

SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

Addendum to the 2009 Final Environmental
Impact Report (SCH # 2005102122)

Prepared for:

Marin County Community Development Agency

By: **Sicular Environmental Consulting and Natural Lands Management**
in association with:
RCH Group
Sutro Science
PaleoWest
Brewster Historic Preservation
PHA Consulting
Kristina Tierney
Environmental Science Associates

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Sicular Environmental Consulting & Natural Lands Management

P.O. Box 582, Philo, CA 95466

www.sicularconsulting.com

(415) 717-6328

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INTRODUCTION AND SUMMARY

Marin County is the Lead Agency, pursuant to the State *Guidelines*¹ for the California Environmental Quality Act,² for the preparation of this Addendum to the 2009 San Rafael Rock Quarry Amended Reclamation Plan Final Environmental Impact (2009 FEIR; SCH #2005102122).³ This Addendum reviews proposed changes to the current amended reclamation plan for the San Rafael Rock Quarry (SRRQ), which the Marin County Board of Supervisors (BOS) initially approved, with conditions and after adopting CEQA Findings, on September 28, 2010.⁴ The Conforming Amended Reclamation Plan of 2010 (CARP10), which incorporates the Conditions of Approval (COA), was finalized in 2012, and is currently SRRQ’s approved reclamation plan. CARP10 was analyzed in the 2009 FEIR as the “Mitigated Alternative” (see Chapter 1, Project Description, for details). The changes reviewed in this Addendum are contained in the proposed Conforming Amended Reclamation Plan of 2019 (CARP19) (hereinafter, the “Project”). This Addendum has been prepared by the County of Marin in accordance with CEQA, the State CEQA *Guidelines*, and the Marin County Environmental Impact Review Guidelines (Marin County, 1994).

Project Summary

SRRQ has applied to the Marin County Department of Public Works to amend CARP10 to extend the date to complete mine reclamation activities from December 31, 2024 to December 31, 2044. The proposed rescheduling of reclamation would make CARP10 consistent with SRRQ’s intent to continue mining through approximately 2044, the year that SRRQ now projects that the quarry will reach final reclamation grades. The changes that constitute the proposed amendment to CARP10 are contained in CARP19, which is the “Project” that is the subject of this Addendum.

California’s Surface Mining and Reclamation Act of 1975 (SMARA) requires all surface mines in California to operate in compliance with an approved reclamation plan; therefore, a revision to the reclamation timeline in CARP10 would be necessary to continue mining beyond 2024. The Project does not otherwise affect mining operations, which are governed by SRRQ’s Amended Surface Mining and Quarrying Permit (AQP). The AQP was also approved, with conditions, by the BOS in 2010, and is also administered by the Marin County Department of Public Works. As discussed in detail in Chapter 1,

¹ California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000 *et seq.*

² Public Resources Code Sections 21000 *et seq.*

³ SRRQ’s previous proposal to amend its reclamation plan was concurrent with its proposal to amend its Surface Mining and Quarrying Permit. While these two proposals were considered to be separate projects for purposes of CEQA review, the EIRs for the two projects were combined into a single document (Marin County, 2009).

⁴ Approval documents can be found at the Marin County Department of Public Works website for SRRQ: <https://www.marincounty.org/depts/pw/divisions/projects/land-use/quarry>

Project Description, SRRQ has a vested right to continue to mine within the scope of its legal, non-conforming use, without regard to depth of the mine pit or the duration of the mining operation.

Supplemental Environmental Review of the Proposed Project

Pursuant to Section 15164 of the State CEQA *Guidelines*, the Lead Agency shall prepare an Addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 or 15163 calling for preparation of a subsequent or supplemental EIR have occurred. State CEQA *Guidelines* Section 15162 lists the following conditions, which require preparation of a subsequent or supplemental EIR:

- (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
- (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
 - (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The County has conducted a CEQA review of the proposed Project in the form of a Supplemental Environmental Review Checklist (Chapter 2), and has found that the Project would not meet any of the conditions in State CEQA *Guidelines* Section 15162 (Chapter 3): the proposed time extension for the completion of mine reclamation, in combination with changed conditions and new information, would not result in new or substantially more severe significant environmental effects requiring changes to the impact conclusions in the 2009 FEIR. Therefore, an Addendum is warranted, and neither a Subsequent EIR, nor a Supplemental EIR (pursuant to State CEQA *Guidelines* Section 15163), is required.

As discussed in Chapters 2 and 3, County staff are proposing minor revisions to several mitigation measures from the 2009 FEIR. As explained in Chapter 2, these are necessitated by changes in law, applicable regulatory standards, or CEQA practice standards that have occurred since the FEIR was certified in 2009, or they are for clarification. Revisions to mitigation measures are not proposed in response to any new or substantially more severe significant impacts resulting from the Project, because none were identified in the Supplemental Environmental Review.

The continued implementation of mitigation measures identified in the 2009 FEIR, which were previously adopted as Conditions of Approval (COA), would still be necessary to avoid or reduce the potential significant environmental impacts of reclamation activities identified in the 2009 FEIR. The full text of the adopted mitigation measures, along with proposed revisions, is provided in Appendix A, Proposed Revisions to the Mitigation Monitoring and Reporting Program. The adopted COA are provided in Appendix B. If the Project is approved, along with the proposed revisions to the mitigation measures, the County will adopt revisions to the corresponding COA, to implement the revisions.

Review and Comment

CEQA does not require a formal public review and comment period on an EIR Addendum. However, the 2009 FEIR and this EIR Addendum are available for review during the hours of 8:00 am to 4:00 pm, Monday through Thursday and 8:00 am to noon on Friday at the Marin County Community Development Agency at 3501 Civic Center Drive, Room 308, San Rafael, CA 94903, and on the Community Development Agency's website at <https://www.marincounty.org/depts/cd/divisions/environmental-review/current-eir-projects/san-rafael-rock-quarry>. Those wishing to submit comments on this Addendum may do so in writing. Please address your comments to:

Ms. Rachel Reid
Environmental Planning Manager
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903
Envplanning@marincounty.org

References

Marin County, 1994. Marin County Environmental Impact Review Guidelines (EIR Guidelines): Policy and Procedures for Implementation of the California Environmental Quality Act (CEQA). Adopted by the Board of Supervisors May 17, 1994. <https://www.marincounty.org/-/media/files/departments/cd/planning/environmental-impact/erguide1994.pdf>

Marin County, 2009. San Rafael Rock Quarry Amended Reclamation Plan and Amended Surface Mining and Quarrying Permit, Combined Final Environmental Impact Report. State Clearinghouse Numbers 2005102122 (Amended Reclamation Plan) and 2007082097 (Amended Quarry Permit). Prepared for the Marin County Community Development Agency by Environmental Science Associates, January, 2009. Certified by the Marin County Board of Supervisors, October 27, 2009. <https://www.marincounty.org/depts/cd/divisions/environmental-review/current-eir-projects/san-rafael-rock-quarry>

CHAPTER 1

Project Description

1. Introduction

San Rafael Rock Quarry (SRRQ) has submitted an application to the Marin County Department of Public Works to amend its approved Conforming Amended Reclamation Plan of 2010 (CARP10) to extend the date to complete mine reclamation activities from December 31, 2024 to December 31, 2044. The proposed rescheduling of reclamation would make CARP10 consistent with SRRQ's intent to continue mining through approximately 2044, the year that SRRQ now projects that the quarry will reach final reclamation grades. The proposed amendment to CARP10 is the "Project" analyzed in this supplemental environmental review.

SRRQ is an existing hard-rock quarry located on the Point San Pedro Peninsula in unincorporated Marin County near the City of San Rafael. In 2004, the Marin County Superior Court confirmed that SRRQ has a vested right to continue to mine within the scope of its operations and within the mining area established in 1982, when the property upon which the facility is located was rezoned, and it became a legal, non-conforming use. The vested right continues irrespective of the depth to which the mine extends, or the time it takes to complete mining of the mineral resource. The application to amend CARP10, therefore, does not affect the right of SRRQ to continue mining, but is necessary to make the CARP consistent with SRRQ's current projections for the completion of mining.

This chapter includes a brief description of the Project site and details of the regulatory history of SRRQ. It then provides a summary of the approved CARP10, and describes the changes that SRRQ is proposing that constitute the Project. The chapter concludes with an explanation of the environmental setting (the "baseline") for the supplemental environmental review, the scope of the review, and a list of the approvals necessary for the Project to proceed.

2. Summary and Background

Under the State of California's Surface Mining and Reclamation Act of 1975 (SMARA), all operators of surface mines in California must prepare and submit for approval by the lead agency a reclamation plan, along with financial assurances for reclamation (Public Resources Code [PRC] §2770(a)). The lead agency under SMARA is the jurisdiction with principal responsibility for approving a reclamation plan pursuant to SMARA, which is Marin County in the case of SRRQ. Mining operations must be consistent with the approved reclamation plan, and substantial deviations from an approved reclamation plan may not be undertaken without the submission to and approval by the lead agency of amendments to the reclamation plan (PRC §§2777, 3502(d)). Under SMARA, each lead agency must adopt a surface mining ordinance which establishes procedures for the review and approval of reclamation plans and financial assurances, and for issuance of permits to conduct surface mining operations (PRC §2774). Marin County

has adopted the required ordinance and it is codified as Title 23, Chapter 23.06 of the Marin County Code.

SRRQ's proposal to amend CARP10, if approved, would allow for the rescheduling of already-planned phased reclamation. SRRQ now anticipates that reclamation would be completed in 2044, at the time that SRRQ now estimates that the mineral resource within the vested mining area would be exhausted. The end date of mining in 2044, 20 years later than stated in CARP10, would be a "substantial deviation" from the approved reclamation plan, pursuant to SMARA §3502(d).¹ Amending CARP10 is necessary to make the reclamation plan consistent with SRRQ's estimated date for the completion of mining. SRRQ proposes no changes to the existing Amended Surface Mining and Quarry Permit (the "AQP," permit number Q-72-03), other than to the condition pertaining to the anticipated date for cessation of mining. SRRQ's proposed changes to CARP10 are the "Project" examined in this supplemental environmental review. Marin County is the Lead Agency for the review, which is being undertaken pursuant to the California Environmental Quality Act (CEQA).

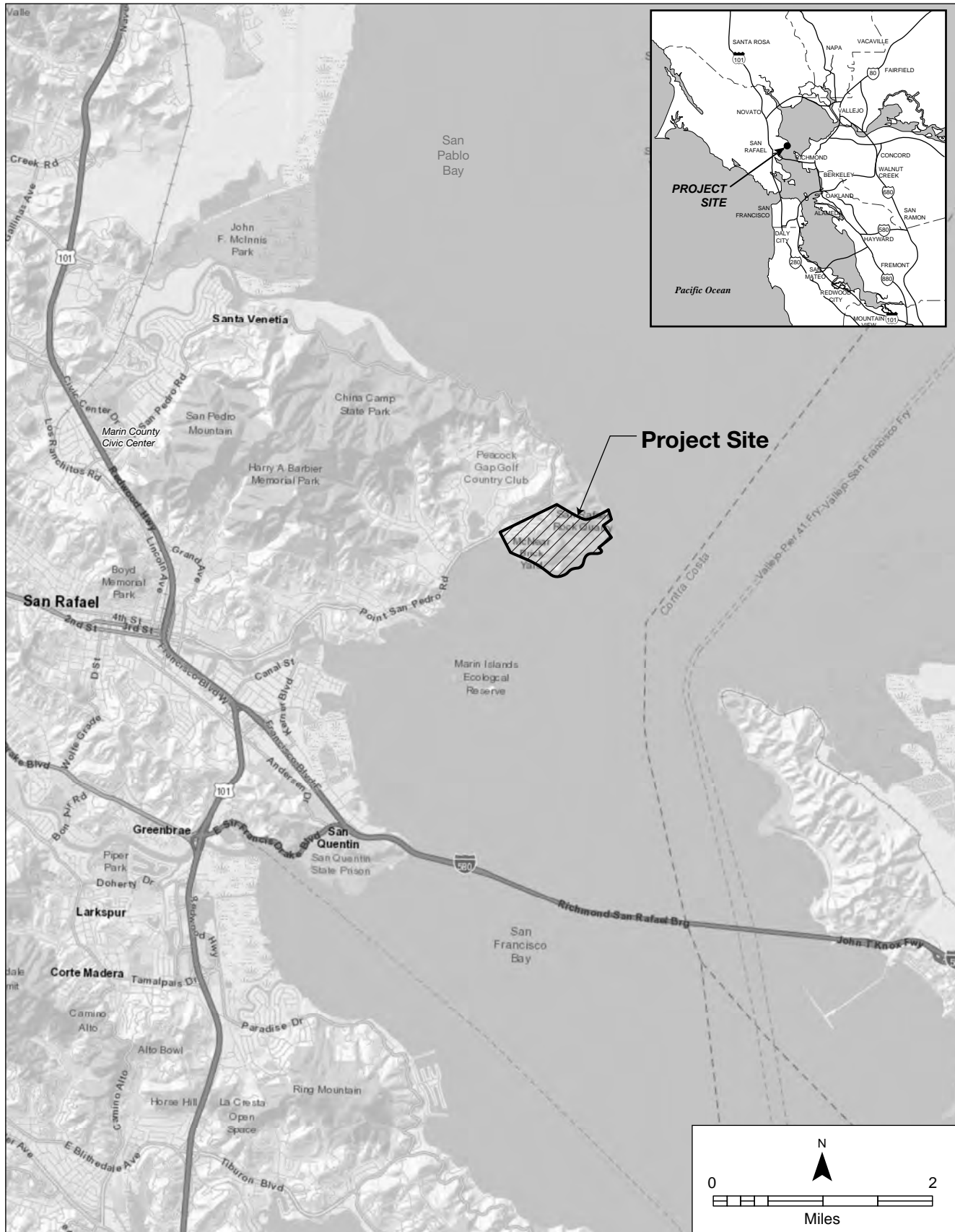
Supplemental Environmental Review

SRRQ's previous proposal to amend its reclamation plan, as well as proposed amendments to its Surface Mining and Quarrying Permit, were subjects of a combined Final Environmental Impact Report (FEIR) certified by the Marin County Board of Supervisors in 2009 (the "2009 FEIR"). The current supplemental environmental review is being undertaken to determine whether the Project would result in new or substantially more severe significant environmental impacts than those identified in the 2009 FEIR; see the Introduction and Summary.

3. Project Location and Setting

SRRQ is located at 1000 Point San Pedro Road in unincorporated Marin County, near Point San Pedro (Figure 1-1). SRRQ is a subsidiary of the Dutra Group. The acronym "SRRQ," as used in this report, refers both to the applicant and to the physical quarry site. The legal parcels on which SRRQ is located, and to which the AQP applies, (Assessor's Parcel Nos. 184-010-**09**, **-15**, **-16**, -18, -19, -20, -44, -45, -47, -51, and **-52**) are partly dry land (**bolded** parcel numbers) and partly tideland totaling 750 acres. The dry portion covers 272 acres, and ranges from an altitude of 250 feet above mean sea level (+250' msl) to about 350 feet below mean sea level (-350' msl) at the current low point of the main mine pit (the "Main Quarry Bowl.") Mining occurs only on dry land. SRRQ is bounded on the north by Point San Pedro Road, and on the south, east, and west by San Francisco Bay. The Peacock Gap neighborhood, consisting primarily of single-family homes, townhouses, and a golf course, is located immediately across Point San Pedro Road from SRRQ. The Marin Bay Park development and McNear's Beach County Park are located adjacent to the property on its northeastern border. SRRQ is accessed by private roads that intersect with Point San Pedro Road, and regionally by U.S. 101.

¹ "In determining whether a change or expansion constitutes a substantial deviation, the lead agency shall take into consideration the following factors: ... (2) A substantial extension of the termination date of the mining operation as set out in the approved reclamation plan...." (PRC §3502(d))



SOURCE: San Rafael Rock Quarry;
Base Map - ESRI

Figure 1-1
Project Location

For planning purposes, the site is divided into four quadrants, the Southeast (SE), Southwest (SW), Northeast (NE), and Northwest (NW) Quadrants (Figure 1-2). Hard rock quarrying of the site's Franciscan sandstone is confined to the SE Quadrant, where the Main Quarry Bowl is located, and specified portions of the SW and NE Quadrants. The SE Quadrant contains the quarry's processing plant and asphalt batching plant, as well as a barge dock for shipping of quarry products by water. SRRQ's offices and a residence on South Hill are located in the SW Quadrant. The NW Quadrant is the location of McNear Brick Company (also referred to as McNear's Brickyard in this document) and Marin Exposed Aggregate Manufacturing, which occupy these areas under lease. A substantial portion of the NW Quadrant is occupied by marshes. The NE Quadrant contains the "brick resource area" where shale and clay deposits were formerly mined for use in the brick making operation. The NE Quadrant also includes stockpiles of overburden and pond fines from the quarrying operation, and areas left in a relatively natural state.

Regional Setting

SRRQ is located on the eastern side of a peninsula that ends in Point San Pedro, which divides San Pablo Bay from San Francisco Bay (collectively, "the Bay;" Figure 1-1). At the western end of the peninsula are U.S. 101, downtown San Rafael, and, to the north, the Marin County Civic Center. The interior of the peninsula is mountainous, and much of the land is within China Camp State Park. Much of the southern portion of the peninsula is within the City of San Rafael, with land uses consisting primarily of single and multi-family residences, a golf course, marinas, and marina-related commercial areas. To the south of SRRQ and the Point San Pedro peninsula, the Bay is relatively calm and shallow. To the east of Point San Pedro, however, the open Bay and the San Pablo Strait are deep with strong currents. The Marin Islands National Wildlife Refuge borders SRRQ to the south. The Sisters (islands) are located off Point San Pedro.

Quarrying activities have occurred on the SRRQ property for nearly 150 years. Quarrying predates most of the other current land uses in the vicinity of the property, including residential and recreational uses (Figure 1-3). At this time, the area around SRRQ is characterized by residential, open space, and recreational land uses. In 1982, when Marin County rezoned the property and approved the quarry's previous Amended Reclamation Plan, the closest residences to SRRQ were the homes on San Marino Drive. Since 1982, homes have been built much closer to the site (Figure 1-4). These include the homes on Marin Bay Park Court and on Heritage Drive.

Local Setting

The natural topography of the quarry property is typical of the Point San Pedro area as a whole: it ranges from sea-level marshes and Bay margins to high peaks and ridges, with natural slopes ranging from very steep to gentle. The property has an extensive waterfront. Much of the property has an industrial character. This includes McNear's Brickyard, which includes a number of factory and warehouse buildings of various ages; smokestacks from the brick kilns; roadways; and open storage of finished brick products and raw materials. Between McNear's Brickyard and Point San Pedro Road there is a series of saltwater and freshwater marshes, divided from one another and from the Bay by levees and roadways, including the access roads for the quarry and McNear's Brickyard. Across Point San Pedro Road, the land slopes up sharply. Single family houses along San Marino Drive, Marin Bay Park Court, and Heritage Drive overlook the quarry property.



SOURCE: San Rafael Rock Quarry

Figure 1-2
Project Site - Existing Conditions



SOURCE: Pacific Aerial Surveys

Figure 1-3
1946 Aerial Photo



SOURCE: Google Earth, 2020

Figure 1-4
Current Aerial Photo

The SE Quadrant has been profoundly altered by quarrying; this area's most distinctive feature is the Main Quarry Bowl, which currently reaches a depth of about -350' msl. At the elevation of the operations area, the Main Quarry Bowl is approximately 2,200 feet wide from west to east, and 1,200 feet wide from south to north. Rainwater ponds in the bottom of the Main Quarry Bowl. The north side of the Main Quarry Bowl is the quarried face of the central ridge separating the SE Quadrant from the NE Quadrant. To the south and east of the Main Quarry Bowl are the quarry's operations area and barge loading facilities, parts of which are built on Bay fill. The operations area includes crushing, sorting, and washing equipment, conveyors, materials stockpiles, process water ponds, and an asphalt batching plant. The barge loading facility consists of a barge pier extending off the eastern waterfront, with associated conveyors for loading docked barges.

The SW Quadrant is dominated by South Hill, the south side of which has been quarried. The highest point on the property is at the summit of South Hill. Benches on the quarried slopes house the quarry's administrative offices, a residence, and other structures. The top and northwestern slopes of South Hill have not been disturbed. The hill is crowned with a grove of large eucalyptus trees.

The NE Quadrant is the area where clay and shale were formerly mined for brickmaking. This mostly low-lying area was previously used for stockpiling pond fines and other materials. A large berm on the northern edge of the Main Quarry Bowl (the "brow berm") is maintained to screen views of and noises from the Main Quarry Bowl and operations area. Relatively undisturbed areas of this quadrant include the "Grassy Knoll" and a grove of large eucalyptus trees along Point San Pedro Road. To the northeast of this area, and across the access road to McNear's Beach County Park, is the Marin Bay Park development, where single family houses are arrayed along Marin Bay Park Court. Many of these houses look directly onto the quarry site.

4. Project History

Site History

Quarrying has taken place on the property since the 1870s, when the McNear family acquired the property and began operating a brickyard using the clay and shale deposits found there. Hard rock quarrying began on the site in the 1920s. In 1939, the Basalt Rock Company, Inc., acquired a lease to operate on part of the McNear property. Quarrying has occurred on the site continuously since that time. In 1971, Basalt Rock Company acquired the property from the McNear family; eventually, Basalt Rock Company became a subsidiary of the Dillingham Corporation. In 1986, San Rafael Rock Quarry, Inc. (SRRQ) acquired the property and has operated the quarry since that time.

145 acres of the SRRQ property has been classified by the State Geologist as a Mineral Resource Zone, Class 2 (MRZ-2A), the category for known mineral resource deposits, and has been designated by the California State Mining and Geology Board as a mineral deposit of regional or statewide significance for

portland cement concrete-grade construction aggregate in the North San Francisco Bay Production-Consumption region.²

History of the Regulatory Process

In 1941, Marin County zoned the property M-2, A2:B2, Heavy Industrial, Limited Agricultural, under which quarrying was an allowed use. Marin County adopted a surface mining ordinance in 1971 and on April 10, 1972 the Marin County Planning Commission issued Surface Mining and Quarrying Permit #Q-72-03 to Basalt Rock Company, then the owner of the site, thus allowing the quarry to continue as a legal use.

The State law governing surface mining, SMARA, took effect in 1976. SMARA required existing quarry operations to submit a reclamation plan. Basalt Rock Company submitted a reclamation plan to the County of Marin in December 1976. Marin County did not, however, take action to approve the 1976 reclamation plan.

In December 1980, the City of San Rafael adopted the Peacock Gap Neighborhood Plan. The plan provided that the quarry property would be developed into a mixed residential/commercial development, although it is outside the City limits. In August 1981, Marin County amended its General Plan by incorporating the Peacock Gap Neighborhood Plan. In 1982, the County rezoned the quarry property RMPL (Residential/Commercial Multiple Planned District). Quarrying is not a permitted use in property zoned RMPL. Hence, the quarrying operation became a legal nonconforming use in 1982. In that year, Basalt Rock Company submitted a revised Amended Reclamation Plan (ARP82) to the County. The Marin County Planning Commission approved ARP82 in December 1982, with conditions.

In September 2001, the State of California, Marin County, the Point San Pedro Road Coalition, and individual neighbors of the quarry filed lawsuits against SRRQ. The lawsuits alleged causes of action for, among other things, public nuisance, private nuisance, and violations of County zoning and building regulations. The Marin County Superior Court bifurcated the lawsuit and conducted a trial regarding the alleged zoning violations related to the alleged expansion of the non-conforming use. On April 19, 2004, the Court found and ordered that:

1. At the time the quarry property became a non-conforming use in 1982, SRRQ's predecessor in interest, Basalt Rock Company, manifested an intent to quarry the Main Quarry Bowl to the extent doing so is profitable (i.e., without respect to duration or the depth of the Main Quarry Bowl), but had manifested an intent to mine South Hill only to the limited extent reflected in ARP82 and not to mine other areas that it agreed would be preserved in their natural state. The Court Order therefore affirmed that SRRQ has a vested right to continue to mine the Main Quarry Bowl indefinitely, but that this right is limited for other areas of the property;

² California State Mining and Geology Board, 2018. Updated Designation of Regionally Significant Aggregate Resources in the North San Francisco Bay Production-Consumption Region, Marin, Napa, Sonoma, and Southwestern Solano Counties, California. SMGB Designation Report No. 17. California State Department of Conservation, Natural Resources Agency, January 2018. https://www.conservation.ca.gov/smgbr/reports/Documents/Designation_Reports/Designation-Report-17-No.SF-Bay.pdf

2. Certain activities engaged in by SRRQ exceeded the scope of SRRQ's legal non-conforming right, which in terms of operations was defined by the Court as the scope and intensity of the activities taking place in 1982; and,
3. SRRQ had substantially deviated from ARP82.

The Court issued an order prohibiting SRRQ from taking certain actions, limiting SRRQ's operations, and encouraging the County to conduct administrative proceedings. Subsequently, the County met with SRRQ and together they agreed to conduct hearings to amend the Surface Mining and Quarrying Permit in which all operating issues associated with the mining operation could be considered. On July 15, 2004, the Court gave the agreement binding effect by ordering certain actions and, in addition, imposed Interim Operating Conditions until approval of an Amended Surface Mining and Quarrying Permit (AQP).

During the same time that the lawsuit was proceeding, Marin County took several regulatory actions aimed at SRRQ with regard to alleged non-compliance with ARP82. These actions resulted in SRRQ submitting an Amended Reclamation Plan (ARP04). This occurred in April 2004, one week after the Court issued its order. In January 2005, the County informed SRRQ that its application to amend ARP82 was complete, and initiated environmental review pursuant to CEQA.

5. The 2009 FEIR

The County undertook separate CEQA reviews of SRRQ's proposed amendments to the AQP and ARP82, because they were considered separate projects.³ For the sake of convenience and clarity, the environmental reviews of the two projects were combined into one document. Completion of the environmental reviews took several years.

On March 25, 2008, the Marin County Board of Supervisors (BOS) conducted a public hearing in two parts to receive separate testimony on the Combined Draft EIR. The FEIR and a Notice of Availability of the FEIR for review and comment were distributed on January 29, 2009 to members of the Planning Commission, Board of Supervisors, State Clearinghouse, State and local agencies and special districts, EIR commenters, and other interested groups and individuals. On August 25, 2009, the BOS held a certification hearing for the FEIR. The public testimony on the AQP project was concluded at the August 25 hearing (no action for FEIR certification was taken) and the hearing on the ARP04 project and consideration for certification of the FEIR were continued to October 27, 2009. On that date, the BOS conducted a public hearing on the ARP04 project and, at the conclusion of public testimony, the hearing was closed and the Board certified the FEIR (hence, the "2009 FEIR").

In compliance with CEQA, the 2009 FEIR examined a range of alternatives to each of the two projects. For the ARP project, the 2009 FEIR examined three alternatives: the required No Project Alternative; an Alternative Reclamation with Alternative Beneficial End Use Alternative, and a Mitigated Alternative. The Mitigated Alternative, which the 2009 FEIR determined was the Environmentally Superior

³ There is legal precedent for separating mine reclamation from operations for the purposes of CEQA review. See *El Dorado County Taxpayers for Quality Growth v. County of El Dorado* (2004) 122 Cal.App.4th 1591, 1598 (citing *City of Ukiah v. County of Mendocino* (1987) 196 Cal.App.3d 47, 53-55).

Alternative, incorporated all mitigation measures identified for the ARP plus additional project changes to avoid or reduce the significant environmental impacts identified for the project as proposed.

The major elements of the ARP Mitigated Alternative included the following:

- The Mitigated Alternative did not change ARP04's final grades and contours, which would limit mining to the vested mining area described in ARP82 and affirmed by the Court. Neither did the Mitigated Alternative alter ARP04's plan to mine the Main Quarry Bowl to a maximum final depth of -400' msl;
- The Mitigated Alternative did not alter ARP04's phasing of reclamation; reclamation would occur in four potentially overlapping phases to occur concurrently with mining, such that reclamation would be substantially completed at the time that mining ceased. The Mitigated Alternative did not change the phasing of reclamation or specified reclamation activities, except as noted below;
- The Mitigated Alternative retained the same areas "to be preserved in a natural state" identified in ARP04, including the marshes in the NW and SW Quadrants, the wooded areas on South Hill and along the northern property boundary in the NE Quadrant, and the Grassy Knoll in the NE Quadrant;
- The Mitigated Alternative retained the same anticipated post-reclamation land uses as ARP04, which were carried over from ARP82. Post-reclamation land uses would include flooding of the Main Quarry Bowl by connecting it to the Bay to create an inlet, and the development of a marina. Much of the site would be developed with residential and commercial uses, consistent with the Peacock Gap Neighborhood Plan and the Marin Countywide Plan. The Mitigated Alternative additionally required inclusion of sustainability and renewable energy features into the design of the development, consistent with the Marin Countywide Plan.
- The Mitigated Alternative differed from ARP04 in the reclamation of the NE Quadrant. ARP04 proposed to use the NE Quadrant for processing mining waste, which would be used for engineered fill material and revegetation throughout the property. To provide a visual and sound screen for the neighbors to the north of the property, ARP04 proposed construction of a berm along the northern property line in the NE Quadrant approximately 70 feet above existing grade, 300 feet wide by 600 feet long. The berm was to be constructed during Phase 1, maintained until the completion of other reclamation activities in the NE Quadrant, and then removed during Phase 4. Because the Mitigated Alternative eliminated the use of the NE Quadrant for processing mining waste, the new berm was not needed, and so was eliminated in that alternative. The existing berm on the northern lip of the Main Quarry Bowl, the "brow berm," was to be maintained until the cessation of mining, however, to provide a visual and noise screen from operations in the SE Quadrant. The Mitigated Alternative required final reclamation of natural areas in the NE Quadrant during Phase 1. Other areas of the NE Quadrant would be left in their current condition until the cessation of mining and then reclaimed, or reclaimed in the early phases of reclamation.
- The Mitigated Alternative included a mechanical mixing or aeration system to be designed and later installed in the flooded Main Quarry Bowl, to avoid water quality problems associated with potential stratification of the water column;

- The Mitigated Alternative required delay of mining of South Hill in the SW Quadrant until mining was complete in the Main Quarry Bowl;
- The Mitigated Alternative required restoration of the marshes in the NW Quadrant in the first phase of reclamation, rather than a later phase as had been contemplated in ARP04. The Mitigated Alternative also specified establishment of wider buffer areas around the marshes to protect sensitive resources than proposed in ARP04;
- The Mitigated Alternative required protection of historic buildings in the NW Quadrant, and their eventual preservation or adaptive re-use following reclamation.

On September 28, 2010, the BOS approved both the AQP and the ARP projects. The approval included Amendment #1, Conditions, as well as a Mitigation Monitoring and Reporting Plan. The 172 Conditions of Approval (COA) in Amendment #1 modify the AQP and ARP projects proposed by SRRQ. The modifications required by the COA include the mitigation measures specified in the 2009 FEIR and other conditions to further regulate mining operations, such as limiting operating hours. The COA pertaining to operations limit the level of production and truck trips, impose limitations on air emissions, require improvements to equipment to reduce noise, and limit blasting. The AQP was further amended in 2013 (Amendment #2), when the BOS approved changes to the COA allowing for the importation and reuse of asphalt grindings in SRRQ's asphalt batch plant. Amendment #2 was subsequently invalidated by order of the Marin County Superior Court in 2016. That decision was upheld by the First District Court of Appeal in 2019.

For reclamation, the COA also substantially incorporated the provisions of the ARP Mitigated Alternative from the 2009 FEIR. The major difference between the Mitigated Alternative described in the 2009 FEIR and the requirements and restrictions of the COA⁴ was that the berm that ARP04 proposed to build along the northern edge of the NE Quadrant to provide a buffer between reclamation activities and the adjoining neighborhood, which was eliminated in the Mitigated Alternative because its construction could itself cause significant impacts, was retained as an "option," to be constructed at the discretion of the Director of Public Works (the County agency that permits and regulates mines). As explained in the Staff Report for the September 28, 2010 public hearing, this option, which is described in COA 9d, is intended to give the Public Works Director discretion to remove the berm from the reclamation plans after considering additional geotechnical data, since little information was available at that time regarding the nature of some of the mining wastes (particularly pond fines) and their suitability for use as engineered fill and as a soil amendment for reclamation purposes. The option was to give the Public Works Director the discretion to determine whether the berm would be a net benefit to the community, despite the significant unavoidable noise impact associated with its construction identified in the 2009 FEIR. In order to provide more information for the Public Works Director to base the future decision about whether to construct the berm, COA 21c required SRRQ to conduct a geotechnical evaluation and report on the use of pond fines as a fill material and planting medium, including an examination of the most efficient method and location to reclaim the pond fines to minimize impacts to the environment and the amount of material imported into the NE Quadrant. Should the Public Works Director decide not to require construction of

⁴ Another difference pertains to mining of specified areas in the SW Quadrant: while the Mitigated Alternative would have prohibited mining in the SW Quadrant until mining was complete in the Main Quarry Bowl, COA 10 allows, but limits, mining in the SW Quadrant prior to completion of mining in the Main Quarry Bowl.

the berm, COA 9f requires maintaining the existing brow berm along the northern rim of the Main Quarry Bowl to shield mining operations from nearby residences, as specified in the Mitigated Alternative.

6. Conforming Amended Reclamation Plan

COA 15 of Amendment #1 required SRRQ to prepare and submit for approval a “Conforming Amended Reclamation Plan” (CARP). This was intended as a revision to ARP04 (the proposed ARP project analyzed in the 2009 FEIR), to make it consistent with the reclamation related COA contained in Amendment #1. Following SRRQ’s submittal of a draft CARP in 2010 and County review, SRRQ submitted the final CARP on October 8, 2012. This document, referred to as the Conforming Amended Reclamation Plan of 2010, or CARP10, is SRRQ’s current approved reclamation plan.

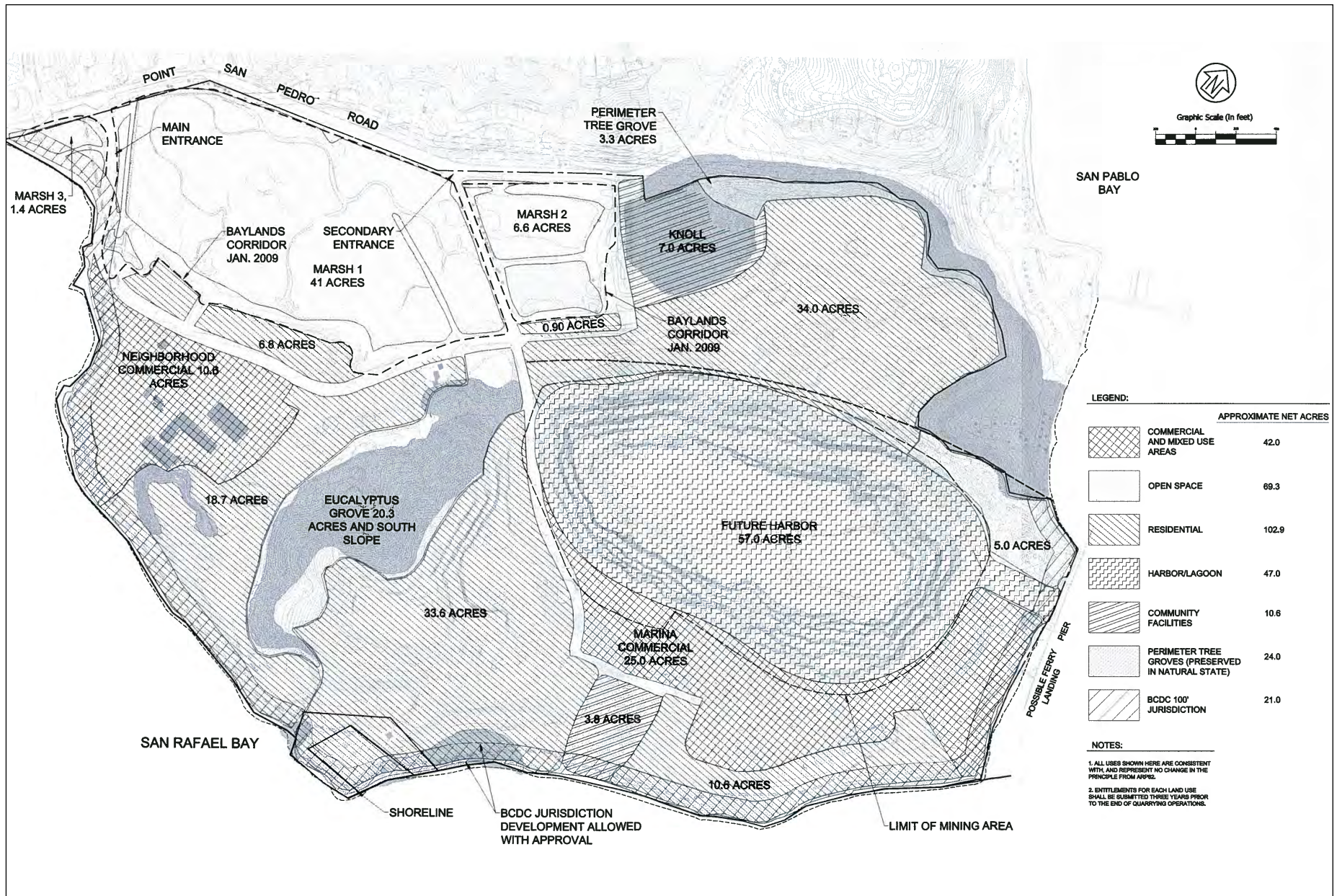
SMARA (PRC §2733) defines “Reclamation” as “the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.”

Detailed planning of post-reclamation use is not a part of a reclamation plan, but reclamation plans must state the intended post-reclamation use and describe how the mining site will be reclaimed to enable it. Reclamation must prepare the site so that, by the completion of reclamation, it is readily adaptable to the intended post-reclamation use. Detailed planning for post-reclamation use of SRRQ is required by COA 31, which states that three years prior to the anticipated cessation of mining, SRRQ will submit a Final Development Plan for review by the County. CARP10 specifies that the post-reclamation use of the SRRQ site will include residential and commercial development, consistent with the Peacock Gap Neighborhood Plan, a marina and related development around the flooded Main Quarry Bowl, and open space in the areas preserved in a natural condition. These are the same post-reclamation uses specified in ARP82, the previous approved reclamation plan, and carried through in ARP04 and the Mitigated Alternative in the 2009 FEIR. Planned post-reclamation land uses are shown in Figures 1-5 and 1-6.

At the completion of reclamation, CARP10 states that the property will be in the following condition:

- the Main Quarry Bowl will have been completed to the side slopes and depths described in CARP10. Quarry faces will be left “clean blasted,”⁵ and quarry benches will be cleared of debris and equipment;
- the lip of the Main Quarry Bowl will have been completed to conform with the footprint shown in Figure 1-5;
- the channel connecting the Main Quarry Bowl to the Bay will have been excavated in-the-dry to the point where only the final barrier to the Bay will have to be removed to begin flooding of the Bowl in preparation for its conversion to a harbor;

⁵ SRRQ equates “clean blasting” with “controlled blasting,” which it defines as “the use of techniques to minimize over-break beyond designated boundaries.”



SOURCE: San Rafael Rock Quarry

Figure 1-5
Post Reclamation Land Use



SOURCE: San Rafael Rock Quarry; Field of Vision

Figure 1-6
Post Reclamation Land Use Model

- the south side of South Hill will have been shaped by quarrying to create a series of planes for future development;
- the Northeast Quadrant will have been recontoured into a series of planes ready for development;
- all of the future development areas underlain with bedrock or consolidated fill (waterfront periphery of the harbor basin, north side of the harbor basin, development planes on the south side of South Hill, raised areas in McNear’s Brickyard, etc.) will have an overlay of consolidated fill material in place to facilitate the installation of services and construction of the planned development;
- portions of the site will have been pre-planted with permanent landscaping which will have reached varying levels of maturity;
- the entire site will have been cleared of debris and equipment; and
- all five of the areas set aside for preservation or open space will be available for any final restoration required in conjunction with the Final Development Plan.

The Project proposes no changes to any of the above existing reclamation requirements.

Reclamation Phasing

CARP10 states that reclamation will occur in four overlapping phases. Most reclamation will take place concurrently with ongoing mining operations, such that the majority of the planned reclamation activities will have been completed by the time that mining ceases. While CARP10 emphasizes that the actual timing of some reclamation activities will be determined by the progression of mining, it provides a timeline for each phase, as shown in Table 1-1.

Table 1-1
CARP10 Reclamation Phases: Timeline and Grading Volumes

Reclamation Phase	Approximate Timeline	Cut (cubic yards)	Fill (cubic yards)
Phase 1	2012-17	350,600	350,600
Phase 2	2014-19	341,420	341,420
Phase 3	2018-23	476,790	476,790
Phase 4	2022-24	907,550	907,550
Total		2,076,360	2,076,360

As shown in Table 1-1, each reclamation phase involves a large amount of earthwork, with a total of over 2 million cubic yards of material cut and filled over the four phases. As shown, the earthwork is “balanced,” that is, cut equals fill, such that import or export of earthen material is not required.

Reclamation activity areas are shown in Figure 1-7. The projected site topography at the conclusion of each of the four reclamation phases is shown in Figures 1-8 through 1-12. Figure 1-8 shows Phase 1 reclamation without the optional berm in the NE Quadrant described above, and Figure 1-9 shows it with the berm. The figures list the mining and reclamation activities and the earth moving sequence for each phase. Figures 1-8 through 1-10 show the rolling over of the existing brow berm on the northern edge of the Main Quarry Bowl: as mining progresses northward in the Main Quarry Bowl toward the final

reclamation grade during Phases 1 and 2, the brow berm will be excavated and rebuilt in a different location. The brow berm will be removed in Phase 4, as shown in Figure 1-12.

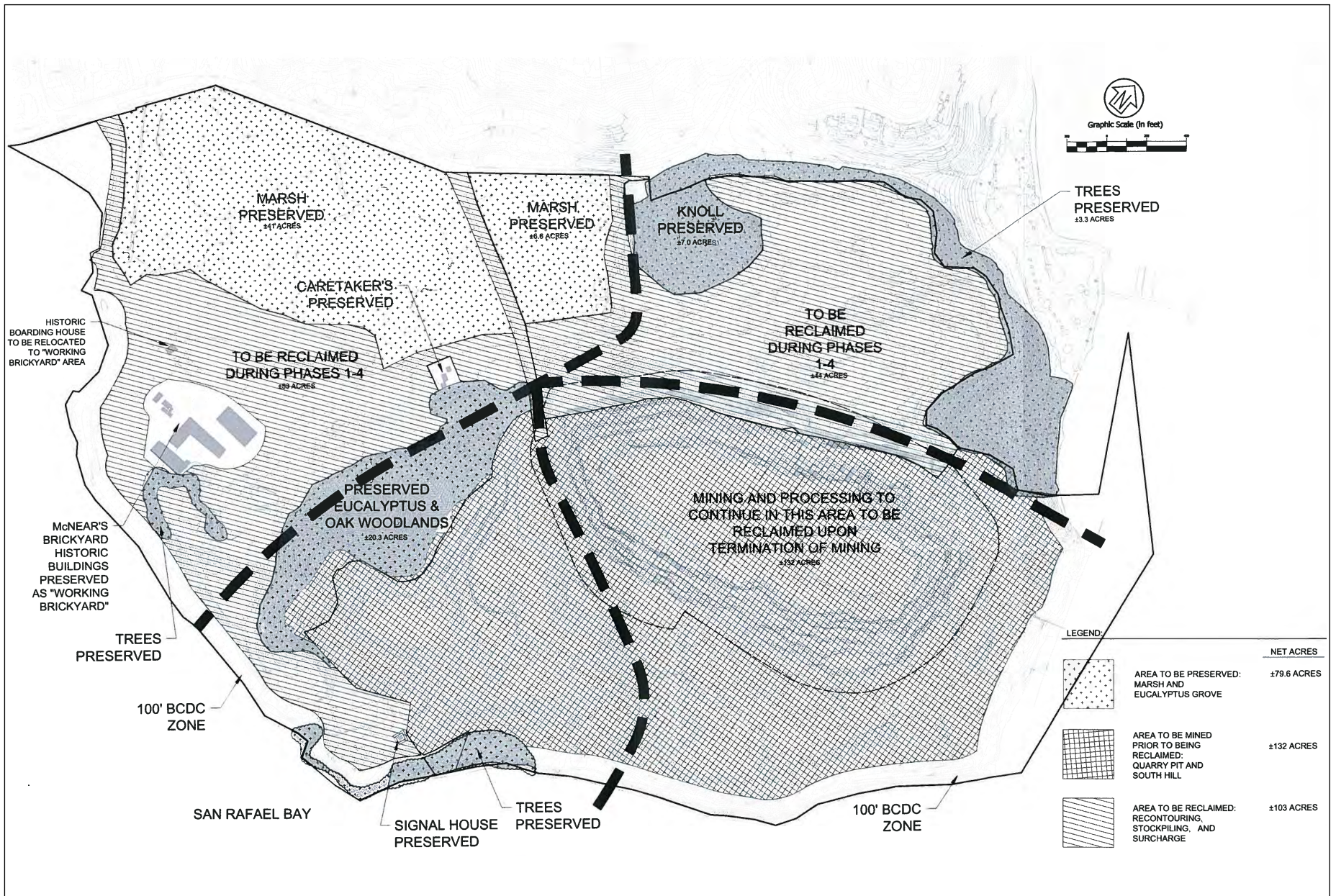
As required by SMARA, CARP10 includes standards for slope design and construction for quarried slopes; standards for grading and stability for non-quarried fills and slopes; standards for handling and placement of topsoil, overburden, and pond fines; standards for storm water and erosion control; revegetation requirements; and standards for preserving natural and sensitive habitat areas. Erosion control features and revegetation plans for each reclamation phase are shown in Figures 1-13 through 1-16.

Reclamation Progress Since Approval of CARP10

Since completion of the 2009 FEIR, the County's approval of the AQP and ARP projects in 2010, and the County's approval of CARP10 in 2012, SRRQ has undertaken several of the reclamation-related studies and planning initiatives required by the COA, and has initiated Phase 1 reclamation. Reclamation has proceeded more slowly than anticipated in CARP10. After the economic downturn in 2008, mining proceeded at a substantially slower pace than previously anticipated (and allowed under the annual production limits in the AQP). Since timing of some reclamation activities is tied to progression of mining toward the approved final grades, some reclamation activities have been delayed. Resolution of regulatory issues also delayed the commencement of some reclamation activities.

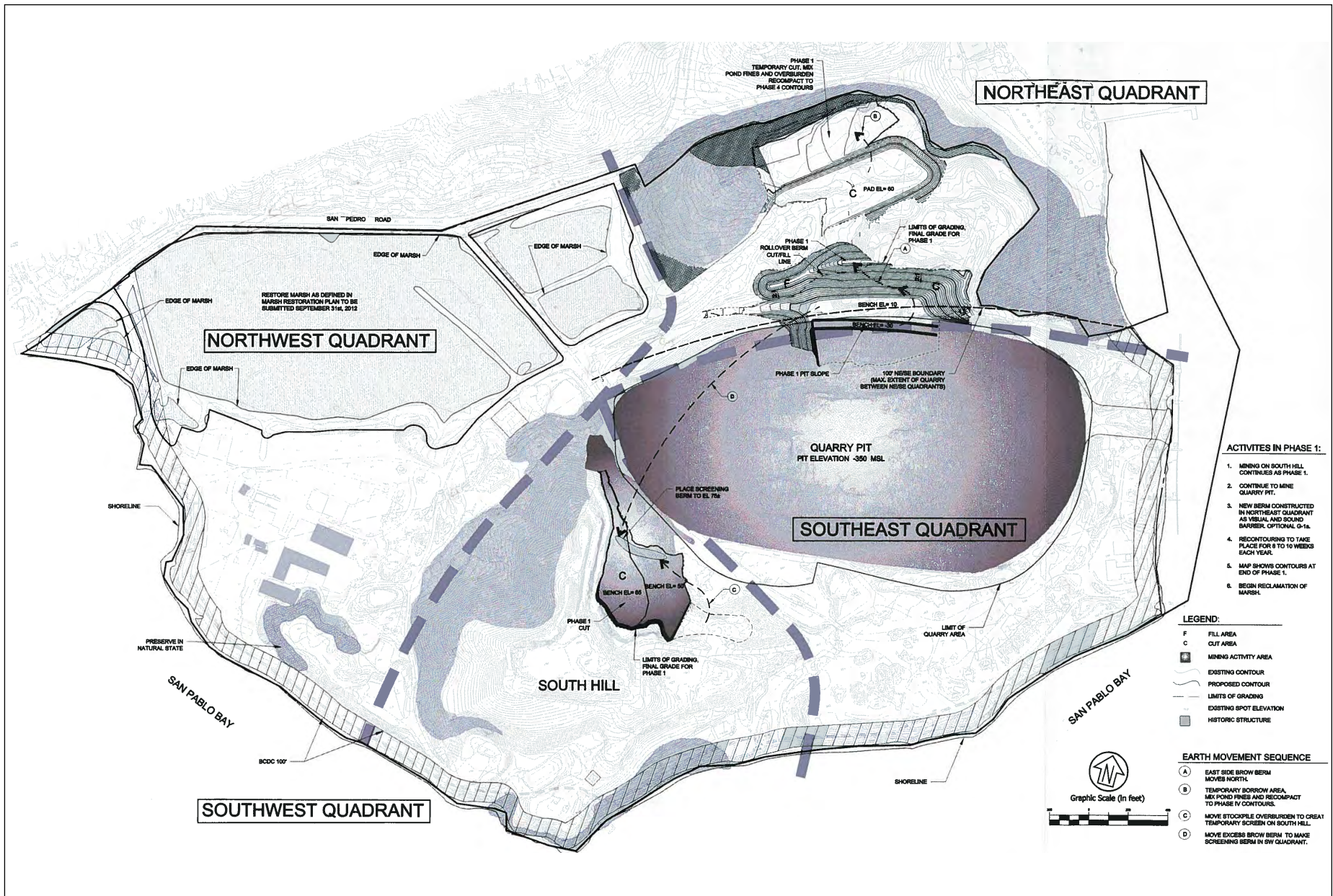
Since 2012, SRRQ has made the following progress on site reclamation (references to the applicable COA and 2009 FEIR mitigation measures, if any, follow each listing):

- prepared and submitted to the County annual reports of reclamation progress with specified content (COA 151);
- completed the investigation of geotechnical properties and handling methods for pond fines (COA 21);
- completed a Greenhouse Gas (GHG) reduction plan, joined the Climate Registry, and began annual reports of emissions, including both operational emissions and emissions from reclamation activities (COA 53; Mitigation Measures R4.2-3c & P4.2-7e);
- completed the Marsh Restoration Plan and began its implementation, including invasive plant removal and periodic tidal flushing (COA 113; Mitigation Measure C4.3-18b);
- conducted slope stability analysis and monitoring within and adjacent to the Main Quarry Bowl (COA 117-120);
- completed the study of options for maintaining acceptable water quality in the flooded Main Quarry Bowl, selected a preferred method, and revised its reclamation bond to include the costs associated with construction, operation, repair and maintenance of required water quality infrastructure (COA 129, Mitigation Measure R4.3-7, R4.5-6);
- removed the secondary crushing plant in mid-2015 and began work to remove the concrete feeders and walls at the asphalt plant. Although not called for as part of Phase 1 reclamation, removal of all plant structures, including the secondary plant, is required under Phase 4;



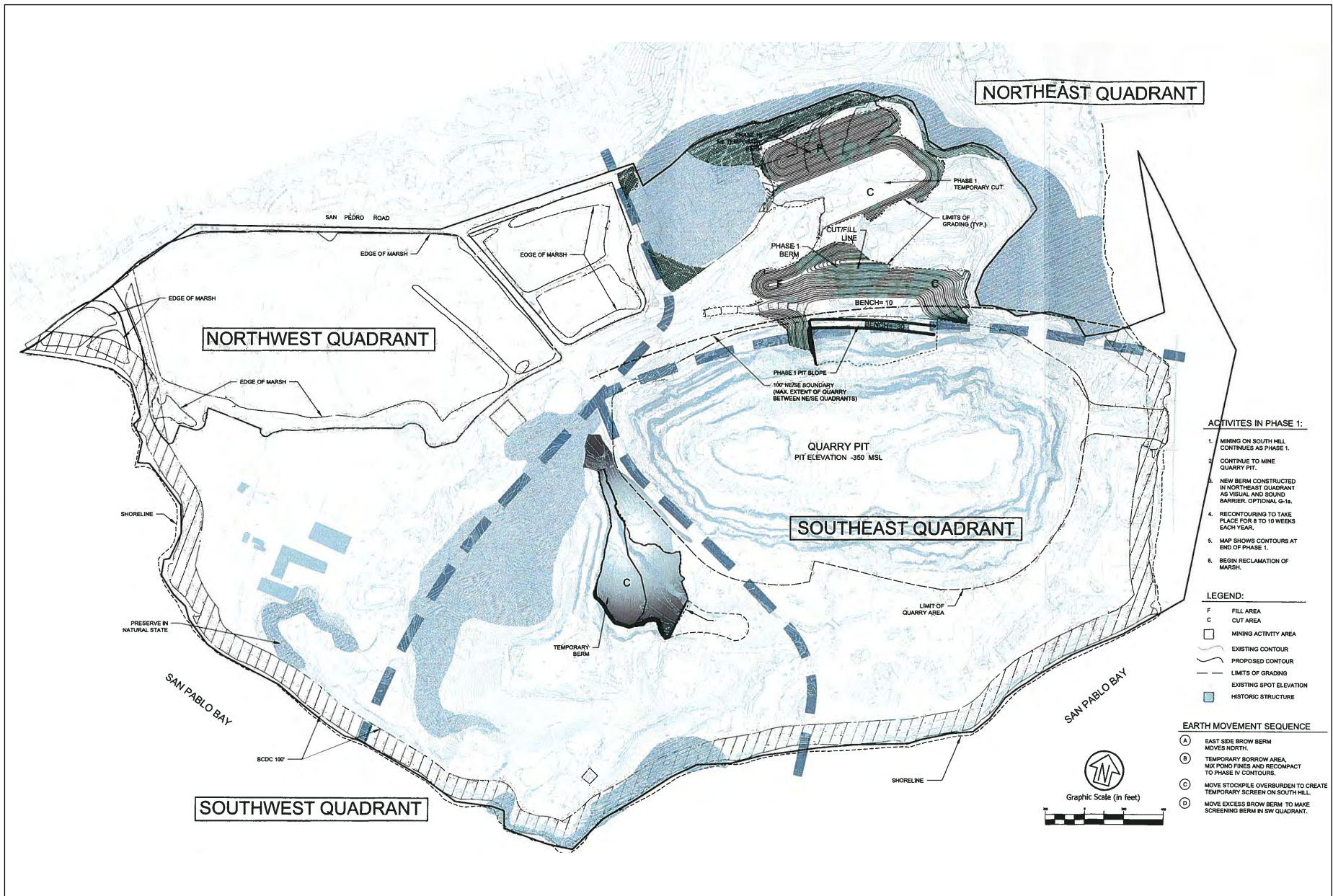
SOURCE: San Rafael Rock Quarry

Figure 1-7
CARP10 Reclamation Activities



SOURCE: San Rafael Rock Quarry

Figure 1-8
CARP10 Phase 1 Reclamation Grading Plan
(No Berm Option)



SOURCE: San Rafael Rock Quarry

Figure 1-9
CARP10 Phase 1 Reclamation Grading Plan
(Option With Berm)

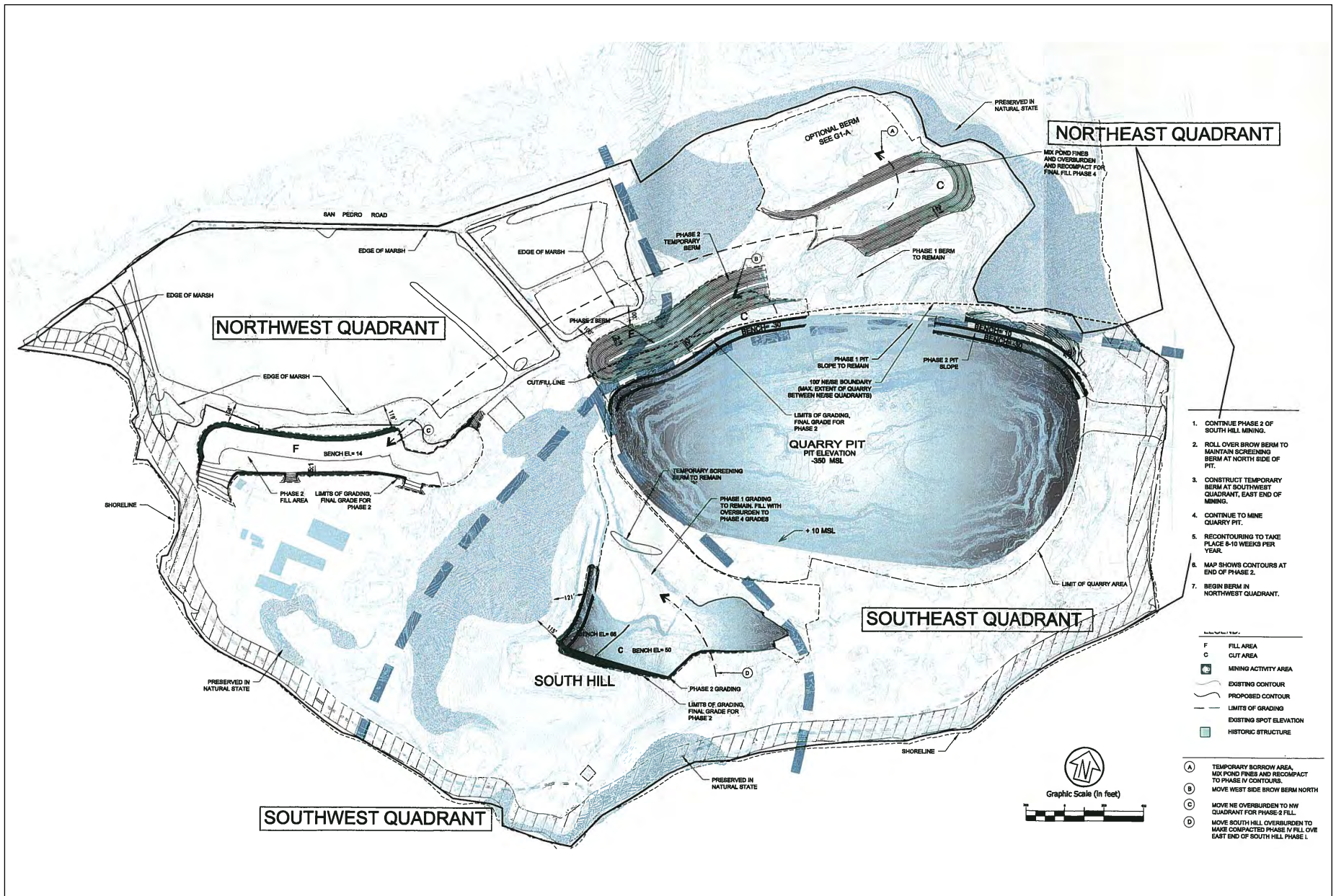
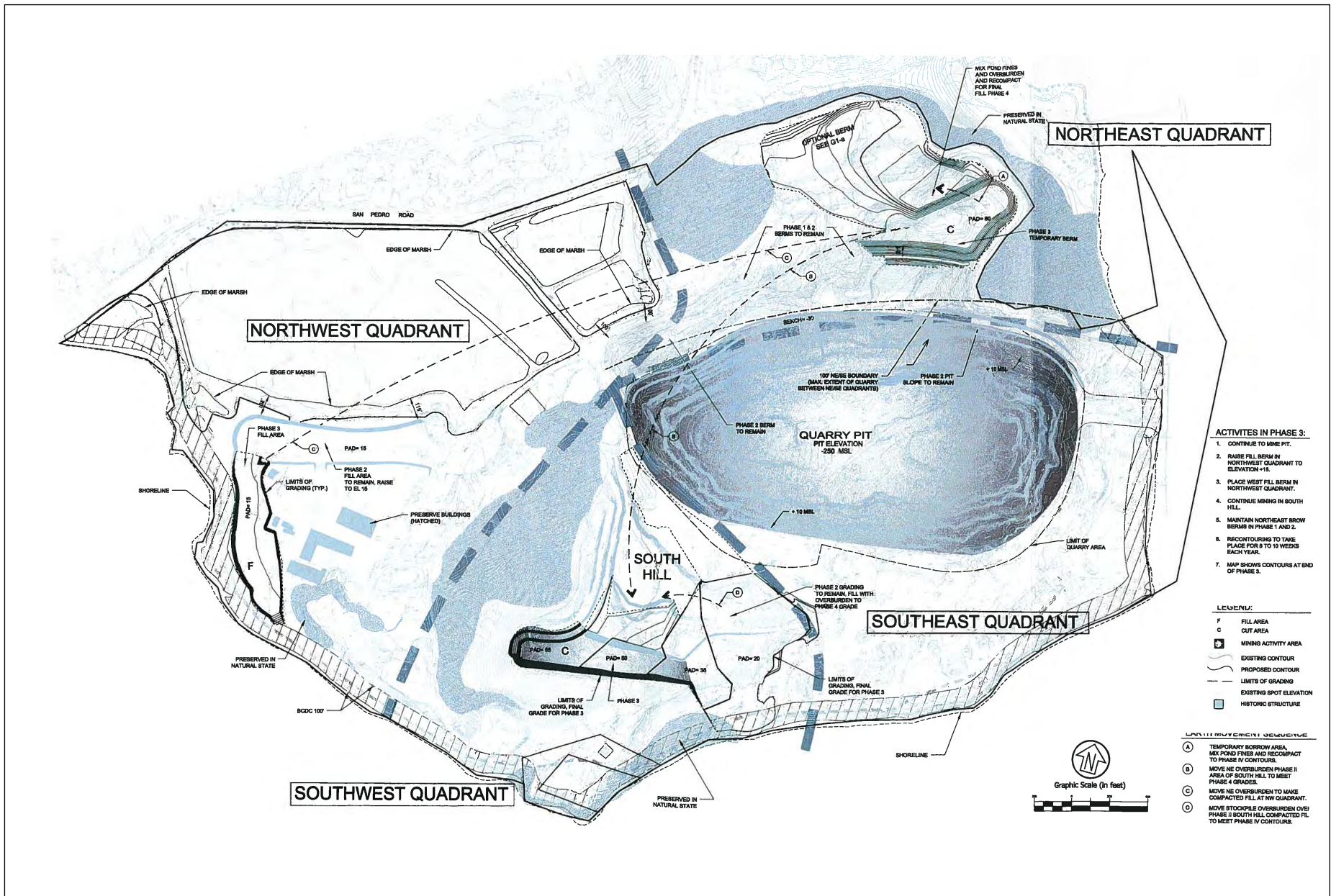
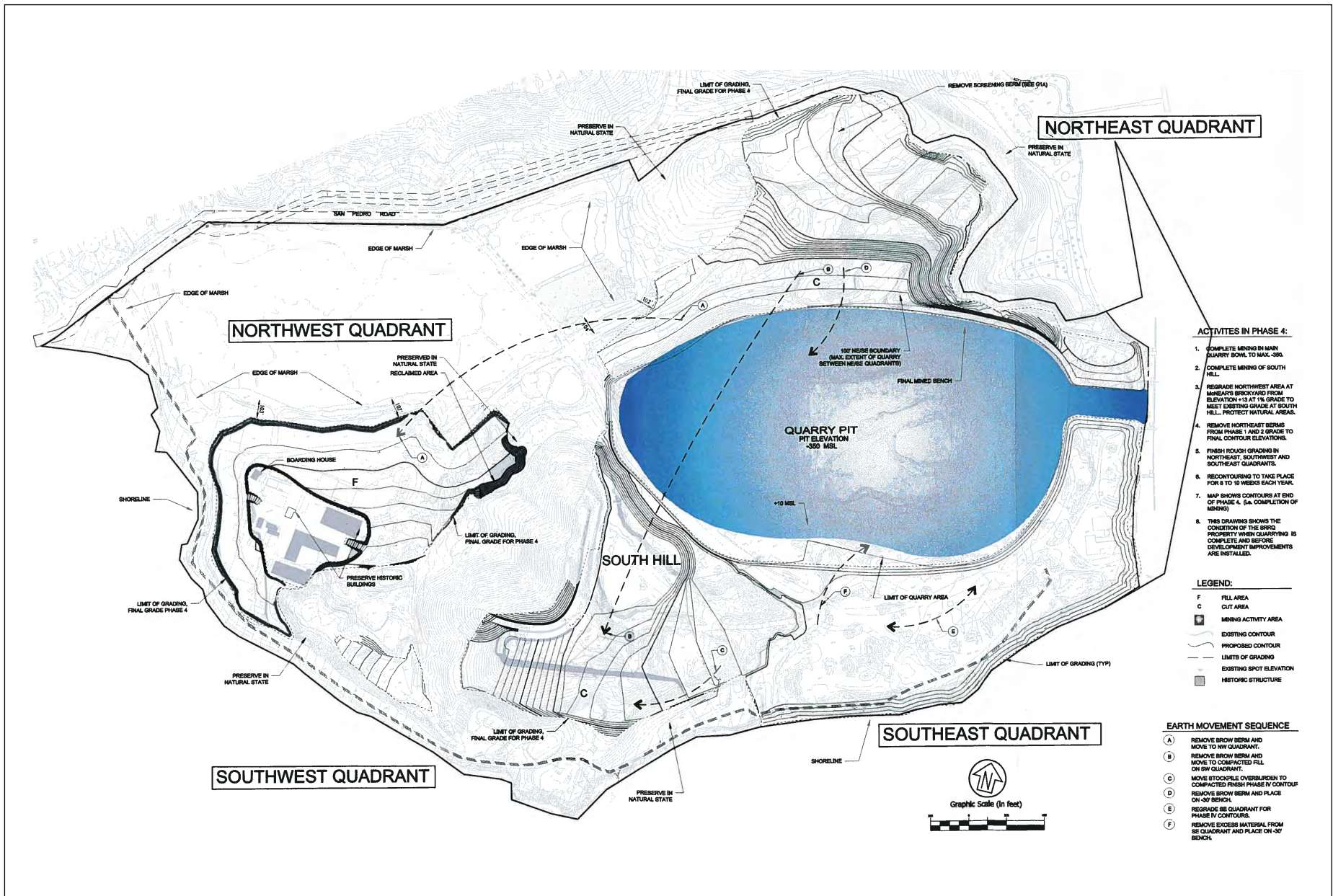


Figure 1-10
 CARP10 Phase 2 Reclamation Grading Plan



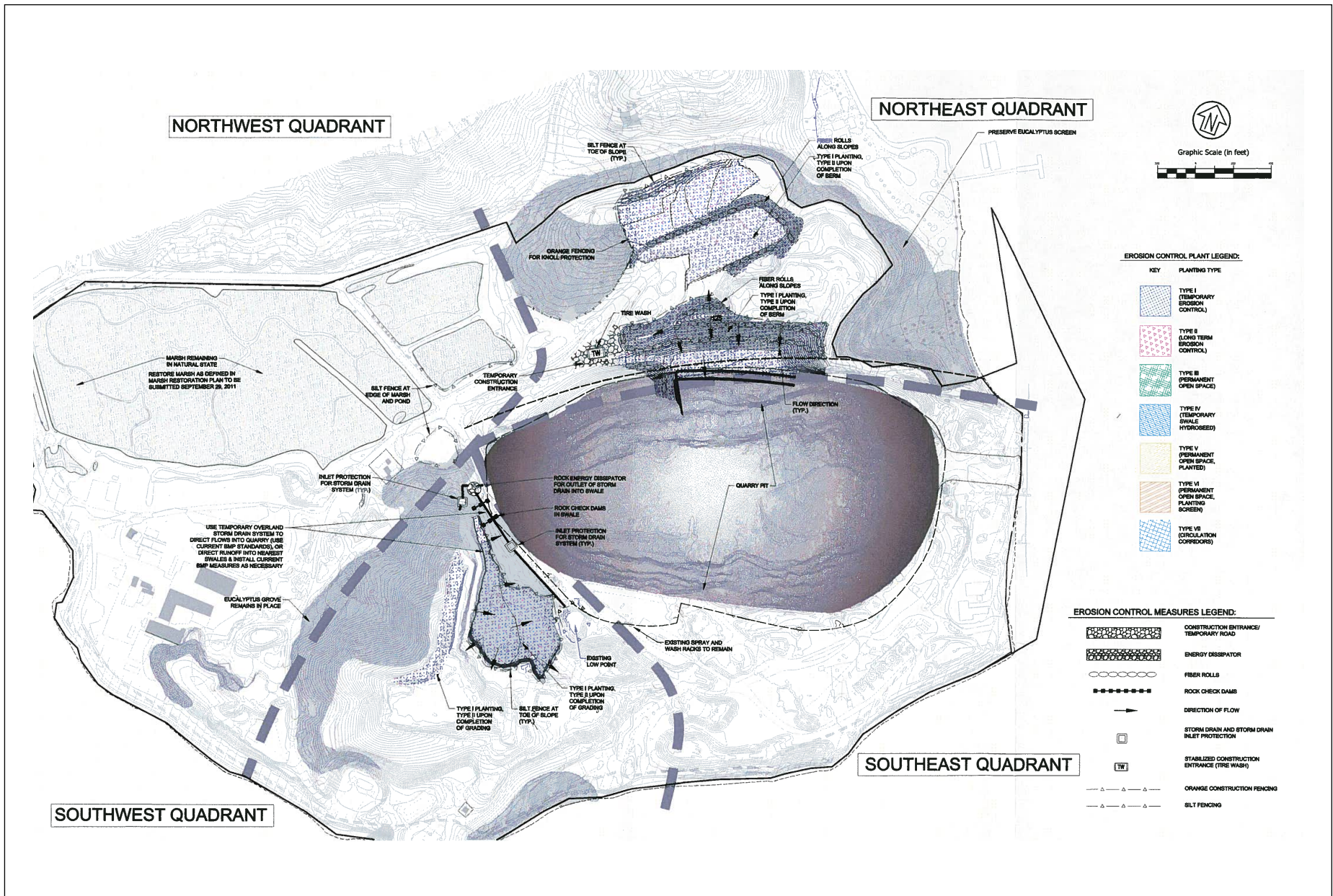
SOURCE: San Rafael Rock Quarry

Figure 1-11
 CARP10 Phase 3 Reclamation Grading Plan



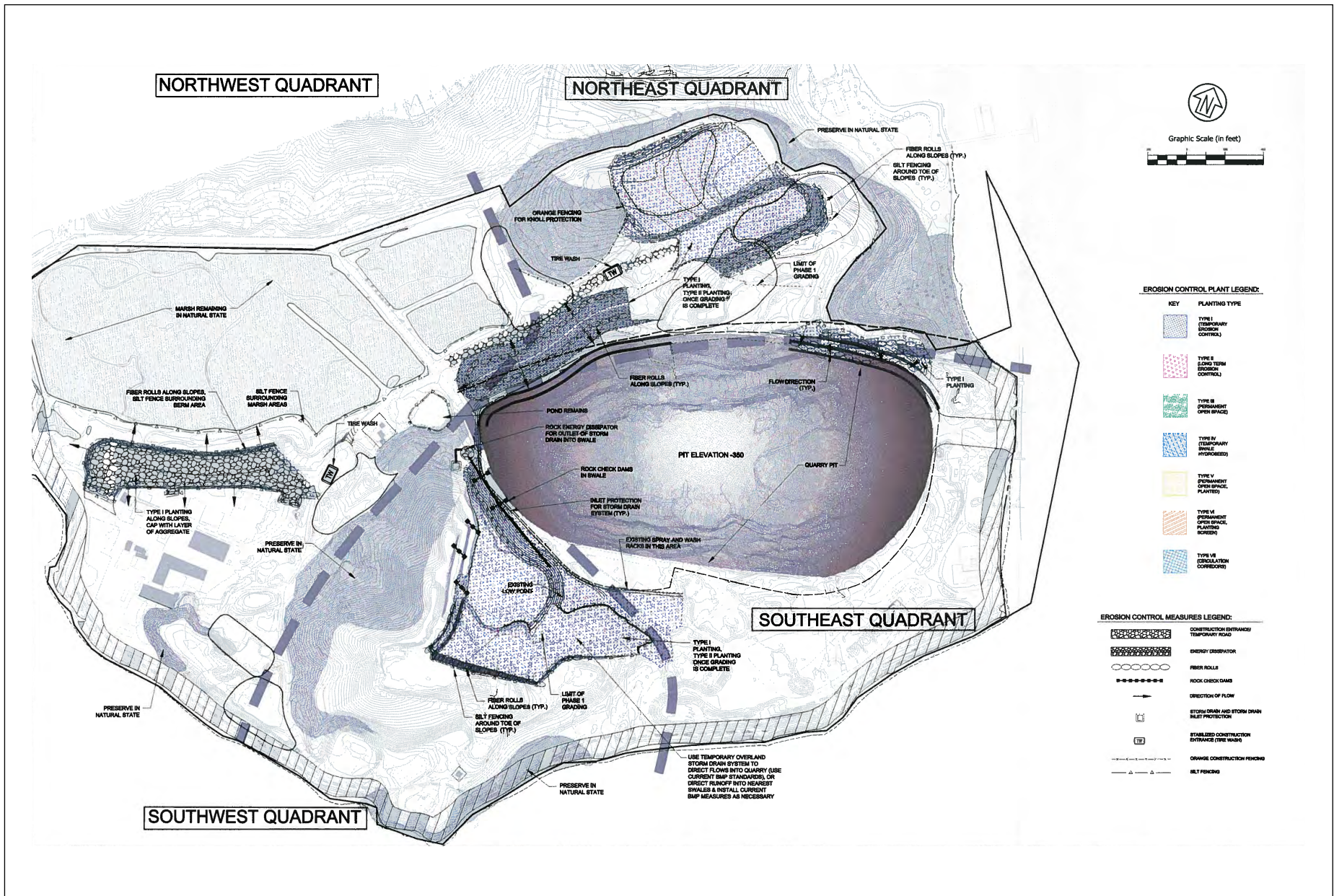
SOURCE: San Rafael Rock Quarry

Figure 1-12
 CARP10 Phase 4 Reclamation Grading Plan



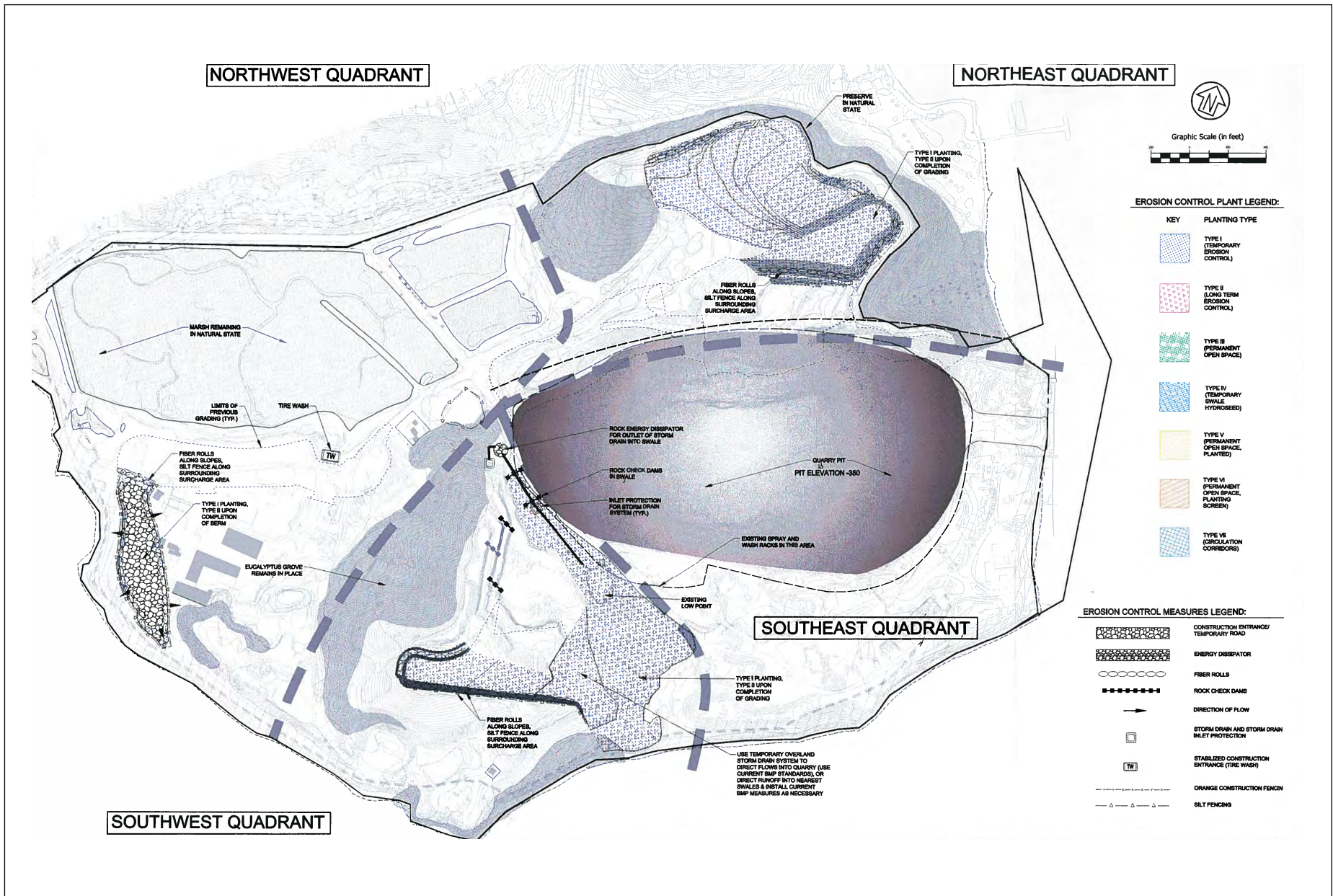
SOURCE: San Rafael Rock Quarry

Figure 1-13
CARP10 Phase 1 Erosion Control
and Revegetation Plan



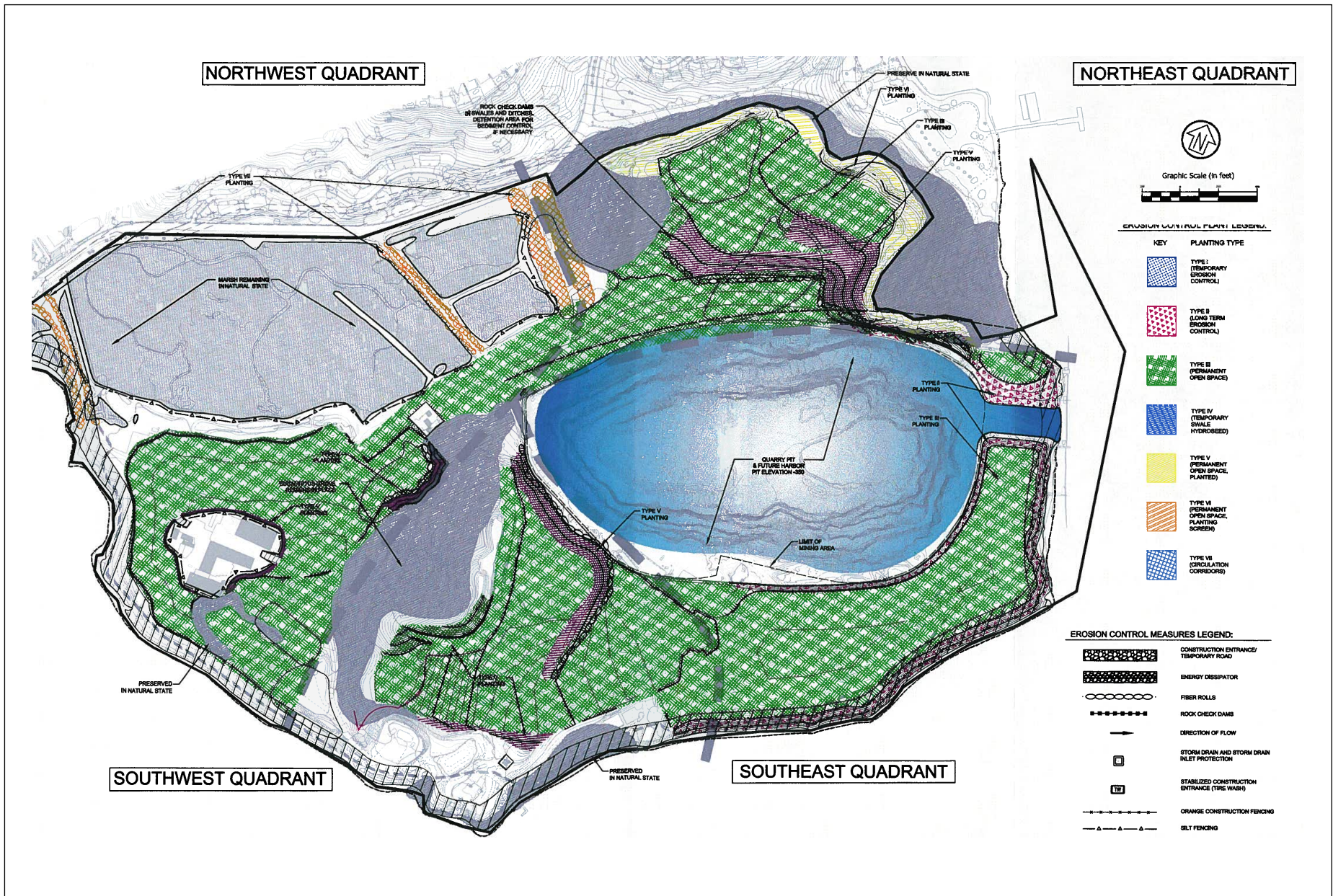
SOURCE: San Rafael Rock Quarry

Figure 1-14
 CARP10 Phase 2 Erosion Control
 and Revegetation Plan



SOURCE: San Rafael Rock Quarry

Figure 1-15
CARP10 Phase 3 Erosion Control
and Revegetation Plan



SOURCE: San Rafael Rock Quarry

Figure 1-16
 CARP10 Phase 4 Erosion Control
 and Revegetation Plan

- conducted baseline air quality monitoring in 2016, and background and reclamation period air quality monitoring in 2018 and 2019 (COA 69); and
- updated its financial assurance cost estimate and maintained the required financial assurances to cover the cost of reclamation.

In 2014, SRRQ submitted to the Marin County Department of Public Works an application for a grading permit for Phase 1 reclamation grading. In preparation for beginning Phase 1 reclamation work, SRRQ performed various biological surveys, including a special status plant survey (COA 93, Mitigation Measure R4.3-3b), a California red-legged frog (“CRLF”) survey (COA 107, Mitigation Measures R4.3-8b and P4.3-13), a Northwestern pond turtle survey (COA 108, Mitigation Measures R4.3-9 and P4.3-14), a bat survey (COA 109, Mitigation Measures R4.3-10 and P4.3-16), and a nesting raptor survey (COA 110, Mitigation Measure R4.3-11a). The CRLF survey identified a single California red-legged frog,⁶ which is listed as “threatened” under the federal Endangered Species Act, in a process water pond on South Hill, outside of the Phase 1 reclamation area. Resolution of the CRLF issue took several years. After determining that the NE Quadrant, where most of the Phase 1 activities were planned, does not provide habitat for CRLF, and modifying its Phase 1 implementation plans to include additional measures to avoid take of CRLF,⁷ SRRQ submitted revised Phase 1 grading plans and received a grading permit for Phase 1 (Grading Permit # GP18-001).

The Public Works Director did not exercise the option to construct the berm along the northern property line in the NE Quadrant. Consequently, the Phase 1 grading plan and permit do not include its construction. Instead, the brow berm will be maintained and rolled over (that is, excavated and rebuilt in a different location) as mining in the Main Quarry Bowl progresses northward.

SRRQ commenced reclamation grading activities in the NE Quadrant in 2018 and continued these activities in 2019. Reclamation grading is limited to a maximum 10-week period in the dry season of each year, per COA 32. The grading volumes for these two years of reclamation are shown in Table 1-2.

Table 1-2
Phase 1 Reclamation Grading Volumes, 2018-2019

Year	Cut	Fill
2018	33,019	6,480
2019	40,705	53,211
Total	73,724	59,691

Source: San Rafael Rock Quarry.

⁶ SRRQ describes the frog found in the pond as a “metamorph.”

⁷ WRA Environmental Consultants, 2018. Letter from Rob Schell, Associate Wildlife Biologist, to Molly F. Jacobson, General Counsel, SRRQ Inc., re: Assessment of California red-legged frog (CRLF) Habitat and Potential for Take during Phase 1 Reclamation Activities at the Dutra San Rafael Rock Quarry. January 5, 2018.

7. Proposed Project

Summary

SRRQ has submitted a proposed revision to CARP10, referred to as CARP19. CARP19 contains one change from CARP10: the timing of reclamation phasing. The proposed changes in the timing of each reclamation phase are shown in Table 1-3. As shown, CARP19 projects reclamation continuing through the year 2044.

**Table 1-3
Existing and Proposed Reclamation Phase Timelines**

Reclamation Phase	Existing: CARP10		Proposed: CARP19	
	Start	End	Start	End
Phase 1	2012	2017	2018	2029
Phase 2	2014	2019	2029	2034
Phase 3	2018	2023	2034	2039
Phase 4	2022	2024	2039	2044

Project Objectives

SRRQ's objective is to amend its existing approved reclamation plan (CARP10) to make it consistent with its intent to continue mining through approximately 2044, the year that SRRQ now projects it will reach final reclamation grades.

The County's objective is to ensure that SRRQ is operating within the bounds of the legal requirements of SMARA, the County Surface Mining and Reclamation Ordinance, and the scope of its vested right; and, through regulation of reclamation activities, to minimize the individual and cumulative impacts of reclamation on the environment and the community.

Project Details

If approved, the Project would reschedule already-planned reclamation activities, extending the time for their anticipated completion from 2024 to 2044, a period of 20 years. SMARA requires all surface mines in California to operate in compliance with an approved reclamation plan; therefore, a revision to the reclamation timeline in CARP10 would be necessary to continue mining beyond 2024.

Because SRRQ has a vested right to continue to mine within the scope of its legal non-conforming use without regard to depth or duration, SRRQ could in the future seek to amend its reclamation plan to continue mining beyond 2044, and/or to mine to a greater depth within the Main Quarry Bowl.

Environmental Setting

The existing physical environmental conditions are the baseline, or "environmental setting," for purposes of the supplemental environmental review, and constitute the starting point for the analysis against which the proposed Project is compared. The baseline conditions are the following:

- the reclamation activities conducted pursuant to the timing and standards contained in CARP10;
- mining operations within the current mining footprint;
- the COA pertaining to mining operations and reclamation contained in Amendment #1; and
- the existing physical conditions and regulatory requirements as of Spring 2020, when the environmental review commenced.

Scope of the Environmental Review

The supplemental environmental review compares the proposed Project to the baseline to determine whether the proposed Project causes changes, or substantial changes, with respect to the circumstances under which the Project is undertaken, would result in a new or substantially more severe significant impact than identified in the 2009 FEIR.

The supplemental environmental review includes the full range of environmental topics required under CEQA. This includes a consideration of whether the proposed Project would make a considerable contribution to any identified cumulative impacts. Per State CEQA Guidelines §15355, “cumulative impacts” refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of a project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

The supplemental environmental review will determine whether any incremental impacts from the Project (that is, the proposed extension of the reclamation phasing schedule) “when added to other closely related past, present and reasonably foreseeable probable future projects” are cumulatively considerable. For the purpose of the cumulative impact analysis, mining operations will be considered a closely related project.

Required Approvals

Following adoption of this EIR Addendum, Project approval would require the following:

- Approval of CARP19, specifically the proposed extension of time to conduct reclamation activities and complete reclamation, and the anticipated date for the cessation of mining;
- Modification of COA 30 in Amendment #1 to make it consistent with the new timeline for reclamation and the continuation of mining. Currently COA 30 identifies 2024 as the intended date for completion of mining and reclamation, and states that this is the date through which the 2009 FEIR examined impacts of mining and reclamation.

CHAPTER 2

Supplemental Environmental Review Checklist

The purpose of this checklist is to evaluate San Rafael Rock Quarry’s Conforming Amended Reclamation Plan of 2019 (CARP19) Project, in order to determine, for each environmental topic, whether any “changed condition” (i.e., substantial changes in circumstances, substantial changes in the Project, or new information of substantial importance) may result in a new or substantially more severe significant environmental impact, requiring a major revision to the previous, 2009 Final Environmental Impact Report (2009 FEIR), pursuant to State CEQA *Guidelines* Section 15162 (a)(1)-(3).

1. Explanation of Checklist Evaluation Categories

Where Impact was Analyzed in the FEIR

The first column in the checklist, “where impact was analyzed,” provides a cross-reference to the portion of the 2009 FEIR pertaining to the environmental issue listed under each topic. The 2009 FEIR consists of the following documents:

- San Rafael Rock Quarry Amended Reclamation Plan and Amended Surface Mining and Quarrying Permit, Combined Final Environmental Impact Report. SCH#s 2005102122 (Amended Reclamation Plan) and 2007082097 (Amended Quarry Permit). Prepared by Environmental Science Associates for Marin County Community Development Agency. January 2009.
 - Volume 1: Revisions to the Draft EIR Text;
 - Volume 2: Comments on the Draft EIR and Responses
 - Volume 3: Appendices
- San Rafael Rock Quarry Combined Final Environmental Impact Report, Response to Comments Amendment. August 2009.

Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?

Pursuant to Section 15162(a)(1) of the State CEQA *Guidelines*, this checklist column indicates whether substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

State CEQA *Guidelines* Section 15064(d) provides guidance on determining the significance of environmental effects:

(d) In evaluating the significance of the environmental effect of a project, the Lead Agency shall consider direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes in the environment which may be caused by the project.

(1) A direct physical change in the environment is a physical change in the environment which is caused by and immediately related to the project. Examples of direct physical changes in the environment are the dust, noise, and traffic of heavy equipment that would result from construction of a sewage treatment plant and possible odors from operation of the plant.

(2) An indirect physical change in the environment is a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment. For example, the construction of a new sewage treatment plant may facilitate population growth in the service area due to the increase in sewage treatment capacity and may lead to an increase in air pollution.

(3) An indirect physical change is to be considered only if that change is a reasonably foreseeable impact which may be caused by the project. A change which is speculative or unlikely to occur is not reasonably foreseeable.

Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?

Pursuant to Section 15162(a)(2) of the State CEQA *Guidelines*, this checklist column indicates whether substantial changes have occurred since certification of the 2009 FEIR with respect to the circumstances under which the Project is undertaken, which will require major revisions of the 2009 FEIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects. New circumstances may include, for example, changes to the regulatory or environmental setting, that is, the legal or physical context for the Project, that may lead to a conclusion that a new or substantially more severe significant impact would now occur, compared to the 2009 FEIR.

Any New Information of Substantial Importance Requiring New Analysis or Verification?

Pursuant to Section 15162(a)(3)(A-D) of the State CEQA *Guidelines*, this column indicates whether new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the 2009 FEIR was certified, requires additional analysis to verify that the environmental conclusions in the 2009 FEIR remain valid. Examples of new information of substantial importance may include, but are not limited to, new relevant scientific studies; monitoring data

from implementation of the previously approved Project; and new engineering or other site studies or plans prepared by the Project applicant.

If the additional analysis in this supplemental environmental review shows any of the following, then this question is answered “Yes:” (A) the Project would have one or more significant effects not discussed in the 2009 FEIR; or (B) significant effects previously examined would be substantially more severe than shown in the 2009 FEIR; or (C) mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the Project, but the Project proponents decline to adopt the mitigation measure or alternative; or (D) mitigation measures or alternatives which are considerably different from those analyzed in the 2009 FEIR would substantially reduce one or more significant effects on the environment, but the Project proponents decline to adopt the mitigation measure or alternative.

Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?

This question applies if answering any of the three previous questions indicates that the proposed Project could result in a new or substantially more severe significant impact. The mitigation measures that were identified in the 2009 FEIR were adopted, made conditions of Project approval, and have already been implemented. A “Yes” response is provided if previously adopted mitigation measures would avoid or reduce the new or substantially more severe significant impact identified for the current Project to a less-than-significant level. If a previously adopted mitigation measure requires revision to address or resolve the impact, this is indicated in the response. A “No” response means that previously adopted mitigation measures are insufficient to avoid or reduce the new or substantially more severe significant impact. A “No” answer indicates that a subsequent or supplemental EIR is required. “NA” (Not applicable) in this column indicates that the Project would not result in a new or substantially more severe significant impact; that is, the previous three questions have been answered “No.”

2. Discussion and Mitigation Sections

Discussion

A discussion is provided for each environmental topic to explain the checklist answers. This includes a discussion of any changes to the environmental and regulatory setting for the Project, and a discussion of Project impacts. The discussion provides information about the environmental topic, how the topic was addressed in the 2009 FEIR, and the status of any mitigation that may be required or that has already been implemented. The discussion includes any new analysis undertaken to determine whether Project changes, changed circumstances, or substantial new information would result in a new or substantially more severe significant impact.

Mitigation Measures

If new analysis concludes that the Project may result in a new or substantially more severe significant impact, the discussion includes an analysis of whether previously adopted mitigation measures from the

2009 FEIR would reduce the impact to less than significant. In several instances, revisions to previously adopted mitigation measures are proposed. The proposed revisions are for clarity, for consistency with current regulations, or to make them applicable to the current Project. Revisions are indicated by ~~strike through~~ and underline text. Mitigation measures from the 2009 FEIR and corresponding Conditions of Approval (COAs) adopting them are included at the end of each checklist section. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. The full text of all COAs is included in Appendix B.

Conclusions

A summary discussion is included as a conclusion to each checklist section.

2.1 Aesthetics

Environmental Issue Area	Where Impact Was Analyzed in FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
1. Aesthetics. Would the Project:					
a) Have a substantial adverse effect on a scenic vista?	Section 4.1, Aesthetics, Impacts R4.1-1 through R4.1-6, R4.1-8, and CR4.1-11	No	No	No	NA
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Section 4.1, Aesthetics, page 4.1-14 (discussion of regulatory setting)	No	No	No	NA
c) 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 point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Section 4.1, Aesthetics, Impacts R4.1-1 through R4.1-6, R4.1-8, and CR4.1-11; Chapter 5, Growth Inducing and Cumulative Effects, Impact C5-2	No	No	No	NA
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Section 4.1, Aesthetics, Impact R4.1-7; Chapter 5, Growth Inducing and Cumulative Effects, Impact C5-1	No	No	Yes	NA

Setting Discussion

The 2009 FEIR, Section 4.1, Aesthetics, described the environmental and regulatory setting for the aesthetics analysis. This included photographs of the Project site taken from vantage points around the Project site, and a review of applicable State and local regulations. Figures AES-1 through AES-4 are Google Maps street view maps from the same vantage points used in the 2009 FEIR. These figures indicate that there has been no substantial change in public views of the Project site.

The 2009 FEIR stated that there were no designated State scenic highways in Marin County. CalTran's current list of designated and eligible scenic highways (CalTrans, 2020a) shows that there are still no designated scenic highways within Marin County, but that there are several eligible routes, as shown in Table AES-1. The Project site is not visible from any of these eligible scenic routes.



Figure AES-1: View from Pt. San Pedro Road, image date March 2020. Vantage is similar to 2009 FEIR Vantage Point 3.
Source: Google Maps



Figure AES-2: View from Pt. San Pedro Road at SRRQ Entrance, image date March 2020. Vantage is similar to 2009 FEIR Vantage Point 4.
Source: Google Maps



Figure AES-3: From Via Montebello, image date April 2019. Vantage is similar to 2009 FEIR Vantage Point 5.

Source: Google Maps



Figure AES-4: From top deck of Richmond-San Rafael Bridge, image date October, 2019. Vantage is similar to 2009 FEIR Vantage Point 10.

Source: Google Maps

Table AES-1
Eligible State Scenic Routes in Marin County

Route	Designation Status (OD= Officially Designated; E= Eligible)	County	Location (from/to)	Length (miles)
1	E	Marin/Sonoma/ Mendocino	Route 101 near Marin City to Route 101 near Leggett	105.6
37	E	Marin	Route 251 near Nicasio to Route 101 near Novato (unconstructed)	11.2
101	E	Marin	Opposite San Francisco/Route 1 in Marin City	4.1
251	E	Marin	Route 37 near Nicasio/Route 1 near Point Reyes (unconstructed)	5.1
101	E	Marin	Route 37 near Ignacio/Route 37 (unconstructed) near Novato	20.9
37	E	Marin/Sonoma/ Solano	Route 101 near Ignacio/Route 29 near Vallejo	9.5

Source: Caltrans, 2020a

Also included in the State Scenic Highway program are Officially Designated County Scenic Highways. There are currently no Officially Designated County Scenic Highways in Marin County (Caltrans, 2020b).

The 2009 FEIR stated that the segment of North San Pedro Road (the northern extension of Point San Pedro Road) that runs through China Camp State Park is designated a scenic rural roadway in the Community Design Element of the 2020 San Rafael General Plan, but that because of intervening topography and vegetation, there are no views from this segment of roadway to the Project site. The City of San Rafael is currently in the process of updating their General Plan. The San Rafael General Plan 2040 draft for City Council Adoption, which was released in July 2021, does not designate scenic roadways (City of San Rafael, 2021).

Scenic features of the Project site itself, including the McNear's Brickyard brick kilns, smokestack and other buildings, as well as natural areas including the marshes and vegetated hillsides, have not changed substantially since certification of the 2009 FEIR (Figures AES-1 and -2). See Section 2.5, Cultural Resources and Tribal Cultural Resources.

Since certification of the 2009 FEIR, the State of California has revised the questions on Aesthetics contained in Appendix G of the CEQA Guidelines. The current questions are used as significance thresholds for this Supplemental Environmental Review. The current questions, which appear in the checklist above, supersede both the questions from previous versions of Appendix G, as well as the County's thresholds contained in Appendix N of the 1994 Marin County Environmental Impact Review Guidelines, both of which were used as significance thresholds in the 2009 FEIR.

Impact Discussion

The 2009 FEIR, Section 4.1, Aesthetics, identified eight impacts associated with the then-proposed Amended Reclamation Plan of 2004 (ARP04), two of which were significant. The 2009 FEIR also identified one less-than-significant cumulative impact of reclamation and mining operations together. Mitigation measures were identified for both significant impacts, and were found sufficient to reduce both to less than significant. All mitigation measures were adopted as COAs (see list at conclusion of this section).

1a. Would the Project have a substantial adverse effect on a scenic vista?

1c. 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 point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?

Using photos of the Project site taken from publicly accessible vantage points and visual simulations of the site at various stages of reclamation, the 2009 FEIR identified two significant impacts of reclamation on scenic views: the view from Vantage Point 3, the public walkway and public road southwest of the Project site (Impact R4.1-1), and the view from Vantage Point 5, Via Montebello near San Marino Drive in the Peacock Gap Neighborhood (Impact R4.1-2). In both instances, the significant degradation of the scenic view was due to potential removal of scenic, historic buildings within McNear's Brickyard, including the brick kilns and smokestack, in conjunction with the alteration of natural landforms. Mitigation Measures R4.1-1a, R4.1-1b, R4.1-2a, and R4.1-2b all reference mitigation measures from the Cultural Resources section of the 2009 FEIR, which require preservation of historically significant buildings within McNear's Brickyard. With these measures, which were adopted as COAs 146 and 148, the 2009 FEIR concluded that both impacts would be reduced to less than significant. All other impacts on scenic views evaluated in the 2009 FEIR (Impacts R4.1-3 through R4.1-6, and R4.1-8), were found to be less than significant. COAs 146 and 148 will ensure the preservation of scenic historic structures, which are key elements in public views and scenic vistas that include the Project site. With these COAs in place, the current Project, CARP19, would not result in a new or substantially more severe significant impact on scenic vistas or public views.

1b. Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

As discussed in the Setting section, above, and in the 2009 FEIR, the Project site is not within a State scenic highway, and is not visible from any designated or eligible State scenic highways. The proposed Project would not result in an impact of this kind.

1d. Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Impact R4.1-7 in the 2009 FEIR discussed the potential for ARP04 to result in substantial nighttime light or daytime glare, and found that such impacts would be less than significant. CARP19 does not propose to change the COA restricting reclamation activities to daytime hours (COA 32), and so would not result in a new source of nighttime lighting. As discussed in Chapter 1, Project Description, COA 9d establishes that the previously-proposed NE Berm, which was to be constructed along the northern property

boundary to shield residents on Marin Bay Park Court from reclamation activities in the NE Quadrant, is optional, to be constructed at the discretion of the Marin County Public Works Director. The NE Berm is not included in the already-approved Phase 1 grading permit, and may not be constructed in future reclamation phases. Reclamation activities in the NE Quadrant may therefore not be screened. This could result in daytime glare from windshields and other reflective surfaces, that could affect residents along Marin Bay Park Court. Reclamation activities are restricted by COA 32 to Monday-Friday, 7:00 a.m. to 5:00 p.m., during 10-week period each year, however. The Project does not propose to alter this restriction. Glare impacts, therefore, would be limited to a brief period each year during which reclamation occurs, and would be no different under CARP19, the proposed Project, than CARP10. The impact would therefore be less than significant, and would not constitute a new or substantially more severe significant impact than identified in the 2009 FEIR.

Cumulative Impact Discussion

Impact C4.1-11 in the 2009 FEIR considered the aesthetic impacts of reclamation occurring simultaneously with mining operations, as proposed in ARP04, and found that mitigation measures to reduce aesthetic impacts of reclamation (cited above) and mining operations (Mitigation Measure P4.1-9, restricting nighttime operations, adopted as COA 32) would avoid any significant cumulative impact of the two considered together. 2009 FEIR Chapter 5, Growth Inducing and Cumulative Effects, considered in Impact C5-1 whether the ARP and AQP projects would combine with other projects in the area to cause a cumulative impact on nighttime lighting, and concluded that this impact would be less than significant. The same conclusion of less-than-significant was reached for Impact C5-2, which examined the potential for the ARP and AQP projects to combine with other projects to cause a degradation in visual quality of the Point San Pedro peninsula.

As discussed under topics 1a and 1c, the Project would not result in an adverse effect on a scenic vista, nor would it degrade the visual character of the area; therefore, the Project could not make a considerable contribution to any cumulative impact of this kind. As discussed under topic 1d, the proposed Project would not increase nighttime light. While the Project could produce daytime glare visible to neighbors, due to the NE Berm not being constructed, this impact would be temporary, minor, and less than significant, as also discussed under topic d. While glare from grading activities in the NE Quadrant could combine in a cumulative manner with glare from ongoing mining operations, the contribution from grading activities would not be cumulatively considerable. Furthermore, there is no difference between reclamation activities already approved under CARP10 and proposed under CARP19, other than the extended schedule for reclamation. The Project therefore would not result in a new or substantially more severe cumulative impact on aesthetics, than identified in the 2009 FEIR.

Mitigation Measures

The following summarizes the Aesthetics mitigation measures from the 2009 FEIR pertaining to reclamation, and identifies the COAs that implement them. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. The full text of the adopted COAs is in Appendix B.

Mitigation Measure R4.1-1a and R4.1-2a: require retention of Hoffman Kiln #1 and its stack (COA 148).

Mitigation Measure R4.1-1b and R4.1-2b: require retention of other scenic historic structures (COAs 146, 148).

Conclusion

No substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects on aesthetics. There is no new information of substantial importance, and neither have substantial changes occurred with respect to the circumstances under which the Project is undertaken since certification of the 2009 FEIR. Therefore, the Project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects on aesthetics.

References

- California Department of Transportation (Caltrans), 2020a. List of eligible and officially designated State Scenic Highways. Excel file downloaded December 7, 2020 from Caltrans website, <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>
- Caltrans, 2020b. List of Officially Designated County Scenic Highways. PDF file downloaded December 7, 2020 from Caltrans website, <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>
- City of San Rafael, 2021. San Rafael General Plan 2040. Draft for City Council Adoption, released July 2021.

2.2 Agriculture and Forestry Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
2. Agriculture and Forestry Resources. 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 non-agricultural use?	Not analyzed in the FEIR	No	No	No	NA
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	Not analyzed in the FEIR	No	No	No	NA
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))?	Not analyzed in the FEIR	No	No	No	NA
d) Result in the loss of forest land of conversion of forest land to non-forest use?	Not analyzed in the FEIR	No	No	No	NA
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?	Not analyzed in the FEIR	No	No	No	NA

Setting Discussion

The 2009 FEIR did not contain an analysis of impacts of ARP04, the amended reclamation plan then being proposed, on agricultural or forestry resources. The Initial Study prepared for the Amended Surface Mining and Quarrying Permit (AQP), however, examined the potential for the AQP to affect agricultural resources, operations, or contracts, such as impacts to soils or farmlands, impacts from incompatible land uses, or conflicts with Williamson Act contracts. The Initial Study found that there were no agricultural uses within the Project site, that the site did not contain any identified agricultural resources, and that it

was not encumbered by any Williamson Act contracts. The Initial Study found that the AQP would, therefore, not have a significant impact on agricultural resources. Since the ARP and AQP projects shared the same Project site, it can be inferred that the same conclusion of no significant impact would apply to the ARP project.

Impact Discussion

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 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?**

The California Important Farmland mapping program identifies the Project site as Urban Land and “other land,” which is land that is not agricultural land (California Department of Conservation, 2021). Therefore, the Project site is not categorized as farmland, and the Project would not have an adverse impact on important farmland. The Project site is not zoned for agriculture, no agriculture is practiced there, and it is not encumbered by a Williamson Act contract. The Project therefore would not affect any agricultural operations or resources.

Forested portions of the Project site include the oak and eucalyptus groves on South Hill and the eucalyptus grove along the northern property boundary. CARP10 identifies these as areas that will be preserved (Figure 1-7 in Chapter 1, Project Description), and CARP19 does not propose to change this designation. The Project site is not zoned as forest land or timber land. As forested areas would be protected under the Project, the Project would not result in the loss of forest land or conversion of forest land to non-forest uses.

Mitigation Measures

The 2009 FEIR identifies no impacts to agricultural or forestry resources, and therefore includes no mitigation measures that address these resources.

Conclusion

As there are no agricultural resources or lands within the Project site, and because the Project would not convert or result in the loss of forested lands, CARP19 would not have a new or substantially more severe significant impact on agriculture or forestry resources, compared to CARP10.

References

California Department of Conservation, Farmland Mapping Program. California Important Farmland Finder Interactive Map. Accessed February 2, 2021. Note: Marin County mapping data is dated 2016. <https://maps.conservation.ca.gov/DLRP/CIFF/>

2.3 Air Quality

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
3. Air Quality. Would the Project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	Section 4.2, Air Quality, Impacts R4.2-1, R4.2-2, and R4.2-4	No	No	No	NA
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.	Section 4.2, Air Quality, Impacts R4.2-1, R4.2-2, R4.2-4, and C4.2-8; Chapter 5, Growth Inducing and Cumulative Effects, Impact C5-3.	No	No	Yes	NA
c) Expose sensitive receptors to substantial pollutant concentrations?	Section 4.2, Air Quality, Impacts C4.2-9 through C4.2-12	No	No	Yes	NA
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Section 4.2, Air Quality, Impact C4.2-11	No	No	No	NA

Setting Discussion

This section summarizes and where necessary updates the 2009 FEIR’s physical and regulatory setting for the analysis of Air Quality impacts.

The Project site is located within the San Francisco Bay Area Air Basin (Air Basin), which encompasses Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin, and Napa Counties, and the southern portions of Solano and Sonoma Counties. The Air Basin is characterized by complex terrain, which distorts normal wind flow patterns, consisting of coastal mountain ranges, inland valleys, and bays, which affect the air pollutant transport in the region. The Bay Area Air Quality Management District (BAAQMD) is the regional regulatory agency for air quality.

Regional Meteorology

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions, including wind speed, wind direction, stability, and air temperature, in combination with local surface topography (i.e., geographic features such as mountains, valleys, and San Francisco Bay), determine the effect of air pollutant emissions on local air quality.

The climate of the greater San Francisco Bay Area, including Marin County, is a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The climate is determined largely by a high-pressure system that is often present over the eastern Pacific Ocean. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, air emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates, such as sulfates and nitrates.

Temperatures are somewhat moderated for cities next to San Francisco Bay. For example, San Rafael experiences average maximum winter temperatures in the high 50s to low 60s and average maximum summer temperatures in the high 70s to low 80s. Inland areas experience average maximum temperatures two degrees cooler in the winter and two degrees warmer in the summer. Average minimum temperatures in San Rafael are in the low 40's in winter and low 50's in summer (BAAQMD, 2010). San Rafael averages 38 inches per year of rain and consistent with the Bay Area Mediterranean climate, 84 percent of the annual rainfall in Marin occurs from November through March (ibid).

Wind speeds are highest along the west coast of Marin, approximately 8 to 10 miles per hour (mph). Although most of the terrain throughout central Marin County is not high enough to act as a barrier to the marine air flow, the complex terrain creates sufficient friction to slow the air flow (ibid). Wind direction is generally west-to-east, although there is a great deal of variation on a local scale due to the complex topography. The winds in eastern Marin County tend to be from the southwest and in western Marin County tend to be from the northwest. The most prominent gap in the coastal ranges is the Golden Gate and it is here the onshore winds funnel inland with the least amount of resistance. Once the airflow moves through the Golden Gate, it fans out across San Francisco Bay, to the southeast toward the southern part of the Bay and the warm Santa Clara Valley, to the northeast toward the Carquinez Strait, Delta and the heat of the Central Valley beyond, and to the north into the Petaluma and Napa Valleys of the North Bay (Board Sports California, 2016; Windhistory.com, 2020).

Air pollution potential is highest on the eastern side of Marin County. This is where the semi-sheltered valleys and largest population centers are located. In the south, where distances to the ocean are short, the influence of the marine air keeps the pollution levels low. Further north, where the valleys are more sheltered from the sea breeze, there is greater pollution potential.

Local Air Quality

The BAAQMD maintains a network of monitoring stations within the Air Basin that monitor air quality and compliance with applicable ambient standards. The monitoring station closest to the Project site is in San Rafael; where levels of ozone, particulate matter less than 10 micrometers (PM₁₀), particulate matter less than 2.5 micrometers (PM_{2.5}),¹ CO₂, nitrogen dioxide (NO₂), and sulfur dioxide (SO₂) are measured.

¹ PM₁₀ and PM_{2.5} consists of airborne particles that measure 10 micrometers or less in diameter and 2.5 micrometers or less in diameter, respectively. PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs, causing adverse health effects.

² CO is a non-reactive pollutant that is a product of incomplete combustion of organic material, and is mostly associated with motor vehicle traffic, and in wintertime, with wood-burning stoves and fireplaces.

The most recent available three years of data (2017 through 2019) from the San Rafael air monitoring station are summarized in Table AQ-1. The State and federal ozone standards were exceeded once during 2019. The state PM₁₀ standard was exceeded twice in 2017 and twice in 2018. The federal PM_{2.5} standard was exceeded eight times in 2017 and thirteen times in 2018. No other State or federal air quality standards were exceeded during the three-year period.

Table AQ-1
Air Quality Data Summary (2017 - 2019)

Pollutant	Monitoring Data by Year			
	Standard ^a	2017	2018	2019
Ozone				
Highest 1 Hour Average (ppm) ^b	0.09	0.088	0.072	0.096
Days over State Standard		0	0	1
Highest 8 Hour Average (ppm) ^b	0.075	0.063	0.053	0.080
Days over National Standard		0	0	1
Highest 8 Hour Average (ppm) ^b	0.070	0.063	0.053	0.080
Days over State Standard		0	0	1
Nitrogen Dioxide				
Highest 1 Hour Average (ppm) ^b	0.180	0.053	0.055	0.050
Days over State Standard		0	0	0
Annual Average (µg/m ³) ^b	0.030/0.053	0.010	0.009	0.008
Carbon Monoxide				
Highest 1 Hour Average (ppm) ^b	9.0	2.6	2.0	1.4
Days over State Standard		0	0	0
Highest 8 Hour Average (ppm) ^b	20	1.6	1.6	0.09
Days over State Standard		0	0	0
Particulate Matter (PM₁₀)				
Highest 24 Hour Average (µg/m ³) ^b	50	94	166	33
Days over State Standard		2	2	0
State Annual Average (µg/m ³) ^b	20	17.7	19.0	14.3
Particulate Matter (PM_{2.5})				
Highest 24 Hour Average (µg/m ³) ^b	35	74.7	168	19.5
Days over National Standard		8	13	0
State Annual Average (µg/m ³) ^b	12	9.7	11.1	6.4

Notes: Values in **bold** are in excess of at least one applicable standard.

a. Generally, state standards and national standards are not to be exceeded more than once per year.

b. ppm = parts per million; µg/m³ = micrograms per cubic meter.

c. PM₁₀ is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

Source: BAAQMD, 2020a.

Pursuant to the 1990 federal Clean Air Act Amendments, the United States Environmental Protection Agency (USEPA) classifies air basins (or portions thereof) as either “attainment” or “nonattainment” for each criteria air pollutant,³ based on whether the national standards have been achieved. The Bay Area is currently designated “nonattainment” for State and national (1-hour and 8-hour) ozone standards, for the

³ Criteria air pollutants refer to those air pollutants for which the United States Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) have established National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) under the Federal Clean Air Act (CAA).

state PM₁₀ standards, and for state and national (annual average and 24-hour) PM_{2.5} standards. The Bay Area is designated “attainment” or “unclassifiable” with respect to the other ambient air quality standards. “Unclassified” is defined by the Clean Air Act Amendments as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

The 2009 FEIR stated that the Air Basin was designated as nonattainment with respect to the state 1-hour ozone standard and federal 8-hour ozone standard. The Air Basin was designated as nonattainment with respect to the state PM₁₀ standards and unclassified for federal 24-hour PM₁₀ standards and attainment for federal annual PM₁₀ standards. The Air Basin was designated as nonattainment with respect to the state PM_{2.5} standards and unclassified for federal PM_{2.5} standards. Thus, the Air Basin remains nonattainment for ozone and particulate matter and generally, the regional air quality has not substantially improved or deteriorated.

Air Quality Monitoring at SRRQ

In 2018, San Rafael Rock Quarry conducted air quality monitoring before and during reclamation activities within the Northeast Quadrant (Sonoma Technologies, Inc., 2018a, 2018b). The monitoring included continuous hourly measurements of particulate matter (PM₁₀ and PM_{2.5}) as well as 24-hour discrete filter samples to quantify crystalline silica (fugitive dust) and metals. Two months of data prior to reclamation activities were considered the “background” monitoring period and represent typical mining activities. These data were used for comparison against similar data collected during reclamation activities. From the Sonoma Technologies reports, analysis of the data collected during reclamation activities revealed the following key findings:

- When compared to the background monitoring period, hourly concentrations of PM_{2.5} increased by 36 percent and PM₁₀ increased by 8 percent during reclamation activities.
- During reclamation activities, weekday concentrations of PM_{2.5} and PM₁₀ were greater than weekend concentrations by 30 percent and 53 percent, respectively.
- The impact of mining activities on the local air quality increased during reclamation, but concentrations were still within allowable State and federal air quality standards.
- During the background monitoring period, average hourly concentrations were 7.0 micrograms per cubic meter (µg/m³) for PM_{2.5} and 16.2 µg/m³ for PM₁₀. During reclamation activities, average hourly concentrations increased to 10.1 µg/m³ for PM_{2.5} and 17.5 µg/m³ for PM₁₀.
- Concentrations of silica and metals (found in PM₁₀ samples) were below levels that are dangerous to human health.

Community Air Risk Evaluation

The BAAQMD’s Community Air Risk Evaluation program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor air toxics in the Bay Area. In 2014, BAAQMD estimated that over 70 percent of the cancer risk related to air pollution in the Bay Area is due to diesel particulate

matter (DPM)⁴, and 90 percent of the total risk is due to three compounds: DPM, benzene, and 1,3-butadiene (BAAQMD, 2014a). All three of these compounds are emitted via fuel combustion. State regulatory actions to reduce diesel engine emissions were predicted to result in a 75 percent reduction in DPM exposure, and a 50 percent reduction in overall cancer risk from toxic air contaminants (TACs), between 2005 and 2015 (ibid). Overall, the cancer risk in the Bay Area, as determined both by pollution levels and by existing health vulnerabilities in a community, is approximately 160 per million persons (ibid). In San Rafael, including the Project site, the risk is approximately 100 per million persons and the annual average PM_{2.5} concentration is approximately 7.9 µg/m³ (ibid). According to the Community Air Risk Evaluation program, the area near the Project site is subject to elevated 24-hour PM_{2.5} concentrations (BAAQMD, 2014b).

The Community Air Risk Evaluation Program identified seven communities in the Bay Area with elevated air pollution levels, none of which are in Marin County (BAAQMD, 2014c).

Planning Healthy Places

In May of 2016, the BAAQMD published *Planning Healthy Places: A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning* (BAAQMD, 2016). The BAAQMD's primary goal in providing the *Guidebook* is to support and promote infill development, which is important to reducing vehicle miles traveled and the associated air emissions, while minimizing air pollution exposure for existing and future residents. The *Guidebook* provides developers and planners with the information and tools needed to create health-protective communities.

The *Guidebook* recommends Best Practices to Reduce Emissions and Reduce Exposure to Local Air Pollution. Implementing Best Practices to Reduce Emissions will reduce potential health risks. The *Guidebook* also lists examples of a variety of strategies to reduce exposure to, and emissions of, air pollution, including the adoption of air quality-specific ordinances, standard conditions of approval, and incorporation of policies into general plans and other planning documents. The BAAQMD recommends implementing all best practices to reduce exposure that are feasible and applicable to a project in areas that are likely to experience elevated levels of air pollution, including installing indoor air filtration systems, planting dense vegetation, implementing project design which provides a buffer between sensitive receptors and emission source, and developing alternative truck routes.

The *Guidebook* links to a web-based interactive map of the Bay Area⁵ showing areas with estimated elevated levels of fine particulates and toxic air contaminants, specifically locations next to major roads and freeways and large industrial sites, as well as the downtown districts of most cities. The interactive map shows locations where further study is recommended prior to approving a project, such as detailed health risk assessment. The interactive map also shows locations that experience elevated air pollution levels, where implementation of best practices by local governments and developers are recommended to reduce health risks from air pollution.

⁴ In 1998, the California Air Resources Board classified DPM as a TAC, citing its potential to cause cancer and other health problems. USEPA concluded that long-term exposure to diesel engine exhaust is likely to pose a lung cancer hazard to humans and can also contribute to other acute and chronic health effects.

⁵ <https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=51c2d0bc59244013ad9d52b8c35cbf66>

According to the Planning Healthy Places interactive map, the area in and around the Project site is a location in which implementation of best practices is recommended, due to elevated PM_{2.5} concentrations associated with SRRQ. BAAQMD's Stationary Source Risk & Hazard GIS Tool (BAAQMD, 2020b) confirms this information with an estimated property line 24-hour PM_{2.5} concentration of 58.5 µg/m³ associated with SRRQ stationary permitted sources (see Setting section for regional ambient air quality measurements during the past three years).

The Planning Healthy Places interactive map shows a second area to the west of the Project site. This area is associated with the McNear's Brickyard (but appears to be erroneously displayed to the west of San Pedro Lagoon) in which implementation of best practices is recommended due to elevated PM_{2.5} concentrations. BAAQMD's Stationary Source Risk & Hazard GIS Tool (BAAQMD, 2020b) confirms this information with an estimated property line 24-hour PM_{2.5} concentration of 25.1 µg/m³ associated with McNear's Brickyard stationary permitted sources.

According to the Planning Healthy Places interactive map, the McNear's Brickyard is also associated with elevated levels of air toxics with a recommendation of conducting additional studies. BAAQMD's Stationary Source Risk & Hazard GIS Tool (BAAQMD, 2020b) confirms this information with an estimated property line hazard impact of 19.2 associated with McNear's Brickyard stationary permitted sources (due to hydrogen fluoride emissions and other air toxics).

Sensitive Receptors

Some receptors are considered more sensitive to air pollutants than others, because of preexisting health problems, proximity to the emissions source, or duration of exposure to air pollutants. Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality related health problems than the general public. Residential areas are also considered sensitive to poor air quality because people in residential areas are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution because vigorous exercise associated with recreation places having a high demand on respiratory system function.

The nearest sensitive receptors to the Project site identified in the 2009 FEIR remain unchanged. They are the residences along Heritage Drive, located about 670 feet from the nearest reclamation activities, and the residences along Marin Bay Park Court, the closest of which are about 410 feet from the nearest reclamation activities. BAAQMD *CEQA Air Quality Guidelines* recommends that a project's zone of influence for health impacts is a 1,000 foot radius around the project property boundary. There are nearby sensitive receptors within this radius, which warrants the development of a health risk assessment to determine the health impacts associated with the Project.

Significance Thresholds

The BAAQMD's thresholds of significance and methodologies for determining significance of impacts have been revised since certification of the 2009 FEIR (BAAQMD, 2017b). Current project-level thresholds of significance, which are used in this Supplemental Environmental Review, are as follows:

- Average daily construction exhaust emissions of 54 pounds per day of ROG, NO_x, or PM_{2.5} or 82 pounds per day of PM₁₀;

- Average daily operation emissions of 54 pounds per day of ROG, NO_x, or PM_{2.5} or 82 pounds per day of PM₁₀; or result in maximum annual emissions of 10 tons per year of ROG, NO_x, or PM_{2.5} or 15 tons per year of PM₁₀;
- An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e., chronic or acute) risk greater than 1.0 hazard index;
- An incremental increase of greater than 0.3 micrograms per cubic meter (µg/m³) annual average PM_{2.5} concentration;
- Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people.

BAAQMD recommends that cumulative air quality effects from criteria air pollutants be addressed by comparison to the project-level mass emission thresholds. These thresholds were developed to identify a cumulatively considerable contribution to a significant regional air quality impact. Therefore, if project emissions are less than the project-level significance threshold, then the project would be expected to have a less than cumulatively considerable contribution to a significant regional air quality impact.

For health risks, a project would have a cumulative significant impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000 foot radius (or beyond, where appropriate)⁶ from the fence line of a source, or from the location of a receptor, plus the contribution from the project, would exceed excess cancer risk levels of more than 100 in one million, a chronic hazard index greater than 10 for TACs, or 0.8 µg/m³ annual average PM_{2.5} concentration.

Methodology

The supporting calculations, methodology, and assumptions for the air quality analysis are provided in the Air Quality Technical Report, dated December 8, 2020 (Appendix C) and summarized here.

The air quality analysis includes a review of criteria pollutant emissions such as CO, nitrogen oxides (NO_x), SO₂, volatile organic compounds (VOC) as reactive organic gases (ROG),⁷ coarse particulates or PM₁₀, fine particulates or PM_{2.5}. The health risk assessment (HRA) includes a focus on health impacts at existing residences from emissions of TACs (such as DPM) from off-road equipment exhaust and crystalline silica (a portion of fugitive dust) due to travel on unpaved surface associated with the reclamation activities.

The air quality analysis uses the methods described in the BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD, 2017b). The HRA was also prepared based on the current California Office of

⁶ BAAQMD *CEQA Air Quality Guidelines* recommends that a lead agency enlarge the 1,000-foot radius on a case-by-case basis if there is an unusually large source or sources of risk or hazard emissions beyond the 1,000-foot radius that may, along with the proposed project, contribute to cumulative impacts. As discussed below Cumulative Impacts, there are no sources of TACs beyond the 1,000-foot radius that have the potential to combine with the TAC emissions from the Project site.

⁷ VOC means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions and thus, a precursor of ozone formation. ROG are any reactive compounds of carbon, excluding methane, CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and other exempt compounds. The terms VOC and ROG are often used interchangeably.

Environmental Health Hazard Assessment (OEHHA)'s *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessment* (OEHHA, 2015).

Impact Discussion

The 2009 FEIR identified five air quality impacts of the 2004 Amended Reclamation Plan (ARP04), the amended reclamation plan then being proposed. Two of these impacts related to greenhouse gas emissions, and are further reviewed in Section 2.8, Greenhouse Gas Emissions. Of the three remaining impacts, two were found to be significant, but were mitigated to less than significant with the implementation of specified mitigation measures, all of which were adopted as Conditions of Approval (COAs). Mitigation measures and corresponding COA are listed at the end of this section. In addition to air quality impacts of ARP04, the 2009 FEIR also identified five cumulative air quality impacts of ARP04 and the then-proposed Amended Surface Mining and Quarrying Permit combined, four of which were health risk impacts. One of the cumulative health risk impacts was found to be significant and unavoidable.

3a. Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The 2009 FEIR addressed consistency of the ARP04, the Amended Reclamation Plan then being proposed, with the BAAQMD's Bay Area 2005 Ozone Strategy. The goal of the Ozone Strategy was to improve air quality by reducing emissions of reactive organic gases (ROG) and NO_x that lead to the formation of ozone, through tighter industry controls, cleaner cars and trucks, cleaner fuels, and increased commute alternatives. The plan encouraged cities and counties to adopt measures in support of this goal (BAAQMD, 2006). The 2009 FEIR did not identify a separate impact regarding consistency with the applicable air quality plan, but addressed this issue through analysis of emissions of ozone precursors of ROG and NO_x (see topic 3b, below).

BAAQMD's current Clean Air Plan was adopted in April of 2017 (BAAQMD, 2017a). The Clean Air Plan provides a roadmap for BAAQMD's efforts over the next few years to reduce air pollution and protect public health and the global climate. The Clean Air Plan identifies potential rules, control measures, and strategies that the BAAQMD can pursue to reduce air emissions in the Bay Area. Clean Air Plan control strategies pertinent to the Project include:

- Reduce Exposure to Toxics: Reduce emissions of toxic air contaminants by adopting more stringent limits and methods for evaluating toxic risks at existing and new facilities.
- Promote Clean Fuels: Promote the use of clean fuels and low or zero carbon technologies in trucks and heavy-duty vehicles.

The BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD, 2017b) state that when a public agency contemplates approving a project where an air quality plan consistency determination is required, the agency should analyze the project with respect to the following questions:

- (1) Does the project support the primary goals of the air quality plan?
- (2) Does the project include applicable control measures from the air quality plan?
- (3) Does the project disrupt or hinder implementation of any Clean Air Plan control measures?

If the first two questions are concluded in the affirmative and the third question concluded in the negative, the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area. The recommended measure for determining project support of these goals is consistency within the BAAQMD's CEQA thresholds of significance (see topic 3b).

CARP19 would be consistent with current BAAQMD CEQA significance thresholds (as discussed in topic 3b), and thus, would not conflict with or obstruct implementation of the Clean Air Plan. Therefore, CARP19 would not result in new impact with regard to Clean Air Plan consistency.

3b. 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?

2009 FEIR Analysis of Criteria Pollutant Emissions

The 2009 FEIR examined criteria pollutant emissions of ARP04, the Amended Reclamation Plan then being proposed, in accordance with the BAAQMD's *CEQA Air Quality Guidelines* dated December 1999 (BAAQMD, 1999), which were applicable at the time. Impact R4.2-1 stated that ARP04 would result in an increase in daily emissions of criteria air pollutants as a result of reclamation activities being conducted simultaneously with mining activities, instead of at the end of quarrying activities, as planned in the previously approved amended reclamation plan (ARP82). This increase in daily emissions would exceed the BAAQMD established significance thresholds for ROG, NO_x, CO, and PM₁₀, and, therefore, this impact was found to be significant. Mitigation Measures R4.2-1a-j were identified and found adequate to reduce the impact to less than significant. These mitigation measures were adopted as COAs (mitigation measures and corresponding COAs are listed at the end of this section and in Appendix C).

Impact R4.2-2 in the 2009 FEIR stated that Phase 4 reclamation in then-proposed ARP04 would include grading activities that were not included in previously approved ARP82. These activities would result in emissions of criteria pollutants that would exceed BAAQMD significance thresholds, and so this impact, too, was found to be significant. The 2009 FEIR included Mitigation Measures R4.2-2a and b, which were found sufficient to reduce this impact to less than significant. Both mitigation measures were adopted as COA.

Impact C5-3 in 2009 FEIR Chapter 5, Growth Inducing and Cumulative Effects, found that then-proposed ARP04 would add incrementally to cumulative air pollutant emissions in the region, a significant impact, but found that the mitigation measures for Impacts R4.2-1 and R4.2-2 would also reduce the contribution of ARP04 to the cumulative air quality burden to less than significant.

Impact R4.2-4 in the 2009 FEIR found that the then-proposed ARP04 would result in post-reclamation development similar to that in previously approved ARP82, and that emissions of criteria air pollutants from post-reclamation activities would be less than significant. Impact C4.2-8 stated that cumulative air quality impacts could result from quarrying activities implemented under the Amended Surface Mining and Quarrying Permit (AQP) occurring simultaneously with proposed phased reclamation grading activities, but that this impact would also be less than significant.

Analysis of Criteria Pollutant Emissions of the Project

As discussed in Chapter 1, Project Description, following certification of the 2009 FEIR, the Marin County Board of Supervisors approved an amended reclamation plan somewhat different from the one that SRRQ had proposed in ARP04. These changes were incorporated into CARP10, which is SRRQ's currently-approved Amended Reclamation Plan. Air emissions associated with CARP10 are considered the baseline for the criteria pollutant emissions analysis for the proposed Project, CARP19. The following analysis, therefore, models criteria pollutant emissions for both CARP10 and CARP19, and compares the incremental difference between them to the BAAQMD's project-level thresholds of significance. Criteria air pollutant emissions for both CARP10 and CARP19 were calculated using the current versions of the EMFAC2017⁸ and OFFROAD2017⁹ emissions models. The following assumptions, all of which apply to both CARP10 and CARP19, were used in the analysis:

- Pursuant to COA 32, reclamation activities may occur between 7 am and 5 pm, five days per week (Monday through Friday) between April 15 and October 15, up to 50 days per year.
- Equipment used in reclamation grading would include five scrapers (422 hp), four bulldozers (372 hp), one front-end loader (84 hp), one backhoe (84 hp), one road grader (217 hp), one water truck (378 hp);
- Based on facility records, all equipment meets tier 4 engine emission standards;¹⁰
- Heavy-duty haul trucks would carry average loads of 20 cubic yards and would travel on average 0.5 mile per one-way trip between quadrants; there would be no off-site trips. There would be approximately 214 round trips per day during the annual 50-day reclamation period. In addition, three light-duty trucks would each travel two miles per day;
- Planned earthmoving would be balanced; that is, the volume of cut material would equal the volume of fill material. Therefore, no excavated materials would be transported off-site. Table 1-1 in Chapter 1, Project Description, shows the estimated amount of reclamation grading, by reclamation phase, for CARP19, which is unchanged from CARP10. The projected grading volume for both CARP10 and CARP19 is less than that which was analyzed in the 2009 FEIR for ARP04. See Table 3-3 in Chapter 3, Project Description, of the 2009 FEIR;
- The models estimate emissions based on grading volume, using a per-cubic-yard emission factor for fugitive dust from material handling, using a miles traveled emission factor for fugitive dust from unpaved travel, and using the number of hours of operation per day, daily utilization load factor, and number and size of equipment for combustion exhaust emissions. To estimate maximum daily and annual grading volume, reclamation grading activities are assumed to take

⁸ EMFAC (CARB 2017, 2020a) is the latest emission inventory model that calculates emission inventories and emission rates for motor vehicles operating on roads in California. This model reflects CARB's current understanding of how vehicles travel and how much they emit. EMFAC can be used to show how California motor vehicle emissions have changed over time and are projected to change in the future.

⁹ OFFROAD (CARB, 2020b) is the latest emission inventory model that calculates emission inventories and emission rates for off-road equipment such as loaders, excavators, and off-road haul trucks operating in California. This model reflects CARB's current understanding of how equipment operates and how much they emit. OFFROAD can be used to show how California off-road equipment emissions have changed over time and are projected to change in the future.

¹⁰ USEPA and CARB have implemented regulations and a tiering system to reduce emissions from off-road equipment with increasing combustion efficiency (i.e., decreasing emissions) where Tier 1 is the least efficient (greatest emissions) and Tier 4 is the most efficient (least emissions). The regulations have been implemented over time such that Tier 1 was phased out in the 1990's and Tier 2 was required, followed by implementation of Tier 3 and Tier 4 by 2015 with a phase out of Tier 2.

place over 10 years, and, as previously stated, for 50 days per year. Total grading volume is therefore divided by 10 for the estimate of annual emissions, and by 500 (50 x 10) for the estimate of daily emissions.

Table AQ-2 shows estimated daily emissions for CARP10 and CARP19. As shown, the criteria air pollutant emissions associated CARP10 and CARP19 are the same values for the reasons stated previously. Consequently, there is no change in emissions between CARP10 and CARP19. Based on this analysis, CARP19 would not result in any new or substantially more severe impacts on air quality than those previously evaluated in the 2009 FEIR.

The BAAQMD *CEQA Air Quality Guidelines* states that cumulative air quality effects from criteria air pollutants should be addressed by comparison to the project-level mass emission significance thresholds (e.g., 82 pounds per day of PM₁₀) found within the Significance Thresholds subsection above). As demonstrated in Table AQ-2, CARP19-related emissions would be below the significance thresholds. Therefore, CARP19 would not result in a considerable contribution to a cumulative air quality impact, and the cumulative impact would be less than significant.

Table AQ-2
Criteria Air Pollutants Daily Emissions for CARP10 and CARP19

Project Condition	Daily Emissions (pounds per day)				
	ROG	CO	NO _x	PM10	PM2.5
CARP10					
Exhaust Emissions from Earthmoving Equipment/ On-Site Truck Travel	2.54	94.5	12.4	0.34	0.34
Fugitive Dust Emissions from Off-road Truck Travel/ Material Loading and Unloading Associated with Cut and Fill Operations	--	--	--	379	56.8
TOTAL CARP10 EMISSIONS	2.54	94.5	12.4	379	57.2
CARP19					
Exhaust Emissions from Earthmoving Equipment/ On-Site Truck Travel	2.54	94.5	12.4	0.34	0.34
Fugitive Dust Emissions from Off-road Truck Travel/ Material Loading and Unloading Associated with Cut and Fill Operations	--	--	--	379	56.8
TOTAL CARP19 EMISSIONS	2.54	94.5	12.4	379	57.2
Project-Increment (CARP19 minus CARP10)					
Exhaust Emissions from Earthmoving Equipment/ On-Site Truck Travel	0	0	0	0	0
Fugitive Dust Emissions from Off-road Truck Travel/ Material Loading and Unloading Associated with Cut and Fill Operations	--	--	--	0	0
TOTAL PROJECT INCREMENT EMISSIONS	0	0	0	0	0

Source: RCH Group, 2020

3c. Would the Project expose sensitive receptors to substantial pollutant concentrations?

Health Risk Assessment

Reclamation activities under CARP19 would emit TACs, including DPM and crystalline silica. Crystalline silica is a naturally occurring substance that is hazardous to human health when inhaled. Exposure to airborne dust particles that are formed when the material containing the silica are broken, crushed, or sawn poses potential risks. DPM from diesel-fueled engines is a human carcinogen. Long-term inhalation exposure to DPM also poses a non-cancer, “chronic” health risk. Crystalline silica also has been found to present a chronic health risk.¹¹ Therefore, a health risk assessment (or HRA), focused on DPM emissions from off-road equipment and haul trucks and crystalline silica emissions from travel on unpaved surface and material handling, was conducted to assess health risk of reclamation activities associated with CARP19.

The 2009 FEIR, Impacts C4.2-9 through C4.2-12, analyzed the human health risk impacts of toxic air emissions from reclamation and mining activities combined. Impacts C4.2-10 and C4.2-11 concluded that acute and chronic human health risk impacts would be less than significant. Impact C4.2-9 identified as a significant impact the increase in cancer risk for nearby sensitive receptors from emissions of carcinogenic toxic air contaminants, including DPM. Mitigation Measures C4.2-9a, b, and c, all of which were adopted as COA (see end of section for COA cross-references), which limited production levels and specified other measures to reduce DPM, were found sufficient to reduce this impact to less than significant. Impact C4.2-12 included consideration of cumulative health risks of past and potential future mining operations, in addition to the AQP and ARP projects then being analyzed, and concluded that this impact would be significant and unavoidable, even after accounting for the emission reduction requirements of Mitigation Measures C4.2-9a, b, and c.

For the analysis of health risk impacts of the current Project, the BAAQMD’s current thresholds of significance were used (see Setting section, above). These thresholds include exposure to substantial levels of TACs resulting in (a) an incremental increase in cancer risk greater than 10 additional cases per million exposed individuals, (b) a noncancerous risk (chronic or acute) equal to a hazard index greater than 1.0, or (c) an increase of annual average PM_{2.5} concentrations of greater than 0.3 µg/m³.

Changes to significance thresholds since the 2009 FEIR include the addition of a standard for cumulative cancer risk and non-cancer risk impacts (discussed below) and for PM_{2.5} concentrations. In addition, several changes in the methodology and guidance associated with the determination of health risk have occurred since the 2009 FEIR, as well as in the models used to estimate emissions and exposure concentrations.

USEPA’s AERMOD model, version 19191 (USEPA, 2019) was used to estimate exposure concentrations of DPM and crystalline silica. AERMOD is the USEPA-preferred atmospheric dispersion modeling system for general industrial sources. The model can simulate point, area, volume, and line sources (ibid). AERMOD is the appropriate model for this analysis based on the coverage of simple, intermediate, and complex terrain. It also predicts both short-term and long-term (annual) average concentrations. The model was run using the regulatory default options (stack-tip downwash, buoyancy-induced dispersion,

¹¹ In 2005, the California Office of Environmental Health Hazard Assessment (OEHHA) added a chronic reference exposure level (REL) for crystalline silica.

and final plume rise), default wind speed profile categories, default potential temperature gradients, and assuming no pollutant decay. In the 2009 FEIR, an older version of AERMOD (Version 07026) was used. As with the 2009 FEIR, two sets of nearby meteorological data (Marin Bay Park or MBP and Via Montebello Pump or VMP) were used to estimate dispersion of pollutants from the cumulative sources and concentrations at nearby sensitive receptors.

Since certification of the 2009 FEIR, OEHHA's *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* has been updated (OEHHA, 2015). OEHHA's revisions to its *Guidance Manual* are primarily designed to ensure that the greater sensitivity of children to cancer and other health effects is reflected in HRAs. For example, OEHHA now recommends analysis of risks separately for multiple age groups, focusing especially on young children and teenagers, rather than the past practice of analyzing risks to the general population. OEHHA also now recommends that statistical "age sensitivity factors" be incorporated into an HRA, and that children's relatively high breathing rates be accounted for. The updated OEHHA guidance includes exposure factors (for example, daily breathing rates) for six age groups: the last trimester of gestation, birth to 2 years, 2 to 9 years, 2 to 16 years, 16 to 30 years, and 16 to 70 years. These age groups allow for more refined exposure information to be used when estimating exposure and the risk of developing cancer during a lifetime.

The *Guidance Manual* revisions also include changes to the recommended residential exposure period for cancer risk assessment: previously cancer risks were assessed by assuming 70 years of exposure at a residential receptor; under the current *Guidance Manual*, this assumption is reduced to 30 years.

While cancer risk is expressed as the potential for additional cancer cases within the exposed population, acute (short-term, such as one-hour) and chronic (continuous or recurring, such as three months or more) adverse health impacts, unrelated to cancer, are measured against a hazard index (HI). The hazard index is defined as the ratio of the estimated air concentrations of a TACs to a reference exposure level (REL). An HI greater than 1.0 (i.e., the estimated air concentrations of a TAC is greater than the REL) is considered significant. OEHHA has established the chronic REL for DPM as $5 \mu\text{g}/\text{m}^3$ and for crystalline silica as $3 \mu\text{g}/\text{m}^3$ (OEHHA, 2019); neither has been updated since the 2009 FEIR. OEHHA has not established an acute REL for DPM or crystalline silica.

In accordance with the current version of OEHHA's *Guidance Manual*, the HRA modeled the estimated concentrations of TACs at nearby sensitive receptors and compared these to the established cancer potency factors for cancer risk and REL for chronic health effects. Increased cancer risks were calculated using the modeled DPM concentrations and OEHHA-recommended methodologies for childhood exposure (3rd trimester of mother's pregnancy through 2 years of age) and adult exposure. The cancer risk calculations were based on applying the OEHHA-recommended age sensitivity factors and breathing rates, as well as fraction of time at home and an exposure duration of 30 years, to the modeled DPM and crystalline silica concentration exposures. The Air Quality Technical Report (Appendix C) provides further information on the methodology and assumptions associated with the health risk assessment.

The HRA results comparing CARP10 and CARP19 are shown in Table AQ-3. Since assumptions about grading volumes, equipment usage, and equipment emissions controls are the same for CARP10 and CARP19 (as described in detail under topic 3b), and the same models and methods are used for both, the HRA results are the same for both. The maximum cancer risk for a residential receptor would be either

0.03 or 0.05 additional cancer cases per million persons, depending on the meteorological dataset used. Both results are below the significance threshold of 10 additional cancer cases per million people exposed.

**Table AQ-3
Incremental health impacts**

Condition	Cancer Risk with MBP Met Data	Cancer Risk with VMP Met Data	Hazard Index (acute/chronic)	PM _{2.5} (Annual Average $\mu\text{g}/\text{m}^3$)
CARP10	0.05	0.03	-/0.02	<0.01
CARP19	0.05	0.03	-/0.02	<0.01
Increment	0	0	0	0
Significance Threshold	10	10	1	0.3
Exceeds Threshold?	No	No	No	No

Source: RCH Group, 2020

Table AQ-3 shows that the chronic HI for both CARP19 and CARP10 would be 0.02, which is below the significance threshold of 1. Table AQ-3 also shows that the annual PM_{2.5} concentration for both CARP10 and CARP19 would be less than 0.01 $\mu\text{g}/\text{m}^3$, which is below the significance threshold of 0.3 $\mu\text{g}/\text{m}^3$.

As shown in Table AQ-3 and discussed above, CARP19 would not result in incremental increases of cancer or non-cancer health risks, nor in PM_{2.5} concentrations, compared to CARP10; the health risk impacts of CARP19 would be less than significant. Therefore, CARP19 would not result in a new or substantially more severe significant health risk impact than was previously evaluated in the 2009 FEIR.

Cumulative Health Risk Impacts

The BAAQMD's 2017 *CEQA Air Quality Guidelines* include standards and methods for determining the significance of cumulative health risk impacts. The method for determining cumulative health risk requires the tallying of health risks from the Project, nearby permitted stationary sources, major roadways, railroads, and any other identified substantial TAC sources in the vicinity of a Project site (i.e., within a 1,000-foot radius) and then adding the individual sources to determine whether the BAAQMD's cumulative health risk thresholds are exceeded: a cancer risk level greater than 100 in a million, a noncancer (chronic or acute) hazard index greater than 10.0, or annual average PM_{2.5} concentrations of greater than 0.8 $\mu\text{g}/\text{m}^3$.

The other major sources of TACs near the Project site are emissions from McNear's Brickyard and from Quarry operations. Quarry operations that emit TACs include off-road equipment, haul trucks, barges, blasting, asphalt processing activities, and aggregate processing facilities. In addition to Quarry operations, there are several stationary permitted sources near the Project site (a diesel generator associated with the San Rafael Sanitation District at 301 Riviera Drive, a diesel generator associated with Verizon Wireless at 333 Biscayne Drive, and a diesel generator associated with the San Rafael Sanitation District at 905 Point San Pedro Road), however, these sources are located beyond 1,000 feet of the Project site and per BAAQMD *CEQA Air Quality Guidance* were not included in the cumulative health risk assessment.¹² No major

¹² <https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65>

roadways or railroads are within 1,000 feet of the Project site. Route 101, located about three miles to the west of the Project site, is the nearest major roadway. According to BAAQMD's criteria for health impacts, Point San Pedro Road is not considered a major roadway and was not included in the cumulative health risk assessment. As with the 2009 FEIR, two sets of nearby meteorological data were used to estimate dispersion of pollutants from the cumulative sources and concentrations at nearby sensitive receptors. Past quarry operations were represented from 2015 through 2020 and future operations were represented from 2021 through 2044. This results in a 30 year exposure period per OEHHA guidance. Actual aggregate production levels, number of blasting events, barge, and haul truck trips based on SRRQ Annual Reports for the period of 2015 through 2020, when available, were used to determine emissions from Quarry operations. When actual data were not available (such as asphalt and brick production levels) or during future conditions of 2021 through 2044, permitted values were used.

As noted previously, the 2009 FEIR's assessment of cumulative health risks of past and potential future mining operations, in addition to the AQP and ARP projects then being analyzed, concluded that cumulative health impacts would be significant and unavoidable.

Table AQ-4 shows that cumulative cancer risks, acute, and chronic health impacts for sensitive receptors near the Project site, including health risk from (past and future) SRRQ operations and from CARP19 reclamation activities, would all be below the applicable significance thresholds. The maximum cumulative cancer risk for a residential receptor would be either 56.8 or 50.7 additional cases per million persons, depending on the meteorological dataset used, which is less than the significance threshold of 100 per million. Cumulative cancer risk would therefore be less than significant.

TableAQ-4
Cumulative health impacts

Condition	Cancer Risk	Hazard Index (acute/chronic)	PM2.5
MBP Met Data			
Quarry and McNear's Brickyard Operations (Past, Present and Future)	56.3	0.29/0.15	0.50
Reclamation Activities	0.5	--/0.02	<0.01
Total	56.8	0.29/0.17	0.50
Significance Threshold	100	10	0.8
Exceeds Threshold?	No	No	No
VMP Met Data			
Quarry and McNear's Brickyard Operations (Past, Present and Future)	50.4	0.16/0.12	0.41
Reclamation Activities	0.3	--/0.02	<0.01
Total	50.7	0.16/0.14	0.41
Significance Threshold	100	10	0.8
Exceeds Threshold?	No	No	No

Source: RCH Group, 2020

Also as shown in Table AQ-4, the cumulative acute HI would be 0.29 to 0.16, depending on the meteorological dataset used. The primary TAC contributing to the acute HI is hydrogen sulfide (H₂S) emissions from SRRQ's asphalt plant (see further discussion of H₂S under topic 3d, below). The chronic HI would be 0.17 to 0.14. The primary sources contributing to the chronic HI are crystalline silica emissions from aggregate processing operations and DPM from off-road equipment. The cumulative annual PM_{2.5} concentration, primarily due to fugitive dust emissions from aggregate processing operations and DPM from off-road equipment, would be 0.50 to 0.41 µg/m³. All these results are below the applicable significance thresholds, as shown in Table AQ-4: reclamation under CARP19, in combination with Quarry operations, would result in a less-than-significant non-cancer cumulative health risk impact.

As discussed above, the 2009 FEIR concluded that TAC emissions from proposed reclamation, in combination with past, current, and future Quarry operations, would result in a significant unavoidable cancer risk impact. The HRA conducted for this Supplemental Environmental Review, which uses updated assumptions, models, and methodologies, finds that cumulative cancer and non-cancer health risks would all be less than significant. Therefore, the Project would not result in a new or substantially more severe significant cumulative health risk, compared to the 2009 FEIR.

3d. Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The 2009 FEIR found in Impact C4.2-11 that then-proposed reclamation activities would not generate odors that could cause a significant odor impact.

Impact C4.2-11 of the 2009 FEIR stated that TAC emissions could cause an acute health impact for nearby receptors (Less than Significant). Impact C4.2-11 was primarily related to H₂S emissions associated with the asphalt processing plant. H₂S has a highly distinctive, highly disagreeable odor ("rotten egg" smell) at very low concentrations, below the level at which a significant acute health risk would occur. The 2009 FEIR reported that the Marin County Public Works Department found no such odor complaints in the vicinity of the Quarry, indicating that actual H₂S emission rates from the asphalt plant are likely much lower than those estimated in the 2009 FEIR. The impact was found to be less than significant.

According to BAAQMD's *CEQA Air Quality Guidelines*, odor impacts could result from siting a new odor source near existing sensitive receptors or siting a new sensitive receptor near an existing odor source. Though offensive odors rarely cause any physical harm, they are unpleasant and can lead to public distress and citizen complaints. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, as well as wind speed and direction, and the sensitivity of receptors. The thresholds of significance applied to assess odor impacts are:

- Frequently and for a substantial duration, create or expose sensitive receptors to substantial objectionable odors affecting a substantial number of people.

Under CARP19, diesel-fueled equipment exhaust would generate some odors. However, these emissions typically dissipate quickly and would unlikely affect a substantial number of people, or to persist for a substantial length of time. Furthermore, because CARP19 proposes only to extend the schedule for reclamation, and not to introduce new or greater potential odor sources, the Project would not be expected

to increase odors, compared to CARP10. Therefore, CARP19 would not result in a new or substantially more severe odor impact than was previously identified in the 2009 FEIR.

Mitigation Measures

The 2009 FEIR identified several mitigation measures to reduce identified Air Quality impacts, all of which would continue to apply to CARP19. Each of these mitigation measures has been adopted as one or more Conditions of Approval (COAs). In the following list, the 2009 FEIR's air quality mitigation measures pertaining to reclamation are summarized, and the COAs implementing them are identified. Mitigation measures related to greenhouse gas emissions are listed in Section 2.8, Greenhouse Gas Emissions. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.2-1a: Requires use of biodiesel in quarry rolling stock. (COA 50)

Mitigation Measure R4.2-1b: Requires SRRQ to upgrade off-road diesel equipment and tugboat engines to higher emission standards. (COA 51)

Mitigation Measure R4.2-1c: Requires implementation of dust control measures. (COA 38, 65, 66)

Mitigation Measure R4.2-1d: Requires continuation of existing emissions control measures (COA 38, 50, 51, 52, 65, 66)

Mitigation Measure R4.2-1e: Requires additional dust control measures during all reclamation grading activities. (COA 54)

Mitigation Measure R4.2-1f: Requires SRRQ to keep equipment and rolling stock well-tuned and regularly serviced to minimize exhaust emissions. (COA 56)

Mitigation Measure R4.2-1g: Requires greater use of biodiesel or other alternative fuels. (COA 50)

Mitigation Measure R4.2-1h: Limits idling of off-road equipment to five minutes. (COA 57)

Mitigation Measure R4.2-1i: Directs SRRQ to purchase BAAQMD off-site emission offset credits in sufficient quantity to off-set emissions from reclamation grading to levels below significance thresholds. (COA 59)

Mitigation Measure R4.2-1j: Limits combined mining and reclamation activities to ensure daily emissions are below significance thresholds. (COA 58)

Mitigation Measure R4.2-2a: Mitigation Measures R4.2-1a, b, and c apply here as well (COA 38, 50, 51, 65, 66)

Mitigation Measure R4.2-2b: Mitigation Measures R4.2-1d through R4.2-1jh apply here as well. (COA 50, 54).

Mitigation Measure C4.2-9a: Mitigation Measures R4.2-1a-d apply here as well. (COA 50, 52, 54, 66)

Mitigation Measure C4.2-9b: Limits aggregate production to 1982 levels (COA 5, 35, 78)

Mitigation Measure C4.2-9c: Mitigation Measures R4.2-1a-j, addressing diesel particulate emissions, apply here as well. (COA 56, 57, 58, 59)

Conclusion

CARP19 would not result in any new or substantially more severe impact on air quality than identified in the 2009 FEIR. There are no new circumstances and no new information that would alter impact conclusions, or result in a new or substantially more severe impact. All of the Mitigation Measures identified in the 2009 FEIR have been adopted as COAs and are in effect. No changes to the existing Mitigation Measures, and no additional mitigation measures, are required.

References

Bay Area Air Quality Management District (BAAQMD), 1999. California Environmental Quality Act Guidelines: Assessing the Air Quality Impacts of Projects and Plans. December, 1999. <http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqaguid.pdf>

BAAQMD, 2006. Bay Area 2005 Ozone Strategy. Adopted January 4, 2006. https://www.baaqmd.gov/~media/files/planning-and-research/plans/2005-ozone-strategy/adoptedfinal_vol1.pdf

BAAQMD, 2010. Bay Area Climatology. October 4, 2010

BAAQMD, 2014a. Identifying Areas with Cumulative Impacts from Air Pollution in the San Francisco Bay Area. March 2014. <http://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program>

BAAQMD, 2014b. Revised CARE Impacted Communities, <https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program> and <https://www.baaqmd.gov/~media/files/planning-and-research/care-program/revised-2013-care-communities-pdf.pdf?la=en>

BAAQMD, 2014c. Improving Air Quality & Health in Bay Area Communities, Community Air Risk Program Retrospective & Path Forward (2004 – 2013). April 2014. http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retrospective_April2014.ashx?la=en

BAAQMD, 2016. Planning Healthy Places: A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning. January 2016. http://www.baaqmd.gov/~media/files/planning-and-research/planning-healthy-places/draft_planninghealthyplaces_marchworkshop-pdf.pdf?la=en

BAAQMD, 2017a. 2017 Clean Air Plan. April 19, 2017, http://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

- BAAQMD, 2017b. California Environmental Quality Act, Air Quality Guidelines. May, 2017. https://www.baaqmd.gov/~/-/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
- BAAQMD, 2020a. Annual Air Quality Summaries, 2017-2019. <https://www.baaqmd.gov/about-air-quality/air-quality-summaries> Accessed November 29, 2020.
- BAAQMD, 2020b. Permitted Stationary Sources Risks and Hazards. Interactive web-based map and database. <https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65>. Accessed December 7, 2020.
- Board Sports California, 2020. Understanding San Francisco Bay Area Weather – the wind beneath our wings! <https://boardsportscalifornia.com/understanding-san-francisco-bay-area-weather-the-wind-beneath-our-wings>. Accessed November 22, 2020.
- California Air Resources Board (CARB), 2018. EMFAC2017 User’s Guide. March 1, 2018, <https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-i-users-guide.pdf>
- CARB, 2020a. EMFAC2017 Web Database. <https://www.arb.ca.gov/emfac/2017/>
- CARB, 2020b. Mobile Source Emissions Inventory Documentation – Off Road Diesel Equipment. <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road>
- Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February 2015. http://oehha.ca.gov/air/hot_spots/hotspots2015.html
- OEHHA, 2019. OEHHA Acute, 8-hour and Chronic Reference Exposure Level (REL) Summary. November 4, 2019. <https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary> Accessed November 22, 2020.
- Sonoma Technology, Incorporated, 2018a. Memo, Josette E. Marrero and Paul T. Roberts, STI, to Jason Wong, Marin County DPW, subject: Summary of Air Quality Measurements at the San Rafael Rock Quarry during the Background Monitoring Period, September 11, 2018. <https://www.marincounty.org/~/-/media/files/departments/pw/land-use/quarry/2018-background-period-summary-tech-memo.pdf?la=en>
- Sonoma Technology, Incorporated, 2018b. Memo, Josette E. Marrero and Paul T. Roberts, STI, to Jason Wong, Marin County DPW, subject: Summary of Air Quality Measurements at the San Rafael Rock Quarry During the Reclamation Monitoring Period. December 21, 2018. <https://www.marincounty.org/~/-/media/files/departments/pw/land-use/quarry/2018-reclamation-period-summary-tech-memo.pdf?la=en>
- United States Environmental Protection Agency (USEPA), 2002. A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions. Draft Technical Report, October, 2002. USEPA document EPA420-P-02-001. <https://19january2017snapshot.epa.gov/www3/otaq/models/analysis/biodsl/p02001.pdf>

USEPA, 2019. AERMOD Implementation Guide. USEPA, Office of Air Quality Planning and Standards, Air Quality Assessment Division, AERMOD Implementation Workgroup. EPA-454/B-19-035. August 2019. Available at: <https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models>

WindHistory.com, <http://windhistory.com/map.html#4.00/36.00/-95.00> Accessed November 22, 2020.

2.4 Biological Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
4. Biological 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?	Section 4.3, Biological Resources, Impacts R4.3-6 through 12; Chapter 5, Growth Inducing and Cumulative Impacts, Impact C5-5	No	No	Yes	Yes, as revised
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?	Section 4.3, Biological Resources, Impacts R4.3-1 through R4.3-5 and R4.3-12	No	No	No	NA
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?	Section 4.3, Biological Resources, Impacts R4.3-5, R4.3-12, and C4.3-18	No	No	No	NA
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?	Section 4.3, Biological Resources, Impact R4.3-5	No	No	No	NA
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Section 4.3, Biological Resources, Impact R4.3-4	No	No	No	NA

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
4. Biological Resources. Would the Project:					
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?	2009 FEIR did not evaluate conflicts with an HCP, NCP, or other conservation plan, as none existed that included the Project site.	NA	NA	NA	NA

Setting Discussion

The 2009 FEIR described the environmental and regulatory setting for biological resources in Section 4.3, Biological Resources. This Supplemental Environmental Review included an updated search of the California Natural Diversity Data Base (CNDDDB) to review special-status species occurrence records from SRRQ and vicinity (Figure BIO-1); a review of California red-legged frog (CRLF) (*Rana draytonii*) survey findings from 2015 protocol-level surveys conducted by Sequoia Ecological Consulting (2015a; Figure BIO-1); a review of other biological survey reports from SRRQ (LSA 2012; Sequoia Ecological Consulting, 2015b, 2015c, and 2015d; WRA Environmental Consultants, 2019a, 2019b); and examination of recent aerial photos of the project site. The LSA, Sequoia, and WRA reports occurred after the publication of the 2009 FEIR, and provide new information relevant to this supplemental environmental review. Figure BIO-1 lists other species recorded in the immediate vicinity of SRRQ. These other records (2 fish and 2 invertebrate species) pre-date 2009 and were evaluated in the 2009 FEIR. Additional changes to the environmental and regulatory setting are discussed under each topic, below.

Impact Discussion

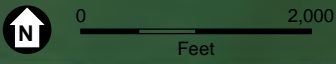
The 2009 FEIR, Section 4.3, Biological Resources, identified twelve impacts of reclamation, eleven of which were significant. The 2009 FEIR identified mitigation measures to reduce all the significant impacts to less than significant. The mitigation measures were adopted as Conditions of Approval (COA), as discussed below and as listed at the end of this section. Section 4.3 of the 2009 FEIR also identified one significant cumulative impact of the Amended Reclamation Plan and the Amended Surface Mining and Quarrying Permit combined. The 2009 FEIR identified mitigation measures, which were also adopted as COA, to mitigate this cumulative impact to less than significant.

4a. 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?

Other species recorded in immediate vicinity of SRRQ:
 Longfin smelt
 Eulachon
 Mimic tryonia snail
 Monarch butterfly



Path: U:\GIS\GIS\Projects\2020\000000315_SanRafaelRockQuarry\Biological\03_MXDs\Projects\CNDDDB.mxd_JMCMAMARA_9/17/2020



SOURCE: Imagery - NAIP (2020);
 USFWS, 2020; ESA, 2020

Quarry Boundary
Occurrence Records
 California red-legged frog (2015)

San Rafael Rock Quarry

Figure BIO-1
 CNDDDB Occurrence Records



Special-Status Plants

The 2009 FEIR analyzed potential impacts to many special-status species with potential to occur at SRRQ. Two rare plants, Gairdner's yampah (*Perideridia gairdneri*) and Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*), were considered to have a low to moderate potential to occur, and Impact R4.3-3 identified a significant impact from the potential for reclamation activities to disturb these plants, if present. Mitigation Measure R4.3-3b in the 2009 FEIR, adopted as COA 93, requires surveys for special-status plants to be conducted by a qualified botanist during the appropriate season, within areas to be disturbed prior to each reclamation phase and during the planning for post-reclamation development. Mitigation Measure R4.3-3b specifies that these rare plant surveys will be conducted during the flowering period when the target species are most readily identifiable, June through October. The required survey was completed for the Phase 1 reclamation grading areas in 2012, and neither of these species nor other rare plants were observed (LSA, 2012). WRA conducted a rare plants survey prior to the commencement of 2019 reclamation grading activities in the NE Quadrant, and likewise found none (WRA, 2019a). Mitigation Measure R4.3-3c, adopted as COA 94, requires relocation, salvage, and monitoring if rare plants were found in areas affected by reclamation activities. These mitigation measures and COAs continue in effect for future reclamation phases.

The extension of reclamation timing proposed in CARP19 would not increase the severity of the previously identified impacts; however, new information from the 2012 rare plant survey constitutes changed circumstances that indicate that Mitigation Measure R4.3-3b may be insufficient to detect rare plants, if present, and so avoid or mitigate for their disturbance during reclamation activities. The 2012 rare plant survey identified an additional eight special status plants with potential to occur onsite: Marin checker lily (*Fritillaria lanceolata* var. *tristulis*), fragrant fritillary (*Fritillaria liliacea*), San Francisco gumplant (*Grindelia hirsutula*), White-rayed pentachaeta (*Pentachaeta bellidiflora*), Marin knotweed (*Polygonum marinense*), Point Reyes checkerbloom (*Sidalcea calycosa* ssp. *rhizomata*), Santa Cruz microseris (*Stebbinsoseris decipiens*), and showy Indian clover (*Trifolium amoenum*). Furthermore, the 2012 survey, which occurred in late October, did not occur during the flowering time of Gairdner's yampah or other rare plants with potential to occur onsite. In order to ensure that the Project would not have a significant impact on special-status plants, revisions are proposed to Measure R4.3-3b to require that rare plant surveys are conducted during the blooming periods of rare plants with potential to occur. See proposed revisions to Mitigation Measure R4.3-3b at the conclusion of this section.

The proposed revisions to Mitigation Measure 4.3-3b will ensure that the required rare plant surveys will detect rare plants, if present. Together with Mitigation Measures R4.3-3a and R4.3-3c, this revised mitigation measure will reduce Impact R4.3-3 to less than significant. With revised Mitigation Measure R4.3-3b in place, the Project would have no new or substantially more severe significant impact on special-status plants.

Fish and Other Aquatic Resources

The 2009 FEIR, Impact R4.3-6, found that reclamation activities and post-reclamation development activities, including dredging, pile-driving, jetty construction, and other "in-water" construction activities, would result in a significant impact to special-status aquatic biological resources and Essential Fish

Habitat.¹³ The 2009 FEIR discussed potential impacts from sedimentation, noise, and habitat loss and stated that impacts would be reduced to less than significant by adherence to established seasonal work windows (Mitigation Measure R4.3-6b, adopted as COA 104), conducting shoreline construction activities either from dry land or from water-based equipment such as barges (Mitigation Measure R4.3-6c, adopted as COA 105), and by complying with other conditions in permits to be acquired from the U.S. Army Corps of Engineers and other relevant agencies (Mitigation Measure R4.3-6a, adopted as COA 103). The proposed Project, CARP19, would not change reclamation activities or post-reclamation development, other than to extend the schedule for their completion. The identified mitigation measures were all adopted as a COA, are in effect, and can still be expected to reduce impacts to fish and other aquatic resources to less than significant. There is no substantial new information, and neither are there substantial changed circumstances since certification of the 2009 FEIR, that would change this conclusion. Therefore, the Project would not result in a new or substantially more severe significant impact on aquatic biological resources or EFH.

California Red-Legged Frog

The 2009 FEIR identified Impact R4.3-8, which stated that Reclamation activities proposed to be conducted in the vicinity of process water ponds in the NW and SW Quadrants have the potential to adversely impact California red-legged frogs, and that the impact would be significant. The 2009 FEIR found that this impact would be reduced to less than significant by implementation of Mitigation Measures R4.3-8a and R4.3-8b (adopted as COAs 106 and 107). Subsequent to the 2009 FEIR, in 2015 during a protocol survey required by USFWS (Sequoia Ecological Consulting, 2015a), one CRLF individual was identified in a pond within the Project site. The pond subsequently dried naturally and no longer holds water (SRRQ, 2018). WRA (2018) evaluated the pond where this frog was found and other process water ponds, wetlands, and seeps at SRRQ and considered all of these to be unsuitable for breeding habitat, due to lack of emergent vegetation, high salinity, or inadequate hydroperiod for CRLF to mature. Similarly, the upland areas of SRRQ were not considered suitable for CRLF refugia, due to lack of suitable sites for burrows or presence of terrestrial predators. Although suitable breeding habitat may be present in other process water ponds at SRRQ, CRLF were not found elsewhere within the Project site. Sequoia Ecological Consulting (2015a) identified the closest nearby breeding habitat in water features at Peacock Gap Golf Course. Another CRLF was found outside SRRQ at McNears Beach County Park (CDFW 2020) following a rain event. These isolated occurrences suggest that the presence of CRLF at SRRQ may be episodic following storms, when frogs move to the site and then become isolated and unable to escape or establish a breeding population. Prior to commencing reclamation grading in 2019, WRA conducted pre-construction surveys of the NE Quadrant for CRLF and other sensitive wildlife and plant species, conducted environmental awareness training for SRRQ employees, and conducted daily construction monitoring during the performance of reclamation work. Pre-construction surveys showed no presence of CRLF, nesting birds, special-status bats, or other special status wildlife or plants. Monitors observed no CRLF or other special status species within the area of reclamation activities, or affected by 2019 reclamation work (WRA, 2019b).

Previously adopted Mitigation Measure R4.3-8b in the 2009 FEIR (adopted as COA 107) requires a habitat assessment for CRLF prior to SRRQ applying for the grading permit for Phase 1 reclamation. The

¹³ Essential Fish Habitat was defined by the U.S. Congress in the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, or Magnuson-Stevens Act, as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.

Mitigation Measure requires that, if recommended by USFWS, protocol surveys shall be conducted. As described above, these requirements were met in 2015. Mitigation Measure R4.3-8b further states that if CRLF are found, consultation will be initiated with the U.S. Fish and Wildlife Service to determine if an incidental take permit is needed for this species. Because the Phase 1 reclamation area was found not to contain suitable CRLF habitat (WRA 2018), consultation has not been initiated; however, in future reclamation phases that will impact wetlands and potential CRLF aquatic habitat, SRRQ is still required to initiate consultation, in compliance with Mitigation Measure R4.3-8b and COA 107. In addition, exclusionary fencing and biological monitoring is required under Mitigation Measure R4.3-8b. Because Mitigation Measure R4.3-8b requires surveys to be conducted for CRLF prior to any work within 300 feet of habitat areas, and consultation to be initiated if habitat will be disturbed, the previously adopted mitigation measure, which was adopted as COA 107 and remains in effect, is considered sufficient to protect CRLF within the Project site, and no additional mitigation is required. The Project would not result in a new or substantially more severe significant impact on CRLF.

Western Pond Turtle

The 2009 FEIR, Impact R4.3-9, found that reclamation activities have the potential to adversely impact western pond turtles, should they be present in the process water ponds in the NW Quadrant. These impacts would be mitigated to a less-than-significant level by Mitigation Measure R4.3-9, which requires surveys for western pond turtle prior to work in the vicinity of the process water ponds, followed by relocation or isolation and buffering of nests, if found. This mitigation measure was adopted as COA 108. The required surveys were conducted in 2015 and no western pond turtles were identified (Sequoia Ecological Consulting, 2015b). The previously adopted mitigation measure and COA will continue to protect western pond turtles from reclamation activities. There is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion: the Project would not result in a new or substantially more severe significant impact on western pond turtles.

Nesting Birds

The 2009 FEIR found that reclamation activities could disturb nesting migratory birds, including raptors, protected under the Migratory Bird Treaty Act and California Fish and Game Code 3503, resulting in significant impacts (Impacts R4.3-11 and R4.3-12). Mitigation Measures R4.3-11a and b and R4.3-12a and b (adopted as COAs 110, 111, 112, 113), were found to reduce impacts on nesting raptors and other migratory birds to a less than significant level.

Potential nesting habitat for raptors occurs on or near the Project site in marshes and eucalyptus trees, though no nesting raptors were observed during a survey in 2015 (Sequoia Ecological Consulting, 2015d). Other special-status bird species potentially breeding in marshes onsite include San Pablo song sparrow (*Melospiza melodia samuelis*) and saltmarsh common yellowthroat (*Geothlypis trichas*). Other protected migratory birds could nest in grasslands, ruderal habitat, on buildings, and in the marshes onsite. While any birds nesting within the Project site may be habituated to noisy conditions, clearing, grading, and other construction activities during reclamation could disturb or destroy active nests, or cause nest abandonment and death of young, if active nests are present. Removal of trees or shrubs could result in direct losses of nests, eggs, or nestlings. Mitigation Measure R4.3-11b and COA 111 require surveys for nesting raptors and other birds prior to vegetation removal or nearby reclamation activities during bird nesting season, and Mitigation Measures R4.3-12a and b, adopted as COAs 112 and 113,

require a buffer area around marsh habitat and development of a Marsh Wildlife and Habitat Protection Plan that would protect birds nesting in the marsh from disturbance. Pre-construction surveys performed prior to reclamation grading in 2019, and biological monitoring conducted during reclamation activities found no nesting birds in the NE Quadrant (WRA, 2019b). Continued implementation of these mitigation measures, all of which were adopted as COA, will ensure that the Project will not have a new or substantially more severe significant impact on nesting birds. There is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion: the Project would not result in a new or substantially more severe significant impact on nesting migratory birds, including raptors.

Bats

The 2009 FEIR found that bats roost in the chimneys of McNear's Brickyard in the NW Quadrant and may use these areas for maternity roosts or hibernacula, and that bats could also potentially roost and breed in eucalyptus or oak trees or other vacant buildings within the Project site. The 2009 FEIR found that these bat roosts could be disturbed by reclamation activities, a potentially significant impact (Impact R4.3-10). Mitigation Measure R4.3-10 (adopted as COA 109) was determined to reduce impacts on bats to a less than significant level. A 2015 bat survey at SRRQ detected eight species, including western red bat (*Lasiurus blossevillii*) a California Species of Special Concern (Sequoia Ecological Consulting, 2015c). Mitigation Measures R4.3-10 and COA 109 require a qualified bat biologist to survey areas of potential habitat prior to removal or demolition, and to use a two-stage removal or demolition process to allow bats to leave the site safely. Pre-construction surveys performed prior to reclamation grading in 2019, and biological monitoring conducted during reclamation activities, found no special-status bats in the NE Quadrant (WRA, 2019b). Mitigation Measure R4.3-10, which is in effect as COA 109, would continue to be implemented for the extended reclamation period proposed by the current Project; therefore, no further mitigation is required for bat species. There is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion: the Project would not result in a new or substantially more severe significant impact on roosting bats.

4b. 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?

The 2009 FEIR identified the presence within the Project site of sensitive upland vegetation communities, including coast live oak woodland, native perennial grassland and coastal scrub. The 2009 FEIR also identified locations of non-native grassland and eucalyptus woodland, which are not considered sensitive communities, but which may provide habitat for wildlife, such as monarch butterflies (*Danaus plexippus*). In addition to the sensitive upland communities, the Project site contains freshwater seeps and wetlands, coastal brackish marsh, coastal salt marsh, as well as seasonal wetlands and open water, which are discussed below under topic 4c. The 2009 FEIR, Impact R4.3-2, found that sensitive vegetation communities may be impacted by reclamation activities such as soil stockpiling, grading, backfilling, and revegetation. The 2009 FEIR concluded that the small hill in the NW Quadrant, which has one acre of mixed perennial grassland and two acres of coastal scrub, as well as oak woodland, could be significantly impacted by reclamation activities, but that other areas were either designated for protection in the Amended Reclamation Plan of 2004 (ARP 04), or had already been slated for removal in the prior amended reclamation plan. Mitigation Measure R4.3-2b (adopted as COA 92) in the 2009 FEIR requires

inclusion of the small hill in the areas to be preserved. This requirement was implemented in CARP10, the current approved amended reclamation plan, as shown in Figure 1-7 in Chapter 1, Project Description. Since certification of the 2009 FEIR, SRRQ has indicated in its annual reports that the native vegetation on the north side of the small hill has been left undisturbed (SRRQ, 2018). CARP19 does not propose any changes to the sensitive areas designated for preservation, and so would not have a new or substantially more severe significant impact on any riparian habitat or other sensitive natural community, and there is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion.

4c. 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?

As stated in the 2009 FEIR (p. 4.3-32), a variety of wetlands and other waters of the U.S. under the regulatory jurisdiction of the USACE, CDFW, RWQCB, BCDC, and the State Lands Commission occur at or in the immediate vicinity of SRRQ. Federally jurisdictional wetlands are areas with characteristic hydrology, vegetation and soils, which are adjacent to or have a significant nexus with navigable waters (Strand and Rothschild, 2010). A 2015 rule extended jurisdiction to adjacent intermittent and ephemeral streams, but this rule was repealed in 2019. CDFW may extend jurisdiction over wetlands and waters covered under Lake and Streambed Alteration Agreements (Fish and Game Code, Section 1602). The 2009 FEIR described onsite wetlands as consisting of the waters of San Pablo Bay, the salt and brackish marshes in the NW Quadrant, the freshwater seep in the NE Quadrant, the freshwater marshes fringing the process ponds in the NW Quadrant, as well as several seasonal wetlands, ponds and drainages, and stated that all were potentially jurisdictional waters, under both federal and CDFW regulations. A draft jurisdictional delineation was completed at SRRQ in 2015 (SRRQ, 2015), which has not been released for review.

The 2009 FEIR found that significant impacts from reclamation activities could include discharge of fill or eroded sediment into diked tidal marsh and into freshwater wetlands and seeps, as well as potential discharge of toxic materials into these areas (Impact R4.3-5). These impacts would be mitigated by obtaining required permits, implementing Best Management Practices to avoid discharge, and applying required setbacks (Mitigation Measures R4.3-5a through e, adopted as COAs 98 through 102). Implementation of these measures was found sufficient to reduce impacts on wetlands to a less than significant level. There is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion: the Project would not result in a new or substantially more severe significant impact on wetlands.

The 2009 FEIR also stated that the diked marsh was cut off from tidal action, and that this was degrading marsh habitat, but concluded that this was an existing condition, and therefore not a significant impact of ARP04. Marsh impacts were, however, identified as a significant cumulative impact, as discussed below.

4d. 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?

SRRQ's location on Point San Pedro is separated from other habitat areas by residential and golf course developments, and isolated by Point San Pedro Road, a major artery. The main movement corridor within the Project site for wildlife species consists of the Bayshore marshes and mudflats, which are part of the Baylands Corridor designated in the Marin Countywide Plan of 2007. These areas may provide nesting and foraging habitat for native shorebirds, but only represent a small percentage of the available habitat for these species in the North Bay. Although wildlife corridors are not discussed as a separate impact category in the 2009 FEIR, Mitigation Measure R4.3-5b (adopted as COA 98) requires that reclamation activities would be consistent with the Countywide Plan policies for protection of the Baylands Corridor, including setback requirements. This mitigation measure is in effect and will continue to reduce impacts to the Baylands Corridor and nursery areas to less than significant. No other wildlife corridors or nursery areas are present at SRRQ, or would be impacted by reclamation activities under CARP19. There is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion: the Project would not result in a new or substantially more severe significant impact to wildlife corridors or nursery sites.

4e. Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Marin County Code Section 22.27, Native Tree Protection and Preservation requires a permit for removal of protected trees. However, removal of trees within an approved mining area or as part of a reclamation plan is exempt from the permit requirements. As stated in the 2009 FEIR (Impact R4.3-4), SRRQ planned to preserve most oak trees within the Project site, and to protect them by avoiding work within the driplines, conducting all pruning using a certified arborist, and monitoring of replacement plantings. This plan was adopted as Mitigation Measure R4.3-4a and as COA 92. The 2009 FEIR also included Mitigation Measures R4.3-4b through e (adopted as COAs 95 through 97), requiring further protections for native trees. The Project would not alter requirements to preserve and protect native trees, and would not conflict with any provisions of the Marin County Code nor with other regional or local plans. There is no new information or changed circumstance since certification of the 2009 FEIR that would change this conclusion: the Project would not result in a new or substantially more severe significant impact with regard to conflicts with local tree protection ordinance or other local policies or ordinances.

4f. 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 Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or State Habitat Conservation Plans apply to the Project site. Therefore, the 2009 FEIR did not include an impact related to this topic. CARP19 would have no impact of this kind, for the same reason.

Cumulative Impacts

The 2009 FEIR analyzed two cumulative biological resources impacts. Impact C5-5, in Chapter 5, Growth Inducing and Cumulative Impacts, examined whether implementation of the proposed Amended

Surface Mining and Quarrying Permit and proposed Amended Reclamation Plan together, and, in combination with other past, present, and reasonably foreseeable future projects, would result in significant cumulative impacts on the biological resources of the Point San Pedro Area, and concluded that it would not. There is no project change, new information, or changed circumstance that would change this conclusion.

Impact C4.3-18 in Section 4.3, Biological Resources of the 2009 FEIR, examined cumulative loss of tidal action and the continuing degradation of salt marshes within the Project site (Impact C4.3-18). The 2009 FEIR found that a delay in establishing tidal action, in conjunction with the disturbing effects of noise, vibration, dust, vehicle and equipment operation, and human presence associated with continued operation of SRRQ, had degraded and would continue to degrade the value of local tidal marshes. The 2009 FEIR identified Mitigation Measure C4.3-18b, requiring preparation of a Marsh Restoration Plan, and completing restoration of the diked tidal marsh in the Northwest Quadrant by the end of Reclamation Phase 1. The 2009 FEIR found that development and implementation of the Marsh Restoration Plan would reduce the cumulative impact of marsh degradation to a less than significant level. This mitigation measure was adopted as COA 113.

The Restoration plan was required to consider multiple restoration alternatives, with restoration of tidal action as the initial preferred alternative, and another alternative providing for invasive species removal and more limited hydrological improvements. As the 2009 FEIR described, the presence of surrounding roads and infrastructure constrained reintroduction of tidal waters, due to the potential for increased flooding along Point San Pedro Road and along SRRQ access roads. Since certification of the FEIR, SRRQ has completed the Marsh Restoration Plan (SRRQ, 2012) and begun implementing the plan's invasive plant removal actions and periodic tidal flushing of the marshes. The Restoration Plan used the California Rapid Assessment Method (CRAM) to evaluate marsh ecological functioning. The plan considered restoration of full tidal action, but determined that flooding would occur at present sea levels. Invasive species removal with limited tidal flushing was selected as the preferred approach. Invasive species removal began in 2013 and proceeded annually through 2018 (SRRQ, 2019). Appendix B of the SRRQ Reclamation Progress Report (SRRQ, 2019) shows that the vegetation management program had moderate success in limiting invasive plant distribution in the marsh from 2011 to 2019. Because marsh restoration has begun and is ongoing during Phase 1 reclamation, the deleterious effect of ongoing reclamation activities on the marsh has been reduced at the present time and, with continued implementation of the Marsh Restoration Plan, can be expected to continue to be reduced. This new information regarding the salt marshes and changed circumstances of partial restoration since certification of the 2009 FEIR demonstrates the effectiveness of identified mitigation measures in reducing the cumulatively significant impact of reclamation activities on the Project salt marshes. The Project would not alter the requirements to continue to implement the Marsh Restoration Plan, and would not result in any new or substantially more severe cumulative impact on Project salt marshes.

Mitigation Measures

The following summarizes the Biological Resources mitigation measures from the 2009 FEIR pertaining to reclamation for which there are no proposed revisions, and identifies the COAs that implement them. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.3-2a and b: Protection of sensitive upland habitats (COAs 91, 92).

Mitigation Measure R4.3-3a through c: Protection of rare plants (COAs 92, 93, 94). Please see proposed revision to Mitigation Measure R4.3-3b, below.

Mitigation Measure R4.3-4a through e: Protected trees (COAs 95, 96, 97).

Mitigation Measure R4.3-5a through e: Protection of wetlands and waters (COAs 98, 99, 100, 101, 102).

Mitigation Measure R4.3-6a through c: Protection of aquatic species/Essential Fish Habitat (COAs 103, 104).

Mitigation Measure R4.3-7: Protection of water quality/aquatic species (COA 105).

Mitigation Measure R4.3-8a and b: Protection of California red-legged frog (COAs 106, 107).

Mitigation Measure R4.3-9: Protection of Western pond turtle (COA 108).

Mitigation Measure R4.3-10: Protection of bat roosts (COA 109).

Mitigation Measure R4.3-11a and b: Protection of nesting raptors and migratory birds (COAs 110, 111).

Mitigation Measure R4.3-12a and b: Marsh protection/nesting birds (COA 112).

Mitigation Measure C4.3-18a and b: Marsh restoration (COA 113).

Revised Mitigation Measures

In order to ensure that the Project would not have a significant impact on special-status plants, the text of Measure R4.3-3b would be revised and clarified to require that rare plant surveys are conducted during the blooming periods of rare plants with potential to occur.

Mitigation Measure R4.3-3b

Prior to each reclamation phase and during the planning for post-reclamation development, presence/absence surveys for special-status plants will be conducted by a qualified botanist within areas to be disturbed.

- Surveys will be conducted in accordance with the most recent CNPS and CDFGW rare plant survey guidelines, presently the 2018 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018).
- Surveys will be conducted prior to the start of each phase of reclamation activities, during the flowering period for rare plant species with potential to occur within the reclamation activity areas for that phase, when the species is most readily identifiable (June March – October).
- The results of the surveys will be filed with the County; if the presence of any of these rare plant species is confirmed, a copy of the survey results will be forwarded to CDFGW, and Mitigation Measure R4.3-3c will be implemented.
- In the event that special-status plants are proven absent, then no additional mitigation is necessary.

Conclusion

With the continued implementation of mitigation measures identified in the 2009 FEIR, all of which were adopted as COA, and the proposed revisions to Mitigation Measure R4.3-3b, the Project would not have the potential to cause new or substantially more severe significant impacts to biological resources.

References

- California Department of Fish and Wildlife (CDFW), 2020. California Natural Diversity Data Base. Rarefind 5 report for San Quentin and San Rafael USGS 7.5-minute quadrangles. October 1.
- CDFW, 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline>
- LSA, 2012. Memo, Tim Milliken and Steve Granholm, LSA, to Al Cornwell, CSW Stuber-Stroeh, subject: San Rafael Rock Quarry -- Special-status Plant Survey. November 5, 2012.
- San Rafael Rock Quarry, 2012. San Rafael Rock Quarry Preferred Marsh Restoration Plan, 2012.
https://www.marincounty.org/-/media/files/departments/pw/land-use/quarry/marsh_restoration_plan_92812.pdf
- San Rafael Rock Quarry, 2016. San Rafael Rock Quarry – Annual Report, 2015. Revision 1, February 19, 2016.
- San Rafael Rock Quarry, 2019. San Rafael Rock Quarry (CA MINE ID # 91-21-0008) Reclamation Progress Report. November.
- San Rafael Rock Quarry, 2020. San Rafael Rock Quarry – Annual Report, 2019. February 1, 2020.
- Sequoia Ecological Consulting, 2015a. San Rafael Rock Quarry - California Red-legged Frog USFWS Protocol Survey Report. August 28.
- Sequoia Ecological Consulting, 2015b. San Rafael Rock Quarry - Western Pond Turtle Survey. June.
- Sequoia Ecological Consulting, 2015c. San Rafael Rock Quarry – Bat Survey. June.
- Sequoia Ecological Consulting, 2015d. San Rafael Rock Quarry – Nesting Raptor Survey.
- Strand, M. and L.M. Rothschild, 2010. What Wetlands Are Regulated? Jurisdiction of the Section 404 Program Environmental Law Reporter. 40 ELR 10372.
<https://elr.info/sites/default/files/articles/40.10372.pdf>
- WRA Environmental Consultants (WRA), 2018. Letter from Rob Schell, Associate Wildlife Biologist, to Molly Jacobson, SRRQ General Counsel, re: Assessment of California red-legged frog (CRLF) Habitat and Potential for Take during Phase 1 Reclamation Activities at the Dutra San Rafael Rock Quarry. January 5, 2018.
- WRA, 2019a. Letter from Rob Schell, Senior Wildlife Biologist, to Molly Jacobson, SRRQ General Counsel, re: Special Status Plants Survey Results, Phase 1 Reclamation Area, San Rafael Rock Quarry. July 7, 2019. Attached to SRRQ, 2020.

WRA, 2019b. Letter from Rob Schell, Senior Wildlife Biologist, to Molly Jacobson, SRRQ General Counsel, re: 2019 Monitoring Report for the Dutra San Rafael Rock Quarry Reclamation Project, Marin County, California. December 4, 2019. Attached to SRRQ, 2020.

2.5 Cultural Resources and Tribal Cultural Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
5. Cultural Resources and Tribal Cultural Resources. Would the Project:					
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	2009 FEIR, Impacts R4.12-3, R4.12-4, R4.12-5, R4.12-6, R4.12-7, and R4.12-8.	No	No	No	NA
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	2009 FEIR, Impacts R4.12-1	No	No	Yes	Yes, as revised
c) Disturb any human remains, including those interred outside of formal cemeteries?	2009 FEIR, Impacts R4.12-1	No	No	Yes	Yes, as revised
d) 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)?	Not evaluated in the 2009 FEIR	No	Yes	No	Yes, as revised

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
5. Cultural Resources and Tribal Cultural Resources. Would the Project:					
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. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	Not evaluated in the 2009 FEIR	No	Yes	No	Yes, as revised

Setting Discussion

The 2009 FEIR described the physical and regulatory setting for cultural resources, including a description of the prehistoric and historic use of the Project site and the area around it, and the regulatory requirements for consideration and mitigation of impacts to cultural resources under CEQA. As described below, a new records search and site survey conducted for this Supplemental Environmental Review revealed no substantial changes to the physical setting.

Since adoption of the 2009 FEIR, Marin County has added provisions to the Development Code (Marin County Code, Title 22) for protection of cultural resources, in the event of accidental discovery during construction. Marin County Code Section 22.20.040 (D) states that:

In the event that archaeological, historic, or paleontological resources are discovered during any construction, construction activities shall cease, and the Agency shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist, and disposition of artifacts may occur in compliance with State and Federal law. The disturbance of an Indian midden may require the issuance of an Excavation Permit by the Department of Public Works, in compliance with Chapter 5.32 (Excavating Indian Middens) of the County Code.

Chapter 5.32, which is referenced in this new Development Code section, was added to the County Code in 1967 in recognition of the historical and archaeological importance of “Indian middens” (i.e., shellmounds), and requires a special permit to excavate them.

Tribal Cultural Resources

In 2014, the California legislature passed, and Governor Brown signed into law Assembly Bill 52 (AB 52), which amended the Public Resources Code to add new requirements regarding tribal cultural resources in CEQA reviews. By requiring consideration of tribal cultural resources early in the CEQA process, the Legislature intended to ensure that local and tribal governments, public agencies, and project proponents would have information available early in the project planning process to identify and address potential adverse impacts to tribal cultural resources. By taking this proactive approach, the Legislature also intended to reduce the potential for delay and conflict in the environmental review process. Public Resources Code Section 21084.2 states that “[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.”

Section 21074 of the Public Resources Code states that “tribal cultural resources” are: (1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe that are listed, or determined to be eligible for listing, in the national or state register of historical resources, or listed in a local register of historic resources; or (2) resources that the lead agency determines, in its discretion, are tribal cultural resources.

To determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. That consultation must take place prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for a project. (Public Resources Code Section 21080.3.1(b).) Per Public Resources Code Section 21080.3.2, if a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact, including consideration of measures to avoid or minimize the impact.

Impact Discussion

The 2009 FEIR, Section 4.12, Cultural Resources, identified seven impacts of reclamation on cultural resources, five of which were determined to be significant. The 2009 FEIR identified mitigation measures for the five significant impacts, and determined that these were sufficient to reduce the impacts to less than significant. All mitigation measures were adopted as Conditions of Approval (COA). All mitigation measures and corresponding COAs are listed at the end of this section and the full text is included in Appendices A and B.

The 2009 FEIR did not separately evaluate impacts on tribal cultural resources, as this requirement post-dates the certification of the 2009 FEIR.

a. Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to State CEQA Guidelines Section 15064.5?

Historic resource surveys and evaluations completed in 2006 in support of the 2009 FEIR identified eight structures located on the McNear’s Brickyard site constructed between c.1902 and c.1910, which are potentially eligible for listing in the California Register of Historical Resources. These are: 1) Boarding House, 2) Office, 3) Cookhouse, 4) Hoffman Kiln #1, 5) Hoffman Kiln #2, 6) Dry Sheds, 7) Caretaker’s

Residence, and 8) Worker's Shed. These structures are potentially eligible for listing in the California Register under Criterion A/1 as one of California's earliest brickmaking industries, an important historic event in the state's and region's economic growth during the late Nineteenth and early Twentieth Centuries, Criterion B/2 for their association with the life of John A. McNear, an early California Settler and local industrialist, and for Criterion C/3, as they embody the distinctive characteristics of a type or method of construction, especially Hoffman Kilns. In addition, the c.1935 former U.S. Army Signal House is also potentially eligible for listing in the California Register of Historical Resources under Criterion A/1 for its associations with the Army Signal Corp and the brief use of rigid airships used to patrol the Pacific before and during World War II, as well as Criterion C/3, for its embodiment of the Spanish Revival style of architecture. These historic architectural resources are identified in Table 4.12-2, Historic Resources on the Project Site, and Figure 12-1, Historic Structures on the Project Site, in the 2009 FEIR.

The 2009 FEIR identified four potentially significant impacts to historic resources (Impacts R4.12-3, R4.12-4, R4.12-5, and R4.12-6). These were: Impact R4.12-3, construction of the topsoil stockpile in area 'F' under Phase 1 of the reclamation plan could demolish or substantially alter the c.1910 Caretaker's Residence; Impact R4.12-4, construction of the surcharge berm under Phase 2 of the reclamation plan could demolish or substantially alter the c.1902 Boarding House and Office; Impact R4.12-5, reclamation activities in the SW Quadrant under Phase 3 of the grading plan could demolish or substantially alter the former c.1935 U.S. Army Signal House; and Impact R4.12-6, grading in Phase 4 of the reclamation plan could demolish or substantially alter the Cookhouse, Dry Sheds, Hoffman Kilns # 1 and 2, and the Worker's Sheds, in addition to altering their historic setting. The 2009 FEIR also identified two less-than-significant impacts on historic resources: Impact R4.12-7, other reclamation grading activities could impact additional historic resources; and Impact R4.12-8, proposed reclamation activities could have adverse impacts on adjacent, off-site historic resources. The 2009 FEIR included Mitigation Measures R4.12-3a-b, R4.12-4a-b, R4.12-5a, b, and c, and R4.12-6b (mitigation measures are listed and summarized at the end of this section), and concluded that these measures would reduce impacts to historic architectural resources to less-than-significant levels. These mitigation measures were adopted as COAs 142 through 148.

To determine whether new information or changed circumstances may affect historic architectural resources, a reconnaissance-level cultural resources survey was completed by PaleoWest cultural resources staff on September 17, 2020, to record and photograph all nine potentially historic buildings and structures that were previously identified on the Project site, with the intention of comparing their current condition with the condition that existed when they were last reviewed in July, 2006, during preparation of the 2009 FEIR.

The 2020 cultural resources survey and photo comparison effort identified extremely limited changed circumstances to historic architectural resources on the Project site. Three of the nine potentially historic buildings and structures on the Project site exhibited some signs of minor deterioration since they were last reviewed, including peeling paint on the c.1902 Boarding House, weathered shingles and board & batten cladding on the c.1910 Caretaker's Residence, and minor weathering on wood shutters and the tile roof on the former c.1935 U.S. Army Signal House, while the remaining resources appeared to be unchanged from their 2006 condition. These changes appear to be due to normal weathering; none of the structures appear to have been damaged or altered by ongoing mining or reclamation activities.

In the absence of any direct disturbance, all potentially historic buildings and structures on the Project site can be expected to continue to deteriorate over time at a similar rate under the proposed Project, due to weathering, and not due to reclamation or mining activities. Considering that these buildings and structures have remained in place from 85 to over 100 years, and only a few exhibit evidence of minor weathering over the past 14 years, the extension of reclamation activities for another 20 years would not affect these historic resources. Therefore, the proposed Project would have no new or substantially more severe significant impacts to historic architectural resources than those identified in the 2009 FEIR.

The findings of the cultural records search completed in May, 2020, at the Northwest Information Center (NWIC), a division of the California Historical Resources Inventory System, indicated no new historic architectural resources have been identified on the Project site or immediate area that were not already analyzed and considered in the 2009 FEIR. There is no new information of substantial importance, and neither have substantial changes occurred with respect to the circumstances under which the project is undertaken since certification of the 2009 FEIR.

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

c. Would the Project disturb any human remains, including those interred outside of formal cemeteries?

The cultural resources records search conducted for the 2009 FEIR identified three previously recorded archaeological sites within the Project site (CA-MRN-105, -106, and -107). These were Native American shell midden sites (i.e., shellmounds) originally recorded by Nelson in 1907 (Nelson, 1909) and were located on the south margins of Point San Pedro. The sites could not be located during the 2006 site survey conducted for the 2009 FEIR, and the 2009 FEIR stated that all three sites have likely been destroyed since their original recordation by Nelson. The records search also returned records of two additional shellmound sites recorded by Nelson, CA-MRN-108, -109, which were located on the northern shore near McNear's Beach County Park and along the southern margins of the peninsula.

The cultural resources records search conducted for the current Supplemental Environmental Review, in May 2020, returned no additional records of archaeological sites within or nearby the Project site (PaleoWest, 2020). During their site survey in September 2020, PaleoWest archaeologists were unable to locate any of the previously recorded sites, and found no new sites (*ibid*).

The 2009 FEIR, Impact R4.12-1, identified as significant the potential for reclamation grading activities to result in adverse effects to prehistoric or unique archaeological resources, including previously unidentified resources, and also including human remains. Impact R4.12-1 found that planned grading activities during Phase 1 reclamation would take place in the vicinity of CA-MRN-105, but that even if subsurface material associated with this site still exists in this area, the action of filling the area with topsoil would not adversely affect the site. No other actions associated with this reclamation phase, or with phases 2 and 3, were found to have the potential to impact known archaeological resources. Impact R4.12-1 stated, however, that because previously unrecorded, or incorrectly or incompletely recorded, cultural resources could exist anywhere within the areas slated for reclamation activities, reclamation activities could still result in significant impacts to cultural resources. Consequently, Mitigation Measure R4.12-1a (adopted as COA 140) requires actions to be taken in the event of accidental discovery during

site preparation or construction activities (including grading activities) of any human remains, artifacts, or other indicators of prehistoric or historic use on any part of the Project site.

Impact R4.12-1 found that reclamation activities proposed for the SE Quadrant in reclamation Phase 4 could adversely affect undocumented components of archaeological sites CA-MNT-106 and CA-MNT-107, noting the poorly recorded and unknown extent of these sites. Mitigation Measure R4.12-1b (adopted as COA 141) applies specifically to Phase 4 reclamation activities, and requires that SRRQ retain the services of a qualified archaeological consultant to review reclamation grading plans and identify areas of potential concern; to monitor all ground-disturbing or vegetation removal activities in identified areas of concern; and if archaeological resources are encountered, to cease work, notify the County, and assess the identity, integrity, and significance of the resource. This could result in redesign of reclamation activities to avoid any adverse effects on significant archaeological resources, or development and implementation of an archaeological data recovery program (ADRP). The 2009 FEIR determined that Mitigation Measure R4.12-1b was sufficient to mitigate potential Phase 4 impacts on cultural resources to less than significant.

Although PaleoWest's pedestrian archaeological survey in September 2020 did not encounter previously recorded or new resources, it is possible that small, intact portions of one or more of the previously recorded shellmounds are still present on the Project site. Therefore, PaleoWest advised that the Project area should still be considered sensitive for prehistoric archaeological deposits, including prehistoric human remains (PaleoWest, 2020).

Currently, Mitigation Measure R4.12-b requires the applicant to retain the services of a qualified archaeological consultant who has expertise in California prehistory to review reclamation grading plans and identify areas of potential concern, including previously undisturbed or minimally disturbed areas, and then to monitor all ground-disturbing or vegetation removal activities in identified areas of concern during construction to ensure that any previously undiscovered cultural resources are properly identified and preserved or otherwise mitigated. PaleoWest recommended amending Mitigation Measure R4.12-1b to specify that areas within 50 feet of the previously recorded prehistoric resources, as well as areas contained within the previously recorded prehistoric resource boundaries, be treated as areas of potential concern. The extension of 50 feet beyond the mapped boundaries of these sites recognizes the fact that a shellmound tends to spread outward at lower depths and may extend beyond the recorded surface expression.

PaleoWest also recommended adding to Mitigation Measure R4.12-1b a provision requiring retaining a Native American representative with ancestral affiliation to the Project area to monitor all ground disturbing activities within the previously recorded boundaries of prehistoric resources or within newly discovered prehistoric contexts in the Project area. This proposed revision of Mitigation Measure R4.12-1b recognizes the trend in the past decade in project planning and CEQA to involve Native American tribes more directly as consulting partners in the environmental review process where tribal cultural resources are present in the Project area. Involvement of the tribes in this process usually entails consultation, construction monitoring, repatriation of human remains and burial goods, and education and outreach. Amending Mitigation Measure R4.12-1b to include construction monitoring by Native American representatives will ensure that Native American concerns regarding potentially buried traditional resources and ancestors will be addressed in the Project mitigation.

PaleoWest further recommended that all workers involved in ground disturbing activities attend a cultural sensitivity crew training session led by a qualified archaeologist and a Native American representative that discusses (1) the reasons for archaeological resource monitoring; (2) regulatory policies protecting resources and human remains; (3) basic identification of archaeological resources; and (4) the protocol to follow in case of a discovery of such resources, and (5) tribal cultural resources and concerns.

Based on these recommendations, Mitigation Measures R4.12-a and R4.12-b would be revised as shown in the Revised Mitigation Measures discussion at the end of this section.

5d. 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)?**
- 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. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

As described above, the Project site is known to contain, or to have contained, significant archaeological resources, specifically several shellmounds recorded in the early 20th century. Pursuant to Public Resources Code Section 21074, a tribal cultural resource is a site, feature, place, or 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. Shellmounds meet the definition of tribal cultural resources because they may also contain human burials; they are believed to have had ceremonial, including funereal, uses; they are recognized in the Marin County Code as being of special historical and archaeological value; and they continue to be considered sacred by Native American tribes in the Bay Area (Coalition to Save the West Berkeley Shellmound & Village Site, 2021). While surficial evidence of the shellmounds is absent on this site, reclamation grading activities could impact subsurface resource deposits, potentially including prehistoric or historic contexts or human burials, causing a substantial adverse change in the significance of a tribal cultural resource.

On December 22, 2020, Marin County Community Development Agency staff contacted representatives of the Federated Indians of Graton Rancheria (FIGR) and the Ione Band of Miwok Indians, the two tribes that have previously requested notification of proposed projects in Marin County, to determine whether they had any interest in the Project, and to provide them with an opportunity for formal consultation. Following further correspondence and a phone conference with the FIGR Tribal Historic Preservation Officer, the consultation was concluded by the County on June 17, 2021, without the Tribe identifying any tribal cultural resources within the Project site or requesting changes to previously adopted mitigation measures. The full record of Tribal consultation is included in Appendix E.

The accidental discovery provisions in Mitigation Measure R4.12-a, and the monitoring and response provisions in Mitigation Measure R4.12-b, with revisions as proposed (see Revised Mitigation Measures

at the conclusion of this Section), would ensure protection and proper treatment of any shellmound components, including human burials, encountered during reclamation grading activities, and would include Native American Tribal representatives in the monitoring and recovery efforts. With continued implementation of these mitigation measures, as strengthened through the proposed revisions, the Project would not be expected to cause a substantial adverse change in the significance of a tribal cultural resource.

Mitigation Measures

The 2009 FEIR included the following mitigation measures to reduce or avoid impacts to cultural resources. Each of these mitigation measures was adopted as a COA, as indicated. None of those listed below require revision. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.12-1a: Required actions in case of accidental discovery of buried cultural resources (COA 140). Please see proposed revision to this mitigation measures, below.

Mitigation Measure R4.12-1b: Archaeological evaluation, monitoring, and response requirements for reclamation Phase 4 (COA 141). Please see proposed revision to this mitigation measures, below.

Mitigation Measure R4.12-3a: Relocate topsoil stockpile in fill area ‘F’ to avoid impacts to the Caretaker’s Residence (COA 142).

Mitigation Measure R4.12-3b: Submit detailed plan to the Marin County Department of Public Works detailing stockpiles and haul routes to protect historic resources (COA 143).

Mitigation Measure R4.12.4-a: Relocate and/or redesign surcharge berm to avoid impacts to the Boarding House and Office (COA 144).

Mitigation Measure R4.12-4b: Revise the conceptual design for the NW Quadrant Reclamation Plan if relocation or alteration of the surcharge berm will affect the geotechnical properties of the site required for intended post-reclamation development (COA 145).

Mitigation Measure R4.12-5a: Redesign reclamation activities to avoid impacts to the former U.S. Army Signal House (COA 146).

Mitigation Measure R4.12-5c: Submit detailed plan to the Marin County Department of Public Works detailing how reclamation grading activities will impacts to all potentially eligible historic resources including the Caretaker’s Residence, Boarding House and Office, and former U.S. Army Signal House (COA 147).

Mitigation Measure R4.12-6b: Revise ARP04 to preserve the following historic resources: Cookhouse, Drysheds, Hoffman Kiln #1, Hoffman Kiln #2, and Worker’s Sheds (COA 148).

Revised Mitigation Measures

Revisions to Mitigation Measures R4.12-1a and R4.12-1b are proposed to strengthen protection of sensitive archaeological resources and tribal cultural resources, and add the provision to include representatives of Native American tribes in monitoring and response to any discovery of archaeological or tribal cultural resources. Revisions are also proposed to Mitigation Measure R4.12-1a to make the language consistent with Marin County Development Code Section 22.20.040(E).

Mitigation Measure R4.12-1a (applies to all Project phases):

Prior to the commencement of reclamation grading activities in each year during which such activities are planned, all workers who will be involved in ground disturbing activities shall attend a cultural resources sensitivity crew training session that discusses (1) the reasons for archaeological resource monitoring; (2) regulatory policies protecting cultural resources and human remains; (3) basic identification of archaeological resources; (4) the protocol to follow in case of a discovery of such resources, and (5) tribal cultural resources and concerns. The training session shall be led by a qualified archaeologist. At least 30 days prior to the training session, the Applicant shall request in writing that a representative of a Native American Tribe with ancestral affiliation to the Project area attend and co-lead the training session. Such request shall be made to any Native American Tribe that requested consultation regarding the Project, with a copy to the Community Development Agency. If no Native American Tribal representative is available to attend on the specified date, the training session may be led solely by a qualified archaeologist.

~~In the event that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during site preparation or construction activities on any part of the Project site, all work at the vicinity of the discovered site shall stop and the Project sponsor shall contact the Marin County Environmental Coordinator immediately.~~

In the event that archaeological or historic resources are discovered during any construction (including any reclamation grading activities), construction activities shall cease within a 15-meter (50-foot) radius of the discovery, and the Community Development Agency shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist, and disposition of artifacts may occur in compliance with State and Federal law, and in consultation with Native American Tribes with an ancestral affiliation to the Project area. The disturbance of a shellmound may require the issuance of an Excavation Permit by the Department of Public Works, in compliance with Chapter 5.32 (Excavating Indian Middens) of the County Code.

If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist chosen by the County and paid for by the Project sponsor, shall assess the site and shall submit a written evaluation to the Community Development Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a "Most Likely Descendant" can be designated.

No work at the site may recommence without approval of the Community Development Agency Director.

Mitigation Measure R4.12-1b (applies to Project Phase 4 of reclamation grading): The applicant shall retain the services of a qualified archaeological consultant who has expertise in California prehistory, and shall also retain a Native American representative with ancestral

affiliation to the Project area, to review reclamation grading plans and identify areas of potential concern, including areas contained within the previously recorded prehistoric resource boundaries, areas within 15-meters (50 feet) of the previously recorded prehistoric resource boundaries, and previously undisturbed or minimally disturbed areas. The archeological consultant and Native American representative shall monitor all ground-disturbing or vegetation removal activities in identified areas of concern during construction to ensure that any previously undiscovered cultural resources are properly identified and preserved or otherwise mitigated in accordance with prevailing professional standards and Public Resources Code Section 21083.2. If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit will cease. The archaeological monitor and the Native American representative will both be empowered to redirect crews and heavy equipment until the deposit is evaluated. The archaeological monitor will immediately notify the Marin County Department of Public Works of the encountered archaeological deposit. The archaeological monitor will, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, and after consulting with the Native American representative, present the findings of this assessment to Marin County. If Marin County, in consultation with the archaeological monitor and the Native American representative, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed Project, the applicant shall take steps to:

- Redesign the Project to avoid any adverse effects on the significant archaeological resource; or
- Develop and implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the resource is of greater interpretive than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archaeological data recovery program, an ADRP will be conducted that will preserve and recover important archeological data from the find, to the extent that adverse effects will be avoided. The Project archaeologist will consult with Marin County and the Native American representative to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP that will be submitted to Marin County, the Native American representative, and the state Office of Historic Preservation for review and approval. The ADRP will identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain (i.e., the ADRP will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions). Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed Project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical.

Conclusion

No substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects on cultural resources. There is no new information of substantial importance since certification of the 2009 FEIR. Mitigation measures identified for the protection of historical resources, all of which have been adopted as COAs and are in effect, will continue to avoid significant impacts to historical resources. The changed circumstance of the addition of tribal cultural resources as a CEQA topic has led in this Supplemental Environmental Review to a determination that previously identified impacts to archaeological resources could also impact tribal cultural resources. With

revision of Mitigation Measures R4.12-1a and R4.12-1b, however, the requirements for protection of archaeological resources (including human remains) will be sufficient to avoid significant impacts to both cultural resources and tribal cultural resources during reclamation activities, and the impact would be less than significant.

References

- Coalition to Save the West Berkeley Shellmound & Village Site, 2020. Shellmound: Ohlone Heritage Site and Sacred Grounds. www.shellmounds.org. Accessed March 7, 2021.
- Nelson, N.C., 1909. Shellmounds of the San Francisco Bay Region. University of California Publications, American Archaeology and Ethnology, Vol. 7, No. 4.
- PaleoWest, 2020. Cultural Resources Assessment Report for the San Rafael Rock Quarry Supplemental Environmental Review Project, 1000 Point San Pedro Road, Marin County, California. Prepared by Allen Estes, Ph.D. and Brenna Wheelis, B.A., for Sicular Environmental Consulting and Natural Lands Management.
- State of California, Governor's Office of Planning and Research (OPR), 2017. Technical Advisory: AB 52 and Tribal Cultural Resources In CEQA. June 2017. https://www.opr.ca.gov/docs/20200224-AB_52_Technical_Advisory_Feb_2020.pdf

2.6. Energy

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
6. Energy. Would the Project:					
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	Section 4.9, Public Services, Utilities, and Energy, Impact R4.9-6	No	No	No	NA
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	Section 4.6, Land Use and Planning, Table 4.6-1	No	No	No	NA

Setting Discussion

The State CEQA Guidelines require an examination of energy impacts of a project. A significant impact may occur if a project would result in wasteful, inefficient, or unnecessary consumption of energy, including the project’s transportation energy use. The following section focuses on diesel fuel (instead of gasoline or electrical usage) because the Project’s energy consumption would be primarily in the form of diesel fuel used in off-road equipment and haul trucks.

Public Resources Code Section 25300 requires the California Energy Commission to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the State’s electricity, natural gas, and transportation fuel sectors and that provides policy recommendations to conserve energy; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the State’s economy; and protect public health and safety. The State’s energy system includes energy extraction, transport, conversion (such as combusting natural gas in power plants to generate electricity or producing gasoline and diesel from crude oil in refineries), and consumption for services (such as electricity for lighting, natural gas use in homes and buildings for space and water heating, pumping water to communities and crops, and gasoline and diesel to fuel cars and trucks), as well as electricity from out-of-State plants serving California (California Energy Commission, 2019).

Regulatory Framework

California Air Resources Board

In 2004, the California Air Resources Board (CARB) adopted an Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling in order to reduce public exposure to diesel particulate matter emissions (Title 13 California CCR §2485). The measure applies to diesel-fueled

commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption.

In addition to limiting exhaust from idling trucks, CARB also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The In-Use Off-Road Diesel-Fueled Fleets regulation adopted by CARB in 2007 aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repowering of older, dirtier engines with newer emission-controlled models (13 CCR §2449). The regulation requires full implementation by 2023 in all equipment for large and medium fleets and by 2028 for small fleets. While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation has also resulted in energy savings from reduced fuel consumption from more fuel-efficient engines.

Marin County Plans

The Marin Countywide Plan's Energy and Green Building Element establishes goals and policies for energy consumption, conservation. The Energy and Green Building Element includes no policies that directly apply to mining reclamation activities or general construction fuel use.

Policies of the Marin County Climate Action Plan (Marin County, 2020), though related to energy usage, are discussed in Section 2.8 Greenhouse Gas Emissions.

Significance Thresholds

The checklist questions for this topic are based on State CEQA Guidelines Appendix G (Environmental Checklist), Marin County uses these checklist questions as significance thresholds for analysis of energy impacts.

Impact Discussion

The 2009 FEIR identified one energy impact of the Amended Reclamation Plan of 2004 (ARP04), which was the reclamation plan then being proposed. Because the impact was less than significant, no mitigation measures were required, and there are no COA directly related to energy consumption. COA 53, however, establishes limits on greenhouse gas emissions associated with reclamation, and therefore also limits diesel fuel consumption.

6a. Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?

The 2009 FEIR evaluated reclamation activities and an increase in energy demand. Impact R4.9-6 of the 2009 FEIR stated that reclamation activities and intended post-reclamation development would increase demand for electricity and natural gas and involve greater energy expenditures but found that this impact

would be less than significant. The 2009 FEIR did not quantify the fuel usage associated with reclamation activities.

SRRQ reports its annual fuel usage as part of its annual reports to Marin County Department of Public Works (SRRQ, 2017, 2018, 2019, 2020). For the last four years (2016 through 2019), SRRQ used between 25 percent and 33 percent biodiesel, as a percentage of total diesel fuel usage, as shown in Table Energy-1. This includes fuel used both for mining operations and reclamation.

Table Energy-1
SRRQ Fuel Usage from 2016 Through 2019

Fuel Type	Fuel Usage (gallons)			
	2016	2017	2018	2019
Red Dye Diesel	97,280	133,760	119,700	136,800
B99 Diesel	24,320	33,340	39,900	45,600
Total	121,600	167,100	156,600	182,400
% Biodiesel	25%	25%	33%	33%

Source: SRRQ Annual Reports for 2016, 2017, 2018, and 2019.

CARP10 and CARP19 would both involve 2,076,370 cubic yards of total grading volume. As in Section 2.3, Air Quality, it is assumed that reclamation activities would occur during 10 years. The same amount of grading volume would be expected to require the same amount of equipment hours of operations and haul truck movement, which would be expected to translate to the same amount of fuel usage. Therefore, it is expected that CARP10 and CARP19 would use the same amount of fuel for reclamation grading, though reclamation would occur over a longer period of time under CARP19. Table Energy-2 provides the estimated fuel usage for CARP10 and CARP19, and shows that reclamation activities would require a total of an estimated 233,354 gallons of diesel/biodiesel fuel blend (see Appendix C for assumptions and methods used to derive this figure). CARP19 would not increase fuel use or energy consumption compared to CARP10, and therefore there would be no impact of CARP19 related to wasteful, inefficient, or unnecessary energy consumption.

The total reclamation grading volume for ARP04 analyzed in the 2009 FEIR was 2,300,300 cubic yards, or about 300,000 cubic yards more than the total grading volume estimated for CARP10 and CARP19. The total fuel usage for CARP19 would therefore be less than the total fuel usage associated with the reclamation activities analyzed in the 2009 FEIR.

Table Energy-2
Estimated Fuel Usage from Existing Project and Proposed Project

Emission Source	Fuel Usage (gallons)		
	CARP10	CARP19	Increment
Diesel Fuel Consumption for Earthmoving Equipment/ On-Site Truck Travel	233,354	233,354	0

Source: The RCH Group, 2020

Because the Project would not increase energy usage, it would not have a new or substantially more severe significant impact involving wasteful, inefficient, or unnecessary consumption of energy resources than previously identified in the 2009 FEIR.

6b. Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

As previously discussed, energy required during reclamation activities would be the same with CARP19 as for CARP10. CARP19 would not create an increase in energy consumption compared to CARP10 and would therefore not conflict with any applicable local or state policies for energy efficiency, including the energy goals established in the Countywide Plan. Therefore, the Project would not conflict with nor obstruct a state or local plan for renewable energy and would not create a new or substantially more severe significant impact than identified in the 2009 FEIR.

Mitigation Measures

The 2009 FEIR did not identify any significant Energy impacts, and consequently no mitigation measures were included.

Conclusion

Implementation of CARP19 would not result in any new or substantially more severe significant impacts on energy resources than those previously evaluated in the 2009 FEIR. No new energy mitigation measures are required for the Project.

References

California Energy Commission, 2019. *Integrated Energy Policy Report (Adopted Feb 20, 2020)*.
<https://efiling.energy.ca.gov/getdocument.aspx?tn=232922>

Marin County, 2020. *Climate Action Plan 2030*. <https://www.marincounty.org/-/media/files/departments/cd/planning/sustainability/climate-and-adaptation/draft-climate-action-plan-2030.pdf?la=en>

San Rafael Rock Quarry, 2017. San Rafael Rock Quarry Annual Report, 2016. Submitted to Marin County Department of Public Works. Revision 1, February 1, 2017.

San Rafael Rock Quarry, 2018. San Rafael Rock Quarry Annual Report, 2017. Submitted to Marin County Department of Public Works. Revision 1, February 9, 2018.

San Rafael Rock Quarry, 2019. San Rafael Rock Quarry Annual Report, 2018. Submitted to Marin County Department of Public Works. February 1, 2019.

San Rafael Rock Quarry, 2020. San Rafael Rock Quarry Annual Report, 2019. Submitted to Marin County Department of Public Works. January 30, 2020.

2.7. Geology and Soils

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
7. Geology and Soils. Would the Project:					
a) 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.	Section 4.4, Geology, Soils, and Seismicity, Page 4.4-14, topics with no potential for significant impacts.	No	No	No	NA
ii) Strong seismic ground shaking?	Section 4.4, Geology, Soils, and Seismicity, Page 4.4-14, topics with no potential for significant impacts	No	No	No	NA
iii) Seismic-related ground failure, including liquefaction?	Section 4.4, Geology, Soils, and Seismicity, Page 4.4-15, topics with no potential for significant impacts	No	No	No	NA
iv) Landslides?	Section 4.4, Geology, Soils, and Seismicity, Impacts: R4.4-1, R4.4-3 and Section 5.2, Cumulative impacts.	No	No	No	NA
b) Result in substantial soil erosion or the loss of topsoil?	Section 4.4, Geology, Soils, and Seismicity, Impacts: R4.4-1, R4.4-3 and Section 5.2, Cumulative impacts.	No	No	No	NA
c) Be located on 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?	Section 4.4, Geology, Soils, and Seismicity, Impacts R4.4-1 and R4.4-3, and Section 5.2, Cumulative Impacts.	No	No	No	NA

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
7. Geology and Soils. Would the Project:					
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?	Section 4.4, Geology, Soils, and Seismicity, Page 4.4-15 Significance Criteria	No	No	No	NA
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	Section 4.4, Geology, Soils, and Seismicity, Page 4.4-15	No	No	No	NA
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Section 4.12, Cultural Resources, Impact 4.12-2	No	No	No	NA

Setting Discussion

The 2009 FEIR discussed the regional environmental and regulatory setting for Geology and Soils in Section 4.4. That discussion is still up to date and accurate, with minor exceptions, which are discussed below. New information about the geology of the Project site, developed by the applicant, is discussed below.

Impact Discussion

The 2009 FEIR, Section 4.4, Geology and Soils, identified three potentially significant impacts of reclamation, and included mitigation measures to reduce these to less than significant. The mitigation measures were adopted as Conditions of Approval (COA), as discussed below and listed at the end of this section. In addition, the 2009 FEIR included brief discussions of several other environmental topics covered in the Geology and Soils section, which did not have the potential for impacts, and gave the reasons for this conclusion. The potential for cumulative impacts was discussed in Chapter 5, Growth Inducing and Cumulative Effects. No cumulative impact was identified.

7a.i Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map?

The 2009 FEIR concluded that there was no potential impact from fault rupture because there are no active faults (faults having experienced surface rupture within the last 11,000 years) on or near San Rafael Rock Quarry (SRRQ) and the closest active fault (the Hayward-Rogers Creek Fault) is at least 4 miles to

the east. This conclusion was further substantiated by ENGEO's subsequent 2013 geotechnical report prepared for Phase 1 reclamation grading (ENGEO, 2013), which places SRRQ outside of a State of California Earthquake Fault Hazard Zone and confirms that the nearest active fault is the Hayward-Rogers Creek fault. ENGEO also identified other regional active faults including the West Napa fault, located approximately 16.5 miles northeast of the site, and the San Gregorio fault, located approximately 17.7 miles to the southwest. The locations and activity on each of these larger active faults, as well as those that are smaller and less active, has not changed since the 2009 FEIR and based on geotechnical studies since the 2009 FEIR (ENGEO, 2018, 2020) no new fault features capable of causing surface fault rupture have been mapped at SRRQ. The change in timing of reclamation phasing proposed under the Project would not cause or increase the potential of surface rupture.

7a.ii Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong ground shaking?

The 2009 FEIR projected that the San Francisco Bay Area will likely experience at least one major earthquake within the next 30 years and that it would affect the SRRQ with strong to violent ground motion, especially at the margin of San Pablo Bay. The 2009 FEIR concluded, however, that because structures would not be constructed as part of the Amended Reclamation Plan (ARP), congregation of people would not occur at the site and there would be no potential for injury and/or structural damage. Consequently, there would be no impact from strong seismic ground shaking; a finding that is similar and applicable to the Project. Earthquakes are an inherent risk in the San Francisco Bay Area and compliance with state and local building codes reduce the risk of structural damage or collapse that earthquakes may cause. The California Building Code (CBC) specifies location-dependent seismic design parameters that are updated periodically with new versions of the California Building Code. ENGEO provided updated seismic design parameters from the 2010 CBC in its January 2013 Geotechnical Report (ENGEO, 2013) and then again in its April 2018 Geotechnical Report Update (ENGEO, 2018). ENGEO recommends, and it is specified in Mitigation Measure R4.4-3c (COA 125), that current CBC requirements, including updated seismic design parameters, be incorporated into post-reclamation development. The proposed extension of reclamation phasing under the Project would not change or create new circumstances that would result in substantially more severe significant impacts associated with seismic ground shaking.

7a.iii Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Ground failure (settlement, collapse, subsidence) during an earthquake can occur on poorly consolidated soils, saturated granular soils, and in the Bay Mud along the edge of San Pablo Bay. The 2009 FEIR concluded that liquefaction and the potential for soils to fail under seismic forces at SRRQ ranged from very high to very low, depending on location within the Project site. The areas with very high liquefaction potential are the saturated units along the Bay margin that may contain liquifiable sand lenses. The areas with very low liquefaction potential are those underlain by bedrock, including the Main Quarry Bowl. The 2009 FEIR concluded that there was not the potential for a significant impact from liquefaction because the Amended Reclamation Plan of 2004 (ARP04), the reclamation plan then being considered, did not propose construction of structures that would be at risk from potentially liquifiable soils. Subsequent investigation by ENGEO (ENGEO, 2013) also concluded that liquefaction potential at SRRQ would be low during seismic shaking following the removal and compaction of non-engineered fills, which is required by Mitigation Measure R4.4-3c (COA 125). Liquefiable soil conditions and the low

potential for associated ground failures, as analyzed in the 2009 FEIR and verified by subsequent geotechnical investigation, would not change under CARP19. No new or substantially more severe significant impacts related to seismic-related ground failure would occur with the Project.

7a.iv Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

7b. Would the Project result in substantial soil erosion or loss of topsoil?

The 2009 FEIR identified soil erosion hazards as a potential impact during reclamation activities, especially during initial site grading and stripping. The analysis concluded that substantial erosion would be a significant impact. Mitigation measures were prescribed in the 2009 FEIR to ensure that soil erosion hazards remain less than significant throughout the duration of mining and under post-reclamation conditions. Mitigation Measure R4.4-2a (COA 128) was proposed as part of the project and, in compliance with that measure, the applicant prepared a Stormwater Management Plan, Stormwater Pollution Prevention Plan, and developed Standards for Stormwater and Erosion Control of Reclaimed Areas, and Standards for Revegetation of Reclaimed Areas. Mitigation Measure R4.4-2b (COA 126) requires the applicant to implement Best Management Practices (BMPs) through all phases of construction to reduce soil erosion and loss of topsoil. Extending the duration of mining and the change in reclamation phasing proposed in CARP19 would not increase or otherwise exacerbate soil erosion and potential loss of topsoil, but would lengthen the amount of time that certain erosion BMPs are required to be implemented. No new impacts related to soil erosion or loss of topsoil would occur and the Project would not increase the severity of previously identified impacts.

7c. Would the Project be located on 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?

Information describing the existing geotechnical conditions relevant to slope stability, unstable soils and landsliding were fully described in the 2009 FEIR, Section 4.4, Geology, Soils, and Seismicity and remain pertinent and applicable for evaluating the Project. Baseline conditions and applicable laws and regulations that affect reclamation have not changed since certification of the 2009 FEIR. The 2009 FEIR analyzed slope instability hazards, which include landslides, debris flows, and rock falls. Slope instability was addressed in Impact R4.4-1, which examined the potential for landslides, debris flows, and rockfalls under earthquake and non-earthquake conditions; and in Impact R4.4-3, which addressed unstable slopes that could adversely affect post-reclamation land uses of SRRQ. Both impacts were determined to be significant, and mitigation measures were prescribed to reduce the impacts to a less-than-significant level. Impacts related to lateral spreading (a secondary effect of liquefaction), soil subsidence, and soil collapse, were determined to be less than significant, and are discussed above in topic 7a (iii).

The slope stability analysis presented in the 2009 FEIR was based on geotechnical evaluations completed by ENGEO in 2004 and 2005. The analysis of slope stability was supported by quantitative slope stability analyses, which incorporated modeling to assess the potential for slope instability following the completion of reclamation and flooding of the Main Quarry Bowl under both seismic (psuedo-static) and non-seismic (static) conditions. The analysis concluded that the slopes in the Main Quarry Bowl would remain stable provided that certain geotechnical recommendations were implemented. Mitigation Measure R4.4-1, which was adopted as Condition of Approval (COA) 114, requires that geotechnical

recommendations be incorporated into the amended reclamation plan. The required geotechnical recommendations included additional studies (pit observations, groundwater monitoring, and slope monitoring) and specifications on final slope configuration. Mitigation Measure R4.4-3b (COA 114) and R4.4-3c (COA 125(a)) require the completion of a design-level geotechnical investigation following the cessation of mining, because there would be a better understanding of the bedrock stability and the properties and performance of the Main Quarry Bowl walls once mining is complete and the final depth of the Main Quarry Bowl is known. The geotechnical investigation required by Mitigation Measures R4.4-3b and R4.4-3c included a comprehensive re-evaluation of slope stability based on results of geotechnical field observations throughout the mining period, including groundwater monitoring, slope monitoring, and laboratory testing of on-site materials. Mitigation Measure R4.4-3d (COA 125 (c)) requires that if design-level geotechnical investigations determined that adequate slope stability factors of safety are infeasible, the geotechnical report would specify appropriate alternative post-reclamation uses or limitations on planned uses. In this case, an amended reclamation plan would need to be submitted to the County, as required under the State Surface Mining and Reclamation Act (SMARA) and the Marin County Code.

In accordance with the mitigation measures in the 2009 FEIR and the related COAs, ENGEO completed additional geotechnical evaluations subsequent to the certification of the 2009 FEIR. These investigations are summarized below.

In November 2010, ENGEO completed a geotechnical evaluation of pond fines from the former wash pond to determine whether that material would be suitable for future placement as engineered fill. ENGEO concluded that the pond fines would be suitable as general reclamation fill provided the material is removed, recompacted and moisture-conditioned (ENGEO, 2010).

In January 2013, ENGEO completed a geotechnical investigation for the proposed Phase 1 reclamation grading (ENGEO, 2013), which included a review of available literature and previous reports, subsurface exploration of 6 soil borings and 33 test pits, laboratory testing, and geotechnical engineering analysis. ENGEO concluded from its investigation that the site is suitable for Phase 1 reclamation provided geotechnical recommendations were properly incorporated into design plans, specifications, and grading.

In April 2018, ENGEO completed a geotechnical report update in which it reviewed previous geotechnical studies, completed a site reconnaissance, and updated seismic parameters (ENGEO, 2018). ENGEO concluded that, based on its document review and observed site conditions, their January 2013 recommendations remained applicable for SRRQ with the updated seismic parameters.

In January 2020, ENGEO completed an annual geologic evaluation consisting of a site reconnaissance of the Main Quarry Bowl and South Hill. Among other observations of mining operation conditions, ENGEO observed that the portions of the northern pit wall did not conform to the recommended Main Quarry Bowl slope design and that some benched areas were narrow or absent. However, ENGEO also stated that since their initial observations, additional benches had been established that are in general in conformance with the Main Quarry Bowl slope design (ENGEO, 2020). ENGEO recommended that as mining proceeds, the previously recommended Main Quarry Bowl slope design be maintained with 30-foot wide safety benches at a maximum of 90-foot vertical intervals with 75-degree or flatter inter-bench face inclinations. These recommendations are consistent with slope configuration requirements prescribed

in Mitigation Measures R4.4-1 (COA 114) and R4.4-3c (COA 125), which require that geotechnical recommendations be incorporated into the final design plans for post-reclamation development.

Mitigation measures prescribed in the 2009 FEIR and adopted as COAs remain adequate to ensure that slope stability hazards are minimized during reclamation grading and post-reclamation/redevelopment of SRRQ. The proposed change in timing of the reclamation proposed under the Project would not change slope configurations within the Main Quarry Bowl or introduce new circumstances that would adversely affect the stability of existing and new slopes in the Main Quarry Bowl. The applicant would still be required to complete a comprehensive geotechnical evaluation prior to cessation of mining and conduct necessary grading to comply with the geotechnical engineering recommendations. The proposed changes in the Project do not introduce any new or substantially more severe significant environmental impacts regarding slope stability not previously addressed in the 2009 FEIR. Based on review of available reports, the geotechnical observations of mining operations and Main Quarry Bowl wall conditions, which have been conducted since the certification of the 2009 EIR, have not revealed any new conditions that would substantially alter reclamation slope inclinations or permanent bench dimensions.

7d. 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?

The 2009 FEIR did not analyze the impact of expansive soil risk because the ARP04 project did not involve construction of any structures that would be at risk from expansive soils. This conclusion remains applicable to CARP19. Expansive soil risks are generally identified during geotechnical evaluations prior to development and are rectified through site preparation during development; post-reclamation development at SRRQ will be subject to these requirements. The nature of the geologic materials, namely the bedrock underlying most of SRRQ, do not have soils with the capacity to shrink and swell to a degree that they would be considered expansive. Because CARP19 only extends the duration of mining and reclamation phasing, it would not create new soil impacts or circumstances that could cause substantially more severe significant impacts.

7e. Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The 2009 FEIR did not analyze septic system wastewater disposal because the project then being analyzed did not propose any new septic systems or other alternative wastewater systems. The current Project would only extend the duration of mining and reclamation phasing and does not include the development of additional wastewater disposal facilities at SRRQ.

7f. Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The 2009 FEIR addressed paleontological impacts in Impact 4.12-2 in Section 4.12, Cultural Resources. The analysis stated that while the geologic materials, primarily graywacke sandstone, have the potential to contain paleontological resources (invertebrate fossils), there have been no discoveries of these fossils during the many decades of excavation and mining. The 2009 FEIR concluded that the likelihood of occurrence of paleontological resources at SRRQ was low and the impact of destroying such a resource was less than significant. These conclusions are applicable to the analysis of paleontological resources for

CARP19 because, while extending reclamation phasing may lengthen the mining duration, the apparent lack of paleontological resources at SRRQ has not changed. Therefore, the Project would not increase the potential for discovering invertebrate fossil deposits. In addition, prior to mining operations, the area encompassing SRRQ was an undisturbed area with hilly topography, similar to the surrounding environs, and did not stand out as a unique geological feature. Because the Project would not alter the final reclamation grades, but would only extend the time for reclamation, the Project does not have the potential to destroy a unique geological feature.

Cumulative Impacts

This discussion considers the potential for the Project, combined with ongoing mining activities at SRRQ, to result in a new or substantially more severe significant cumulative impact to seismic, geologic and soil resources. The Project would not result in new or substantially more severe Project-specific significant impacts from seismic hazards, slope instability, or impacts to geological resources, because the mitigation measures identified in the 2009 FEIR and adopted as COAs would continue to reduce identified impacts to a less-than-significant level.

Impacts determined to be significant in the 2009 FEIR, namely slope instability, erosion, and loss of topsoil, would be the same under the Project. The 2009 FEIR did not identify any significant impacts on geologic and soil resources associated with the Amended Surface Mining and Quarrying Permit; therefore, there is no potential for impacts of ongoing mining and reclamation to combine in a cumulative manner. In Chapter 5, Growth Inducing and Cumulative Effects, the 2009 FEIR also considered the potential for post-reclamation cumulative impacts associated with post-reclamation uses of the Project site, and found no potential for a cumulative impact. The proposed extension of reclamation activities under CARP19 would not change these conclusions.

Mitigation Measures

The 2009 FEIR identified seven mitigation measures that reduce identified Geology, Soils, and Seismicity impacts to a level below the significance threshold. The following mitigation measures, all of which were implemented as COA, would continue to apply to the Project. There is no need to revise any of the existing mitigation measures or COAs. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.4-1 requires the applicant to include geotechnical recommendations as part of the Project, requires that registered professionals must complete the geotechnical investigation work, and specifies the required Main Quarry Bowl slope configurations (COA 114).

Mitigation Measure R4.4-2a requires the applicant to prepare a Stormwater Management Plan and Stormwater Pollution Prevention Plan, as well as Standards for Stormwater Erosion Control of Reclaimed Areas and Standards for Revegetation of Reclaimed Areas (COA 128).

Mitigation Measure R4.4-2b requires the applicant to include into its grading and construction specifications BMPs to reduce and eliminate soil erosion and loss of topsoil and requires the contractor to be responsible for the inspection and maintenance of the BMPs through all phases of reclamation (COA 126).

Mitigation Measure R4.4-3a requires that earthwork activities included in ARP04 to be designed so that all development is located on bedrock or engineered fill with known strength and stability (COA 127).

Mitigation Measure R4.4-3b requires that geotechnical recommendations include a design-level geotechnical investigation following the cessation of mining (COA 114).

Mitigation Measure R4.4-3c requires the preparation of a design-level, site-specific geotechnical evaluation to determine how the site may be developed following reclamation in order to avoid or mitigate significant impacts associated with soil and slope stability (COA 125a).

Mitigation Measure R4.4-3d requires appropriate alternative post-reclamation uses or limitations on the planned uses if the design-level, site-specific geotechnical investigation determines that it is infeasible to achieve the intended, post-reclamation factors of safety for slopes (COA 125c).

Conclusion

Since the publication of the 2009 FEIR, no new information has been presented by the applicant's geotechnical consultant that would alter the impact conclusions presented in Section 4.4, Geology, Soils and Seismicity, or Section 5.2, Cumulative Impacts, and the impacts remain less than significant due to the requirements of Mitigation Measures R4.4-1, R4.4-2a, R4.4-2b, R4.4-3a, R4.4-3b, R4.4-3c and R4.4-3d and COAs 114 through 127. With implementation of the mitigation measures and COA, implementation of the Project would not result in any new or substantially more severe significant impacts associated with geology, soils, or seismicity, compared to those previously evaluated in the 2009 FEIR.

References

- ENGEO Incorporated (ENGEO), 2010, Pond Fines COA#21C – Permit #Q-72-03 Amendment #1. Annual Geotechnical Evaluation. San Rafael Rock, San Rafael California, Letter to Mr. Josh Kirtley, Dutra Materials. ENGEO Project Number 6261.200.100. November 29, 2010.
- ENGEO Incorporated (ENGEO), 2013, Geotechnical Report. San Rafael Rock Quarry CARP 2010-Phase 1 Reclamation Grading, San Rafael California. ENGEO Project Number 6261.200.100. January 22, 2013.
- ENGEO Incorporated (ENGEO), 2018. Geotechnical Report Update. San Rafael Rock, San Rafael California. Letter to Mr. Ross Campbell, Dutra Materials. ENGEO Project Number 6261.200.000. April 19, 2018.
- ENGEO Incorporated (ENGEO), 2020, Annual Geotechnical Evaluation. San Rafael Rock, San Rafael California. Letter to Mr. Ross Campbell, Dutra Materials. ENGEO Project Number 6261.200.000. January 8, 2020.

2.8 Greenhouse Gas Emissions

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
8. Greenhouse Gas Emissions. Would the Project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	2009 FEIR, Section 4.2, Air Quality, Impacts R4.2-3, R4.2-5; Chapter 5, Growth Inducing and Cumulative Effects, Impact C5-4.	No	Yes	Yes	Yes, as revised
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	2009 FEIR, Section 4.2, Air Quality, Impacts R4.2-3, R4.2-5	No	Yes	Yes	Yes, as revised

Setting Discussion

This section summarizes and, where necessary, updates the 2009 FEIR’s physical and regulatory setting for the analysis of greenhouse gas (GHG) emissions impacts. The 2009 FEIR included analysis of GHG emissions impacts in Section 4.2, Air Quality.

“Global warming” and “global climate change” are the terms used to describe the increase in the average temperature of the earth’s near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal, with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years.

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change (IPCC) concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward (IPCC, 2014). After 1950, however, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth’s atmosphere are thought to be the main cause of human-induced climate change. The IPCC is now 95 percent certain that humans are the main cause of current global warming (IPCC, 2014). GHGs naturally trap heat by impeding the exit of solar radiation that has

hit the earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone, and water vapor.

While the presence of the primary GHGs in the atmosphere are naturally occurring, CO₂, CH₄, and N₂O are also emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices, coal mines, and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

CO₂ is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO₂. CH₄ and N₂O are substantially more potent GHGs than CO₂, with GWP of 28 and 265 times that of CO₂, respectively (IPCC, 2014).

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons (MT) of CO₂ equivalents (MTCO₂e). CO₂e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH₄ and N₂O have much higher GWP than CO₂, CO₂ is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO₂e.

Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO₂ emissions (and thus substantial increases in atmospheric concentrations of CO₂). In pre-industrial times (c. 1860), concentrations of atmospheric CO₂ were approximately 280 parts per million (ppm) (IPCC, 2014). By October 2020, atmospheric CO₂ concentrations had increased to 411 ppm, 47 percent above pre-industrial concentrations (National Oceanographic and Atmospheric Administration - Earth System Research Laboratory, 2020).

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, decrease in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity (California EPA, 2006).

Greenhouse Gas Worldwide, State, and Regional Emission Estimates

Worldwide emissions of GHGs in 2016 were estimated at 49.36 billion tons of CO₂e (World Resources Institute, 2020). This value includes ongoing emissions from industrial and agricultural sources, but excludes emissions from land use changes.

In 2018, the United States emitted about 6,677 million MTCO₂e. Emissions increased from 2017 to 2018 by 3.1 percent. The increase in 2018 was largely driven by an increase in emissions from fossil fuel combustion (USEPA, 2020). GHG emissions in 2018 (after accounting for sequestration from the land sector) were 10.2 percent below 2005 levels.

In 2018, California emitted approximately 425 million MTCO₂e. The transportation sector remains the largest source of GHG emissions in the state with 40 percent of the emissions in 2018, but saw a decrease in emissions compared to 2017 (CARB, 2020a). Emissions from the electricity sector account for 15 percent of the inventory and showed a slight increase in 2018 due to a decrease in hydropower. California in 2018 used more electricity from zero-GHG sources (for the purpose of the GHG inventory, these include hydro, solar, wind, and nuclear energy) than from GHG-emitting sources for both in-state generation and total (in-state plus imports) generation. The industrial sector has seen steady emissions in the past few years, and remains at 21 percent of the inventory (ibid). The percentages of biodiesel and renewable diesel in the total diesel blend have shown significant growth in recent years, growing from 0.5 percent in 2011 to 18.5 percent in 2018, due mostly to the implementation of the Low Carbon Fuel Standard (CARB, 2020a).

In the San Francisco Bay Area, a GHG emissions inventory prepared by the Bay Area Air Quality Management District (BAAQMD) for 2011, shows that the transportation and industrial/commercial sectors represented the largest sources of GHG emissions, accounting for 39.7 percent and 35.7 percent, respectively, of the Bay Area's 86.6 MTCO₂e emissions. Electricity/co-generation sources accounted for approximately 14 percent of the Bay Area's GHG emissions, followed by residential fuel usage at approximately 7.7 percent. Off-road equipment sources accounted for approximately 1.5 percent of total Bay Area GHG emissions (BAAQMD, 2015).

Regulatory Setting

In 2006, the California legislature passed and Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 required that statewide GHG emissions be reduced to 1990 levels by 2020.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and to develop tracking, reporting, and enforcement mechanisms to ensure that the GHG emissions reductions meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Under AB 32, CARB must prepare a Scoping Plan and adopt regulations to achieve reductions in GHG emissions to meet the 1990 emissions cap by 2020. The first Scoping Plan was adopted in 2008 (CARB, 2008), and updated in 2013 (CARB, 2013).

SB 32, enacted in 2016, increases the required reductions in GHG emissions to 40 percent below 1990 levels by 2030. The 2017 Scoping Plan Update contains the strategy for meeting the 2030 goal (CARB, 2017). This will be accomplished by increasing renewable energy use, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries. In 2015, Executive Order B-30-15 affirmed California's target to reduce emissions to 80 percent below 1990 levels by 2050. The State has also established "renewable portfolio standards," which specify the percentage of retail energy sold in the state from renewable and zero carbon sources. In September of 2018, Governor Brown signed SB100, establishing a renewable portfolio standard of 100 percent by the year 2045, and also in 2018 signed Executive Order B-55-18, establishing a goal of achieving carbon neutrality by 2045.

In 2018, two years ahead of schedule, California achieved the AB32 reduction goal. In that year, statewide emissions were approximately 425 million MTCO_{2e}, six million MTCO_{2e} below the 2020 GHG target (CARB, 2020a).

Marin Countywide Plan (2007)

The Marin Countywide Plan, the General Plan for the County, establishes as one of its Guiding Principles the reduction of GHGs:

Guiding Principle 4. Reduce greenhouse gas emissions that contribute to global warming.

We will join other communities addressing climate change by lowering our greenhouse gas emissions. We will increase the use of renewable resources which do not have a negative impact on the earth's climate.

The Countywide Plan states that reducing fossil fuel combustion is key to reducing GHG emissions, and includes two Countywide goals related to reducing GHG emissions and addressing climate change:

Reduced Ecological Footprint. Marin residents and businesses will increasingly use renewable energy, fuel efficient transportation choices, and green building and business practices similar to the level of Western Europe.

A Community Safe from Climate Change. Marin will be a leader in averting and adapting to all aspects of climate change.

The Countywide Plan Natural Systems and Agriculture Element includes **Goal AIR-4: Minimization of Contributions to Greenhouse Gases.** Prepare policies that promote efficient management and use of resources in order to minimize greenhouse gas emissions. Incorporate sea level rise and more extreme weather information into the planning process.

Policies adopted pursuant to Goal AIR-4 include the following:

AIR-4.1 Reduce Greenhouse Gas Emissions. Adopt practices that promote improved efficiency and energy management technologies; shift to low-carbon and renewable fuels and zero emission technologies.

AIR-4.2: Foster the Absorption of Greenhouse Gases. Foster and restore forests and other terrestrial ecosystems that offer significant carbon mitigation potential.

Two of the Implementing Programs adopted pursuant to Goal AIR-4 are relevant to the Project:

AIR-4.h Evaluate the Carbon Emissions Impacts of Proposed Developments. Incorporate a carbon emissions assessment into land use plans and the environmental impact report for proposed projects.

AIR-4.o Implement Proposed State Programs to Reduce Greenhouse Gas Emissions. Implement proposed State programs to reduce greenhouse gas emissions, including the Renewable Portfolio Standards, California Fuel Efficiency (CAFE) standards, and carbon cap and trade programs.

The Countywide Plan contains the non-binding benchmark of reducing countywide GHG emissions 15 percent below the 1990 level by 2015, which had previously been established as a goal in the 2006 Marin County GHG Reduction Plan.

Marin County Climate Action Plan 2030

The Marin County Climate Action Plan 2030 (2030 CAP), adopted by the County Board of Supervisors (BOS) on December 8, 2020, updates the County's previous climate action plan to make it consistent with current State GHG reduction goals and inventory methodologies, and to incorporate the outcome of Drawdown: Marin. Drawdown: Marin was a two-year planning process conducted by the County Community Development Agency that engaged residents and businesses in a comprehensive, science-based, countywide campaign to identify actions to dramatically reduce GHG emissions, address equity, and increase community resilience. Over 150 volunteers identified 29 climate change solutions in six focus areas: Renewable Energy, Transportation, Buildings and Infrastructure, Local Food and Food Waste, Carbon Sequestration, and Climate Resilient Communities, which have been incorporated into the 2030 CAP.

In the 2030 CAP, the County establishes the goals of reducing GHG emissions 40 percent below 1990 levels by 2030, and, through a combination of emission reductions and carbon sequestration, reducing net carbon emissions to 60 percent below 2005 levels by 2030 (a goal initially established by Drawdown: Marin), and to zero by 2045. These targets meet and exceed the State goals of reducing emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. To establish the 1990 baseline for the 2030 goal, and consistent with CARB's guidance to local governments, the 2030 CAP estimates 1990 emissions levels as 15 percent below 2005 levels. Using this methodology, GHG emissions from the unincorporated County area in 1990 are estimated at 419,632 MTCO_{2e}, based on the 2005 inventory of 493,685 MTCO_{2e} (**Table GHG-1**). The 2030 CAP reports that in 2018 emissions were 380,318 MTCO_{2e}, about 23 percent below the 2005 level, and about 10 percent below the 1990 level.

The 2030 CAP is a "Qualified GHG Reduction Plan" within the meaning of CEQA Guidelines §15183.5, which means that a finding of consistency with the 2030 CAP may be used to determine that a project's GHG impacts would be less than significant.

The GHG emissions inventory in the 2030 CAP, Off-Road Sector, includes emissions from the combustion of gasoline and diesel from the operation of off-road vehicles and equipment used for construction, landscape maintenance, and agriculture. This sector emitted 4,471 MTCO_{2e} in 2018,

accounting for about 1.2 percent of emissions from the unincorporated County. About 64 percent of emissions from this sector were from off-road construction equipment. While the 2030 CAP identifies State regulatory actions and local strategies to reduce emissions from small off-road equipment such as lawn and garden equipment, the 2030 CAP does not contain any actions or strategies related to large scale construction equipment. The 2030 CAP indicates that while CARB is currently considering regulating small off-road engines, construction and agricultural equipment are regulated by the federal government and are not subject to CARB regulation.

Table GHG-1

Marin County Climate Action Plan 2030 GHG Emissions and Targets for the Unincorporated County

Year	Benchmark/Target	MTCO_{2e}
1990	Baseline (calculated at 15 percent below 2005)	419,632
2005	Baseline	493,685
2018	Reported	380,318
2030	40 percent Below 1990, emission reductions only	251,779
2030	60 percent below 2005, emission reductions + sequestration	197,474
2045	Carbon neutrality: 80 percent emission reductions + sequestration	0

Significance Thresholds

The 2009 FEIR was certified prior to establishment of thresholds of significance for GHG emissions by the State or the BAAQMD. Consequently, the 2009 FEIR used the 15 percent GHG reduction target from the 2006 GHG Reduction Plan and the Countywide Plan to establish thresholds of significance for the ARP and AQP projects then under review. The 2009 FEIR stated that the following situations would exceed the 15 percent below 1990 threshold, resulting in a significant impact:

- Project GHG emissions are from a source that did not exist in 1990, such as a new development;
- Project GHG emissions are from a source that did exist in 1990, but emissions would be greater than the 1990 emission level from that source minus 15 percent.

In addition, the 2009 FEIR considered that, if the project did not include feasible measures to reduce GHG emissions, regardless of their level in relation to 1990 levels, the impact would be considered significant.

Since certification of the 2009 FEIR, the BAAQMD has adopted thresholds of significance for GHG emissions (BAAQMD, 2017). The applicable thresholds for reclamation activities are as follows:

- Compliance with a Qualified Greenhouse Gas Reduction Strategy, per CEQA Guidelines §15183.5; or
- 1,100 MTCO_{2e} per year; known as a bright line threshold (i.e., emissions above this level may be considered significant).

The BAAQMD's bright line threshold was established to be consistent with the AB 32 goal of reducing statewide GHG emissions to 20 percent below 1990 levels by 2020, however, and so is insufficient to ensure that projects are complying with the current, more ambitious emission reduction targets. BAAQMD is working on updating their recommended GHG thresholds, but has not yet produced any revised recommendations (BAAQMD, 2021). The County has chosen not to rely on the old, outdated bright line threshold, but instead to focus on whether the Project complies with a Qualified Greenhouse Gas Reduction Strategy. As previously noted, Marin County's 2030 CAP, which is a Qualified Greenhouse Gas Reduction Strategy, is consistent with State goals to reduce GHG emissions by 40 percent below 1990 levels by 2030 and by 80 percent below 1990 levels by 2050. Based on this threshold, the Project would result in a significant impact if it did not reduce GHG emissions occurring before 2030 by 40 percent, and after 2030 by 80 percent. Consistent with the BAAQMD's 2017 thresholds, if the Project has a significant impact on GHG emissions, the County also considers its contribution to a cumulative impact to be cumulatively considerable.

BAAQMD recommends quantification of all GHG emissions from a project, including direct and indirect emissions. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption. BAAQMD does not require the inclusion of embodied energy, such as energy embodied in goods purchased or materials used, to quantify a project's GHG emissions (BAAQMD, 2017).

Impact Discussion

As described in detail below, the 2009 FEIR identified two significant GHG impacts of the 2004 Amended Reclamation Plan (ARP04), the reclamation plan then being proposed. Mitigation measures identified for both impacts were found to be sufficient to reduce both impacts to less than significant. All mitigation measures were adopted as COAs.

The supporting calculations and methodology used in the following analysis are provided in Air Quality Technical Report (Appendix C).

8a. Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

8b. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The discussion under this topic considers whether the Project would reduce Project GHG emissions by 40 percent by 2030 and by 80 percent by 2050.

The 2009 FEIR analyzed the GHG impacts of ARP04, the reclamation plan then proposed, in Section 4.2, Air Quality. Impact R4.2-3 estimated that GHG emissions associated with reclamation activities would be 5,742 MTCO₂e over all four phases of reclamation, or an average of about 287 MTCO₂e per year over the 20-year reclamation period assumed in the 2009 FEIR analysis. As noted above, the significance threshold for GHG emissions used in the 2009 FEIR was consistency with Marin County's 2006 GHG Reduction Plan and Countywide Plan, specifically, reducing emissions 15 percent below 1990 levels.

Because reclamation emissions would be from a source that did not exist in 1990, the impact was determined to be significant. The 2009 FEIR included Mitigation Measures 4.2-3a, b, and c, which together were found to be sufficient to reduce this impact to less than significant. Mitigation Measure 4.2-3a, which was adopted as COA 50, requires use of a minimum of 20 percent biodiesel for on-site heavy mobile equipment. Mitigation Measure 4.2-3b, which was adopted as COAs 50, 56, and 57, incorporates other air quality mitigation measures to reduce GHG emissions from diesel-powered equipment. Mitigation Measure 4.2-3c, which was adopted as COA 53, requires SRRQ to prepare and implement a GHG Reduction Plan. The plan is required to include a complete inventory of reclamation-related GHG emissions and to demonstrate how the Quarry would reduce or offset GHG emissions such that there would be no net emissions from reclamation, consistent with the Countywide Plan standard. SRRQ is required to submit its GHG inventory to the Climate Registry (the successor organization to the California Climate Action Reserve, which is named in the mitigation measure).

As adopted, COA 53 differs from Mitigation Measure 4.2-3c. Mitigation Measure 4.2-3c requires the GHG Reduction Plan to reduce or offset all reclamation-related GHG emissions, such that net emissions related to reclamation are zero. COA 53, however, requires that the GHG Reduction Plan reduce or offset emissions to 15 percent below the emissions associated with the Amended Reclamation Plan of 1982 (ARP82), SRRQ's previous reclamation plan, and establishes the maximum amount of allowable reclamation-related emissions at 2,489 MTCO_{2e}. In other words, COA 53 allows SRRQ to emit 2,489 MTCO_{2e} more than Mitigation Measure 4.2-3c.

In 2014, SRRQ submitted the required GHG Reduction Plan to the Marin County Department of Public Works (SRRQ, 2014). The plan's estimate of reclamation-related GHG emissions assumes that reclamation would occur over a 10-year period (as opposed to 20 years as assumed in the 2009 FEIR), and that SRRQ would fuel diesel-powered equipment with a minimum 40 percent biodiesel blend (as opposed to 20 percent assumed in the 2009 FEIR). Using these assumptions, the plan estimated total reclamation-related emissions to be 2,105 MTCO_{2e} (SRRQ, 2014), which is below the standard set in COA 53. Although noting that additional emissions reductions are not necessary to achieve compliance with COA 53, the plan lists several measures to reduce GHG emissions from mobile equipment. These measures apply to equipment used for both mining operations and reclamation:

- Use hybrid off-road equipment instead of fossil-fuel powered equipment;
- Increase use of biodiesel up to 80 percent of diesel fuel blend, if necessary to achieve required reduction;
- Establish maximum idling time for diesel-powered equipment to less than five minutes.

In addition to completing the required GHG Reduction Plan, SRRQ also reports annual GHG emissions to The Climate Registry, as required by Mitigation Measure 4.3-2c and COA 53 (SRRQ, 2017, 2018, 2019).

During any particular year, SRRQ may or may not undertake reclamation activities. For the current analysis of CARP19 emissions, reclamation activities are assumed to occur during 10 years between 2021 and 2044. In each year during which reclamation occurs, reclamation is assumed to be limited to a 10-week period during the dry season, five days per week, 7 a.m. to 5 p.m., using the equipment specified by SRRQ (see Appendix C, Air Quality Calculations). GHG emissions were calculated using the current

versions of CARB's EMFAC2017 emission model (CARB, 2020b) and the OFFROAD2017 emission model (CARB, 2020c) with the same assumptions and methodology as described in Section 2.3, Air Quality. The CO₂ emission factors from OFFROAD2017 and EMFAC2017 emissions models (which assume conventional diesel fuel) were adjusted to account for a 40 percent biodiesel and 60 percent diesel blend.¹⁴ This blend was used in the SRRQ GHG Reduction Plan calculations, although that calculation used older versions of the EMFAC and OFFROAD emissions models.

CARP10 and CARP19 would both involve a total of 2,076,370 cubic yards of grading. The same volume of grading would be expected to require the same number of equipment hours of operations, amount of haul truck movement, and number of worker trips, which would be expected to translate to the same amount of fuel usage since reclamation GHG emissions are directly related to fuel usage. Therefore, CARP10 and CARP19 would be expected to produce the same total GHG emissions, which is estimated to be 2,369 MTCO_{2e}¹⁵ (Table GHG-2), or 237 MTCO_{2e} per year in each of the 10 years when reclamation is assumed to occur.

Table GHG-2
Greenhouse Gas Emissions for CARP10 and CARP19

Emission Source	Total Emissions (metric tons of CO _{2e})		
	CARP10	CARP19	Increment
Exhaust Emissions from Earthmoving Equipment/ On-Site Truck Travel/Worker	2,369	2,369	0
Annual Average	237	237	0
Mitigated Total Emissions (metric tons of CO_{2e})			
Exhaust Emissions from Earthmoving Equipment/ On-Site Truck Travel/Worker	2,369	948	-1,421
Annual Average	237	95	-142

Source: RCH Group, 2021

It is assumed that, under the Project, half of the planned reclamation grading would occur by 2030 and the remaining reclamation grading would occur between 2030 and 2044, the year SRRQ anticipates reaching final reclamation grades in the mining operation. Therefore, half of the Project GHG emissions would be subject to the 40 percent reduction requirement and half of the Project GHG emissions would be subject to the 80 percent reduction requirement to comply with the State goals and to be consistent with the Marin County CAP 2030. The following formula presents the calculation of GHG emissions required to achieve a 40 percent reduction of Project GHG emissions by 2020 and an 80 percent reduction for the Project GHG emissions after 2030:

$$2,369 \text{ metric tons} / 2 * (1 - 0.40) + 2,369 \text{ metric tons} / 2 * (1 - 0.80) = 948 \text{ metric tons}$$

After applying these reductions, the mitigated total CARP19 GHG emissions would be 948 MTCO_{2e} for all reclamation grading activities, as shown in Table GHG-2, or an average of 95 MTCO_{2e} per year over

¹⁴ Fuel usage is estimated using the CalEEMod output for CO₂, and a 10.15 kgCO₂/gallon conversion factor for diesel fuel and 9.45 kgCO₂/gallon conversion factor for biodiesel fuel, as cited in https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

¹⁵ SRRQ's GHG Reduction Plan (SRRQ, 2014) estimated a total of 2,105 MTCO_{2e} from reclamation activities using older versions of the same emission models, and also assuming 10 years of reclamation activities.

10 years. The resultant total GHG emissions from CARP19 would be a reduction of 1,421 MTCO₂e or 142 MTCO₂e per year average over 10 years.

The findings that are drawn from the results in Table GHG-2 include the following:

- a. CARP19 GHG emissions would be the same as CARP10 GHG emissions (i.e., CARP19 would result in no increase in GHG emissions);
- b. the total CARP19 GHG emissions of 2,369 MTCO₂e is less than the COA 53 limit of 2,489 MTCO₂e, and less than the total GHG emissions calculated for the 2009 FEIR;
- c. CARP19 GHG emissions, half of which are assumed to occur before 2030, and the other half between 2030 and 2044, would exceed the County's threshold of reducing emissions to be consistent with the CAP 2030 and State targets.
- d. The reduction required to reduce total GHG emissions associated with reclamation activities to below the County threshold would be from 2,369 MTCO₂e to 948 MTCO₂e, effectively a 60 percent reduction.

While the Project does not propose changes that would increase GHG emissions, the current County and State emission reduction goals are a substantial change that has occurred with respect to the circumstances under which the Project would be undertaken that results in a more severe significant impact on GHG emissions than previously identified. Proposed revisions to Mitigation Measure 4.2-3c, which would, if the Project is approved, also be adopted as revisions to COA 53, are shown at the end of this section. With implementation of the proposed revisions to Mitigation Measure 4.2-3, and their adoption through revisions to COA 53, CARP19 would not result in a new or substantially more severe significant impact with regard to GHG emissions from reclamation grading activities.

GHG Emissions from Post-Reclamation Development

The 2009 FEIR, Impact 4.2-5, identified a significant impact of GHG emissions from future post-reclamation development of the Project site. The 2009 FEIR estimated that GHG emissions from operation of the post-reclamation development would be about 36,500 MTCO₂e per year (2009 FEIR, Volume 3, Appendix C, Air Quality Calculations), but stated that this was a preliminary estimate based on assumptions made about the conceptual development plan. Mitigation Measure 4.2-5 requires SRRQ to develop a standard to guide the future design of the final Development Plan, which is due to be submitted to the County three years prior to the cessation of mining. The final Development Plan, which is required by COA 31, is required to incorporate a detailed inventory of GHG emissions associated with the planned post-reclamation development, as well as a plan to reduce GHG emissions consistent with Countywide Plan policies and other relevant County, State, and federal standards then applicable. Mitigation Measure 4.2-5 was adopted as COA 11, and remains in effect. The 2009 FEIR concluded that Mitigation Measure 4.2-5 was sufficient to mitigate this impact to less than significant. The required standard to guide future design of the final development plan is included in CARP10 and carried over to CARP19, on page 33, which states, "When the Post-Reclamation Development Plan is submitted three years prior to cessation of mining, the Plan shall include an analysis of the greenhouse gases produced by

the Plan and provide for methods to reduce the projected GHGs in compliance with the County-Wide Plan.”

CARP19 does not propose to alter the intended post-reclamation use of the Project site from what was considered in the 2009 FEIR, which is also specified in CARP10. With COA 11 and 31 in effect, detailed future planning for minimizing GHG emissions from the post-reclamation development of the Project site is still required. Therefore, CARP19 would not result in a new or substantially more severe significant impact with regard to GHG emissions from post-reclamation development of the Project site.

Cumulative Impacts

The 2009 FEIR, Chapter 5, Growth Inducing and Cumulative Effects, Impact C5-4, examined the potential for greenhouse gas emissions from the reclamation project and the mining project together to add to global greenhouse gas emissions and contribute to global climate change, and found that the mitigation measures specified for the ARP project would reduce this impact to less than significant.

Consistent with the BAAQMD *CEQA Air Quality Guidelines* (BAAQMD, 2017) the County considers that a project which exceeds project-specific GHG thresholds would make a cumulatively considerable contribution to the global GHG burden and, therefore, would result in a significant cumulative impact.

Based on the conclusion for topics 8a and 8b, CARP19 would result in significant GHG emissions. Implementation of the revisions to Mitigation Measure 4.2-3c, which are provided below, and their adoption through revisions to COA 53, would reduce the Project’s contribution to cumulative GHG emissions to less than significant.

Mitigation Measures

The 2009 FEIR identified the following mitigation measures to reduce identified GHG emissions impacts, all of which would continue to apply to CARP19. COA adopting these mitigation measures are also indicated. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.2-3a: Requires SRRQ to use a minimum 20 percent biodiesel blend in off-road equipment used for reclamation grading (COA 50).

Mitigation Measure R4.2-3b: Refers to Mitigation Measures R4.2-1d, f, g, and h, which would reduce running time of diesel equipment, replace diesel equipment with less polluting equipment, and further increase the use of biodiesel in off-road equipment (COA 50, 56, and 57).

Mitigation Measure R4.2-3c: Requires reduction of GHG emissions to 1990 levels (COA 53). Please see proposed revision to this mitigation measure, below.

Mitigation Measure R4.2.5: Requires that the final Development Plan for post-reclamation use of the Project Site include a GHG Reduction Plan (COA 11).

Revised Mitigation Measures

The following revisions to Mitigation Measure R4.2-3c, which was adopted as COA 53, would reduce Project GHG emissions to less than significant, by requiring the applicant to reduce emissions from reclamation grading such that they would not exceed the County and State GHG reduction targets. The revisions to Mitigation Measure R4.2-3c would, if the Project is approved, be carried over as revisions to COA 53.

Mitigation Measure R4.2-3c: Within ~~one year~~ three months of ~~project approval of the CARP19 Project,~~ the applicant shall ~~update the existing~~ prepare and implement a GHG reduction plan. The plan will ~~include a complete inventory of reclamation related GHG emissions and will demonstrate how the Quarry will reduce or offset remaining un-mitigated reclamation-related GHG emissions such that total GHG emissions from reclamation grading will not exceed 948 MTCO₂e over the life of the reclamation project.~~ The plan will prioritize emissions reduction through energy conservation and other measures; for those emissions that cannot be reduced, the plan shall specify how emissions will be offset. Offsets may take the form of installation of on-site alternative energy generation facilities (such as solar power) or offsite compensation, such as monetary contribution to a project that sequesters carbon. Examples of such projects include wetland restoration, purchase of carbon credits verified by the ~~California Climate Action Registry~~ California Air Resources Board, and reforestation. On-site offsets will be given higher priority than off-site offsets, and offsets with co-benefits, such as reduction of particulate emissions within the vicinity of the Quarry, and restoration of habitat for special status species, will be given higher priority. ~~The plan must demonstrate how, at a minimum, the Quarry will reduce reclamation related, non-biogenic GHG emissions consistent with the Marin County Greenhouse Gas Reduction Plan and Countywide Plan Update policies: since no reclamation related emissions were occurring in 1990, the plan must demonstrate how reclamation-related emissions are reduced or offset, such that there are no net emissions from reclamation.~~ The plan will include an implementation schedule. The plan will be submitted to the Marin County Public Works Department for review and approval. In addition, ~~the initial emissions inventory prepared as part of the plan will be reported to the California Climate Action Registry~~ Climate Registry or a successor organization as a baseline inventory, and the Quarry will conduct an annual GHG emissions inventory and report it to the Climate Registry and to the County Public Works Department. and report additional inventories annually.

Conclusion

Due to substantially changed circumstances, specifically, the intensification of the global climate crisis and the adoption by the State of California and Marin County of new GHG emissions reduction targets for 2030 and 2050, CARP19 would result in substantially more severe significant impacts, both the project itself and cumulatively, from GHG emissions. Revisions to previously adopted Mitigation Measure R4.2-3c and corresponding COA 53 would reduce this impact to less than significant.

References

BAAQMD, 2015. Bay Area Emissions Inventory. Adopted June 2011, Updated January 2015. http://www.baaqmd.gov/~/-/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf

- BAAQMD, 2017. California Environmental Quality Act, Air Quality Guidelines. May, 2017.
https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en
- BAAQMD, 2021. Email from BAAQMD to D. Sicular re: question regarding update to GHG emissions thresholds. January 28, 2021.
- California Air Pollution Control Officers Association, 2008. CEQA and Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008. <http://www.capcoa.org/wp-content/uploads/2012/03/CAPCOA-White-Paper.pdf>
- California Air Resources Board (CARB), 2008. Climate Change Scoping Plan: A Framework for Change. <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>
- CARB, 2013. Climate Change Scoping Plan Update: Building on the Framework. <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>
- CARB, 2017. Climate Change Scoping Plan Update: Achieving California's 2030 Greenhouse Gas Target. <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>
- CARB, 2020a. Emissions Trends Report 2000-2018 (2020 Edition). https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf
- CARB, 2020b. EMFAC2017 Web Database. <https://www.arb.ca.gov/emfac/2017/>
- CARB, 2020c. Mobile Source Emissions Inventory Documentation – Off Road Diesel Equipment. <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road>
- California Environmental Protection Agency, 2006. Final Climate Action Team Report to the Governor and Legislature, March 2006. http://documents.cityofdavis.org/Media/CityCouncil/Documents/PDF/CDD/Planning/Subdivisions/West-Davis-Active-Adult-Community/Reference-Documents/CalEPA_2006_Climate_Action_Team_Report_to_Gov-and_Leg.PDF
- IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/site/assets/uploads/2018/05/SYR_AR5_FINAL_full_wcover.pdf
- Marin County, 2007. Marin Countywide Plan, Adopted November 6, 2007. <https://www.marincounty.org/depts/cd/divisions/planning/2007-marin-countywide-plan>
- Marin County, 2020. Climate Action Plan 2030. <https://www.marincounty.org/~media/files/departments/cd/planning/sustainability/climate-and-adaptation/draft-climate-action-plan-2030.pdf?la=en>
- National Oceanographic and Atmospheric Administration - Earth System Research Laboratory, 2020. Recent Monthly Mean CO2 at Mauna Loa. www.esrl.noaa.gov/gmd/ccgg/trends/ Accessed November 22, 2020.

San Rafael Rock Quarry (SRRQ), 2014. San Rafael Rock Quarry Greenhouse Gas Reduction Plan. Prepared by ENVIRON International, May 2014. <https://www.marincounty.org/-/media/files/departments/pw/land-use/seismic-data/srrq--final-ghg-reduction-plan-053014.pdf?la=en>

SRRQ, 2017. San Rafael Rock Quarry Annual Report, 2016. Submitted to Marin County Department of Public Works. Revision 1, February 1, 2017.

SRRQ, 2018. San Rafael Rock Quarry Annual Report, 2017. Submitted to Marin County Department of Public Works. Revision 1, February 9, 2018.

SRRQ, 2019. San Rafael Rock Quarry Annual Report, 2018. Submitted to Marin County Department of Public Works. February 1, 2019.

SRRQ, 2020. San Rafael Rock Quarry Annual Report, 2019. Submitted to Marin County Department of Public Works. January 30, 2020.

United States Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks. April 13, 2020. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks> Accessed November 23, 2020

World Resources Institute, 2020. Climate Analysis Indicator Tool – Global Historical GHG Emissions. <http://cait.wri.org/> Accessed November 23, 2020.

2.9 Hazards and Hazardous Materials

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
9. Hazards and Hazardous Materials. Would the Project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Section 4.8, Hazards and Hazardous Materials, Impact R4.8-1	No	No	No	NA
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?	Section 4.8, Hazards and Hazardous Materials, Impact R4.8-1	No	No	No	NA
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Section 4.8, Hazards and Hazardous Materials, page 4.8-9	No	No	No	NA
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?	Section 4.8, Hazards and Hazardous Materials, page 4.8-9	No	No	No	NA
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?	Section 4.8, Hazards and Hazardous Materials, page 4.8-9	No	No	No	NA

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
9. Hazards and Hazardous Materials. Would the Project:					
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Section 4.8, Hazards and Hazardous Materials, Impact R4.8-1	No	No	No	NA
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	Section 4.8, Hazards and Hazardous Materials, impact R4.8-2	No	No	No	NA

Setting Discussion

In Section 4.8 Hazards and Hazardous Materials, the 2009 FEIR described the physical and regulatory setting for this topic, including an explanation of the regulations for handling, storing, and disposing of hazardous materials applicable to SRRQ. The discussion from the 2009 FEIR regarding hazardous materials is still current, and no substantial changes have occurred in the physical or regulatory setting for the current Project.

With respect to the setting for wildland fire, the 2009 FEIR stated that the Marin Countywide Plan generally characterizes the Project site as “moderate” for wildland fire risk, and areas north of Point San Pedro Road as either “high” or “very high” for wildland fire risk. Since completion of the 2009 FEIR, wildfire has become an urgent safety and environmental issue: with the climate warming and drying, after years of a prevailing policy to suppress wildfire, and with more residential development within the wildland-urban interface (WUI), wildfire behavior and wildfire risk have become more severe (State of California, 2019).

In 2012, Senate Bill 1241 was passed, requiring the Governor’s Office of Planning and Research, the Natural Resources Agency, and the California Department of Forestry and Fire Protection (Cal FIRE) to develop amendments to the initial study checklist of the State CEQA Guidelines for the inclusion of questions related to fire hazard impacts for projects located on lands classified as state responsibility areas, and on lands classified as very high fire hazard severity zones (FHSZs) (Governor’s Office of Planning and Research, 2017). The additions to the Checklist implementing SB 1241 were included in the 2019 revisions to the State CEQA Guidelines, which is used as the basis for the topical questions in this supplemental environmental review; see section 2.19, Wildfire, below.

In accordance with California Public Resource Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, the California Department of Forestry and Fire Protection (Cal FIRE)

maps areas of significant fire hazards because of fuels, terrain, weather, and other relevant factors. Cal FIRE's statewide and county maps depict FHSZs that are within the State Responsibility Area (SRA). The SRA is the area where the State of California is financially responsible for the prevention and suppression of wildfires. The areas within the SRA are further classified as being Moderate, High, or Very High FHSZs. The Project site is not within an SRA; the nearest SRA area is the northern part of the Point San Pedro peninsula, about a half mile from the Project site (Marin County, 2021).

Marin County extends mapping of FHSZs into areas of the County that are not within the SRA. Portions of the Project site are mapped within the moderate and high FHSZs. None of the Project site is within the Very High FHSZ. Areas to the north of the Project site are mapped within the Moderate FHSZ (Marin County, 2021). Per Marin County Code Section 16.17.080, the County designates lands within the WUI. The Project site is not within the mapped WUI, though some areas to the north of the Project site are designated WUI (Marin County, 2021).

Impact Discussion

The 2009 FEIR, Section 4.8, Hazards and Hazardous Materials, identified two impacts of the then-proposed Amended Reclamation Plan of 2004 (ARP04), one of which was significant, and one less than significant. The 2009 FEIR identified mitigation measures for the significant impact, and determined that these would reduce the impact to less than significant. All mitigation measures were adopted as Conditions of Approval (COAs). The mitigation measures and corresponding COAs are discussed below and listed at the end of this section. The 2009 FEIR also considered the potential for cumulative impacts from mining operations combined with reclamation, and determined that there was no potential for such an impact.

9a. Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

9b. 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?

9f. Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The 2009 FEIR, Impact R4.8-1, identified a significant impact of ARP04 from use and storage of hazardous substances, including petroleum products, for reclamation activities. Explosives, used in the mining operation, were not and are not planned to be used for reclamation. The impact further stated that adherence to existing federal, state, and local laws and regulations, including the requirements of the Quarry's National Pollutant Discharge Elimination System permit, their Hazardous Materials Business Plan, and their Spill Prevention, Control and Counter Measure Plan (SPCCMP), would reduce the risk of release of hazardous materials to a less-than-significant level. The 2009 FEIR included Mitigation Measure R4.8-1a and R4.8-1b, requiring SRRQ to maintain and periodically update its existing Hazardous Materials Business Plan, in accordance with California Health and Safety Code Section 25504, and found that these measures would reduce the impact to less than significant. The requirements for a Hazardous Materials Business Plan include listing all the hazardous materials stored at the site,

emergency response procedures for spills, evacuation plans and procedures, and employee training and communications. These mitigation measures were adopted as COA 136.

There are no Project changes that would increase the risks to the public or the environment from use, transport, disposal, or upset or accident involving hazardous materials. The required Hazardous Materials Business Plan, which was last updated in 2020, (Dutra Group, 2020) satisfies the requirements of Mitigation Measures R4.8-1a and R4.8-1b and COA 136. The Project therefore would not result in a new or substantially more severe significant impact related to storage, transport, disposal, or spill or accident resulting in the release of hazardous materials.

The emergency response and evacuation procedures included in the Hazardous Materials Business Plan ensure that SRRQ has adequate plans in place to address an emergency situation involving hazardous materials, including an evacuation plan. Pt. San Pedro Road is a primary evacuation route (MarinMap, 2021). The Project would not alter or interfere with these emergency response and evacuation plans; there would be no impact of this kind.

9c. 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?

The 2009 FEIR found that there were no existing or proposed schools within one-quarter mile of the Project site. This is still the case: the nearest schools to the Project site are Glenwood Elementary School at 25 West Castlewood Drive, and Redeemer Preschool at 123 Knight Drive, both located about 3,000 feet (over one-half mile) from the Project site (Marin County, 2021). Therefore, the Project would have no impact of this kind.

9d. 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?

The 2009 FEIR found that the Project Site was not listed on any of the Cortese List databases. A new search of the Cortese List databases (California Environmental Protection Agency, 2021) included the following:

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database;
- List of solid waste disposal sites identified by the State Water Board with waste constituents above hazardous waste levels outside the waste management unit;
- List of “active” CDO and CAO from the State Water Board;
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

The Project site was not found on any of these lists. Therefore, the Project would not have an impact of this kind.

9e. 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?

The 2009 FEIR found that the Project site was not located within an airport land use plan or within two miles of a public or public use airport, and so there was not the potential for an impact of this kind. The closest airport to the Project site is the San Rafael Airport, located approximately 3.6 miles northwest of the Project site (Google Maps, 2021). Therefore, the Project would not have an impact of this kind.

9g. Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Impact 4.8-2 in the 2009 FEIR stated that operation of equipment near vegetation during the dry season, as then proposed for reclamation activities, could potentially increase the possibility of ignition of a fire, but that because the project would be required to comply with all County of Marin rules, regulations, and guidelines to minimize wildland fire hazards, the impact would be less than significant, and no mitigation was required.

As discussed in the Setting Discussion, above, additional categorization and mapping of fire risk and fire hazard has occurred since certification of the 2009 FEIR. The Project site is not within the WUI. It includes areas categorized as moderate to high FHSZ. There are no very high FHSZ areas within or adjacent to the Project site.

The greatest fire hazard occurs during offshore wind events, sometimes called Mono Winds, when strong, dry winds are blowing from the north or northeast. Because the Project site is to the south, that is, downwind, of adjacent residential areas, the potential for fire to spread from the Project site to adjoining neighborhoods during an offshore wind event is low. Furthermore, the presence within the Project site of heavy equipment such as bulldozers and water trucks could aid in suppression of a fire if one were to ignite, and San Rafael Fire Station # 55 is located on Point San Pedro Road about 3,500 feet west of SRRQ's main entrance. Roadways, including Point San Pedro Road and Cantera Way, separate the Project site from adjacent neighborhoods, which would also decrease the risk of fire spreading off-site.

Reclamation grading activities that would occur under the proposed Project would, as identified in the Impact 4.8-2 in the 2009 FEIR, involve operation of heavy equipment close to vegetated areas during the dry season, potentially posing a risk of fire ignition and spread to surrounding areas. Most reclamation activities, however, would take place in unvegetated or sparsely vegetated areas, and use of properly maintained equipment would reduce the risk of ignition. Because of these mitigating factors, and because the Project site is not categorized by Marin County as a very high FHSZ and not within the WUI, the exposure of people and structures to a significant risk of loss, injury or death involving wildland fires from reclamation grading activities would be less than significant.

Reclamation under the proposed Project would also involve revegetation of disturbed areas of the Project site, and protection of several areas that still have vegetative cover and are still in relatively natural state. CARP19, the proposed Project, includes a revegetation plan in Section E, Revegetation, that specifies different planting palettes for specific purposes, such as short-term and long-term erosion control, permanent vegetation of open spaces and swales, and landscaping screens and transportation corridors. The revegetation plan states that most of the species selected are native to the area, are drought tolerant

and fire resistant, and are recommended by the California Geological Survey and the USDA Natural Resources Conservation Service for revegetation and erosion control on disturbed lands. The revegetation plan also includes standards for monitoring and maintenance of revegetated areas. CARP19's revegetation plan has not changed from CARP10, the currently-approved amended reclamation plan. The selection of site-appropriate plants, and the commitment to monitor and maintain revegetated areas, will together reduce the potential for revegetated areas to become fire hazards; the Project's revegetation plan would not, therefore, expose people or structures to a significant risk of loss, injury or death involving wildland fires.

Post-reclamation development of the Project site is preliminarily postulated to produce new populated premises, including commercial and residential areas. These uses would place potential ignition sources in proximity to vegetated areas. This could result in an increased risk of loss, injury, or death involving wildland fires. The Project does not propose a change to post-reclamation use of the Project site, however, and Project approval would not entitle any post-reclamation development. Impacts of post-reclamation development will be examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying, pursuant to COA 31. The Project itself would not result in increased exposure of people or structures to a significant risk of loss, injury or death involving wildland fires, and there would be no new or substantially more severe significant impact of this kind, compared to that identified in the 2009 FEIR.

Mitigation Measures

The 2009 FEIR identified the following mitigation measures to reduce the identified hazards and hazardous materials impact, which would continue to be in effect if the proposed Project is approved. There is no need to revise either measure. The COAs implementing these mitigation measures is also indicated. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measures R4.8-1a: States that SRRQ has in place a Hazardous Materials Business Plan (COA 136).

Mitigation Measure R4.8-1b: Requires SRRQ to maintain and periodically update its Hazardous Material Business Plan during the entire reclamation period (COA 136).

Conclusion

There are no substantial changes to the proposed Project, and new information about the proposed Project that could not have been known at the time the 2009 FEIR was certified that would result in new significant impacts or substantially more severe significant impacts related to hazards, or hazardous materials, including wildfire. Changes circumstances consisting of increased wildfire hazard have been considered and do not indicate a new or substantially more severe significant impact related to wildfire hazard. No new or revised mitigation measures are needed.

References

- California Environmental Protection Agency, 2021. Cortese List Data Resources. <https://calepa.ca.gov/sitecleanup/corteselist/> Accessed February 5, 2021.
- State of California, 2019. Wildfires and Climate Change: California's Energy Future. A Report from Governor Newsom's Strike Force. April 12, 2019. <https://www.gov.ca.gov/wp-content/uploads/2019/04/Wildfires-and-Climate-Change-California%E2%80%99s-Energy-Future.pdf>
- Dutra Group, 2020. Emergency Response/Contingency Plan and Employee Training Plan. Submitted to the California Environmental Reporting System (CERS) on 3/30/2020 by Howard Cooper of The Dutra Group. Submittal was accepted on 11/3/2020 by Tracey Nguyen. Comments by regulator: The submittal has been conditionally accepted and will be verified during the routine inspection.
- Google Maps, 2021. Measurement, San Rafael Rock Quarry to San Rafael Airport. <https://www.google.com/maps>. Accessed February 5, 2021.
- Marin County, 2021. MarinMap Viewer. <https://www.marinmap.org>. Accessed February 5, 2021.
- Newton, Gail A. and V.P. Claassen, 2003. Rehabilitation of Disturbed Lands in California: A Manual for Decision-Making. California Geological Survey, Special Publication 123. <https://archive.org/details/rehabilitationof123newt/page/n3/mode/2up>

2.10 Hydrology and Water Quality

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
10. Hydrology and Water Quality. Would the Project:					
a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	Section 4.5, Hydrology and Water Quality, Impacts R4.5-2, R4.5-3, R4.5-4, R4.5-5, R4.5-6, R4.5-7, R4.5-10, and Section 5.2, Cumulative Impacts; Volume II, Master Response 1, Master Response 4, and Master Response 7.	No	No	No	NA
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	Section 4.5, Hydrology and Water Quality, Impact R4.5-1 and Section 5.2, Cumulative Impacts.	No	No	No	NA
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;	Section 4.5, Hydrology and Water Quality, Impacts R4.4-2, R4.5-2, R4.5-3, R4.5-4, R4.5-7, R4.5-10, and Section 5.2, Cumulative Impacts.	No	No	No	NA
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	The 2009 FEIR identified no impacts of this kind.	No	No	No	NA

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
10. Hydrology and Water Quality. Would the Project:					
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	Section 4.5, Hydrology and Water Quality, Impacts R4.5-10.	No	No	No	NA
iv) Impede or redirect flood flows?	Section 4.5, Hydrology and Water Quality, Impact R4.5-9, and page 4.5-8	No	No	No	NA
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Section 4.5, Hydrology and Water Quality, Impacts R4.5-8 and R4.5-9.	No	No	No	NA
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Section 4.5, Hydrology and Water Quality, Impacts R4.5-1, R4.5-2, R4.5-3, R4.5-4, R4.5-6, R4.5-7.	No	No	No	NA

Setting Discussion

The information presented in the Setting discussion in Section 4.5, Hydrology and Water Quality, in the 2009 FEIR describing the existing physical and regulatory conditions relevant to water quality, water quality standards, and waste discharge requirements remain pertinent and applicable for evaluating the proposed Project. Water resources relevant to the proposed Project, including a comprehensive characterization of surface and groundwater hydrology and water quality, climate, topography, and drainage, are fully described in the 2009 FEIR Section 4.5, Hydrology and Water Quality. Also described in detail in Section 4.5 of the 2009 FEIR are the various federal, State, and County laws and regulations governing operation of SRRQ and future reclamation activities relevant to surface and groundwater hydrology and water quality.

Baseline conditions, applicable laws and regulations, and Quarry operations that affect reclamation have not changed since publication of the 2009 FEIR. Site drainage patterns within the active quarry area and along the Bay margin and other aspects of surface water hydrology, such as tidal flows and flood hazards in the marsh areas, have not substantially changed since 2009. Groundwater dynamics and groundwater quality relevant to SRRQ also have not changed significantly. Regarding regulations relevant to SRRQ

and the Project, the National Pollutant Discharge Elimination System (NPDES) remains the primary mechanism for regulating water quality at the Quarry site, including stormwater quality and discharges to the Bay from active quarry areas. Specifically, the General Permit for Storm Water Discharges Associated with Industrial Activities (NPDES Order CAS000001) issued by the State Water Resources Control Board (SWRCB), in combination with the specific requirements of the permit (discussed in detail below), continues to be the primary regulatory mechanism relevant to water resources related impacts, as described in the 2009 FEIR.

New information about future sea level rise is discussed below.

Impact Discussion

As discussed in more detail below, the 2009 FEIR identified ten hydrology and water quality impacts of reclamation activities, six of which were found to be less than significant, and four of which were significant. All the significant impacts were mitigated to less than significant with the adoption and implementation of identified mitigation measures. All mitigation measures from the 2009 FEIR, and the adopted Conditions of Approval (COAs) implementing them, are listed at the end of this section.

10a. Would the Project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?

Subsequent to the 2010 Board of Supervisors approval of the AQP and the ARP projects, SRRQ has completed or has implemented and continues to undertake various required actions relevant to water quality. The following summary describes the findings of the 2009 FEIR water quality impact analyses relevant to the proposed Project, as well as the status of associated mitigation measures and Conditions of Approval (COAs).

The 2009 FEIR, Impact R4.5-6, identified that, post-reclamation, deep waters (30-foot depth to 400-foot depth) within the flooded Main Quarry Bowl could stagnate, resulting in degraded water quality and exceedance of established water quality objectives defined in the RWQCB Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) (RWQCB, 2006). Degraded water quality within the deep portions of the flooded Main Quarry Bowl would subsequently impact aquatic species and would fail to support Basin Plan beneficial uses associated with recreation and aquatic habitat. Pursuant to COA 129 and 2009 FEIR Mitigation Measures R4.3-6, SRRQ has completed the study of options for maintaining acceptable water quality in the flooded Main Quarry Bowl (Moffatt and Nichol, 2014), selected a preferred method, and revised its reclamation bond to include the costs associated with construction, operation, repair, and maintenance of required water quality infrastructure. The proposed changes to the timing of each reclamation phase under CARP19 would not change the preferred method of maintaining acceptable water quality in the flooded Main Quarry Bowl, its implementation, or the projected results. The installation of a destratification system, as determined through implementation of COA 129 and Mitigation Measure R4.5-6, would be sufficient to reduce water quality impacts related to stratification of the flooded Main Quarry Bowl to less than significant and implementation of the proposed Project would not affect the outcome of the destratification system. No new impacts related to water quality standards or the degradation of water quality would occur, and no previously identified significant impact would increase in severity as a result of implementing the proposed changes in the timing of each reclamation phase under CARP19.

The 2009 FEIR, Impact 4.5-2 in Section 4.5, Hydrology and Water Quality, and Impact 4.4-2 in Section 4.4, Geology, Soils, and Seismicity, assessed the potential for erosion and water quality impacts resulting from reclamation-related activities for each phase of the reclamation plan. These impacts found that earthmoving activities such as grading and soil stockpiling would expose soil to erosion that, in turn, could result in discharge of sediment to the Bay and other receiving waters, such as adjacent marsh habitat. Both impacts were identified as significant. As stated in the 2009 FEIR, during each phase of reclamation, SRRQ would be required to adhere to the NPDES Permit for Industrial Activities, which includes a Stormwater Pollution Prevention Plan (SWPPP) and Stormwater Management Plan. The Stormwater Management Plan includes construction and post-construction BMPs sufficient to reduce significant hydrologic and water quality impacts, including the concentration of pollutants found in Project site stormwater runoff. Erosion control measures are specified in the SWPPP for each reclamation phase associated with CARP10, the currently approved amended reclamation plan. The standards and specific BMPs required as part of the Stormwater Management Plan and SWPPP are industry-accepted methods and proven effective at attenuating concentrated stormwater flows, reducing erosion, and minimizing or avoiding the transport of pollutants in stormwater. These BMPs are adequate to provide protection against water quality degradation provided they are maintained effectively and monitored regularly. The 2009 FEIR included mitigation measures to ensure that the stormwater hydrologic, erosion control, and water quality control measures are maintained, remain effective throughout the operational life of SRRQ and in post-reclamation development, and that they are kept current and in compliance with all RWQCB permit requirements (Mitigation Measures R4.4-2a, R4.5-2a, and R4.5-2b). These mitigation measures were adopted as COAs 128 and 133. Further, SRRQ is required to adhere to all water quality and hydrologic standards and monitoring requirements contained in the NPDES Discharge Permit (General Permit for Storm Water Discharges Associated with Industrial Activities, NPDES Order CAS000001) issued by the SWRCB, including routine scheduled water quality monitoring of specified pollutants and subsequent correction of any water quality exceedances indicated by sampling results (COA 132).

SRRQ has completed and implemented the required Stormwater Management Plan and SWPPP, both of which will remain in effect until SRRQ has ceased operations and completed reclamation activities. The SWPPP includes a monitoring and maintenance element with periodic scheduled monitoring of BMP performance (Industrial SWPPP, 2019). The performance of BMPs, including any related failures, improvements, and corrective actions taken as a result of periodic monitoring conducted by erosion control specialists are described in annual regulatory reports submitted to the RWQCB as required under the SWPPP and made available to the County. Further, as required under COA 133, copies of all RWQCB permits for SRRQ are provided to the County Department of Public Works.

Consistent with the requirements outlined above, water quality monitoring and reporting, as well as associated corrective actions, are ongoing at SRRQ. Annual water quality reporting for SRRQ stormwater discharges for the three most recent reporting periods (2016-2017, 2017-2018, and 2018-2019) show that pollutants listed on the Clean Water Act 303(d) list for Bay receiving waters¹⁶ (SWRCB, 2017a) and that have been shown as exceeding protective water quality standards are not present at SRRQ and are not being discharged into receiving waters as a result of Quarry operations or reclamation (SWRCB 2017b,

¹⁶ Pollutants listed on the CWA 303(d) list as exceeding protective water quality standards in Bay waters adjacent to SRRQ include: Dacthal, Diazinon, Dieldrin, Dioxins, Furans, Copper, Zinc, Selenium, Mercury, PCBs, DDT, Chlorodane, and *E. Coli* and *Enterococcus* bacteria.

2018, 2019). Where water quality monitoring has determined that pollutants other than those identified as impairing the beneficial uses of receiving Bay waters (i.e., those not listed on the 303(d) list) have exceeded water quality objectives or Numeric Action Limits (NAL), as defined in the NPDES Permit, an Exceedance Response Action (ERA) Report was prepared by a Qualified Industrial Stormwater Practitioner (QISP) and submitted to the SWRCB. Each submitted ERA details the pollutant that has exceeded a water quality threshold, the location where the exceedance occurred, and the corrective actions being implemented to correct the water quality issue. Additionally, the ERA contains a schedule for implementation of additional BMPs or other corrective actions as well as analysis of the effectiveness of the corrective action to address the documented exceedance for a specific pollutant. Specifically, in the prior three reporting periods, ERAs have been prepared for Nitrate-Nitrate Nitrogen, Total Suspended Solids (TSS), and Iron water quality exceedances (Dutra Group, 2016, 2018a, 2018b, 2019). Corrective actions implemented to address these water quality NAL exceedances have included the following:

- Increasing the frequency of sweeping near stormwater outfalls;
- addition of erosion control blankets on and near slopes surrounding the drainage system connected to Detention Basin-1 and stormwater Outfall-1;
- removal and repair of corroded steel and cast-iron on-site;
- enclosing, covering, revegetating and stabilizing areas associated with TSS and Iron pollutant sources;
- upgrading the on-site drainage system to direct stormwater to appropriate treatment BMPs;
- physically separating site stormwater from San Pablo Bay through repair of tidal gates;
- reengineering Detention Basin-1 to ensure consistency with the Design Storm Standards for Treatment Controls BMPs as outlined in section (X)(H)(6) of the Industrial General Permit (IGP) to ensure stormwater is sufficiently treated. (Dutra Group, 2018b)

Implementation of the actions and BMPs required under the NPDES Permit, the SWPPP, the Stormwater Management Plan, as well as the COAs and mitigation requirements described above (COAs 128, 129, 132, 133, and Mitigation Measure R4.4-2a, R4.5-2a, and R4.5-2b) would prevent significant impacts to water quality associated with reclamation activities and ensure that all construction activities that would occur as part of reclamation would minimize the potential to adversely affect the quality of the receiving waters, resulting in less-than-significant impacts to water quality. Since the publication of the 2009 FEIR, no new information has been presented that would alter the impact conclusions presented in Section 4.5, *Hydrology and Water Quality*, and the impacts remain less than significant with continued implementation of the requirements of the COAs and mitigation measures. With continued adherence to these requirements, the proposed CARP19 changes to the timing of each reclamation phase would not provide a substantial additional source of polluted stormwater runoff or increase the potential for the transport of pollutants, such as through erosion and sedimentation. The mitigation measures and COAs identified above would be sufficient to reduce water quality impacts associated with the proposed modifications to the timing of each reclamation phase to less than significant. No new impacts related to water quality standards or the degradation of water quality would occur, and no previously identified significant impact would increase in severity.

In addition, as described in Chapter 1, the Marin County Public Works Director has not exercised the option to construct the berm along the northern property line in the NE Quadrant, as assessed in the 2009 FEIR. Consequently, the Phase 1 grading plan and permit do not include its construction. Instead, the brow berm will be maintained and “rolled over” as mining in the Main Quarry Bowl progresses northward. Therefore, the Applicant’s reclamation activities will require less ground disturbance, because construction of the berm along the northern property line, as described and analyzed in the 2009 FEIR, will not occur. Overall, reclamation grading will require cutting, filling, and moving less material than previously anticipated and analyzed in the 2009 FEIR (Section 1, Project Description, Table 1-3); therefore, the potential for polluted stormwater would be less than that identified in FEIR Section 4.5, Hydrology and Water Quality, relating to reclamation activities.

10b. 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?

The 2009 FEIR identified that groundwater conditions beneath the SRRQ are not suitable for municipal or domestic supply. There are no groundwater supply wells on the SRRQ property. Based on geologic conditions at and surrounding SRRQ, there is very low potential that the localized groundwater-bearing zones at the SRRQ are hydraulically connected to shallow off-site supply wells and, therefore, off-site wells are not expected to be influenced by groundwater conditions or reclamation activities at the Project site. The proposed Project would not reduce surface water recharge to the underlying groundwater-bearing zones, for example, through the addition of impervious surfaces. Although the proposed Project would extend the period for reclamation to occur, the proposed changes in the timing of each reclamation phase would not reduce the areas that are otherwise currently available for shallow or deep groundwater recharge.

Overall, the proposed Project would have no impact on local groundwater supplies or groundwater recharge, and implementation of the Project would not impede sustainable groundwater management of the basin. Since the publication of the 2009 FEIR, no new information has been presented that would alter the impact conclusions presented in 2009 FEIR Section 4.5, *Hydrology and Water Quality*. No new impacts related to depletion of groundwater supplies or interference with groundwater recharge would occur, and impacts described in the 2009 FEIR would not increase in severity.

10c. 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 offsite;**
- 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?**

The 2009 FEIR assessed impacts to on- and off-site erosion, sedimentation, stormwater drainage, and flooding resulting from altered drainage patterns due to reclamation activities (i.e., grading and soil

stockpiling) in Impacts R4.4-2, R4.5-1, R4.5-2, R4.5-3, R4.5-4, R4.5-8, R4.5-10. As described in 2009 FEIR Section 4.5, Hydrology and Water Quality, the Surface Mining and Reclamation Act (SMARA) requires the process of reclamation to maintain water quality and to minimize flooding and damage to habitat and water resources from erosion. The Quarry's drainage patterns have been dramatically altered from their original configuration through years of ground disturbance and mining at this location. Currently, most of the SRRQ site drains into the Main Quarry Bowl in the SE Quadrant (Figure 1-13 in Chapter 1, Project Description). The NE and NW Quadrants drain to the marshlands in the NW Quadrant. For the SW Quadrant, those waters not draining into the Main Quarry Bowl drain directly into San Francisco Bay. Shoreline areas also drain toward the Bay.

As described under topic 10a, above, the 2009 FEIR concluded that grading and soil stockpiling can alter localized stormwater runoff patterns and expose soil to erosion, resulting in potential sediment discharges to the Bay and other receiving waters, such as the adjacent marsh habitat. Implementing actions and BMPs required under the NPDES Permit, the SWPPP, the Stormwater Management Plan, as well as in COAs 128, 129, 132, 133, and Mitigation Measures R4.4-2a, R4.5-2a, R4.5-2b, and R4.5-10, would prevent significant water quality impacts associated with reclamation activities and would minimize adverse water quality conditions (i.e., erosion and sedimentation) in on- and off-site receiving waters, resulting in less-than-significant water quality impacts. Additionally, the proposed Project would not increase impervious area within the Quarry site compared to that assessed in the 2009 FEIR, and therefore would not create or contribute runoff capable of exceeding the capacity of stormwater drainage systems or generate substantial additional sources of polluted runoff. The proposed Project would not result in changes to the physical design or method of implementing the ARP, and would only result in a change in the timing of implementation of each reclamation phase.

The majority of the Quarry site is in an area of minimal flooding.¹⁷ The marsh areas of the NW Quadrant of the Quarry are located within the 100-year flood hazard zone (FEMA, 2016) as mapped by the Federal Emergency Management Agency (FEMA). These areas are to be preserved and restored under the ARP. Reclamation would not include the placement of structures that would impede or redirect flood flows. Further, as discussed above and under topic 10b, implementation of the proposed Project would not add substantial areas of impervious surfaces such that the rate or amount of surface runoff from the Quarry site would be substantially increased as compared to that assessed in the 2009 FEIR; therefore, the Project would not result in flooding impacts on- or offsite.

COAs 107, 128, 130, 131, 133, 151, which implement Mitigation Measures R4.3-8b, P4.3-13, R4.4-2a, R4.5-2a, R4.5-2b, R4.5-8, and R4.5-10, would be sufficient to reduce impacts related to altered drainage patterns to less than significant. Since the publication of the 2009 FEIR, no new information has been presented that would alter the impact conclusions presented in the 2009 FEIR in Section 4.5, Hydrology and Water Quality, and the impacts remain less than significant with continued implementation of these COAs and Mitigation Measures. Implementation of the proposed Project would not substantially alter the design or implementation method of reclamation assessed in the 2009 FEIR other than the timing of each reclamation phase. Therefore, the proposed Project would not result in a new impact related to the

¹⁷ Areas of minimal flooding are defined by FEMA as being at a greater elevation than the 0.2-percent-annual-chance (or 500-year) flood.

alteration of an existing drainage pattern, and impacts described in the 2009 FEIR would not increase in severity.

10d. In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to inundation?

As described under topic 10c, above, the majority of the Quarry site is located in an area of minimal flooding and most of the site is not located in a Special Flood Hazard Area (SFHA). The marsh areas of the NW Quadrant of the Quarry are located within the 100-year flood hazard zone as mapped by FEMA (FEMA, 2016). This area is designated for preservation and restoration under the ARP, and reclamation would not include the placement of facilities or structures that could release pollutants in the event of flood inundation.

As described in the 2009 FEIR, the creation of the harbor basin would increase the possibility of inundation by a seiche or tsunami adjacent to the basin and potentially result in the release of pollutants due to inundation of structures and other shoreline areas. A seiche is a seismically generated water wave in a lake or bay, and a tsunami is a seismically generated water wave resulting from large terrestrial displacements adjacent to or beneath open water. Additionally, rising sea levels are expected to raise the highest tides and increase the potential height of seismic-wave run-up, potentially resulting in inundation of the lowest-lying areas. The 2009 FEIR analysis of flood hazard impacts incorporated consideration of sea level rise scenarios of one to three feet by the year 2100. The upper boundary of the sea level rise scenarios considered in the 2009 FEIR is consistent with estimates by the National Research Council (NRC) that the Bay Area is likely to experience a sea level rise of 36 inches by 2100 (NRC, 2012). The planning scenario of 36 inches of sea level rise by 2100 is incorporated into regional sea level rise planning (CCSF, 2017). Some sources project that sea level rise may be up to 66 inches by 2100 (BayWave, 2020). Inundation maps developed by the Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) Program, depict several inundation scenarios, the most extreme of which assumes a 66-inch sea level rise, plus a 100-year storm surge combining to produce a water surface elevation of 108 inches above Mean Higher High Water (BCDC, 2017). Implementation of COA 130 and Mitigation Measure R4.5-8 require the Applicant to model the effects of the maximum expected tsunami, seiche event, and anticipated sea level rise prior to the implementation of Phase 4 of reclamation. The assessment report to the County must rely on the most recent climate change projections, consider the County policies and regulations in effect at the time, and incorporate adequate setback and final contour elevations. If necessary, the results of the assessment report will be used as a basis for revising the plans for Phase 4 reclamation and post-reclamation use of the Project site.

Implementation of COA 130 and Mitigation Measure R4.5-8 would be sufficient to reduce to less than significant impacts related to the release of pollutants from inundation by flood waters. Since the publication of the 2009 FEIR, no new information has been presented that would alter the impact conclusions presented in Section 4.5, *Hydrology and Water Quality*, and the impacts remain less than significant with the requirements of the COAs and mitigation measures. No new impacts related to the release of pollutants from inundation by flood waters would occur, and the proposed Project would not increase the severity of previously identified significant impacts.

10e. Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As discussed above under topics 10a, 10b, and 10c, no significant water quality degradation or groundwater impacts would occur as a result of the proposed Project. As described under topics 10a and 10c, the proposed Project would have a less-than-significant impact to on-site and off-site water quality. This includes receiving marsh waters in the NW Quadrant and off-site Bay waters, which are subject to the Basin Plan water quality objectives. The Basin Plan water quality objectives are designed to preserve and enhance water quality and protect the beneficial uses¹⁸ of all regional terrestrial surface water bodies (e.g., creeks, rivers, streams, and lakes), groundwaters, coastal drainages, estuaries, coastal lagoons, and enclosed bays within the RWQCB's jurisdictional area. These objectives include parameters such as turbidity/sediment and nutrients. The Project would comply with the requirements of the NPDES Permit, including implementation of BMPs and other requirements of a SWPPP, as well as all previously identified COAs and mitigation measures, all of which are designed to ensure that stormwater discharges associated with reclamation-related operational activities at the Quarry site comply with the Basin Plan water quality standards. As described under topic 10b, the proposed Project would not require groundwater withdrawals or reduce groundwater recharge. The Project site is not located within an area subject to a sustainable groundwater management plan (DWR, 2020). Impacts relating to conflict or obstruction of implementation of a water quality control plan or sustainable groundwater management plan from implementation of the proposed Project would be less than significant. No new impacts related to conflict or obstruction of implementation of a water quality control plan or sustainable groundwater management plan would occur, and the proposed Project would not increase the severity of previously identified significant impacts.

Cumulative Impacts

The geographic scope for potential cumulative hydrology and water quality impacts consists of the Project site, including associated marshlands, and surrounding receiving Bay waters. As discussed above, the proposed Project would not result in Project-specific significant impacts associated with hydrology and water quality. Continued implementation of adopted mitigation measures and COAs will continue to reduce all previously identified impacts in the 2009 FEIR to a less-than-significant level.

With implementation of mitigation measures and COAs, including the conditions contained in the NPDES Permit, SWPPP, and associated BMPs, impacts associated with erosion, sedimentation, and transport or discharge of pollutants on-site or downstream would be less than significant. Pollutants listed on the 303(d) list for Bay receiving waters are not present at SRRQ and are not being discharged into receiving waters as a result of Quarry operations or reclamation. Implementation of the proposed Project would not result in the occurrence of new or substantially more severe significant impacts related to flooding on- or off-site or the exceedance of stormwater conveyance capacity. Implementation of the proposed changes to the timing of each reclamation phase would not increase impervious surfaces compared to the areas analyzed in the 2009 FEIR and, accordingly, would not increase the rate or amount of peak runoff, flooding or flood risks, erosion, and/or sedimentation on- or off-site, or reduce groundwater recharge relative to the 2009 FEIR.

¹⁸ Aquatic resources provide many different benefits. Beneficial uses are those resources, services, and/or qualities of aquatic systems that are to be maintained and are the ultimate goals for protecting and achieving high water quality.

With adherence to the described regulatory requirements, as well as implementation of COAs and mitigation measures, the effects of the Project would not combine with those of ongoing Quarry operations or other cumulative projects in the area to cause a cumulatively significant impact related to increased soil erosion and sedimentation, alterations to drainage patterns, or inadvertent releases of water quality pollutants. Therefore, no overall cumulatively significant effect to surface water or groundwater quality or hydrology would occur, and the Project would not make a cumulatively considerable contribution to a significant cumulative effect. Portions of the Main Quarry Bowl reclamation area associated with the creation of a harbor basin would be located in areas potentially subject to future flooding and flood risks from wave and tsunami run-up as a result of sea-level rise. With implementation of COA 130 and Mitigation Measure R4.5-8, the new facilities would be protected from future flooding and flood hazards due to sea-level rise flooding and impacts would be less than significant. The proposed Project therefore would not result in a cumulatively considerable contribution to a significant cumulative effect. For these reasons, the proposed Project does not result in new cumulative impacts or increase the severity of cumulative impacts related to hydrology and water quality relative to the 2009 FEIR.

Mitigation Measures

The 2009 FEIR identified seven mitigation measures to reduce identified impacts related to Hydrology and Water Quality to a less-than-significant level. The identified mitigation measures were adopted as COAs, as indicated in the list below, and would continue to apply to the proposed Project. No mitigation measures require revision. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.4-2a requiring preparation of a Stormwater Management Plan and Stormwater Pollution Prevention Plan, as well as Standards for Stormwater Erosion Control of Reclaimed Areas and Standards for Revegetation of Reclaimed Areas (COAs 128, 133).

Mitigation Measure R4.4-2b requiring incorporation of BMPs to reduce and eliminate soil erosion into grading and construction specifications (COA 126).

Mitigation Measure R4.5-2a requiring implementation of the Stormwater Management Plan and Stormwater Pollution Prevention Plan (COAs 128, 133).

Mitigation Measure R4.5-2b requiring incorporation of a BMP performance and condition monitoring and maintenance plan as part of the Stormwater Pollution Prevention Plan (COAs 128, 133).

Mitigation Measure R4.5-6 requiring completion of an engineering and economic report for use and maintenance of mechanical mixing or aeration system for the Main Quarry Bowl after it is flooded (COA 129).

Mitigation Measure R4.5-8 requiring model analysis of maximum expected tsunami, seiche, and anticipated sea level rise using latest climate information along with proposed design recommendations consistent with County policies and applicable regulations (COA 130).

Mitigation Measure R4.5-10 requiring the ARP includes standards for preventing polluted stormwater runoff from entering the Main Quarry Bowl after it is flooded (COA 131).

Conclusion

Implementation of Mitigation Measures R4.4-2a, R4.4-2b, R4.5-2a, R4.5-2b, R4.5-6, R4.5-8, and R4.5-10, all of which have been adopted as COAs, would be sufficient to reduce reclamation-related impacts to surface and groundwater quality, water quality standards, waste discharge requirements, groundwater supply, erosion and sedimentation, stormwater runoff rate, volume, and conveyance, and flooding to less than significant under CARP19. Since the publication of the 2009 FEIR, no new information has been presented that would alter the impact conclusions presented in Section 4.5, *Hydrology and Water Quality*, or Section 5.2, *Cumulative Impacts*, and the impacts remain less than significant with the implementation of the COAs and mitigation measures. No new significant impacts would occur and no previously identified significant impact would increase in severity as a result of the proposed Project.

References

- Bay Conservation and Development Commission (BCDC), 2017. Bay Area Sea Level Rise Analysis and Mapping Project: Marin County. Available at: <https://explorer.adaptingtorisingtides.org/download>
- BayWAVE, 2020. BayWAVE: Sea Level Rise and Marin's Bayside: Sea Level Rise Scenarios. Accessed online, November 17, 2020 at <https://www.marincounty.org/main/marin-sea-level-rise/baywave/sea-level-rise-scenarios>
- City and County of San Francisco (CCSF), 2017. City and County of San Francisco Proposed Capital Plan Fiscal Years 2018-2027. Accessed online, October 15, 2020 at: https://onesanfrancisco.org/sites/default/files/2017-05/Capital-Plan-FINAL_digital_170504.pdf
- California Department of Water Resources (DWR), 2020. Statewide Map of Current SGMA Basin Prioritization. April 28, 2020.
- The Dutra Group, 2016. San Rafael Rock Quarry (SRRQ) Exceedance Response Action Level 1 Report. Reporting Period 2015-2016. San Rafael Rock Quarry, WDID 2 21I003840. December 30, 2016.
- The Dutra Group, 2018a. San Rafael Rock Quarry (SRRQ) Exceedance Response Action Level 1 Evaluation and Report. Reporting Period 2017-2018. San Rafael Rock Quarry, WDID 2 21I003840.
- The Dutra Group, 2018b. Exceedance Response Action Level 2 Action Plan – TSS & Iron. San Rafael Rock Quarry. August 2018.
- The Dutra Group, 2019. ERA Level 2 Nitrate + Nitrite Nitrogen Natural Background Demonstration / Non-Industrial Pollutant Source Demonstration Sampling and Analysis Plan. San Rafael Rock Quarry, WDID 2 21I003840. February 2019.
- Federal Emergency Management Agency (FEMA), 2016. National Flood Insurance Program, Flood Insurance Rate Map (FIRM) 06041C0477E. March 16, 2016.
- Industrial Activities Stormwater Pollution Prevention Plan (Industrial SWPPP), 2019. Prepared by Cal Inc Training LLC for the Dutra Group San Rafael Rock Quarry. WDID 2 21I003840, September 2015, revised January 7, 2019.

- Moffat and Nichol, 2014. Circulation and Water Quality Study – Cost Analysis for Potential Mitigation Options. San Rafael Rock Quarry – Reclamation Plan Project, M&N File No: 5487-03. December 30, 2014.
- NRC. 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. National Academies Press.
- Regional Water Quality Control Board (RWQCB), 2006. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). Incorporating all amendments approved by the Office of Administrative Law as of November 5, 2019. Accessed online, September 28, 2020 at: https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html
- State Water Resources Control Board (SWRCB), 2017a. 2014 and 2016 California 303(d) List of Water Quality Limited Segments. Final 2014 and 2016 Integrated Report (CWA Section 303(d) List / 305(b) Report). Accessed online, September 28, 2020 at: https://www.waterboards.ca.gov/water_issues/programs/tmdl/2014_16state_ir_reports/category5_report.shtml
- SWRCB, 2017b. 2016-2017 Annual Report for Stormwater Discharges Associated with Industrial Activities. Reporting Period July 1, 2016 through June 30, 2017. San Rafael Rock Quarry, WDID 2 21I003840.
- SWRCB, 2018. 2017-2018 Annual Report for Stormwater Discharges Associated with Industrial Activities. Reporting Period July 1, 2017 through June 30, 2018. San Rafael Rock Quarry, WDID 2 21I003840.
- SWRCB, 2019. Annual Report for Stormwater Discharges Associated with Industrial Activities. Reporting Period July 1, 2018 through June 30, 2019. San Rafael Rock Quarry, WDID 2 21I003840.

2.11 Land Use and Planning

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
11. Land Use and Planning. Would the Project:					
a) Physically divide an established community (including a low-income or minority community)?	2009 FEIR identified no impact of this kind.	No	No	No	NA
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?	Section 4.6, Land Use and Planning, Table 4.6-1, Impacts R4.6-2 and R4.6-5.	No	No	No	NA
c) Result in substantial alteration of the character or functioning of the community, or present planned use of an area?	Section 4.6, Land Use and Planning, Impacts R4.6-3 and C4.6-7.	NA	NA	NA	NA
d) Conflict with applicable Countywide Plan designation or zoning standards?	Section 4.6, Land Use and Planning, Setting discussion.	No	No	No	NA

Setting

Land uses, general plan land uses designations, and zoning within and adjacent to the Project site have not changed since certification of the 2009 FEIR, and are as described in 2009 FEIR Section 4.6, Land Use and Planning. The 2009 FEIR examined the consistency of the Amended Reclamation Plan of 2004 (ARP04), the reclamation plan then being proposed, with relevant policies in the 2007 Marin Countywide Plan and the 2004 San Rafael General Plan 2020. Both of these general plans are still in effect, and relevant policies have not changed.

Impact Discussion

The 2009 FEIR, Section 4.6, Land Use and Planning, identified five impacts of reclamation, plus one cumulative impact. This section also identified one impact on agricultural lands and agricultural uses, which is discussed in this Supplemental Environmental Review in Section 2.2, Agriculture and Forestry Resources. Two of the Land Use and Planning impacts were significant, and the 2009 FEIR included mitigation measures to reduce these to less than significant. The mitigation measures were adopted as Conditions of Approval (COAs), as discussed below and listed at the end of this section. The 2009 FEIR

found that the cumulative land use impact of planned reclamation and continued mining operations considered together, would be significant and unavoidable.

11a. Would the Project physically divide an established community (including a low-income or minority community)?

The 2009 FEIR included “physically divide an established community” as a significance threshold, but did not identify any impact of ARP04 related to physically dividing an established community. Since certification of the 2009 FEIR, there have been no changes to land use within or around the Project site, and there have been no changes to the regulatory environment that affect land use within or around the Project site.

The Project Site is entirely within the existing property owned by SRRQ and used for mining, brickmaking, and other industrial activities. The Project site is bounded on the north by Point San Pedro Road, and on the south, east, and west by San Francisco Bay. The Peacock Gap neighborhood, consisting primarily of single-family homes, townhouses, and a golf course, is located immediately across Point San Pedro Road from the Project site. The Marin Bay Park development and McNear's Beach County Park are located adjacent to the property on its northeastern border. Other residential areas west of Peacock Gap are the Glenwood, Bayside Acres, and Loch Lomond neighborhoods. SRRQ is accessed by private roads that intersect with Point San Pedro Road. Quarrying activities have occurred on the SRRQ property for nearly 150 years and predate most of the other current land uses in the area, including residential and recreational uses. Because the Quarry has been located at the Project site for over 100 years and the Project would not differ from the existing approved reclamation plan, CARP10, other than to extend the schedule for reclamation, the Project would not physically divide an established community (including a low-income or minority community). Consequently, the Project would not result in any new or substantially more severe significant impact related to physically dividing an existing community.

11b. 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?

In Table 4.6-1, the 2009 FEIR examined consistency of ARP04 with relevant policies of the 2007 Countywide Plan, and found that, with adoption and implementation of mitigation measures identified throughout the 2009 FEIR, ARP04 would be consistent with relevant Countywide Plan policies. In addition, the 2009 FEIR identified two impacts that addressed consistency of ARP04 with other plans, policies, and regulations. Impact R4.6-2 considered consistency of the intended post-reclamation use of the Project site with BCDC Bay Plan policies and zoning and other policies of the San Rafael General Plan 2020, and found that it was premature to analyze this impact; consistency with these plans and policies should be determined during review of the final Development Plan, which is required by COA 31 to be prepared three years prior to the anticipated completion of mining. Impact R4.6-5 identified a significant impact from intensification of a nonconforming use, in conflict with County Development Code Title 22 (identified as Section 22.112.020 in the 2009 FEIR, but since renumbered as Section 22.78.020I). As stated under Impact R4.6-5, this conflict was due to the proposal to undertake phased reclamation while mining was ongoing, rather than following cessation of mining, as had been the plan in effect at the time that the Quarry became a non-conforming use in 1982. The 2009 FEIR concluded that mitigation measures to reduce noise and air quality impacts would, however, reduce the environmental

effects of intensified site use on land uses adjacent to the site sufficiently to reduce this impact to less than significant.

The Project, if approved, would reschedule already-planned phased reclamation activities, extending the time for their anticipated completion from 2024 to 2044, a period of 20 years. This would extend the period during which mining and reclamation both continue as a legal, non-conforming use, but would not intensify those uses. The requirement to prepare a final Development Plan, which will be subject to separate environmental review, is still in place as COA 31. The noise and air quality mitigation measures that were found to reduce the impact of the non-conforming use are also in place (with the exception of the construction of the NE Berm; however, see discussion under the following topic and in Section 2.13, Noise, which finds that reclamation activities in the NE Quadrant, in the absence of the NE Berm, would not cause a significant noise impact), and the conclusions of consistency with Countywide Plan polices in 2009 FEIR Table 4.6-1 remain valid. Therefore, the proposed Project would not have a new or substantially more severe significant impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, beyond those identified in the 2009 FEIR.

11c) Would the Project result in substantial alteration of the character or functioning of the community, or present planned use of an area?

The 2009, Impact R4.6-3, found that planned phased reclamation activities were incompatible with the residential land uses adjacent to the Project site, and that ARP04 would therefore conflict with existing land uses at the periphery of the Project site. In particular, the effect of planned reclamation activities, especially grading and other activities in the NE Quadrant, occurring concurrently with ongoing mining operations could have a substantial impact in terms of annoyance of the neighbors of SRRQ due to the inherent land use incompatibilities. This exacerbation of the existing incompatibility of land uses was considered a significant impact. The 2009 FEIR included Mitigation Measures R4.6-3a through d, which were adopted as COAs 9d, 34, 72, and 73. Mitigation Measures R4.6-3b and c require construction noise abatement measures, including use of broadband back-up alarms, limiting the hours of reclamation activities, prohibiting unnecessary idling, and properly muffling and shielding equipment. Mitigation Measure R4.6-3d requires notification of SRRQ neighbors of planned reclamation activities each year before they began. Together with Mitigation Measure R4.6-3a, which is discussed in the following paragraph, these measures were found sufficient to minimize the conflict between reclamation activities and surrounding land uses, and so to reduce this impact to less than significant.

Mitigation Measure R4.6-3a cites the mitigating effect of the then-planned construction of the NE Berm along the northern property line in screening reclamation activities from neighbors on Marin Bay Park Court. The approved CARP10, which is based on the Mitigated Alternative examined in the 2009 FEIR, includes construction of the NE Berm as an option, to be required at the discretion of the Public Works Director in the approval of the Phase 1 grading permit. Several COAs implement aspects of the Mitigated Alternative that reduce noise, dust, and other contributors to incompatibility with adjacent land uses associated with reclamation activities in the NE Quadrant, including reducing the reclamation activities that may occur in the NE Quadrant. These are reviewed under topic 13a in Section 2.13, Noise. Because the County approved Phase 1 grading plans without the NE Berm, it will not be constructed and its construction and later demolition will not occur; therefore, the significant, unavoidable, short-term noise impact that contributed to the 2009 FEIR's finding of incompatibility with residential land uses has been

avoided. As identified in Section 2.13, Noise, topic 13a, the reclamation activities that are now planned in the NE Quadrant, absent the NE Berm, would not result in a significant noise impact. In sum, the changes to ARP04 embodied in the Mitigated Alternative, and the COAs that implement it, reduce to less than significant the incompatibility of reclamation activities, particularly those in the NE Quadrant, with adjacent residential land uses.

The 2009 FEIR, in Impact C4.6-7, also identified as significant the cumulative impact of continued Quarry operations occurring simultaneously with phased reclamation grading, which together would result in continuing incompatibility with neighboring residential and recreational land uses. The 2009 FEIR stated that both reclamation activities and mining activities would make a considerable contribution to this cumulative impact, and found no additional mitigation to resolve this impact. The 2009 FEIR therefore concluded that this impact would remain significant and unavoidable. Extending the already-planned reclamation activities another 20 years, as now proposed, would not result in new or substantially more severe significant impacts, compared to what was identified in the 2009 FEIR and what has already been approved in CARP10, but would only extend the same effects for a longer period of time. No physical land use change would result from the extended reclamation schedule. The proposed Project would not result in any substantial alteration of the character or functioning of the adjacent communities or present planned use of an area: the current residential and recreational uses adjacent to the Project site can be expected to continue. Because the Project would not result in a substantial physical change to the environment, compared to what was already identified in the 2009 FEIR and what is already allowed under CARP10, the Project would not result in a new or substantially more severe significant land use impact.

11d) Would the Project conflict with applicable Countywide Plan designation or zoning standards?

The 2009 FEIR reviewed the Countywide Plan land use designation of the Project site, on pages 4.6-5 and 4.6-6. Then as now, the Project site was designated by the Countywide Plan as MR (Mineral Resources Area) and PD: Reclamation (Planned Designation: Reclamation Area) for post-reclamation uses. The 2009 FEIR identified no conflict with the Countywide Plan designation, and none would occur under the current Project, CARP19. The 2009 FEIR, page 4.6-18, identified the zoning of the Project site as Residential Multiple Planned Commercial (RMPC) within which the Quarry is a legal, non-conforming use (the Project site had previously been zoned M-2, Heavy Industrial, and was rezoned to RMPC at the time of the approval of the previous amended reclamation plan (ARP82), to allow for the eventual implementation of the planned post-reclamation site uses). The zoning of the Project site has not changed, and the Project would not result in a conflict with the existing zoning. No impact due to a conflict with the Countywide Plan or zoning was previously identified in the 2009 FEIR, and none would occur under the Project. The Project would not result in a new or substantially more severe significant impact from any conflict with the Countywide Plan land use designation or zoning.

Cumulative Impacts

As discussed under topic 11.c, above, the 2009 FEIR, Impact C4.6-7, identified incompatibility with neighboring residential and recreational land uses as a significant and unavoidable cumulative impact of continued mining operations occurring simultaneously with phased reclamation grading. The Project would extend this impact for another 20 years, but otherwise would not change it: the impact would be the same under CARP19 and CARP10. Because the Project would not result in a substantial physical

change to the environment, compared to what was already identified in the 2009 FEIR and what is already allowed under CARP10, the Project would not result in a new or substantially more severe significant cumulative land use impact.

Mitigation Measures

The 2009 FEIR identified several mitigation measures to reduce identified Land Use and Planning impacts, all of which would continue to apply to CARP19. Each of these mitigation measures has been adopted as one or more Conditions of Approval (COAs). No mitigation measures require revision. In the following list, these mitigation measures are summarized, and the COAs implementing them are identified. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.6-3a: Cites SRRQ's plans to construct the NE Berm to shield neighbors from reclamation activities in the NE Quadrant, and to use broad-band backup beepers (COAs 9d, 73)

Mitigation Measure R4.6-3b: Refers to Noise and Vibration Mitigation Measure R4.7-1b, requiring noise reduction measures for off-road vehicles and equipment (COA 72)

Mitigation Measure R4.6-3c: Additional noise reduction measures, including limits on hours of reclamation activities (COA 72)

Mitigation Measure R4.6-3d: Requires notification of SRRQ neighbors of planned reclamation activities each year before they began (COA 34).

Mitigation Measure R4.6-5a: Cites SRRQ's plan to limit reclamation activities to an 8-10 week period each year (COA 32).

Mitigation Measure R4.6-5b: Mitigation Measures R4.6-3a-d and Air Quality Mitigation Measures R4.2-1a through j and R4.2-2a and b apply here as well (COAs 9d, 34, 72, 73; see Section 2.3, Air Quality, for COAs implementing the cited Air Quality mitigation measures).

Conclusion

There are no substantial changes to the proposed Project, substantial changes in circumstances surrounding the proposed Project, or substantial new information that could not have been known at the time the 2009 FEIR was certified that would result in new significant impacts or substantially more severe significant impacts related to land use and planning. Impacts to land use and planning would remain less than significant with implementation of applicable mitigation measures and COAs, none of which require revision.

2.12 Mineral Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
12. Mineral 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?	Section 4.6, Land Use and Planning, Setting section and Table 4.6-1.	No	No	No	NA
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?	Section 4.6, Land Use and Planning, Setting section and Table 4.6-1.	No	No	No	NA

Setting Discussion

While the 2009 FEIR did not contain a separate Mineral Resources section, consistency of the Amended Reclamation Plan of 2004 (ARP04) the reclamation plan then being proposed, with Countywide Plan and other land use policies was considered in the Setting discussion in Section 4.6, Land Use and Planning. Then, as now, the Project site was designated in the Countywide Plan as MR (Mineral Resources Area) and PD: Reclamation (Planned Designation: Reclamation Area) for its post-reclamation use. 145 acres of the SRRQ property is classified by the State Geologist as a Mineral Resource Zone, Class 2 (MRZ-2A), the category for known mineral resource deposits, and has been designated by the California State Mining and Geology Board as a mineral deposit of regional or statewide significance for portland cement concrete-grade construction aggregate in the North San Francisco Bay Production-Consumption region (California State Mining and Geology Board, 2018). The 2009 FEIR also found that ARP04 was consistent with reclamation requirements of the State Surface Mining and Reclamation Act (SMARA) and County Surface Mining and Reclamation Ordinance (SMARO).

Impact Discussion

The 2009 FEIR did not identify any impacts of ARP04 on availability of mineral resources. As discussed above, the 2009 FEIR examined consistency of the ARP04 with State and County policies for protection of mineral resources and mineral resource sites from incompatible land uses, and for reclamation of surface mining sites, and found no inconsistencies.

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?

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?

The proposed Project, CARP19, would enable continued mineral extraction at SRRQ through approximately 2044, until mining achieves the planned final reclamation grades. Therefore, the Project would not result in the loss of availability of a known mineral resource or mineral resource recovery site, and the Project would have no such impact.

Mitigation Measures

The 2009 FEIR identified no impacts, and consequently no mitigation measures, pertaining to mineral resources. As the Project would not have an adverse impact on mineral resources, no mitigation measures are required.

Conclusion

There are no substantial changes to the proposed Project, substantial changes in circumstances surrounding the proposed Project, or substantial new information that could not have been known at the time the 2009 FEIR was certified that would result in new significant impacts or substantially more severe significant impacts related to the availability of known mineral resources or mineral resource recovery sites. No mitigation measures are required.

References

California State Mining and Geology Board, 2018. Updated Designation of Regionally Significant Aggregate Resources in the North San Francisco Bay Production-Consumption Region, Marin, Napa, Sonoma, and Southwestern Solano Counties, California. SMGB Designation Report No. 17. California State Department of Conservation, Natural Resources Agency, January 2018. https://www.conservation.ca.gov/smgb/reports/Documents/Designation_Reports/Designation-Report-17-No.SF-Bay.pdf

2.13 Noise

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
13. Noise. 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?	Section 4.7, Noise and Vibration, Impacts R4.7-1, R4.7-2, R4.7-3, R4.7-4, and C4.7-8; Chapter 5, Growth Inducing and Cumulative Effects, page 5-12.	No	No	Yes	Yes
b) Generation of excessive groundborne vibration or groundborne noise levels?	Section 4.7, Noise and Vibration, Impact P4.7-7.	No	No	No	NA
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 two 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?	Section 4.7, Noise and Vibration, Page 4.8-9.	No	No	No	NA

Setting:

Noise Descriptors

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the “loudness” of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflect the human ear’s reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A-weighted sound level over a given time

period (Leq)¹⁹; average day–night 24-hour average sound level (Ldn)²⁰ with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)²¹, also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a “line” source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Regulatory Framework

The 2009 FEIR cited noise regulations, plans and policies from Marin County Code and the Marin Countywide Plan Noise Element for analysis of potential noise impacts. These regulations in the County Code (Section 6.70) and noise criteria cited from the Marin Countywide Plan Noise Element (Land Use Compatibility for Community Noise Environments and Benchmarks for Allowable Noise Exposure from Stationary Noise Sources) remain current and Marin County has not changed the noise regulations or criteria since the 2009 FEIR.

Existing Noise Sources and Levels

To quantify existing ambient noise levels and identify any substantial changes in the noise environment since the 2009 FEIR, RCH group conducted one long-term (72-hour) and several short-term (10-minute) noise measurements at the Project site in September 2020. Long-term noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements. Short-term measurements were made using a Larson Davis SoundTrack LxT Sound Level Meter calibrated before and after the measurements. Table NOISE-1 summarizes the locations and results of the noise measurements at each location. Figure NOISE-1 shows the locations on a map.

The Noise Appendix (Appendix D) includes 24-hour noise plots for Site 1. Based on observations from the short-term measurements, the main source of noise during short-term measurements was construction occurring within the Marin Bay Park Court community (not from SRRQ), SRRQ operational noise, and traffic noise (especially from large trucks) from Point San Pedro Road. Additional noise sources included pedestrians and birds.

¹⁹ The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time-varying sound energy in the measurement period.

²⁰ Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

²¹ CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10-decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

**Table NOISE-1
Existing Noise Levels**

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1: On a Tree located within Marin Bay Park Ct, North of the Quarry	September 15, 12:00 a.m. Through September 17, 11:59 p.m., 2020 Tuesday – Thursday 72-hour measurement	Hourly Leq's ranged from 43-52 CNELs: 53, 51, 52	Unattended noise measurements do not specifically identify noise sources
Site 1: On a Tree located within Marin Bay Park Ct, North of the Quarry	Monday September 14, 2020 11:25 a.m. to 11:35 a.m.	5-minute Leq's: 49, 49	Traffic on Marin Bay Park Ct 58 dB, Construction occurring nearby in Marin Bay Park Ct for home remodel 54 dB, Quarry noise 52 dB.
Site 1: On a Tree located within Marin Bay Park Ct, North of the Quarry	Friday September 18, 2020 10:59 a.m. to 11:09 a.m.	5-minute Leq's: 51, 51	Jet overhead 63 dB, Construction occurring nearby in Marin Bay Park Ct for home remodel 55 dB, Quarry noise 52 dB.
Site 2: Marin Bay Park Ct, 50 feet north of Cantera Way	Monday September 14, 2020 11:37 a.m. to 11:47 a.m.	5-minute Leq's: 48, 46	Service vehicle entering Cantera Way 58 dB, Construction occurring nearby in Marin Bay Park Ct 50 dB, Quarry noise 54 dB.
Site 2: Marin Bay Park Ct, 50 feet north of Cantera Way	Friday September 18, 2020 11:10 a.m. to 11:20 a.m.	5-minute Leq's: 46, 45	Quarry noise 54 dB, Distant Plane 52 dB, Birds 48 dB.
Site 3: Eastern Intersection of Heritage Dr and Point San Pedro Rd, 40 feet north of the centerline of Point San Pedro Rd	Monday September 15, 2020 11:54 a.m. to 12:04 p.m.	5-minute Leq's: 54, 55	Loud nearby traffic on Point San Pedro Road 67 dB, Quarry 53 dB, Pedestrians 42 dB.
Site 3: Eastern Intersection of Heritage Dr and Point San Pedro Rd, 40 feet north of the centerline of Point San Pedro Rd	Friday September 18, 2020 11:25 a.m. to 11:35 a.m.	5-minute Leq's: 53, 55	Loud nearby traffic on Point San Pedro Road 67 dB, Quarry 53 dB, Pedestrians 42 dB.
Site 4: Western Intersection of Heritage Dr and Point San Pedro Rd, 40 feet north of the centerline of Point San Pedro Rd	Monday September 15, 2020 12:10 p.m. to 12:24 p.m.	5-minute Leq's: 69, 65	Truck on Point San Pedro Rd 84 dB, Quarry 54 dB.
Site 4: Western Intersection of Heritage Dr and Point San Pedro Rd, 40 feet north of the centerline of Point San Pedro Rd	Friday September 18, 2020 11:38 a.m. to 11:48 a.m.	5-minute Leq's: 63, 66	FedEx Truck 80 dB, Large Truck 78 dB, Bikers 64 dB, Traffic on Point San Pedro Road 58 dB

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 5: Intersection of Chapel Cove Dr and Point San Pedro Rd, 50 feet north of the centerline of Point San Pedro Rd	Monday September 15, 2020 12:24 p.m. to 12:34 p.m.	5-minute Leq's: 57, 58	Traffic on Point San Pedro Rd 70 dB, Distant Quarry noise 49 dB, Pedestrians 45 dB.
Site 5: Intersection of Chapel Cove Dr and Point San Pedro Rd, 50 feet north of the centerline of Point San Pedro Rd	Friday September 18, 2020 11:50 a.m. to 12:00 p.m.	5-minute Leq's: 57, 57	Traffic on Point San Pedro Rd 71 dB, Distant Quarry noise 49 dB, Pedestrians 48 dB.
Site 6: Nearby intersection of Point San Pedro Rd and McNear's Brickyard Rd, 30 feet south of the centerline of Point San Pedro Rd	Monday September 15, 2020 12:37 p.m. to 12:47 p.m.	5-minute Leq's: 61, 64	Traffic on from Point San Pedro 69 dB, Distant Quarry noise 54 dB, Birds 54 dB.
Site 6: Nearby intersection of Point San Pedro Rd and McNear's Brickyard Rd, 30 feet south of the centerline of Point San Pedro Rd	Friday September 18, 2020 12:03 p.m. to 12:13 p.m.	5-minute Leq's: 60, 61	Truck Honking 77 dB, Distant Quarry noise 52 dB, Birds 49 dB.

Source: RCH Group, 2020



Figure NOISE-1: Noise Measurement Locations



Legend

= Noise Measurement Location

The previous long-term noise study conducted in the 2009 FEIR indicated that noise levels at Marin Bay Park Court varied from 52 to 56 dB, Ldn. Long-term noise results from the 2020 study show that noise levels at Marin Bay Park Court varied from 51 to 53 dB, Ldn. Based on these results, the current ambient noise levels at Marin Bay Park Court are slightly lower than analyzed in the 2009 FEIR.

Sensitive Receptors

The nearest sensitive receptors identified in the 2009 FEIR remain unchanged. Sensitive receptors are the residences along Heritage Drive and Marin Bay Park Court. These residences are approximately 200 feet from the fence line of the Quarry and 1,200 feet from the Main Quarry Bowl. Portions of McNear's Beach County Park border the fence line and are located approximately 800 feet from the Main Quarry Bowl. Residences on San Marino Drive and Via Montebello also overlook the Quarry at approximately 1,600 feet from the Main Quarry Bowl. See Figure NOISE-1.

Impact Discussion

As discussed in more detail below, the 2009 FEIR identified four noise impacts of reclamation activities, three of which were less than significant, and one of which was significant. The 2009 FEIR included mitigation measures to address the significant impacts but found that one could not be mitigated to less than significant. The 2009 FEIR concluded that this impact was significant and unavoidable. The 2009 FEIR also identified one less-than-significant cumulative impact of reclamation and mining operations considered together. All mitigation measures from the 2009 FEIR, and the corresponding Conditions of Approval (COAs) implementing them, are listed at the end of this section.

13a. 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?

Overview of Updated Analysis

This analysis includes updated noise analyses based on changes in circumstances to the Project that differ from the noise analysis in the 2009 FEIR. One change in circumstances is that the NE Berm has not been constructed and the applicant is no longer proposing to construct the NE Berm. Therefore, the construction of the NE Berm would no longer be a temporary significant noise impact, as determined in the 2009 FEIR. Consequently, the Project will no longer have the beneficial impact of the noise reduction from the NE Berm. Another change is the adoption of COA 70 that defines the applicable noise standards for operations and reclamation activities. The 2009 FEIR considered an increase of greater than 6 dBA over existing ambient noise levels to be a significant impact regardless of the existing noise levels, but 2019 changes in the State CEQA *Guidelines* provides guidance that substantial temporary or permanent increases in ambient noise are only significant if they are in excess of standards, which for this Project are the standards established in COA 70, as discussed below.

COA 70 establishes noise limits for both operations and reclamation at SRRQ as follows:

Noise levels due to Quarry operations or reclamation, measured at the residential receptor property line, shall be limited to: 60 dBA day/night Ldn, 70 dBA maximum (sound level measurement made with "slow" meter response) and 65 dBA impulsive (sound level measurement made with "fast" meter response).

COA 70 establishes the standard for evaluation of the Project's potential noise impacts under topic 13a: exceedance of these numerical standards would indicate that the Project would have a significant noise impact.

Analysis of Reduced Activity in the NE Quadrant and Construction of NE Berm

Impact R4.7-1 in the 2009 FEIR determined that the construction of a proposed berm along the northern property line of the NE Quadrant (the "NE Berm") would result in a temporary but significant and unavoidable construction noise impact. Once constructed, however, this berm would result in the creation of a noise buffer that would reduce noise from reclamation activities and mining operations for residences located to the north of the Project site (identified as a beneficial impact). Mitigation Measures R4.7-1a and b require noise abatement measures, including modifications to equipment and limiting the hours for reclamation activities that would reduce noise from reclamation activities, but found that these reductions would not mitigate the impact (construction of the NE Berm) to less than significant. Mitigation Measures R4.7-1a and b were adopted as COAs 72 and 73. These COAs continue to reduce noise in the NE Quadrant with or without the construction of the NE Berm.

As discussed in Chapter 1, Project Description, the Board of Supervisors approved a modified version of the Mitigated Alternative to ARP 04. As described in the 2009 FEIR, the Mitigated Alternative included changes to then-proposed reclamation of the NE Quadrant that prohibited using this area for stockpiling and preparing mining wastes for eventual use as fill for reclamation grading. Consequently, the Mitigated Alternative did not include construction of the proposed NE Berm, because the reduced level of reclamation activity in the NE Quadrant rendered it unnecessary as a noise and visual shield. In approving the ARP project, the BOS retained most of the features of the Mitigated Alternative, but included an option to construct the NE Berm, by requiring two sets of grading plans for reclamation phase 1: one with the berm, and one without. This requirement is contained in COA 9d.

Other COAs pertaining to noise-limiting activities in the NE Quadrant include:

- COA 9f, which requires retention of the brow berm on the northern lip of the Quarry until the later stage of reclamation, specifically to provide visual and sound screening between the mining and plant operations and adjacent residences;
- COA 9h, which limits NE Quadrant grading activities to work and activities needed for geotechnical soil stabilization, erosion control and revegetation of the area, as approved by the Public Works Director, and specifically prohibits grading activity beyond what is needed to readily adapt the area for alternative land uses is not approved under this Permit;
- COA 21a, which limits reclamation grading to a 10-week period during the dry season each year; and
- COA 21c, which requires SRRQ to provide a geotechnical evaluation of the use of pond fines as fill material, and to report to the County on the most efficient method and location to reclaim the

pond fines which further reduces potential impacts to the environment and minimizes the amount of material imported into the NE Quadrant.²²

- COA 70, which establishes noise limits for both operations and reclamation, limiting noise measured at the residential receptor property line to 60 dBA day/night Ldn, 70 dBA maximum (sound level measurement made with “slow” meter response) and 65 dBA impulsive (sound level measurement made with “fast” meter response).

In 2015, the County Department of Public Works issued a grading permit for Phase 1 reclamation grading. The approved grading plans did not include construction of the NE Berm. Because the NE Berm will not be constructed during Phase 1 reclamation, the temporary but significant and unavoidable noise impact from construction of the NE Berm will be avoided. As discussed above, the long-term beneficial impact of the NE Berm (shielding residents to the north from reclamation activities in the NE Quadrant) will not be realized. The NE Berm, however, is no longer needed to reduce noise exposure to less-than-significant levels, as explained below.

Although the NE Berm is not included for Phase 1 of reclamation, the Public Works Director could still require the NE Berm to be constructed during a later reclamation phase, as permitted in COA 9d, but SRRQ is not proposing it. If the NE Berm is built later, construction would occur within approximately 300 feet of receptors on Marin Bay Park Court. Typical construction equipment noise emission levels are provided in Table NOISE-2 below. Noise levels from construction equipment would be 80 to 85 dB, Lmax at 50 feet from the construction equipment. Construction of the NE Berm would occur at approximately 300 feet from residences located along Marin Bay Park Court. At 300 feet, noise levels would attenuate to 64 to 68 dB, Lmax.

Table NOISE-2
Typical Noise Levels from Construction Equipment (Lmax)

Construction Equipment	Typical Noise Level 50 ft from Source, dB
Scraper	85
Dozer	85
Loader	80
Backhoe	80
Grader	85
Shovel (excavator)	82
Rockdrill	95
Truck	84

Source: FTA, 2018.

Impact R4.7-1 in the 2009 FEIR determined that construction of the NE Berm would result in a temporary but significant and unavoidable construction noise impact even with mitigation incorporated (Mitigation Measures 4.7-1a and b, adopted as COAs 72 and 73) because temporary construction noise would have conflicted with the significance thresholds used for the 2009 FEIR’s noise analysis (which

²² The report was completed in 2010 (ENGEO Incorporated, 2010. Pond Fines COA#21C – Permit #Q-72-03 Amendment #1. Annual Geotechnical Evaluation. San Rafael Rock, San Rafael California, Letter to Mr. Josh Kirtley, Dutra Materials. ENGEO Project Number 6261.200.100. November 29, 2010.

were based on Program NO-1c of the General Plan Noise Element), and would have resulted in an increase of greater than 6 dBA over existing levels at Marin Bay Park Court. After construction, the NE berm would be beneficial, because it would reduce noise from reclamation and mining activities for Marin Bay Park Court residents. The Project would extend the reclamation schedule but would not otherwise change the noise impact from construction of the NE Berm. Therefore, with respect to construction of the NE Berm if it were to be required by the Public Works Director, the Project would not result in a new or more severe significant impact than previously identified in the 2009 FEIR, and as already included as an option in CARP10.

In Impact R4.7-3, the 2009 FEIR determined that planned reclamation activities in the NE Quadrant, specifically the mixing of pond fines for use as fill material for reclamation grading, would generate noise at nearby sensitive receptors on Marin Bay Park Court, but that the then-proposed NE Berm, once constructed, would provide sufficient noise attenuation to reduce this impact to less than significant. One of the alternatives evaluated in the 2009 FEIR, the Mitigated Alternative, specified not constructing the NE Berm, and not using the NE Quadrant for certain reclamation activities, notably the mixing of stockpiled pond fines. The alternatives analysis in Chapter 6 of the 2009 FEIR found that the Mitigated Alternative would avoid the significant unavoidable noise impact of constructing the NE Berm, and that noise impacts from the reduced reclamation activities in the NE Quadrant would either be less than significant, or less than significant with mitigation. The 2009 FEIR did not, however, provide detailed analysis of impacts of noise from reclamation activities in the NE Quadrant without the presence of the NE Berm. Such an analysis is presented below.

Analysis of Reclamation Activities in the NE Quadrant without the NE Berm.

Without the construction of the NE Berm, there will not be a buffer between noise-generating reclamation activities in the NE Quadrant and the residences located to the north. Recent noise levels at Marin Bay Park Court (during a period when no reclamation activities were occurring) were found to range from 47 to 51 dB, Leq(h) (Table 1). The nearest residences on Marin Bay Park Court are about 400 feet from the closest areas slated for reclamation activities in the NE Quadrant in Phase 1 (Figure 1-8 in Chapter 1).

Under the Project, reclamation activities in the NE Quadrant would include limited mixing of pond fines with overburden and using this material to fill portions of the NE Quadrant to final reclamation grades, consistent with the limitations in COAs 9h and 21c. Use of construction equipment for these activities will generate noise levels of 80 to 85 dB, Lmax at 50 feet (Table Noise-2), which will attenuate to about 57 to 62 dB, Lmax at 400 feet,²³ which is less than the COA 70 standard of 70 dB, Lmax. Average hourly noise levels (Leq(h)) will be less than the maximum because of breaks in the activity and because noise-generating activities will at times be farther away from sensitive receptors or partially shielded by other equipment or material piles. The distance from pond fine mixing and grading activities to the nearest residences will increase in later reclamation phases, to about 600 to 700 feet away in Phase 2 (Figure 1-10 in Chapter 1), and 800 to 900 feet away in Phase 3 (Figure 1-11 in Chapter 1), and so noise levels from these later phases will also be lower than the COA 70 Lmax standard.

²³ Assuming a typical attenuation rate for noise from point sources traveling over uneven terrain of 7.5 dB for each doubling of the reference distance.

Noise from Brow Berm Construction Activity

COA 9f requires maintenance of the existing brow berm along the northern rim of the Main Quarry Bowl to shield mining operations from nearby residences, and this requirement is included in the grading plans for both CARP10 and CARP19. As shown in Figures 1-8, 1-10, 1-11, and 1-2 in Chapter 1, Project Description, the brow berm will be rolled over (excavated and rebuilt in a different location) as mining in the Main Quarry Bowl progresses northward. The brow berm will screen views of and noises from the Main Quarry Bowl and operations area, but not reclamation activities in the NE Quadrant. The 2009 FEIR did not analyze the rolling over of the brow berm. Such an analysis is presented below.

Use of heavy-duty construction equipment for rolling over the brow berm would generate noise levels of 80 to 85 dB, L_{max} at 50 feet (See Table Noise-2). Phase 1 will include the rolling over of the berm just north of the Main Quarry Bowl, approximately 1,000 feet from the residences on Marin Bay Park Court. Phase 2 will include extending the brow berm west of the existing brow berm approximately 1,100 feet from the residences on Marin Bay Park Court.

At 1,000 feet, noise levels from rolling over of the brow berm would attenuate to 55 to 59 dB, L_{max}, which is lower than the COA 70 L_{max} standard, and which is also lower than the previously predicted noise levels from mixing and grading of pond fines, as described above. Depending on the intensity of the reclamation activities, the hourly average noise increase (Leq(h)) would increase from existing ambient levels, but not substantially given the distance and estimated L_{max} from brow berm construction activities.

Ldn Noise Levels

Reclamation activities would only occur for a maximum of 10 hours per day during daylight, and the low level of noise measured at night at Marin Bay Park Court would not be affected by the daytime construction activity. Consequently, the modeled 24-hour Ldn noise level at the nearest property line on Marin Bay Park Court would be 58 dB, Ldn, which is less than 60 dB, Ldn standard contained in COA 70.

Conclusion: Noise Impacts from Reclamation Grading in the NE Quadrant without the NE Berm

Because noise levels from reclamation activities in the NE Quadrant without the NE Berm would not be expected to exceed either the 60 dBA, day/night Ldn or 70 dBA, L_{max} noise standards established in COA 70, reclamation activities in the NE Quadrant under the Project would be less than significant; no new or substantially more severe significant impacts, compared to what was identified in the 2009 FEIR, would occur.

Noise from Post-Reclamation Development

The 2009 FEIR, Impact R4.7-4, analyzed noise increases from post-reclamation development, including housing, commercial uses, community facilities (parks) and a marina, and found the impact to be less than significant. Under the current Project, post-reclamation development would occur later than previously anticipated in the FEIR and currently scheduled in CARP10. However, the change in reclamation scheduling would not create new or substantially more severe sources of noise. CARP19 would not result in a net increase in noise generation from post-reclamation land use development or a net increase of

noise associated with post-reclamation uses. Therefore, CARP19 would not be expected to result in a new or substantially more severe noise impact from post-reclamation land use.

13b. Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

The 2009 FEIR determined that continued blasting at the Quarry under the AQP project would expose nearby receptors to vibration levels that exceed human annoyance levels (less than significant with mitigation incorporated) but did not identify any impacts of groundborne noise or vibration from reclamation activities. The applicant does not plan to use blasting for reclamation. The Project does not make any changes to operations at the Quarry and would only extend the reclamation phasing schedule at SRRQ. Blasting for operations would continue to be short, temporary events, which would not be affected by the Project. The Project would not result in stronger vibrations or a longer duration of blasting events than what is already experienced from current blasting events, and there would be no new or more severe significant impact of this kind.

13c. 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 two 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?

The nearest private airstrip to the Project site is the San Rafael Airport (formerly known as the Marin Ranch Airport), located about 3.6 miles to the northwest. No public use airports are located within Marin County or in proximity to the Project site. The Project site is therefore not within the vicinity of a private airstrip or an airport land use plan or, within 2 miles of a public use airport. As indicated in the 2009 FEIR, there are no Project impacts related to proximity to airports.

Cumulative Impacts

The 2009 FEIR determined that there would be less-than-significant cumulative noise impacts resulting from mining operations and reclamation occurring simultaneously (Impact C4.7-8), and also found that the potential for noise impacts from the two projects, combined with other projects in the area, to cause a cumulative noise impact was less than significant (Chapter 5, Growth Inducing and Cumulative Effects). One noise-generating reclamation activity (the NE Berm construction) has been eliminated. The overall cumulative noise impact for residents north of SRRQ has been reduced by eliminating construction of the NE Berm and therefore eliminating the temporary significant, unavoidable impact of building the NE Berm. The construction of the NE Berm was determined to be a significant, unavoidable impact in the 2009 FEIR. That activity will no longer be part of the cumulative noise environment.

Under CARP19, operations and reclamation activities would also occur simultaneously, but for a longer period than previously analyzed in the 2009 FEIR. The Project would not cause changes in operational noise. The 2009 FEIR provided typical construction equipment noise emission levels for the analysis of noise impacts. Since then, typical noise levels from construction equipment have decreased slightly (See **Table Noise-2**). The Project would continue to use the same types of equipment for reclamation activities as proposed in the 2009 FEIR, however, the estimated maximum noise emission levels from this equipment would be slightly lower than previously analyzed in the 2009 FEIR. Therefore, noise levels generated from operations and reclamation occurring simultaneously would not be higher than previously analyzed in the 2009 FEIR. Furthermore, when compared to 2006 noise measurements (in the 2009

FEIR), long-term noise monitoring in 2020 showed a slight reduction in 24-hour noise at the nearest residential receptors (Appendix D - Noise). Hence, the Project would not be expected to result in a new or substantially more severe cumulative noise impact.

Mitigation Measures

The following summarizes the Noise and Vibration mitigation measures from the 2009 FEIR, and identifies the COAs that implement them. The full text of all mitigation measures, including proposed revisions, is included in Appendix A. COAs are included in Appendix B.

Mitigation Measure R4.7-1a: Requires continuation of SRRQ's practice of fitting all rolling vehicles with broadband backup alarms (COA 73).

Mitigation Measure R4.7-1b: Requires additional measures to reduce noise from reclamation activities in the NE Quadrant, including limits on hours and days during which reclamation can occur, and use of best available noise control techniques and good practices for off-road equipment and trucks (COA 72).

Conclusion

The Project would not result in a new or substantially more severe significant noise impact, compared to those identified in the 2009 FEIR. No new mitigation measures, and no revisions to previously adopted mitigation measures, are necessary or proposed.

References

California Department of Transportation (Caltrans), 1998. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects. October 1998.

Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment (FTA Report No. 0123, Page 190). 2018.

2.14 Population and Housing

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
14. Population 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)?	Section 4.11, Population and Housing, Impacts R4.11-1 and R4.11-2.	No	No	No	NA
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	Section 4.11, Population and Housing, Impacts R4.11-1 and R4.11-2.	No	No	No	NA
c) Increase density that would exceed official population projections for the planning area within which the project site is located as set forth in the Countywide Plan and/or community plan?	Section 4.11, Population and Housing, Impacts R4.11-1 and R4.11-2.	No	No	No	NA
d) Displace existing housing, especially affordable housing?	Section 4.11, Population and Housing, Impacts R4.11-1 and R4.11-2.	No	No	No	NA
e) Result in any physical changes which can be traced through a chain of cause and effect to social or economic impacts?	Chapter 2, Summary, p. 2-22	No	No	No	NA

Setting Discussion

There have been several changes to the physical and regulatory setting for Population and Housing since certification of the 2009 FEIR. In Section 4.11, the 2009 FEIR stated that Marin County had a population of approximately 251,000 in 2005 and estimated it would have a population of approximately 270,000 in 2020. Population growth rates were estimated to be approximately 9 percent. Since certification of the 2009 FEIR, the population of Marin County has grown, but not as quickly as predicted. In 2019, the County had a population of approximately 258,000 and the growth rate had slowed to 2.5 percent (US Census, 2019).

Since certification of the 2009 FEIR, Marin County's Housing Element has been updated. The current Housing Element covers the period 2015-2023, and brings housing goals in line with the sustainability principles of the Countywide Plan of 2007. The current Housing Element also reflects changes to State laws, notably SB 375, the Sustainable Communities and Climate Protection Act of 2008. SB 375 extends the housing element planning period from five years to eight years in order to link the Regional Transportation Plan (RTP) process with the Regional Housing Needs Allocation (RHNA) and housing element process. Marin jurisdictions saw a significant decrease in the 2014-2022 RHNA allocation, from 4,882 units county-wide in the previous allocation to 2,298 in the current one. The allocation for the unincorporated County area was also reduced, from 773 units to 185. This was due to the methodological decision to focus growth in transit-oriented areas of the Bay Area: because Marin had no fixed transit (prior to initiation of SMART Train service) and a relatively low service level of bus transit, the RHNA share was reduced. The current Housing Element directs residential development to the City-Centered Corridor, which is best served by transit. The Housing Element includes an inventory of sites that identifies seven properties with the potential to be developed to meet the RHNA. None of the land inventory sites is located within or near the Project site. (Marin County Community Development Agency, 2015).

The Project site contains several residences, including two residential quarters, a main house, guest house, cottage, and a caretaker's residence. No new housing has been constructed on the Project site since certification of the 2009 FEIR, and no housing has been removed.

Impact Discussion

The 2009 FEIR, Section 4.11, Population and Housing, identified two impacts of the Amended Reclamation Plan of 2004 (ARP04), the reclamation project then being proposed, both of which were found to be less than significant. Consequently, no mitigation measures were required. The potential for cumulative population and housing impacts was discussed in Chapter 5, Growth Inducing and Cumulative Effects. No cumulative impacts were identified.

14a. 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)?

14b. Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

14c. Would the Project Increase density that would exceed official population projections for the planning area within which the project site is located as set forth in the Countywide Plan and/or community plan?

14d. Would the Project displace existing housing, especially affordable housing?

Impact R4.11-1 in the 2009 FEIR concluded that post-reclamation residential development would result in an increase in the residential population within the area, but that increase would not be substantial, and the impact would therefore be less than significant. In Impact R4.11-2, the 2009 FEIR found that the post-reclamation development could result in a less-than-significant increase in employment. The 2009 FEIR identified no impact of ARP04, the reclamation plan then being proposed, on population and housing during reclamation, as ARP04 did not propose any new housing on the Project site, did not propose to

displace the limited number of existing housing units until completion of reclamation, and did not propose any changes to reclamation activities that would affect employment.

As discussed in Chapter 1, Project Description, detailed planning of post-reclamation use is not a part of a reclamation plan, but reclamation plans must state the intended post-reclamation use and describe how the mining site will be reclaimed to enable it. Reclamation must prepare the site so that it is readily adaptable to the intended post-reclamation use. Detailed planning for post-reclamation use of the Project site is required by COA 31, which requires that three years prior to the anticipated cessation of mining, SRRQ will submit a Final Development Plan for review by the County (or by the City of San Rafael, if the Project site has been annexed). CARP10, like ARP82 before it, envisions the post-reclamation use of the SRRQ site to include residential and commercial development, a marina and related development around the flooded Main Quarry Bowl, and open space in the areas preserved in a natural condition (Figures 1-5 and 1-6 in Chapter 1, Project Description). The proposed Project, CARP19, does not change the intended post-reclamation land use.

The preliminary plan for the post-reclamation development allocates 102.9 acres for residential development and 42 acres for commercial and other non-residential uses (Figure 1-5 in Chapter 1, Project Description). The 2009 FEIR, Impact R4.11-1, speculates that the post-reclamation development would provide between 206 and 412 new residential units, and house up to about 970 residents. This estimate, however, was based on the land use designation for the Project site contained in the 1994 Marin County General Plan, Community Development Element, Policy CD-11.2. The 2007 Countywide Plan, which supersedes the 1994 General Plan, addresses future use of the Project site in Policy PA-3.2 in the Planning Areas discussion in the Built Environment Element. Policy PA-3.2 states that, “in order not to exceed current traffic levels, which include truck and other vehicle trips generated by quarry activity, the total number of dwelling units, or their equivalent in commercial or other uses, shall not exceed 75 dwelling units unless otherwise determined by a County-approved traffic study.” The 2009 FEIR, Impact 4.11-2, speculates that 180 people would be employed in the post-reclamation development, using allowable commercial densities for the area contained in the Land Use Element of the San Rafael General Plan 2020. The October 2020 draft San Rafael General Plan 2040, Policy SPP-7 of the Neighborhoods Element, also envisions mixed use development of the Project site post-reclamation, expresses the intent of the City to participate in planning of the post-reclamation development, and mentions the potential for annexation of the Project site, but does not establish residential or commercial densities for the future development.

If the Project is approved, planning and approval of the post-reclamation development will be years away, and the number of housing units, the number of these that would be affordable, and the number of residents and workers that will be accommodated by the post-reclamation development are all speculative at this time. The current Project, however, does not propose changes to the post-reclamation use of the Project site from what is currently envisioned in CARP10, in the Countywide Plan, and in the draft San Rafael General Plan 2040. Neither does the Project propose any change to the requirement of COA 31 to submit a final Development Plan three years prior to the cessation of mining; nor does the Project propose to add new housing, or displace existing housing, during the reclamation period, nor to add additional employees. Therefore, compared to the current amended reclamation plan, CARP10, the Project, CARP19, would not induce substantial unplanned population growth, either directly or indirectly; would not displace substantial numbers of existing people or housing necessitating the construction of

replacement housing elsewhere, would not increase density that would exceed official population projections, and would not displace existing housing, including affordable housing. There would be no new or substantially more severe significant impact of these kinds.

14e. Would the Project result in any physical changes which can be traced through a chain of cause and effect to social or economic impacts?

The Project proposes no changes to existing land use or activities within or outside the Project site that would result in a physical change to the environment that has not already been planned and approved in CARP10. If approved, reclamation would proceed as previously planned, but over a longer period of time. It is possible that extending the reclamation period could result in a depression of property values in the areas most affected by reclamation activities, which could result in a decline in the condition of residences, abandonment of properties, and urban blight. A check of Zillow, the internet-based property and rental value site, however, indicates that, as of February 2021, the homes along Marin Bay Park above Cantera Way, the nearest homes to ongoing reclamation activities in the NE Quadrant, have values estimated at between \$1.88 and \$3.47 million (Zillow, 2021). Therefore, property values appear not to be substantially negatively affected by reclamation, which has been occurring since 2018. There is no other reasonably foreseeable chain of cause and effect that would lead from the rescheduling of reclamation to social or economic impacts, and therefore it can be concluded that there would be no new or substantially more severe significant impact of this kind.

Cumulative Impacts

Cumulative impacts related to population and housing resulting from the simultaneous operation of the quarry and reclamation activities was identified to be less than significant in the 2009 EIR. Extending the already-planned reclamation activities would not change this conclusion: the Project would not have a significant impact on population and housing, and so would not contribute to a cumulative impact of this kind.

Mitigation Measures

As the 2009 FEIR identified no significant impacts related to population or housing, no mitigation measures were needed or identified; as the Project would have no new or substantially more severe significant impacts of this kind, no new mitigation measures are required.

Conclusion

No substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects on population and housing. There is no new information of substantial importance, and neither have substantial changes occurred with respect to the circumstances under which the project is undertaken since certification of the 2009 FEIR. Therefore, the Project would not result in new significant environmental effects on population and housing.

References

Marin County Community Development Agency, 2015. Marin County Housing Element, 2015 – 2023. Adopted by the Marin County Board of Supervisors, December 9, 2014. Certified by the California State Department of Housing and Community Development March 20, 2015.

City of San Rafael, 2004. San Rafael General Plan 2020. Adopted 2004.

City of San Rafael, 2021. San Rafael General Plan 2040. Draft for City Council adoption, released July 2021.

Zillow, 2021. Search: Marin Bay Park Court, San Rafael, CA. Search completed February 15, 2021.
www.zillow.com

2.15 Public Services

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
15. Public Services.					
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:					
i. Fire protection?	Section 4.9 Public Services, Utilities, and Energy, Impact R4.9-1	No	No	No	NA
ii. Police protection?	Section 4.9 Public Services, Utilities, and Energy, Impact R4.9-2	No	No	No	NA
iii. Schools?	No impact of this kind was identified in the 2009 FEIR.	No	No	No	NA
iv. Parks?	No impact of this kind was identified in the 2009 FEIR.	No	No	No	NA
v. Other public facilities, including roads?	No impact of this kind was identified in the 2009 FEIR.	No	No	No	NA

Setting Discussion

The 2009 FEIR, Section 4.9 Public Services, Utilities, and Energy, reviewed the then-current regulatory and environmental setting for public services, focusing on police, fire, and emergency medical services. Schools and parks were not specifically discussed, as the amended reclamation plan project then being considered did not have the potential to impact these services. No substantial changes have occurred since completion of the 2009 FEIR with respect to the environmental and regulatory setting for public services, except as noted in the discussions below.

Impact Discussion

The 2009 FEIR identified two impacts of the Amended Reclamation Plan of 2004, the project then being considered, on public services. Both were found to be less than significant, and no mitigation measures were required.

15.i 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 fire protection?

Fire protection services are provided to the Project site by the City of San Rafael Fire Department (SRFD) and the Marin County Fire Department (MCFD) through a mutual aid agreement. While the Project site is located in unincorporated Marin County, the SRFD operates the nearest fire station: Station # 55 is located on Point San Pedro Road about 3,500 feet west of SRRQ's main entrance. Both the SRFD and MCFD are multidisciplinary, and depending on the type, size and location of the emergency, and staffing and equipment availability of the emergency services at the time, both could respond to all potential fire protection and medical responses. 2009 FEIR Impact R4.9-1 identified that the Project would require fire protection and emergency medical services, primarily due to calls associated with structural fires, on- or off-site vehicular accidents, and medical emergencies, but that based on the nature of the reclamation project, it would not likely create a significant demand for fire protection services or additional personnel for either the MCFD or the SRFD. The impact was therefore found to be less than significant. Similarly, the current project, CARP19, would not increase demand for these services, and would not require the expansion or construction of new facilities. There would be no new or substantially more severe significant impact with respect to fire and emergency medical services and facilities.

Post-reclamation, SRRQ plans to develop the Project site with a mixture of commercial, residential, and open space uses. These new uses would increase the demand for fire and emergency medical services, and may require expansion of existing facilities or construction of new facilities. The Project does not propose a change to the envisioned post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of mining pursuant to COA 31. The Project itself would not result in any new or substantially more severe significant impacts related to provision of fire and emergency medical services or facilities.

15.ii 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 police protection?

Police protection for the Project area is provided by the Marin County Sheriff's Office. The Sheriff's office also maintains a mutual aid agreement with the San Rafael Police Department (SRPD). The California Highway Patrol (CHP), which has jurisdiction and law enforcement powers on all County roads and State highways outside the incorporated cities, including Point San Pedro Road within the unincorporated County area. The 2009 FEIR, Impact R4.9-2, found that ARP04, the project then being considered, could require response by the Marin County Sheriff's Department and the SRPD for typical police protection services (e.g., for traffic enforcement, traffic control in the event of vehicular accident, trespassing/vandalism, etc.), but found that this would not require construction of new or expanded facilities and would not affect service ratios or response times. Similarly, CARP19, the proposed Project, would not prevent the Sheriff's Office, SRPD, or CHP from providing adequate law enforcement services to the site, or require any new or physically altered facilities. The Project, therefore, would not have a new or substantially more severe significant impact on police services or facilities.

Post-reclamation, SRRQ plans to develop the Project site with a mixture of commercial, residential, and open space uses. These new uses would increase the demand for police services, and may require expansion of existing police facilities or construction of new facilities. The Project does not propose a change to the envisioned post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying pursuant to COA 31. The Project itself would not result in any new or substantially more severe significant impacts related to provision of police services or facilities.

15.iii 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 Schools?

The San Rafael City School District serves the Project area. The Project site is within the San Rafael Elementary School District and the San Rafael High School District. The closest public school to the Project site is Glenwood Elementary School, located approximately 3,000 feet west of the site. San Rafael High School is located approximately three miles to the west.

SRRQ uses its regular employees for reclamation activities, and does not propose to change this under the proposed Project, CARP19. Therefore, as discussed in Section 2-14, Population and Housing, the Project would not increase employees or population. Consequently, the Project would not increase demand for schools, and there would be no impact on schools.

Post-reclamation, SRRQ plans to develop the Project site with a mixture of commercial, residential, and open space uses. New residences would increase the demand for schools. The Project does not propose a change to post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of mining pursuant to COA 31. The Project itself would not result in any new or substantially more severe significant impacts related to schools.

15.iv. 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 parks?

Public parks near the Project site include McNear's Beach County Park and China Camp State Park. No parks are located within the Project site and, as an industrial facility, SRRQ does not generate high demand for parks. The proposed Project would not change this, and there would be no impact of the Project related to parks.

Post-reclamation, SRRQ plans to develop the Project site with a mixture of commercial, residential, and open space uses. These new uses would increase the demand for existing parks. New recreational opportunities may be provided by the post-reclamation development itself, including a marina, open space

areas that may be accessible to the public, and extension of the San Francisco Bay Trail along the Bayshore. The Project does not propose a change to post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying, pursuant to COA 31. The Project itself would not result in any new or substantially more severe significant impacts related to parks.

15.v. 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 other public facilities, including roads?

SRRQ is accessed by private roads that intersect with Point San Pedro Road, and regionally by U.S. 101. The Quarry is an existing facility that utilizes existing roads, infrastructure and other public facilities. The proposed Project would not affect any public facilities other than extending the duration of their use.

Post-reclamation development would require new public facilities such as roads. The Project does not, however, propose a change to the planned post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying, pursuant to COA 31. The Project itself would not result in any new or substantially more severe significant impacts related to provision of roads or other public facilities.

Cumulative Impacts

Cumulative impacts related to provision of public services resulting from mining operating simultaneously with reclamation activities were found to be less than significant in the 2009 EIR. Extending the already-planned reclamation activities would not change this conclusion and cumulative impacts would remain less than significant.

Mitigation Measures

The 2009 FEIR included no mitigation measures related to public services and no COAs were adopted. As the Project would not have an impact on public services and facilities, no new measures are required.

Conclusion

No substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects on public services. There is no new information of substantial importance, and neither have substantial changes occurred with respect to the circumstances under which the Project is undertaken since certification of the 2009 FEIR. Therefore, the Project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects on public services.

2.16 Recreation

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
16. Recreation.					
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 of this kind was identified in the 2009 FEIR.	No	No	No	NA
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 of this kind was identified in the 2009 FEIR.	No	No	No	NA

Setting Discussion

The 2009 FEIR described the recreational uses and facilities around the Project site in Section 4.6, Land Use and Planning. As described in that section, McNear’s Beach County park is adjacent to the Project site, China Camp State park is nearby, and the San Francisco Bay Trail runs along Point San Pedro Road, past the Project site. There is a plan to extend the Bay Trail along the shoreline of the Project site, after completion of reclamation. Other, private recreational facilities nearby the Project site include the Peacock Gap Golf Course and the Loch Lomond Marina. There have been no substantial changes to the recreational setting since completion of the 2009 FEIR. Since completion of the 2009 FEIR, there are no substantially changed circumstances under which the Project would be undertaken, and no new information of substantial importance requiring new analysis related to recreational facilities.

Impact Discussion

The 2009 FEIR analyzed one impact related to recreation: Impact R4.6-4 in Section 4-6, Land Use and Planning. This impact found that the Amended Reclamation Plan of 2004 (ARP04), the reclamation plan project then being considered, would not result in the conversion of open space to urban- or suburban-scale development. Because the impact was found to be less than significant, no mitigation was required.

16a. 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?

As an industrial facility, SRRQ does not generate high demand for parks and recreation. The proposed Project would not change this, and there would be no impact of the Project related to the demand for recreational facilities.

Post-reclamation, SRRQ plans to develop the Project site with a mixture of commercial, residential, and open space uses. These new uses would increase the demand for existing parks and recreational facilities in the area. New recreational facilities may, however be provided by the post-reclamation development itself, including a marina, open space areas that may be accessible to the public, and extension of the San Francisco Bay Trail along the Bayshore. The Project does not propose a change to post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying, pursuant to COA 31. The Project itself would not result in increased demand for recreational facilities, and there would be no new or substantially more severe significant impact of this kind.

16b. 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?

Reclamation activities pursuant to the Project, CARP19, are industrial in nature and do not include nor require the construction of recreational facilities. CARP19, like the existing approved reclamation plan, CARP10, includes preservation of natural areas within the Project site, and plans to maintain these as open space after the completion of reclamation (see Figure 1-5 in Chapter 1, Project Description). Rescheduling the already-planned reclamation activities, as proposed as part of the Project, would not result in substantial adverse impacts to parks and recreational facilities.

Post-reclamation development would increase demand on existing parks and recreational facilities and would likely include the development of new recreational facilities within the Project site, including open space areas, a marina, and the extension of the San Francisco Bay Trail along the Bayshore. The construction of these new facilities would entail physical changes to the environment which could result in potential environmental impacts. The Project does not propose a change to intended post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development; this issue will be further examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying, pursuant to COA 31. The Project itself would not result in any new or substantially more severe significant impacts related to recreational facilities.

Cumulative Impacts

As the Project would not result in an impact on recreational facilities, it would not contribute to any cumulative impact of this kind.

Mitigation Measures

The 2009 FEIR included no mitigation measures pertaining to recreation, no COAs were adopted, and no new mitigation measures are required.

Conclusion

No substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects on recreation. There is no new information of substantial importance, and neither have substantial changes occurred with respect to the circumstances under which the Project is undertaken since certification of the 2009 FEIR. Therefore, the Project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects on recreation.

2.17 Transportation/Traffic

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
17. Transportation/Traffic. Would the Project:					
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	No impact of this kind was identified in the 2009 FEIR.	No	No	No	NA
b) Conflict or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b)?	No impact of this kind was analyzed in the 2009 FEIR. Vehicle miles traveled within the Project site were calculated in 2009 FEIR Vol. III, Appendix C., Air Quality Calculations.	No	No	No	NA
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Section 4.10, Traffic and Transportation, Impact 4.10-3	No	No	No	NA
d) Result in inadequate emergency access?	No impact of this kind was identified in the 2009 FEIR	No	No	No	NA

Setting Discussion

Section 4.10, Transportation and Traffic, in the 2009 FEIR described the local and regional transportation system around the Project site, and conducted a study of intersection Level of Service (LOS), a measure of traffic delay, for nine intersections between the Project site and US 101 used by trucks from the SRRQ mining operation.

Since completion of the 2009 FEIR, dedicated bicycle lanes have been added to Point San Pedro Road for most of its length from downtown San Rafael to the Project site and beyond. No other substantial changes to the local transportation system have occurred.

Senate Bill 743 (SB 743), passed in 2013 and codified in Public Resources Code Section 21099, required changes to the State CEQA *Guidelines* regarding the analysis of transportation impacts. Pursuant to Section 21099, the criteria for determining the significance of transportation impacts must “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a

diversity of land uses.” To that end, the changes to the State CEQA *Guidelines*, which took effect in 2020, identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project’s transportation impacts. With the changes to the State CEQA *Guidelines*, automobile delay, as measured by LOS and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. The Project’s VMT impacts are, therefore, analyzed below under topic 17b, below. The Project’s potential to change the conclusions of the 2009 FEIR’s conclusions regarding LOS impacts is not considered.

Also since completion of the 2009 FEIR, implementation of SB 375, the Sustainable Communities and Climate Protection Act of 2008, has profoundly altered transportation planning in California. Consistency of the Project with SB 375 is discussed under topic 17a, below.

Impact Discussion

The 2009 FEIR identified two impacts of the Amended Reclamation Plan of 2004 (ARP04), the reclamation plan then being considered, on transportation and traffic, and one cumulative impact of ARP04 combined with the Amended Surface Mining and Quarrying Permit project. All three impacts focused on intersection LOS; the cumulative impact also considered cumulative impacts of reclamation and mining on roadway condition. All three impacts were found to be less than significant, and no mitigation measures were necessary.

17a. Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The 2009 FEIR, Section 4.6, Land Use and Planning, Table 4.6-1, considered consistency of ARP04 with Countywide Plan transportation policies, and found no conflict with relevant policies. As described in Chapter 1, Project Description, and also as described in the 2009 FEIR, Impact R4.10-1 with regard to ARP04, planned reclamation involves large grading volumes, but in each reclamation phase, grading is “balanced:” cut volume equals fill volume. Therefore, reclamation grading is not expected to require import nor export of fill material, and so would not generate truck traffic to or from the Project site. Furthermore, SRRQ plans to use their regular employees for reclamation work during the annual maximum 10-week reclamation period; reclamation is not expected to generate additional employee commute trips. Therefore, reclamation activities associated with the Project would have minimal impact on the transportation system.

Post-reclamation development, which is planned to include both residential and commercial uses of the Project site, would generate additional vehicle trips and would increase demand on the transportation system generally. The 2007 Countywide Plan addresses future use of the Project site in Policy PA-3.2 in the Planning Areas discussion in the Built Environment Element. Policy PA-3.2 states that, “in order not to exceed current traffic levels, which include truck and other vehicle trips generated by quarry activity, the total number of dwelling units, or their equivalent in commercial or other uses, shall not exceed 75 dwelling units unless otherwise determined by a County-approved traffic study. The 2009 FEIR examined the transportation impacts of ARP04, which anticipated the same post-reclamation development as CARP19, in Impact R4.10-2, and concluded that, because the density of the development was to be scaled to roadway capacity per Policy PA-3.2, the impact on traffic congestion would be less than significant.

The draft San Rafael General Plan 2040, Policy NH-5.7, San Rafael Rock Quarry and McNear Brickworks Long-Term Plans, addresses transportation for post-reclamation development as follows:

b) Consider redevelopment of the site to the extent that traffic capacity is available and the project can meet the City's transportation standards, including performance of intersections between the site and US 101. Alternative modes of transportation may be considered to facilitate compliance with City standards. Water transit (including water taxis and potential ferry service) should be considered in any phase of the project and factored into the transportation analysis.

c) If needed for traffic capacity and to the extent consistent with City traffic standards, Point San Pedro Road should be expanded to four lanes east of Riviera Drive, including traffic calming measures and bicycle lanes consistent with the Bicycle and Pedestrian Master Plan

(City of San Rafael, 2021)

The draft City of San Rafael General Plan 2040 also states that, "A planning process for the post-reclamation use of the site should commence as soon as practical and well before operations conclude" (City of San Rafael, 2021, p. 4-80).

Since completion of the 2009 FEIR, the focus and process for regional transportation planning in California has been profoundly altered by the implementation of SB 375, the Sustainable Communities and Climate Protection Act of 2008. SB 375 is an essential companion legislation to AB32, the Global Warming Solutions Act of 2006, which requires the California Air Resources Board to adopt and periodically update a "Scoping Plan" that lays out strategies for the State to achieve its greenhouse gas reduction goals (see Section 2.8, Greenhouse Gases). The Scoping Plan's Regional Transportation-Related Greenhouse Gas Targets strategy, which is implemented by SB 375, requires regions, such as the Bay Area, to integrate development patterns and the transportation network in a way that achieves the reduction of greenhouse gas emissions, while meeting housing needs and other regional planning objectives. SB 375 reflects the importance of achieving significant additional reductions of greenhouse gas emissions from changed land use patterns and improved transportation to help achieve the goals of AB 32.

In the Bay Area region, responsibility for regional transportation and housing planning is shared by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). These two agencies have prepared Plan Bay Area 2013, and the Plan Bay Area 2040 Update (MTC and ABAG, 2017), which include the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan. Plan Bay Area 2040 prioritizes fixing an aging transportation system and directing future growth to reduce dependence on the automobile. Plan Bay Area 2040 identifies about 200 "Priority Development Areas" (PDAs). These existing neighborhoods are served by public transit and have been identified as appropriate for additional, compact development. Two PDAs are located in Marin County, the San Rafael Transit Center PDA in downtown San Rafael, and the Unincorporated Marin County PDA in Marin City.

The Project site is not within either of these PDAs. However, most of the Project site is within the City-Centered Corridor, as defined in the Countywide Plan. The City-Centered Corridor contains the County's urbanized areas, and is the focus for future urban development. Thus, while planned post-reclamation development of the Project site is not wholly consistent with the priorities to focus development in areas

to reduce reliance on automobiles for transportation needs contained in the Scoping Plan, SB 375, and Plan Bay Area 2040, it is generally consistent with the County's similar focus as expressed in the CWP.

Specific uses, densities, and transportation requirements for the post-reclamation development of the Project site will be addressed in the final Development Plan, which is required by COA 31 to be submitted by SRRQ three years prior to the anticipated cessation of mining. Consistency with the transportation policies then in effect will be determined at that time. Reclamation activities themselves would not, as discussed above, have a new or substantially more severe significant impact with regard to consistency with programs, plans, ordinances, or policies addressing the circulation system.

17b. Would the Project conflict or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b)?

State CEQA *Guidelines* Section 15064.3, subdivision (b), implements the requirement of SB 743 to focus transportation impact analysis on a project's consequences for transportation-related GHG emissions, replacing the previous focus on intersection LOS. Section 15064.3 states, in part, "For the purposes of this section, "vehicle miles traveled" [VMT] refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact."

As described under topic 17a, above, reclamation activities under the Project are not expected to result in increased off-site traffic, and so there is no anticipated increase in off-site VMT. Within the Project site, reclamation activities involve movement of large quantities of mining waste and other earthen materials. Increases in miles traveled by heavy-duty trucks, however, are not considered in the VMT impact analysis. Nevertheless, for informational purposes, estimated on-site VMT by heavy-duty trucks is shown in Table 17-1. These estimates were made for the purpose of calculating project air emissions; a similar calculation was made in the 2009 FEIR (Volume III, Appendix C, Air Quality Calculations) that reached a similar result to that shown in Table TRANS-1.

Table TRANS-1
On-site Vehicle Miles Traveled (VMT) Estimates for Reclamation Grading Activities

Reclamation Phase	Days of Construction	Daily Trips/Phase	Length (mile)/Trip	VMT/Day	VMT/Year
Phase 1	25	117	0.5	58.5	1,462.5
Phase 2	50	114	0.5	57.0	2,850.0
Phase 3	50	159	0.5	79.5	3,975.0
Phase 4	25	605	0.5	302.5	7,562.5

Source: Appendix C, Air Quality Technical Report

Post-reclamation development, which is planned to include residential and commercial uses, would result in an increase in automobile VMT. Impacts of post-reclamation development will be assessed in the consideration of the final Development Plan, which is required by COA 31 to be submitted three years prior to the anticipated cessation of mining. The Project does not propose a change to the intended post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation

development. The Project itself would not result in an increase in automobile VMT, and there would be no new or substantially more severe significant impact of this kind.

17c. 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)?

17d. Would the Project result in inadequate emergency access?

As discussed above under topic 17a, reclamation activities associated with the Project would not result in an increase in vehicle trips to or from the Project site. Neither would the Project physically alter any public streets, nor would it alter emergency access to the Project site or to the neighborhoods around the Project site. Reclamation activities under the Project, therefore, would not substantially increase roadway hazards nor hinder emergency access, and there would be no new or substantially more severe significant impact of these kinds.

Post-reclamation development would involve the development of new roads within the Project site, and may require changes to Point San Pedro Road or other roads that could have an impact on roadway safety and emergency access. As noted above under topic 17a, the draft San Rafael General Plan 2040 anticipates the potential need to accommodate post-reclamation development increases in automobile and non-motorized transportation by expanding Point San Pedro Road to four lanes east of Riviera Drive, including traffic calming measures and bicycle lanes consistent with the Bicycle and Pedestrian Master Plan. This issue, however, will be taken up during consideration of the final Development Plan, which is required by COA 31 to be submitted three years prior to the anticipated conclusion of mining activities. The Project does not propose a change to post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development. The Project itself would not substantially increase roadway hazards nor hinder emergency access, and there would be no new or substantially more severe significant impact of these kinds.

Cumulative Impacts

Impact C4.10-3 in the 2009 FEIR examined the potential for reclamation activities under ARP04, occurring simultaneously with ongoing mining activities, to result in a cumulative impact on transportation, focusing on intersection LOS and roadway wear and tear, and concluded that the cumulative impact would be less than significant. As discussed above, the Project would not result in a new or substantially more severe significant transportation impact, since the Project would not increase traffic off of the Project site. Therefore, Project transportation effects would not combine with those of mining activities, or any other project in the area, in a cumulative manner. There would be no new or substantially more severe significant cumulative traffic impact.

Mitigation Measures

The 2009 FEIR included no mitigation measures and adopted no COAs related to transportation associated with reclamation activities, and, as the Project would not have any new or substantially more severe significant impact on transportation, no new mitigation measures are needed.

Conclusion

There are no substantial changes to the proposed Project, and no substantial new information about the proposed Project that could not have been known at the time the 2009 FEIR was certified, that would result in new significant impacts or substantially more severe significant impacts related to transportation. The changed circumstance of a change in the focus of transportation impact analysis under CEQA, from LOS to VMT, has been considered; the Project would not result in a new significant impact from an increase in VMT. No mitigation measures are required.

References

California Air Resources Board (CARB), 2017. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target.

https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

City of San Rafael, 2021. San Rafael General Plan 2040. Draft for City Council adoption, released July 2021. Available at: <https://www.cityofsanrafael.org/departments/general-plan-2040/>

Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2017. Plan Bay Area 2040: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area, 2017–2040. Adopted July 26, 2017. <https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040>

2.18 Utilities and Service Systems

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
18. Utilities and Service Systems. Would the Project:					
a) Require or result in the relocation or construction of new or expanded water, wastewater or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Section 4.9, Public Services, Utilities, and Energy, Impacts R4.9-3, R4.9-4, and R4.9-6	No	No	No	NA
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	Section 4.9, Public Services, Utilities, and Energy, Impact R4.9-3	No	No	No	NA
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?	Section 4.9, Public Services, Utilities, and Energy, Impact R4.9-4	No	No	No	NA
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?	Section 4.9, Public Services, Utilities, and Energy, Impact R4.9-5	No	No	No	NA
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	Section 4.9., Public Services, Utilities, and Energy, Setting, p. 4.9-4	No	No	No	NA

Setting Discussion

As described in Section 4.9, Public Services, Utilities, and Energy, of the 2009 FEIR, the Project site is currently served by public utilities including water from the Marin Municipal Water District (MMWD) and natural gas from PG&E. Electricity to the Project Site is now provided by Marin Clean Energy. Solid waste disposal is accommodated at the Redwood Landfill in Marin County. Redwood Landfill's current Solid Waste Facility Permit states that the permitted capacity of the landfill is 26,077,000 cubic yards, and that the landfill is permitted to accept a total of 2,140 tons of waste materials, materials for recycling, and cover material per day (Marin County Environmental Health Services, 2014. Remaining capacity as of 2019 was estimated at 7.7 million cubic yards, and the anticipated closure date is 2035 (Waste Management, Inc., 2019). The EarthCare Composting Facility, located on the landfill site, is separately permitted to receive up to 514 tons per day of material for composting (Marin County Environmental Health Services, 2013).

Wastewater in the area around the Project site is served by the San Rafael Sanitation District; however, the Project site is outside the service area and is not connected. It is served by three onsite septic systems.

There have been no other substantial changes to the environmental or regulatory setting for utilities and service systems since completion of the 2009 FEIR. Since completion of the 2009 FEIR, there are no substantially changed circumstances under which the Project would be undertaken, and no new information of substantial importance requiring new analysis related to utilities and service systems.

Impact Discussion

The 2009 FEIR, Section 4.9 Public Services, Utilities, and Energy, identified four impacts of the Amended Reclamation Plan of 2004 (ARP04), the reclamation plan then being considered, on utilities and service systems. None were found to be significant and no mitigation measures were required. The potential for cumulative impacts was discussed in Chapter 5, Growth Inducing and Cumulative Effects. No cumulative impacts were identified.

18a. Would the Project require or result in the relocation or construction of new or expanded water, wastewater or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

18b. Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

18c. 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?

The 2009 EIR evaluated potential impacts to utilities and service systems in Impacts R4.9-3, R4.9-4, and R4.9-6. As discussed in those impacts, reclamation activities were not expected to result in a substantial demand for public water, wastewater, or electricity and natural gas; the conclusion of all three of these impacts was less than significant. The proposed Project, CARP19, would not substantially change the nature or scope of reclamation activities, but would only extend reclamation for an additional time period. There are no proposed changes to the Project that would result in a new or substantially more severe significant impact on these utilities and services systems.

Post-reclamation, SRRQ plans to develop the Project site with a mixture of commercial, residential, and open space uses. These new uses would increase the demand for utilities and service systems. The scope of the demand for water, wastewater treatment, electricity, and natural gas was discussed in the 2009 FEIR, in the same impacts cited above. That discussion was based on a preliminary estimate of the scale of the post-reclamation development, and, because it was speculative, did not result in the identification of any significant impact. As noted in each of those impact discussions, the impacts of post-reclamation development on utilities and service systems would be evaluated upon submittal of the final Development Plan for post-reclamation use of the Project site. The Project does not propose a change to the intended post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development. Impacts of post-reclamation development will be examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of mining, pursuant to COA 31. The Project itself would not result in increased demand for utilities or service systems, and there would be no new or substantially more severe significant impact of this kind.

18d. 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?

18e. Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

As discussed in the 2009 EIR under Impact R4.9-5, reclamation activities are not expected to generate a substantial amount of solid waste requiring disposal or other treatment off-site. Implementation of the proposed Project would not affect the generation of solid waste. Any solid waste generated during reclamation activities would be required to comply with applicable County and State regulations regarding solid waste disposal and recycling. CalGreen (Title 24) requires recycling of 65 percent of construction and demolition waste for projects requiring building permits, but because reclamation activities do not require a building permit, and grading permits are not subject to this CalGreen requirement, this does not apply to the Project. Redwood Landfill has sufficient capacity to continue to accept waste through approximately 2035. Thereafter, any solid waste disposal needs associated with reclamation activities would have to be accommodated by another facility in the region.

Following completion of reclamation, the planned commercial and residential uses would generate substantial volumes of solid waste, including recyclable and compostable materials, and, presumably, materials requiring disposal, as noted in Impact 4.9-5 in the 2009 FEIR. As discussed in Impact 4.9-5, the impacts of post-reclamation development on solid waste handling, and compliance with then-existing regulatory requirements for solid waste diversion will be evaluated upon submittal of the final Development Plan for post-reclamation use of the Project site. The Project does not propose a change to the intended post-reclamation use of the Project site, and Project approval would not entitle any post-reclamation development. Impacts of post-reclamation development will be examined in the review of the final Development Plan, which is to be submitted to the County three years prior to the anticipated cessation of quarrying, pursuant to COA 31. The Project itself would not result in increased demand for solid waste disposal or other infrastructure, and would not be out of compliance with solid waste reduction requirements. There would not be any new or substantially more severe significant impacts of this kind.

Cumulative Impacts

Cumulative impacts related to utilities and service systems resulting from mining operations occurring simultaneously with reclamation were identified to be less than significant in the 2009 EIR. Extending the already-planned reclamation activities would not change this conclusion and cumulative impacts would remain less than significant.

Mitigation Measures

As the 2009 FEIR identified no significant impacts on utilities and service systems, no mitigation measures were required, and no COAs were adopted. Since the Project would not result in a new or substantially more severe significant impact on utilities and service systems, no new mitigation measures are required.

Conclusion

No substantial changes are proposed in the Project which will require major revisions of the 2009 FEIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects on utilities and service systems. There is no new information of substantial importance, and neither have substantial changes occurred with respect to the circumstances under which the Project is undertaken since certification of the 2009 FEIR. Therefore, the Project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects on utilities and service systems.

References

- Marin County Environmental Health Services, 2013. Solid Waste Facility Permit # 21-AA-0068, WM Earthcare of Marin. December 30, 2013.
- Marin County Environmental Health Services, 2014. Solid Waste Facility Permit # 21-AA-0001, Redwood Landfill. October 13, 2014.
- Waste Management, 2019. Joint Technical Document, Redwood Landfill Marin County, California Prepared by Geosyntec Consultants. August 19, 2019.

2.19 Wildfire

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
19. Wildfire. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:					
a) 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?	Topic not addressed in the 2009 FEIR	No	No	No	NA
b) 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?	Topic not addressed in the 2009 FEIR	No	No	No	NA
c) 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?	Topic not addressed in the 2009 FEIR	No	No	No	NA
d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	Topic not addressed in the 2009 FEIR	No	No	No	NA

Setting Discussion

The 2009 FEIR addressed wildfire in Section 4.8, Hazards and Hazardous Materials. The setting discussion in that section stated that the Marin Countywide Plan generally characterizes the Project site as “moderate” for wildland fire risk. Areas north of Point San Pedro Road are characterized as either “high” or “very high” for wildland fire risk.

In 2012, after certification of the 2009 FEIR, Senate Bill 1241 was passed, requiring the Governor’s Office of Planning and Research, the Natural Resources Agency, and the California Department of

Forestry and Fire Protection (Cal FIRE) to develop amendments to the initial study checklist of the State CEQA *Guidelines* for the inclusion of questions related to fire hazard impacts for projects located on lands classified as state responsibility areas, and on lands classified as very high fire hazard severity zones (FHSZs) (Governor's Office of Planning and Research, 2017). The additions to the Checklist implementing SB 1241 were included in the 2019 revisions to the State CEQA *Guidelines*, Appendix G, which is used as the basis for the topical questions in this Supplemental Environmental Review.

In accordance with California Public Resource Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, Cal FIRE maps areas of significant fire hazards because of fuels, terrain, weather, and other relevant factors. Cal FIRE's statewide and county maps (adopted November 2007) depict FHSZs that are within the State Responsibility Area (SRA). The SRA is the area where the State of California is financially responsible for the prevention and suppression of wildfires. The areas within the SRA are further classified as being Moderate, High, or Very High FHSZs. The Project site is not within an SRA; the nearest SRA area is the northern part of the Point San Pedro peninsula, about a half mile from the Project site (Marin County, 2021).

Marin County extends mapping of FHSZs into areas of the County that are not within the SRA. Portions of the Project site are mapped within the moderate and high FHSZs. None of the Project site is within the Very High FHSZ. Areas to the north of the Project site are mapped within the Moderate FHSZ (Marin County, 2021). Marin County also designates lands within the Wildland-Urban Interface (WUI), per Marin County Code Section 16.17.080. The Project site is not within the mapped WUI, though there are areas to the north of the Project site that are within the WUI (Marin County, 2021).

Impact Discussion

The 2009 FEIR, Section 4.8, Hazards and Hazardous Materials, Impact 4.8-2, addressed the potential for the Amended Reclamation Plan of 2004, the Project then being considered, to increase wildfire hazards, and found that the impact was less than significant. See further discussion of potential wildfire hazards of the current proposed Project in Section 2.9, Hazards and Hazardous Materials.

19a. If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, would the Project, 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?

19b. If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, 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?

19c. If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, 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?

19d. If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The Project is not within or near an SRA area, and no part of the Project site or adjacent properties is classified as within the Very High FHSZ. Therefore, these topics do not apply to the Project.

Mitigation Measures

As this topic does not pertain to the Project, no mitigation measures are required.

Conclusion

Because the Project site is not within or near an SRA, and does not include lands classified as Very High FHSZ, this topic does not apply to the Project. See, however, the discussion of wildfire hazards in Section 2.9, Hazards and Hazardous Materials.

References

Marin County, 2021. MarinMap online geographic information system for Marin County.
www.marinmap.org Accessed March 2, 2021

Governor's Office of Planning and Research, 2017. Proposed Updates to the CEQA Guidelines. November 2017. https://opr.ca.gov/docs/20171127_Comprehensive_CEQA_Guidelines_Package_Nov_2017.pdf

2.20 Mandatory Findings of Significance

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Significant Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Significant Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
20. Mandatory 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?	Section 4.3, Biological Resources, Section 4.12, Cultural Resources	No	No	No	NA
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)?	Chapter 4, Environmental Setting, Impacts and Mitigation Measures, and Chapter 5, Growth-Inducing and Cumulative Effects	No	No	No	NA
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Section 4.2, Air Quality, Impacts C4.2-9 through C4.2-12; Section 4.4, Geology, Soils, and Seismicity, Impacts R4.4-1 and R4.4-3; Section 4.5, Hydrology and Water Quality, Impacts R4.5-8 and R4.5-9; Section 4.8, Hazards and Hazardous Materials, Impacts 4.8-1 and 4.8-2.	No	No	No	NA
d) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	Chapter 2, Summary, p. 2-18, discussion of Significant Unavoidable Impacts and Significant Irreversible Environmental Changes	No	No	No	NA

Discussion

20a. 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?

The 2009 EIR, Section 4.3, Biological Resources, examined the potential of the Amended Reclamation Plan of 2004 (ARP04), the reclamation plan then being considered, to 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, or substantially reduce the number or restrict the range of a rare or endangered plant or animal, and found that, with mitigation, impacts of this kind would be less than significant. Section 2.4, Biological Resources, in the current document, updates the analysis from the 2009 FEIR, considering substantially changed circumstances, substantial new information, and substantial changes to planned reclamation as proposed in CARP19. Section 2.4 concludes that, with continued implementation of adopted mitigation measures and COAs with some modifications, CARP19 would not 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, or substantially reduce the number or restrict the range of a rare or endangered plant or animal.

The 2009 FEIR, Section 4.12, Cultural Resources, examined the potential for ARP04 to impact archaeological resources and historical resources, both of which were found to exist within the Project site, and found that ARP04 would not eliminate important examples of the major periods of California history or prehistory. Section 2.5, Cultural Resources and Tribal Cultural Resources updates the analysis from the 2009 FEIR, considering changed circumstances, new information, and changes to planned reclamation, as proposed in CARP19. Section 2.5 concludes that, with continued implementation of adopted mitigation measures and COAs, CARP19 would not eliminate important examples of the major periods of California history or prehistory. In addition, Section 2.5 includes a new analysis of potential impacts on tribal cultural resources, and finds that CARP19 would not cause a substantial adverse change in the significance of a tribal cultural resource, defined 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.

20b. 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)?

Each topical section in this Supplemental Environmental Review includes an examination of the potential for the Project, CARP19, to combine with the impacts of ongoing mining operations and to result in a new or substantially more severe significant cumulative impact than was identified in the 2009 FEIR, and finds that no such cumulative impact would occur. The current discussion examines whether the Project could combine with other past, present, and reasonably foreseeable future projects in the vicinity of the Project site to cause a new or substantially more severe significant cumulative impact than was identified in the 2009 FEIR.

The 2009 FEIR similarly considered the potential for impacts from reclamation and mining activities to combine with impacts of other projects in Chapter 5, Growth-inducing and Cumulative Impacts. The cumulative impact analysis included consideration of two then-proposed or recently approved projects, The Village at Loch Lomond Marina mixed use development project, and the Dutra Haystack Landing Asphalt and Recycling Facility, as well as with relevant policies contained in the Marin Countywide Plan and the San Rafael General Plan 2020. Other projects in the vicinity of the Project site were considered, but found not to have the potential to combine with the reclamation or mining activities at SRRQ in a cumulative manner. The 2009 FEIR found the potential for one cumulative impact: Impact C5-3 identified that the reclamation and mining projects then being considered would add incrementally to cumulative air pollutant emissions. The analysis found that air quality Mitigation Measures R4.2-1a-j and R4.2-2a and b would reduce the corresponding impacts to less than significant, such that the contribution of the residual impacts would not be cumulatively considerable, and that, therefore, the cumulative impact would be reduced to less than significant as well. These mitigation measures were adopted as COAs and remain in effect, as discussed in Section 2.3, Air Quality, above.

Table MFS-1 summarizes recent past, current, and proposed future development projects in the vicinity of the Project site. Since certification of the 2009 FEIR, the Village at Loch Lomond Marina mixed use development project, which was approved in 2007, has been approximately half built. There are no other current or proposed major development or redevelopment projects in the Peacock Gap neighborhood area within the City of San Rafael (Stafford, 2021). Several small development projects in unincorporated areas near the Project site have been recently approved or are undergoing review (Table 21-1), but all of these are limited in size and scope, and sufficiently distant from the Project site that any impacts they may cause would not be expected to combine with Project effects in a cumulative manner. The Dutra Haystack Landing project, which was included as a cumulative project in the 2009 FEIR because of its potential connection with SRRQ, specifically, the potential for materials to be trucked between the two facilities, has been approved by Sonoma County but has not yet received all necessary permits, and is not yet operating. COA 41, which has been adopted and is in effect, however, states that any material shipment from the Quarry to the Haystack Landing facility shall be by barge only, if the facility is approved and built with a barge unloading component. This COA effectively eliminates the potential for the Haystack Landing facility to increase truck traffic from SRRQ. In any event, CARP19 would not increase truck traffic, and so would have no bearing on this issue.

The City of San Rafael General Plan 2040 is currently in draft form. A draft for City Council adoption was released in July 2021. The draft General Plan 2040 states that, “General Plan 2040 does not envision major changes on the San Pedro Peninsula during the time horizon of this Plan. A strong focus should be placed on emergency preparedness, adaptation to sea level rise, and wildfire prevention. ...[T]he Quarry presents long-term opportunities for reuse. However, General Plan 2040 assumes continuation of existing uses and activities for the foreseeable future. Ongoing dialogue between the Quarry operators and neighbors is important to ensure that Quarry operations remain compatible with permit conditions and neighborhood well-being.” (City of San Rafael, 2021, pp. 4-74)

**Table MFS-1
Cumulative Project List**

Project Name	Project Location (and Distance from Project Site)	Project Description	Status	Schedule
Dutra Haystack Landing Asphalt Facility	3355 Petaluma Blvd. South, Petaluma (18 miles)	Construction and operation of an asphalt batch plant, an asphalt and concrete recycling facility, and an aggregate material offloading, storage, and distribution facility.	Partial approval; not built or operating	Project still pending permit from Regional Water Quality Control Board
Village at Loch Lomond Marina Mixed Use Development	110 Loch Lomond Drive, San Rafael (1 mile)	<p>In 2007, the City of San Rafael approved the Village at Loch Lomond Marina mixed-use development for an existing marina site. City approvals authorized the following:</p> <ul style="list-style-type: none"> • Retention of the existing full-service marina including public launch, fueling facilities, harbormaster's office and boat repair. Of the 517 boat berths, 52 were approved for "liveaboards" allowing permanent residency; • Development of a new full-service grocery store, a new mixed-use building is approved to include neighborhood commercial uses and services; • Development of 81 residential units; • Development of an expansive marina green, boardwalk and park areas; • Enhancement, expansion and preservation of an existing seasonal wetland. 	Approved	Project was approved in 2007 following environmental review; project is about half constructed and continues to be built.
San Rafael Rock Quarry Amended Quarry Permit	San Rafael Rock Quarry, 1001 Point San Pedro Road (within the Project site)	County permit to allow hard rock mining.	Environmental review completed 2009, Amended Surface Mining and Quarrying Permit issued 2010. Facility is operating.	Project may continue to operate within existing footprint without limitation of depth or duration

Project Name	Project Location (and Distance from Project Site)	Project Description	Status	Schedule
Brubaker Design Review/Accessory Dwelling Unit (P2682 & P2683)	79 Inverness Drive San Rafael, CA 94901 (unincorporated County area) (1.2 miles)	The applicant requested Design Review and Accessory Dwelling Unit Permit approval to construct a new, two-level, 1,166-square-foot accessory dwelling unit on a developed lot in San Rafael. The 1,166 square feet of proposed development would result in a floor area ratio of 12 percent on the 42,296 square foot lot. Various site improvements would also be entailed in the proposed development, including site clearing and grading, construct grade level staircase, and other general improvements.	Approved	Project was approved June 5, 2020.
Presbytery Design Review / Use Permit (P2770)	10 Bayview Drive San Rafael, CA 94903 (unincorporated County area) (1 mile)	The applicant is requesting a Use Permit and Design Review approval to construct a new 30-foot tall wireless communications facility (“WCF”) disguised as a bell tower structure on the grounds of the St. Luke Presbyterian Church lot located in San Rafael. The WCF consists of building a new 12 feet by 12 feet wide and 30 feet tall faux bell tower structure at the front of the church to house and camouflage nine panel antennas (three sets of three antennas), 15 relay radio units (RRUs) and associated equipment cabinets. The WCF and associated equipment would be installed within the proposed faux bell tower and would provide 4G and LTE wireless technology.	Application is incomplete	Pending review and approval.
Weiss and Lavine Design Review and Tree Removal (P3039)	40 Montecito Road, San Rafael (unincorporated County area) (2.2 miles)	The applicant requests Design Review approval to construct a new 4,524 square foot single-family residence and a 727 square foot detached accessory structure (garage) on a developed lot in San Rafael. The 5,216 square feet of proposed development would result in a floor area ratio of 13.9 percent on the 34,089 square foot lot. Additionally, the applicant requests Tree Removal Permit approval to remove three Heritage Coast live oaks, two measure 24 inches in diameter at breast height (dbh) and one is 18 inches dbh.	Initial Review	Pending review and approval.
City of San Rafael General Plan 2040	City of San Rafael	Update of the City’s general plan.	Draft	Draft for Council adoption released July 2021.

Sources: Marin County Community Development Agency, 2020, 2021; Stafford, 2021; City of San Rafael, 2021a, 2021b

Regarding the Peacock Gap neighborhood, the draft General Plan 2040 states that, “Other than upgrades by individual homeowners, little change is expected in the residential portion of the neighborhood over the next 20 years. Emergency preparedness remains a priority. Peacock Gap is vulnerable to wildfire and flooding, and lower portions of the neighborhood and lagoon area will be more susceptible to sea level rise in the future. Residents have also expressed a need for park maintenance and reinvestment, improved utility reliability, water quality improvements at the Lagoon, and improved vegetation management and hazard reduction. The future of the San Rafael Rock Quarry and McNear Brickyard, located just south of Peacock Gap at Point San Pedro, is of critical importance to the neighborhood. Residents should be closely involved in future planning activities” (City of San Rafael, 2021a, p. 4-75).

Specific policies and programs contained in the draft San Rafael General Plan 2040 that address future development of the Project site are consistent with SRRQ’s intent for a mixed-use development, including a marina, and potentially including a community center, shoreline trail, ferry landing, and other public amenities.

In summary, there are no projects, including past, current, and reasonably foreseeable future projects, and including future plans for the Peacock Gap neighborhood, other portions of the Point San Pedro Peninsula, and the Project site itself envisioned in the draft San Rafael General Plan 2040, that would have the potential to combine with CARP19 in a cumulative manner. The Project would not result in a new or substantially more severe significant cumulative impact.

20c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The 2009 FEIR examined the potential for ARP04 to significantly increase the potential to expose people to hazardous materials and hazards, including wildfire, in Section 4.8, Hazards and Hazardous Material; the potential to expose people to risk of loss, injury or death due to landsliding and other geologic hazards in Section 4.4, Geology, Soils, and Seismicity; and the potential to expose people and property to flooding and inundation in Section 4.5, Hydrology and Water Quality. While the 2009 FEIR found the potential for effects of this kind to be significant, in all instances, mitigation measures were identified to reduce impacts to less than significant. The current Supplemental Environmental Review reexamines these impacts in light of proposed Project changes contained in CARP19, changed circumstances, and new information, and finds that, with continued implementation of mitigation measures implemented through COAs, impacts would remain less than significant.

The 2009 FEIR also included a Health Risk Assessment (HRA) in Section 4.2, Air Quality, which analyzed the potential for ARP04, both singly and in combination with continued mining operations, to result in substantial increases in human health risk, including cancer and non-cancer risk. As recounted above in Section 2.3, Air Quality in the discussion of topic 3c., the 2009 FEIR, Impacts C4.2-9 through C4.2-12, analyzed the human health risk impacts of toxic air emissions from reclamation and mining activities combined. Impacts C4.2-10 and C4.2-11 concluded that acute and chronic human health risk impacts would be less than significant. Impact C4.2-9 identified as a significant impact the increase in cancer risk for nearby sensitive receptors from emissions of carcinogenic toxic air contaminants, including diesel particulate matter (DPM). Mitigation Measures C4.2-9a, b, and c, all of which were adopted as COA, which limited production levels and specified other measures to reduce DPM, were found sufficient to reduce this impact to less than significant. Impact C4.2-12 included consideration of

cumulative health risks of past and potential future mining operations, in addition to the AQP and ARP projects then being analyzed, and concluded that this impact would be significant and unavoidable, even after accounting for the emission reduction requirements of Mitigation Measures C4.2-9a, b, and c.

As discussed under topic 3c in Section 2.3, the HRA conducted for this Supplemental Environmental Review, which uses updated assumptions, models, and methodologies, including consideration of lower rates of toxic emissions from improved diesel-powered equipment, finds that cumulative cancer and non-cancer health risks would all be less than significant. Therefore, the Project would not result in air emissions that cause new or substantially more severe adverse effects on human beings, either directly or indirectly.

20d. Does the Project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?

As stated in Chapter 1, Project Description, SRRQ's objective for the proposed CARP19 Project is to amend its existing approved reclamation plan (CARP10) to make it consistent with its intent to continue mining through approximately 2044, the year that SRRQ now projects it will complete mining operations. The County's objective is to ensure that SRRQ is operating within the bounds of the legal requirements of State Surface Mining and Reclamation Act (SMARA), the County Surface Mining and Reclamation Ordinance, and the scope of its vested right; and, through regulation of reclamation activities, to minimize the individual and cumulative impacts of reclamation on the environment and the community: these may be considered the short-term environmental goals of the Project. SMARA defines "Reclamation" as, "the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety" (Public Resources Code, Section 2733). These may be considered the long-term environmental goals of the Project. Since mitigating the short-term impacts of reclamation activities, as required by the mitigation measures in the 2009 FEIR and adopted COAs, would not interfere with the long-term goals of returning the Project site to, "...a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety," the Project does not have the potential to achieve short-term, to the disadvantage of long-term, environmental goals.

Mitigation Measures

As there are no mandatory findings of significance for the Project, no additional mitigation measures are required.

Conclusion

As the Project would not meet the conditions of any of the topical questions posed in this section, there are no mandatory findings of significance.

References

City of San Rafael, 2021a. San Rafael General Plan 2040. Draft for City Council adoption, released July 2021.

City of San Rafael, 2021b. The Village at Loch Lomond Marina Project.
<https://www.cityofsanrafael.org/village-loch-lomond-marina/> Accessed March 7, 2021.

Marin County Community Development Agency, 2020 and 2021. Current Projects: South San Rafael Area. <https://www.marincounty.org/depts/cd/divisions/planning/projects>

San Francisco Regional Water Quality Control Board, 2021. Dutra Haystack Asphalt Plant Project.
https://www.waterboards.ca.gov/sanfranciscobay/water_issues/hot_topics/dutra.html Accessed March 7, 2021.

Stafford, Steve, 2021. Email, Steve Stafford, Senior Planner, City of San Rafael, to Dan Sicular, Sicular Environmental Consulting. Subject: Reply: San Rafael eTRAKiT Contact Form. March 3, 2021.

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CHAPTER 3

Summary and Conclusion

1. Summary Findings of Checklist

Table 3-1 provides a summary of the conclusions for each environmental topic reached in Chapter 2, Checklist for Supplemental Environmental Review. The table indicates for each topic whether the Project would result in a new significant impact or a substantially more severe significant impact than identified in the 2009 FEIR, and if so, whether existing or revised mitigation measures would reduce the impact to less than significant. Those topical issue areas for which there is the potential for a significant impact that cannot be mitigation should be further evaluated in a subsequent EIR, pursuant to State CEQA *Guidelines* Section 15162, or a supplement to the 2009 FEIR, pursuant to State CEQA *Guidelines* Section 15163. As shown in the table, the Project would not result in a new or substantially more severe significant impact, and an addendum to the 2009 FEIR may be prepared, pursuant to State CEQA *Guidelines* Section 15164.

**Table 3-1
Conclusions Regarding New or Substantially More Severe Significant Impacts**

Topical Issue	No New or Substantially More Severe Significant Impact	New or Substantially More Severe Significant Impact, Can Be Mitigated to Less than Significant	New or Substantially More Severe Significant Impact, Cannot Be Mitigated to Less than Significant
2.1 Aesthetics	X		
2.2 Agriculture and Forestry Resources	X		
2.3 Air Quality	X		
2.4 Biological Resources		X	
2.5 Cultural Resources and Tribal Cultural Resources		X	
2.6 Energy	X		
2.7 Geology and Soils	X		
2.8 Greenhouse Gas Emissions		X	
2.9 Hazards and Hazardous Materials	X		
2.10 Hydrology and Water Quality	X		
2.11 Land Use and Planning	X		
2.12 Mineral Resources	X		

Topical Issue	No New or Substantially More Severe Significant Impact	New or Substantially More Severe Significant Impact, Can Be Mitigated to Less than Significant	New or Substantially More Severe Significant Impact, Cannot Be Mitigated to Less than Significant
2.13 Noise	X		
2.14 Population and Housing	X		
2.15 Public Services	X		
2.16 Recreation	X		
2.17 Transportation and Traffic	X		
2.18 Utilities and Service Systems	X		
2.19 Wildfire	X		
Mandatory Findings of Significance	X		

2. Revisions to Mitigation Measures

Proposed revisions to several mitigation measures from the 2009 FEIR are compiled here. As explained in the topical sections above, these proposed changes reflect changes in law, applicable regulatory standards, or CEQA practice standards since the EIR was certified in 2009, or are for clarification, and are not proposed in response to any new or more severe impacts resulting from the Project.

Biological Resources

To ensure that the Project would not have a significant impact on special-status plants, the text of Measure R4.3-3b would be revised and clarified to require that rare plant surveys are conducted during the blooming periods of rare plants with potential to occur.

Mitigation Measure R4.3-3b

Prior to each reclamation phase and during the planning for post-reclamation development, presence/absence surveys for special-status plants will be conducted by a qualified botanist within areas to be disturbed.

- Surveys will be conducted in accordance with the most recent CNPS and CDFGW rare plant survey guidelines, presently the 2018 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018).
- Surveys will be conducted prior to the start of each phase of reclamation activities, during the flowering period for rare plant species with potential to occur within the reclamation activity areas for that phase, when the species is most readily identifiable (June March – October).
- The results of the surveys will be filed with the County; if the presence of any of these rare plant species is confirmed, a copy of the survey results will be forwarded to CDFGW, and Mitigation Measure R4.3-3c will be implemented.
- In the event that special-status plants are proven absent, then no additional mitigation is necessary.

Cultural and Tribal Cultural Resources

Revisions to Mitigation Measures R4.12-1a and R4.12-1b are proposed to strengthen protection of sensitive archaeological resources and tribal cultural resources, and to add the provision to include representatives of Native American tribes in monitoring and response to any discovery of archaeological or tribal cultural resources. Revisions are also proposed to Mitigation Measure R4.12-1a to make the language consistent with Marin County Development Code Section 22.20.040(E).

Mitigation Measure R4.12-1a (applies to all Project phases)

Prior to the commencement of reclamation grading activities in each year during which such activities are planned, all workers who will be involved in ground disturbing activities shall attend a cultural resources sensitivity crew training session that discusses (1) the reasons for archaeological resource monitoring; (2) regulatory policies protecting cultural resources and human remains; (3) basic identification of archaeological resources; (4) the protocol to follow in case of a discovery of such resources, and (5) Tribal Cultural Resources and concerns. The training session shall be led by a qualified archaeologist. At least 30 days prior to the training session, the Applicant shall request in writing that a representative of a Native American Tribe with ancestral affiliation to the Project area attend and co-lead the training session. Such request shall be made to any Native American Tribe that requested consultation regarding the Project, with a copy to the Community Development Agency. If no Native American Tribal representative is available to attend on the specified date, the training session may be led solely by a qualified archaeologist.

~~In the event that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during site preparation or construction activities on any part of the Project site, all work at the vicinity of the discovered site shall stop and the Project sponsor shall contact the Marin County Environmental Coordinator immediately.~~

In the event that archaeological or historic resources are discovered during any construction (including any reclamation grading activities), construction activities shall cease within a 15-meter (50-foot) radius of the discovery, and the Community Development Agency shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist, and disposition of artifacts may occur in compliance with State and Federal law, and in consultation with Native American Tribes with an ancestral affiliation to the Project area. The disturbance of a shellmound may require the issuance of an Excavation Permit by the Department of Public Works, in compliance with Chapter 5.32 (Excavating Indian Middens) of the County Code.

If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist chosen by the County and paid for by the Project sponsor, shall assess the site and shall submit a written evaluation to the Community Development Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a "Most Likely Descendant" can be designated.

No work at the site may recommence without approval of the Community Development Agency Director.

Mitigation Measure R4.12-1b (applies to Project Phase 4 of reclamation grading)

The applicant shall retain the services of a qualified archaeological consultant who has expertise in California prehistory, and shall also retain a Native American representative with ancestral affiliation to the Project area, to review reclamation grading plans and identify areas of potential concern, including areas contained within the previously recorded prehistoric resource boundaries, areas within 15-meters (50 feet) of the previously recorded prehistoric resource boundaries, and previously undisturbed or minimally disturbed areas. The archeological consultant and Native American representative shall monitor all ground-disturbing or vegetation removal activities in identified areas of concern during construction to ensure that any previously undiscovered cultural resources are properly identified and preserved or otherwise mitigated in accordance with prevailing professional standards and Public Resources Code Section 21083.2. If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit will cease. The archaeological monitor and the Native American representative will both be empowered to redirect crews and heavy equipment until the deposit is evaluated. The archaeological monitor will immediately notify the Marin County Department of Public Works of the encountered archaeological deposit. The archaeological monitor will, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, and after consulting with the Native American representative, present the findings of this assessment to Marin County. If Marin County, in consultation with the archaeological monitor and the Native American representative, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed Project, the applicant shall take steps to:

- Redesign the Project to avoid any adverse effects on the significant archaeological resource; or
- Develop and implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the resource is of greater interpretive than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archaeological data recovery program, an ADRP will be conducted that will preserve and recover important archeological data from the find, to the extent that adverse effects will be avoided. The Project archaeologist will consult with Marin County and the Native American representative to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP that will be submitted to Marin County, the Native American representative, and the state Office of Historic Preservation for review and approval. The ADRP will identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain (i.e., the ADRP will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions). Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed Project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical.

Greenhouse Gas Emissions

The following revisions to Mitigation Measure R4.2-3c, which was adopted as COA 53, would reduce Project GHG emissions to less than significant, by requiring the applicant to reduce emissions from reclamation grading such that they would not exceed current County and State GHG reduction targets,

which have changed since certification of the 2009 FEIR. The revisions to Mitigation Measure R4.2-3c would, if the Project is approved, be carried over as revisions to COA 53.

Mitigation Measure R4.2-3c

Within ~~one year~~ three months of ~~project~~ approval of the CARP19 Project, the applicant shall update the existing ~~prepare and implement~~ a GHG reduction plan. The plan will ~~include a complete inventory of reclamation-related GHG emissions and will~~ demonstrate how the Quarry will reduce or offset ~~remaining un-mitigated~~ reclamation-related GHG emissions such that total GHG emissions from reclamation grading will not exceed 948 MTCO₂e over the life of the reclamation project. The plan will prioritize emission reduction through energy conservation and other measures; for those emissions that cannot be reduced, the plan shall specify how emissions will be offset. Offsets may take the form of installation of on-site alternative energy generation facilities (such as solar power) or offsite compensation, such as monetary contribution to a project that sequesters carbon. Examples of such projects include wetland restoration, purchase of carbon credits verified by the ~~California Climate Action Registry~~ California Air Resources Board, and reforestation. On-site offsets will be given higher priority than off-site offsets, and offsets with co-benefits, such as reduction of particulate emissions within the vicinity of the Quarry, and restoration of habitat for special status species, will be given higher priority. ~~The plan must demonstrate how, at a minimum, the Quarry will reduce reclamation-related, non-biogenic GHG emissions consistent with the Marin County Greenhouse Gas Reduction Plan and Countywide Plan Update policies: since no reclamation-related emissions were occurring in 1990, the plan must demonstrate how reclamation-related emissions are reduced or offset, such that there are no net emissions from reclamation.~~ The plan will include an implementation schedule. The plan will be submitted to the Marin County Public Works Department for review and approval. In addition, ~~the initial emissions inventory prepared as part of the plan will be reported to the California Climate Action Registry~~ Climate Registry or a successor organization as a baseline ~~inventory, and~~ the Quarry will conduct an annual GHG emissions inventory and report it to the Climate Registry and to the County Public Works Department. ~~and report additional inventories annually.~~

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APPENDIX A

Proposed Revisions to the Mitigation Monitoring and Reporting Program

APPENDIX A

Proposed Revisions to the Mitigation Monitoring and Reporting Program

A Mitigation Monitoring and Reporting Program (MMRP) was adopted at the time that the Amended Reclamation Plan and Amended Surface Mining and Quarrying Permit were approved by the Marin County Board of Supervisors in September 2010, as Exhibit 3 of the approval resolution. The purpose of the MMRP is to ensure that the mitigation measures, which are necessary to reduce identified significant impacts to less than significant, are implemented in a timely and effective manner.

The following version of the MMRP table incorporates the proposed changes to mitigation measures identified in Chapters 2 and 3. Please note that the MMRP table includes mitigation measures addressing impacts of both reclamation and mining operations. Alpha-numeric identifiers begin with an “R” for reclamation-related impacts and mitigation measures, and with a “P” for operations-related impacts and mitigation measures. Impacts and mitigations measures for cumulative impacts of reclamation and operations combined begin with a “C.”

Proposed revisions to reclamation-related impacts are identified as follows: insertions are underlined, and deletions are ~~struck through~~.

**PROPOSED REVISIONS TO THE SAN RAFAEL ROCK
QUARRY ARP AND AQP MITIGATION MONITORING AND
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Proposed revisions shown in underline for insertions and
~~strike-through~~ for deletions

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Aesthetics				
R4.1-1: Visual impacts on the view from Vantage Point 3, the public walkway and public road southwest of the site.	<p>R4.1-1a: Implementation of Mitigation Measure R4.12-6a, retention of Hoffman Kiln #1 and its stack would partly mitigate this impact.</p> <p>R4.1-1b: Implementation of Mitigation Measures R4.12-3a, 3b, 4a, 4b, 5a, 5b, 5c, 6a, and 6b to ensure that key historic structures are preserved, would also mitigate the adverse visual impacts that would result from the loss of these structures.</p>	R4.1-1: SRRQ to submit revised amended reclamation plan. The Marin County DPW will verify SRRQ's compliance with Mitigation Measures R4.1-1a and R4.1-1b. See also Mitigation Monitoring Measures R4.12-3, 4, 5, and 6.	Specification for preservation of historic structures to be included with Conforming Amended Reclamation Plan, to be submitted within 60 days of AQP approval. Detailed grading plans for Reclamation Phases III and IV to be submitted with grading permit applications. See referenced Mitigation Measures.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and specified plans. See referenced Mitigation Measures.
R4.1-2: Visual impacts on the view from Vantage Point 5, Via Montebello near San Marino Drive in the Peacock Gap Neighborhood.	See Mitigation Measure R4.1-1a.	See Mitigation Monitoring Measure R4.1-1.	See above.	See above.
P4.1-9: Proposed nighttime operations would introduce new sources of light and glare.	P4.1-9: The AQP will restrict operations that have the potential to cause nighttime sources of light and glare and that are visible from public vantage points (including the Bay and vantage points across the Bay), roadways, and residences to daytime hours, except during emergency operations. See Mitigation Measure 4.6-6b in Section 4.6, Land Use and Planning.	P4.1-9: The Marin County DPW will verify SRRQ's compliance with Mitigation Measure P4.1-9. See also Mitigation Monitoring Measure 4.6-6 in Section 4.6, Land Use and Planning.	Upon issuance of the AQP.	Verified by Marin County DPW continuous program of periodic inspections of SRRQ activity, and reported by SRRQ in annual report of quarry operations and reclamation.

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Air Quality				
<p>R4.2-1: Reclamation grading under Phases 1-3 of the proposed Amended Reclamation Plan would result in an increase in daily emissions of criteria air pollutants above emissions that would have occurred under the 1982 Amended Reclamation Plan. This increase in daily emissions would exceed the Bay Area Air Quality Management District-established significance thresholds for nitrogen oxides and particulate matter equal to or less than 10 microns.</p>	<p>R4.2-1a: The project applicant has recently initiated the use of biodiesel fuel in all quarry rolling stock. Biodiesel is the only alternative fuel for which a detailed emissions evaluation has been submitted to the United States Environmental Protection Agency (USEPA). The effectiveness of emission reduction resulting from the use of biodiesel is dependent upon the percent of biodiesel contained in the mixture (USEPA, 2002). The most common blend, and that currently used at SRRQ, is a 20 percent biodiesel and 80 percent conventional diesel (B-20). B-20 will reduce particulate and CO emission by approximately 12 percent, and reduce hydrocarbon emissions by approximately 20 percent. Use of biodiesel may increase or decrease NOx emissions (McCormick et al, 2006).</p> <p>R4.2-1b: SRRQ has already upgraded SRRQ's entire fleet of off-road diesel equipment to USEPA Tier 3 standards, ahead of regulatory requirements that at least 10 percent of the fleet be upgraded each year. SRRQ also plans to upgrade its tug boat fleet to Tier 2 standards prior to the end of 2008.</p> <p>R4.2-1c: SRRQ already implements several measures to control dust. These will be continued under the project:</p> <ul style="list-style-type: none"> • All trucks leaving the Quarry shall be washed down, including the undercarriage, prior to entering Point San Pedro Road (except trucks transporting asphalt). The wash down and adjoining areas shall be paved to minimize tracking of dust and dirt. Point San Pedro Road will be swept up to two times per day, except on rainy days, when no sweeping will occur, subject to the approval of the City of San Rafael; • The Quarry shall maintain all required erosion control measures and stormwater management plans, and shall keep current and comply with all permits required by the Regional Water Quality Control Board; • The Quarry shall maintain all dust abatement devices, and shall keep current and comply with all permits required by the BAAQMD. <p>R4.2-1d: The project sponsor shall be required to continue existing emission reduction practices, including use of alternative fuels, use of low-emission diesel equipment, and dust abatement measures.</p>	<p>R4.2-1: SRRQ shall implement all mitigation measures as requirements of the AQP conditions of approval.</p> <p>The Marin County DPW will be responsible for monitoring implementation of all Impact R4.2-1 mitigation measures.</p>	<p>Upon approval of Conforming ARP, to be submitted within 60 days of AQP approval, the requirement shall become part of the ARP. Alternative fuel usage shall begin when reclamation activity begins.</p>	<p>Verified by Marin County DPW continuous program of periodic inspections of SRRQ activity, and reported by SRRQ in annual report of quarry operations and reclamation. Emission reduction measures and compliance with emission CAP to be verified by Marin County DPW, and reported by SRRQ in annual report of quarry operations and reclamation. The BAAQMD is the administrator of the emissions credit program, and will be responsible for ensuring compliance with the terms of participation in this program.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Air Quality (cont.)				
R4.2-1 (cont.)	<p>R4.2-1e: The applicant shall implement additional dust abatement measures identified by BAAQMD as feasible dust control, during all reclamation grading activities:</p> <ul style="list-style-type: none"> • Cover all trucks hauling soil, sand, and other loose materials as a part of reclamation activities, or require such trucks to maintain at least two feet of freeboard between the top of the material and top of truck; • Pave, apply water at a minimum three times daily in dry weather, or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at the Quarry; • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at the Quarry; • Hydroseed, apply non-toxic soil stabilizers, or water to inactive reclamation areas (previously graded areas inactive for ten days or more); • Limit traffic speeds on unpaved roads to 15 miles per hour; • Install sandbags or other erosion control measures to prevent silt runoff to public roadways; • Replant vegetation in disturbed areas as soon as the growing seasons dictates; • Install wind breaks or plant trees/vegetative wind breaks at the windward sides of the reclamation areas until such time as the vegetation is established; • Suspend reclamation-related excavation and grading activities when wind (as instantaneous gusts) exceeds 25 miles per hour; and • Limit the area subject to reclamation-related excavation, grading and other construction activity at any one time. <p>R4.2-1f: The project applicant shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for all operating equipment at the Quarry.</p>			

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Air Quality (cont.)				
4.2-1 (cont.)	<p>R4.2-1g: To further reduce emissions from off-road diesel equipment, the applicant shall fuel on-site diesel-powered mobile equipment used in reclamation activities with a minimum 80 percent biodiesel blend (B-80) or use other equipment and/or fuel that achieves the same reduction in particulate (PM-10) emissions. The applicant shall also use Purinoxtm, another approved additive, or other measures to reduce NOx and PM-10 emissions to the maximum extent feasible given current technologies.</p> <p>R4.2-1h: Off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than 5 minutes, unless such idling is necessary for proper operation of the vehicle.</p> <p>R4.2-1i: If the mitigation measures listed above do not reduce emissions to below threshold values, the applicant will acquire BAAQMD off-site emission offset credits in sufficient quantity to reduce emissions from reclamation grading to levels below significance thresholds.</p>	The BAAQMD is the administrator of the emissions credit program and will be responsible for ensuring compliance with the terms of participation in this program.	Implementation of emission credits will be on an as-needed basis.	Emission reduction measures and compliance with emission cap to be verified by Marin County DPW, and reported by SRRQ in annual report of quarry operations and reclamation. The BAAQMD is the administrator of the emissions credit program, and will be responsible for ensuring compliance with the terms of participation in this program.

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Air Quality (cont.)				
4.2-1 (cont.)	R4.2-1j: The applicant will limit on-site mining operations on days on which reclamation grading activities are performed, such that total emissions from the site are not increased above significance thresholds. To ensure the effectiveness of this measure, the Quarry will be required to maintain and report to the BAAQMD and the County Public Works Department a record of reclamation and operations activities, with an estimate of emissions from each. The baseline for combined emissions is the current level of emissions for mining operations, as shown in Table 4.2-13.1, plus the baseline emissions for the reclamation grading phase, as shown in Tables 4.2-10 and 4.2-11. The limit for combined emissions from mining and reclamation will therefore be the sum of the current emissions levels from mining operations, the baseline emission levels for reclamation grading, and the BAAQMD's threshold values for criteria pollutants, as shown in Table 4.2-10.1 for each reclamation phase.	The BAAQMD is the administrator of the emissions credit program and will be responsible for ensuring compliance with the terms of participation in this program	As above.	As above.
R4.2-2: Phase 4 of the 2004 Amended Reclamation Plan would include cut and fill activities that were not included in 1982 Amended Reclamation Plan. These new reclamation activities would result in emissions of criteria pollutants that would exceed BAAQMD significance thresholds.	R4.2-2a: Mitigation measures R4.2-1a, b, and c apply to Phase 4 as well. R4.2-2b: Implement Mitigation Measures R4.2-1d through R4.2-1j for Phase 4.	R4.2-2: The Marin County Public Works Department will be responsible for monitoring implementation of all mitigation measures.	Upon commencement of Phase 4 reclamation.	Emission reduction measures and compliance with emission CAP to be verified by Marin County DPW, and reported by SRRQ in annual report of quarry operations and reclamation. The BAAQMD is the administrator of the emissions credit program, and will be responsible for ensuring compliance with the terms of participation in this program.

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Air Quality (cont.)				
<p>R4.2-3: Reclamation activities will generate greenhouse gas emissions that will contribute to climate change.</p>	<p>R4.2-3a: The applicant already uses a 20 percent biodiesel blend (B-20) in on-site mobile equipment; see Mitigation Measure R4.2-1a. The CO₂ produced by burning biodiesel is considered “biogenic,” that is, it is part of the natural cycling of carbon in the atmosphere and biosphere. Because it is not from a fossil source, it is not included in GHG inventories. Therefore, the use of B-20 reduces CO₂ emissions that contribute to global climate change from on-site mobile equipment by approximately 20 percent.</p> <p>R4.2-3b: Implementation of Mitigation Measure R4.2-1d, f, g, and h will reduce running time of diesel equipment, replace diesel equipment with less polluting equipment, and increase the use of biodiesel in on-site equipment. The amount of reduction in GHG emissions is estimated to be approximately an additional 65 percent.</p> <p>R4.2-3c: <u>Within one-year three months of project approval of the CARP19 Project, the applicant shall update the existing prepare and implement a GHG reduction plan. The plan will include a complete inventory of reclamation-related GHG emissions and will demonstrate how the Quarry will reduce or offset remaining un-mitigated reclamation-related GHG emissions such that total GHG emissions from reclamation grading will not exceed 948 MTCO₂e over the life of the reclamation project.</u> The plan will prioritize emission reduction through energy conservation and other measures; for those emissions that cannot be reduced, the plan shall specify how emissions will be offset. Offsets may take the form of installation of on-site alternative energy generation facilities (such as solar power) or offsite compensation, such as monetary contribution to a project that sequesters carbon. Examples of such projects include wetland restoration, purchase of carbon credits verified by the California Climate Action Registry California Air Resources Board, and reforestation. On-site offsets will be given higher priority than off-site offsets, and offsets with co-benefits, such as reduction of particulate emissions within the vicinity of the Quarry, and restoration of habitat for special status species, will be given higher priority. The plan must demonstrate how, at a minimum, the Quarry will reduce reclamation-related, non-biogenic GHG emissions consistent with the Marin County Greenhouse Gas Reduction Plan and Countywide</p>	<p>R4.2-3: In addition to Mitigation Monitoring Measure R4.2-1, the Marin County Public Works Department will be responsible for reviewing and approving the GHG reduction plan. The Marin County DPW will also be responsible for monitoring implementation of the GHG reduction plan.</p>	<p>Upon submittal of a Conforming Amended Reclamation Plan within 60 days of permit approval; ongoing monitoring of emission reduction measures.</p> <p>GHG reduction plan to be submitted within one year of AQP approval.</p>	<p>Emissions reductions and adherence to GHG reduction plan to be reported annually by SRRQ in annual report of quarry operations and reclamation, and verified by Marin County DPW, beginning one year after permit approval.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Air Quality (cont.)				
4.2-3 (cont.)	Plan Update policies: since no reclamation-related emissions were occurring in 1990, the plan must demonstrate how reclamation-related emissions are reduced or offset, such that there are no net emissions from reclamation. The plan will include an implementation schedule. The plan will be submitted to the Marin County Public Works Department for review and approval. In addition, the initial emissions inventory prepared as part of the plan will be reported to the California Climate Action Registry Climate Registry or a successor organization as a baseline inventory, and the Quarry will conduct an annual GHG emissions inventory and report it to the Climate Registry and to the County Public Works Department, and report additional inventories annually.			
R4.2-5: The proposed Amended Reclamation Plan would result in post-reclamation development and land uses that will emit greenhouse gasses, and contribute to global climate change.	R4.2-5: The applicant shall revise the ARP to include a standard to guide the future design of the final Development Plan (due to be submitted to the County three years prior to the cessation of mining) to incorporate a detailed inventory of GHG emissions associated with the planned post-reclamation development, and a plan to reduce GHG emissions consistent with Countywide Plan policies and other relevant County, state and federal standards, as applicable.	R4.2-5: The Marin County DPW will review the revised ARP for completeness prior to project approval.	Upon submittal of a Conforming Amended Reclamation Plan within 60 days of permit approval; and as part of the Final Development Plan, to be submitted 3 years prior to the cessation of mining.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation plan, and, later, upon submittal of the Final Development Plan.
P4.2-6: Future Quarry operations under the proposed Amended Surface Mining and Quarrying Permit could exceed baseline levels of production, with concomitant increases in emissions of criteria air pollutants above threshold values.	P4.2-6a: Mitigation measures R4.2-1a, R4.2-1b, and R4.2-1c apply to equipment used in ongoing quarrying operations as well. P4.2-6b: Implement Mitigation Measures R4.2-1d through R4.2-1h for ongoing quarrying operations as well as reclamation activities. P4.2-6c: Implement Mitigation Measure P4.6-6b (see Section 4.6, Land Use and Planning), which would limit Quarry operations to the baseline level.	P4.2-6: The Marin County DPW will be responsible for oversight and enforcement of these provisions. DPW will verify that a revised application for the AQP that contains the above provisions, including the Operational Dust Mitigation Plan/Program, and will approve said provisions prior to issuance of the AQP. After issuance of the AQP, DPW will conduct routine field inspection to verify implementation of these provisions. The Quarry must report its annual production to the County and to the State each year.	Emission reduction requirements and cap on annual production to become conditions of approval of the AQP, and will be implemented upon AQP approval.	Verified by Marin County DPW, and reported by SRRQ in annual report of quarry operations and reclamation.

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Air Quality (cont.)				
<p>P4.2-7: Proposed amendments to the Surface Mining and Quarrying Permit could result in an increase in greenhouse gas emissions, and contribute to global climate change.</p>	<p>P4.2-7a: The applicant proposes to limit truck trips into and out of the Quarry to 250 trips per day, which is below the baseline level of truck trips. Therefore, GHG emissions from haul trucks would not increase above 1990 levels.</p> <p>P4.2-7b: The applicant already uses a 20 percent biodiesel blend in on-site mobile equipment; see Mitigation Measure R4.2-1a. Biodiesel reduces CO2 emissions that contribute to global warming, since biodiesel is derived from plant and animal sources, not fossil sources.</p> <p>P4.2-7c: Mitigation Measure P4.2-6b will further reduce GHG emissions below 1990 levels from on-site mobile equipment used for Quarry operations.</p> <p>P4.2-7d: Mitigation Measure P4.6-6b will limit production to baseline levels, which will ensure no increase in emissions from on-site mobile diesel equipment and tugboats.</p> <p>P4.2-7e: The Greenhouse Gas Reduction Plan specified in Mitigation Measure R4.2-3c shall also include an inventory of operations-related GHG emissions and a plan to reduce these emissions by 15 percent.</p>	<p>P4.2-7: See Mitigation Monitoring Measures R4.2-1, R4.2-3, P4.2-6 and P4.6-6.</p>	See referenced mitigation measures.	See referenced mitigation measures.
<p>C4.2-9: Reclamation activities under the Amended Reclamation Plan and Quarry operations under the Amended Surface Mining and Quarrying Permit would result in emissions of toxic air contaminants, including diesel particulate matter, increasing the risk of cancer for nearby sensitive receptors.</p>	<p>C4.2-9a: As noted in Mitigation Measures R4.2-1 and P4.2-6, the applicant has taken measures to reduce DPM emissions from on-site equipment, including upgrading to lower emission engines and use of B-20 fuel.</p> <p>C4.2-9b: Implement Mitigation Measure P4.6-6b, which would limit multi-year annual average production levels to 1982.</p> <p>C4.2-9c: Implement Mitigation Measure R4.2-1 and Mitigation Measure P4.2-6 to further reduce DPM emissions from on-site mobile equipment used both for reclamation and for mining operations.</p>	<p>C4.2-9: See Mitigation Monitoring Measures R4.2-1, P4.2-6, and P4.6-6.</p>	See referenced mitigation measures.	See referenced mitigation measures.
<p>C4.2-12: Toxic air contaminants emitted from past Quarry operations, in conjunction with planned future operations under the AQP (as well as currently unplanned but reasonably foreseeable future operations), reclamation activities under the Amended Reclamation Plan, and post-reclamation land uses could cause significant cumulative health effects.</p>	<p>No additional mitigation is available to further reduce the cancer health risks from the current projects or from reasonably foreseeable future projects, beyond those stated in Mitigation Measures C4.2-9a, b, and c.</p>	<p>C4.2-10: See Mitigation Monitoring Measures R4.2-1, P4.2-6, and P4.6-6.</p>	See referenced mitigation measures.	See referenced mitigation measures.

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Air Quality (cont.)				
C5-3: The project would add incrementally to cumulative air pollutant emissions.	Implement Mitigation Measures R4.2-1a through j and R4.2-2a and b.	C5-5: See Mitigation Monitoring Measures R4.2-1 and R4.2-2.	See referenced mitigation measures.	See referenced mitigation measures.
Biological Resources				
R4.3-2: Reclamation activities during Phases 1 through 4, as well as post-reclamation uses of the site will result in the loss of native vegetation at San Rafael Rock Quarry, including mixed perennial grassland, coastal scrub, and coast live oak woodlands.	<p>R4.3-2a: ARP04 contains "Standards for Preserving Sensitive Habitat Areas." Implementation of these standards will protect specific areas of oak woodland and native grassland.</p> <p>R4.3-2b: The applicant shall submit to the Marin County Department of Public Works a revised ARP that includes the preservation of the small hill, consistent with ARP82. Any plans for future alteration of the small hill for post-reclamation development may be proposed as part of the final Development Plan, due to be submitted three years prior to the cessation of mining.</p>	R4.3-2: The Marin County DPW shall be responsible for reviewing revisions to ARP04 prior to its adoption, and for monitoring compliance with standards contained therein.	Upon submittal of a Conforming Amended Reclamation Plan, within 60 days of permit approval, and throughout period of reclamation.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan, and ongoing during quarry operations and reclamation.
R4.3-3: Reclamation activities implemented in Phases 1 through 4 could result in temporary disturbance to or mortality of Point Reyes bird's beak and Gairdner's yampah.	<p>R4.3-3a: ARP04 delineates areas to be preserved, including portions of South Hill, the Grassy Knoll, and the marsh areas.</p> <p>R4.3-3b: Prior to each reclamation phase and during the planning for post-reclamation development, presence/absence surveys for special-status plants will be conducted by a qualified botanist within areas to be disturbed.</p> <p>Surveys will be conducted in accordance with the most recent CNPS and CDFGW rare plant survey guidelines, <u>presently the 2018 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW, 2018).</u></p> <p>Surveys will be conducted prior to the start of each phase of reclamation activities, during the flowering period <u>for rare plant species with potential to occur within the reclamation activity areas for that phase, when the species is most readily identifiable (June March – October).</u></p> <p>The results of the surveys will be filed with the County; if the presence of any of these <u>rare plant</u> species is confirmed, a copy of the survey results will be forwarded to CDFGW, and Mitigation Measure R4.3-3c will be implemented.</p> <p>In the event that special-status plants are proven absent, then no additional mitigation is necessary.</p>	R4.3-3a: The Marin County DPW shall be responsible for ensuring that special status plant surveys are conducted prior to planned disturbance, for ensuring implementation of Mitigation Measure R4.3-3 in the event that species presence is affirmed, and for making a final determination of success.	Prior to commencement of each reclamation phase and prior to submittal of Final Development Plan, and, if presence is affirmed, during reclamation.	Verified by Marin County DPW prior to issuance of each reclamation phase, and as part of review of Final Development Plan.

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Biological Resources (cont.)				
R4.3-3 (cont.)	<p>R4.3-3c: In the event that special-status plant populations are found during the surveys conducted pursuant to Mitigation Measure R4.3-3b, the project proponent will avoid disturbance to the species by establishing a visible buffer zone of not less than 25 feet prior to construction or by relocating reclamation activities if feasible to avoid disturbance. Where necessary reclamation activities cannot be altered to avoid disturbance, the applicant shall relocate affected special-plant populations and/or restore similar habitat in another location:</p> <ul style="list-style-type: none"> • Protection of special status species will be coordinated by a qualified biologist. • Disturbance or mortality of special status plant habitat and species shall be avoided as a priority. If a qualified biologist determines that restoration would provide equivalent or more effective mitigation, special-status plant habitat and/or sensitive plant communities may instead be restored on-site at a 2:1 ratio in areas that are to remain as post-reclamation open space, such as the Grassy Knoll or within the salt marshes. • Special-status plants and/or seeds will be salvaged from areas of disturbance and moved to restoration areas on or off the site; if this is not feasible, an alternate source of seed or plant material will be selected by a qualified biologist. • A five-year restoration mitigation and monitoring program will be developed and implemented. Appropriate performance standards will include, but are not limited to: a 75 percent survival rate of restoration plantings or plant cover; absence of invasive plant species (any species listed on the California Invasive Plant Council's California Invasive Plant Inventory); and a functioning, self-sustaining plant community at the end of five years. 	<p>R4.3-3b: In the event that special-status plants are translocated or that habitat for them is restored, Annual Mitigation and Monitoring reports will be prepared and submitted to California Department of Fish and Game.</p>	As needed.	Verified by Marin County DPW during translocation, and annually thereafter.
<p>R4.3-4: Reclamation activities implemented in Phases 1 through 4, as well as post-reclamation development could result in damage to or removal of protected trees that are within or adjacent to areas to be reclaimed or developed.</p>	<p>R4.3-4a: ARP04 delineates areas to be preserved, including portions of South Hill and the Grassy Knoll.</p>	<p>R4.3-4: Marin County DPW shall be responsible for ensuring that the specified actions are undertaken prior to planned disturbance, and for ensuring implementation of Mitigation Measure R4.3-4e.</p>	Prior to commencement of each reclamation phase and prior to any disturbance of areas where protected trees are growing.	Verified by Marin County DPW prior to issuance of grading permits for each reclamation phase, and during site inspections thereafter.

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Biological Resources (cont.)				
R4.3-4 (cont.)	<p>R4.3-4b: Implement Mitigation Measure 4.3-2b to protect the trees located on the small hill in the NW Quadrant.</p> <p>R4.3-4c: The applicant will implement the following measures in order to minimize damage to protected trees that are to be preserved on-site:</p> <ul style="list-style-type: none"> • Prior to the start of any clearing, stockpiling, excavation, grading, compaction, paving, change in ground elevation, or construction, preserved trees that occur adjacent to project construction areas shall be identified as preserved and clearly delineated by constructing short post and plank walls, or other protective fencing material, at the dripline of each tree. • The delineation markers shall remain in place for the duration of the work. • Where reclamation activities would encroach upon the dripline of a preserved tree, special construction techniques will be required to allow the roots of remaining trees within the project site to breathe and obtain water (examples include, but are not limited to, use of hand equipment for tunnels and trenching, and/or allowance of only one pass through a tree's dripline). Tree wells or other techniques may be used. • The following shall not occur within the dripline of any retained tree: parking; storage of vehicles, equipment, machinery, stockpiles of excavated soils, or construction materials; or dumping of oils or chemicals. • If a tree within a preserved area is damaged or destroyed, the applicant shall replace the tree at a ratio of 2:1 with trees of the same species. Tree replacement shall be performed by a certified arborist. <p>R4.3-4d: All pruning activities of preserved trees shall be performed by a certified arborist. No more than 25 percent of a tree's canopy shall be removed during pruning activities of retained trees.</p> <p>R4.3-4e: The project proponent shall develop and implement a five-year monitoring program for any required replacement plantings, as specified in Mitigation Measure R4.3-4c.</p>	See also Mitigation Monitoring Measure R4.3-2.		

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Biological Resources (cont.)				
R4.3-4 (cont.)	Performance standards for tree replacement include all of the following: 75 percent survival rate of restoration plantings; absence of invasive plant species (any species listed on the California Invasive Plant Council's California Invasive Plant Inventory); and self-sustaining trees at the end of five years. If these criteria are not met, the applicant shall re-plant and success shall again be assessed after five years.			
R4.3-5: Reclamation activities as well as post-reclamation development could result in substantial adverse effects on wetlands and waters of the U.S. under the jurisdiction of the Army Corps of Engineers, waters of the State under the jurisdiction of California Department of Fish and Game or the Regional Water Quality Control Board, and waters and land under Bay Conservation and Development Commission and State Lands Commission jurisdiction, and would be inconsistent with standards established for the Baylands Corridor in the Countywide Plan update.	<p>R4.3-5a: ARP04 contains standards for setbacks from marsh areas. As stated in Chapter 3, Project Description, the saltwater and brackish marsh areas in the NW Quadrant would be protected by maintaining a setback from the edge of the existing marsh, maintaining high quality stormwater runoff, and keeping the outlet works of the marsh in good working order. ARP04 further states that stormwater quality would be monitored, and that the setback would align with the edge of current operations, including the edge of existing pavement and/or storage areas in the McNear's Brickyard storage area. As this component of ARP04 does not comply with the setback requirements for the Baylands Corridor contained in the Countywide Plan Update, Mitigation Measure R4.3-5b is necessary to further mitigate this impact.</p> <p>R4.3-5b: All jurisdictional wetland areas to be avoided shall be protected by setbacks throughout site reclamation and post-reclamation development consistent with the Baylands Corridor designation of the site in the Countywide Plan Update:</p> <ul style="list-style-type: none"> • Setbacks for the NW Quadrant marshes shall be consistent with the requirements of the Baylands Corridor designation for the site. During reclamation activities, no temporary or permanent reclamation stockpiles, berms, or other features shall be placed within 100 feet of the NW Quadrant marshes. Buffers shall be included as part of post-reclamation development design in the vicinity of the NW Quadrant marshes and shall be a minimum of 100 feet in width. • Setbacks for seeps and seasonal wetlands shall be a minimum of 50 feet. • Areas that are avoided and provided with setbacks will be further protected by Best Management Practices (BMPs), 	<p>R4.3-5a: The Marin County DPW shall be responsible for ensuring that setbacks are established and maintained, and that BMPs and other measures to avoid construction-related impacts on wetlands are implemented during reclamation activities.</p> <p>R4.3-5b: Conditions of additional permits needed for work within jurisdictional waters will be monitored by the relevant permitting agencies, including the USACE, RWQCB, and BCDC.</p>	<p>Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval, and ongoing throughout period of reclamation.</p> <p>Upon submittal of permit applications for work within jurisdictional wetlands</p>	<p>Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan, and ongoing during quarry reclamation.</p> <p>Appropriate permitting agency (USACE, RWQCB, CDFG, BCDC), at time of permit application review.</p>

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Biological Resources (cont.)				
<p>R4.3-5 (cont.)</p>	<p>as described in Mitigation Measure R4.3-5d below. Such measures include the installation of silt fencing, straw wattles or other appropriate erosion and sediment control methods or devices along roads and at the 100 foot setback limits. Such BMPs shall also be employed if and when reclamation grading and post-reclamation development requires work within the setbacks as described above, between the feature and the activity.</p> <p>R4.3-5c: All necessary jurisdictional wetland permits and approvals of appropriate regulatory agencies shall be obtained prior to each relevant phase of reclamation.</p> <p>R4.3-5d: The applicant shall conduct reclamation activities in a manner that avoids erosion and sedimentation of wetland areas, through implementation of standard BMPs to maintain water quality and control erosion and sedimentation during construction as required by compliance with the General National Pollution Discharge Elimination System (NPDES) Permit for Construction Activities and as established by mitigation measures set forth in Section 4.5, Hydrology and Water Quality.</p> <p>Mitigation measures would include, but would not be limited to, installing silt fencing between jurisdictional waters and project related activities, locating fueling stations away from potentially jurisdictional features, and otherwise isolating construction work areas from any identified jurisdictional features. In addition, BMPs identified in the Long-term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS) (Corps, 2001) shall be implemented to prevent degradation of water quality resulting from dredging activities within open waters. These BMPs include: silt fencing and gunnerbooms or other appropriate methods for keeping dredged materials from leaving the project site.</p> <p>R4.3-5e: The applicant shall revise the ARP to include as a standard for guiding development of the final Development Plan that post-reclamation residential, commercial, and mixed use development, except as otherwise permitted by BCDC, shall not occur within the 100 foot shoreline band subject to BCDC jurisdiction.</p>			

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Biological Resources (cont.)				
R4.3-6: Reclamation activities and post-reclamation development activities such as dredging, pile driving, jetty construction, and other “in-water” construction activities would result in temporary disturbances to aquatic biological resources and Essential Fish Habitat.	R4.3-6a: Prior to open-water construction activities, the applicant shall obtain the necessary permits from the USACE and other regulatory agencies. Open-water construction will not begin prior to obtaining necessary permits. R4.3-6b: All open-water construction activities shall adhere to the guidelines of the then-current version of the LTMS. R4.3-6c: To minimize wetland disturbance the construction of the connecting channel from the Main Quarry Bowl to the Bay and removal or installation of rip-rap along the Bay shoreline will either operate from dry land or from water-based equipment such as barges, scows, derrick barges, and tugs.	R4.3-6: USACE and other permit conditions are likely to include the relevant guidelines of the LTMS; it is anticipated that adherence to these conditions will be monitored by the USACE or other agencies, such as NMFS, designated in the permits.	Upon submittal of application for permit for open-water construction activities.	Appropriate permitting agency (such as USACE), during review of permit application and subsequently during work performed under any such permit.
R4.3-7: Poor water quality in the deep water within the flooded Main Quarry Bowl could occur due to long residence times and stratification at depth. The proposed project may result in degradation of water quality within the deep areas of the harbor basin. This condition could result in impacts to special-status aquatic species.	R4.3-7: Implement Mitigation Measure R4.5-6 in Section 4.5, Hydrology and Water Quality.	R4.3-7: The Marin County Department of Public Works will be responsible for reviewing the report specified in Mitigation Measure R4.5-6.	See referenced mitigation measure (R4.5-6).	See referenced mitigation measure (R4.5-6).
R4.3-8: Reclamation activities conducted in the vicinity of the process water ponds in the NW and SW Quadrants have the potential to adversely impact California red-legged frog.	R4.3-8a: ARP04 includes surveys for CRLF in its “Standards for Preserving Sensitive Habitat Areas,” to be conducted prior to filing for grading permits for each reclamation phase, as well as undefined setbacks to be established in the site’s Development Plan. R4.3-8b: The applicant shall conduct reclamation and post-reclamation development activities in and around the process water ponds in the NW and SW Quadrants in a manner that avoids take of CRLF through surveys to determine whether the species is present, and, if so, to reduce the risk of take of individuals of the species, as specified below. Specifically, the following measures shall be implemented: <ul style="list-style-type: none"> The project proponent shall retain a qualified biologist to conduct a habitat assessment for CRLF according to U.S. Fish and Wildlife Service (USFWS) guidelines prior to filing for grading permits for Reclamation Phase 1. The habitat assessment shall be submitted to USFWS for review. If, following the review of the habitat assessment, USFWS recommends protocol-level field surveys, then the project sponsor shall conduct protocol-level field surveys for CRLF within aquatic habitat that provides potential breeding habitat (the process water ponds in the NW and SW Quadrants) on the project site 	R4.3-8a: Surveys for CRLF in its “Standards for Preserving Sensitive Habitat Areas,” shall be conducted prior to filing for grading permits for each reclamation phase. Results shall be submitted to USFWS and CDFG. R4.3-8b: The Marin County DPW shall verify that a CRLF habitat assessment and protocol-level surveys, if required, have been completed and reviewed by USFWS prior to issuance of the grading permits. DPW will notify USFWS if take of CRLF occurs in association with the project within 48 hours of the incident.	Upon submittal of application for grading permits for each reclamation phase. Prior to issuance of grading permit for each reclamation phase.	Verified by Marin County DPW during review of grading permit applications, and during site inspections. Verified by Marin County DPW prior to issuance of grading permit for each reclamation phase.

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Biological Resources (cont.)				
R4.3-8 (cont.)	<ul style="list-style-type: none"> • If no CRLF are found during the habitat assessment and/or protocol level surveys associated with Phase 1 reclamation activities then the project proponent shall consult with USFWS as to the necessity of conducting further assessments or surveys for Phases 2 through 4 and/or for post-reclamation development. • If, as a result of the habitat assessment and/or protocol level surveys, CRLF are found on the project site, the project applicant shall initiate informal consultation with the USFWS to determine the need for formal consultation and preparation of a Biological Assessment and Biological Opinion (required by the federal Endangered Species Act). Specific measures to protect CRLF shall be determined in consultation with USFWS and may include, but are not limited to, the following measures, which are derived from the USFWS Programmatic Biological Opinion (PBO) for impacts to CRLF. The PBO summarizes typical project effects and provides generic preventive measures designed to substantially reduce the risk of incidental "take" of CRLF within the project area: <ul style="list-style-type: none"> – The name and credentials of a biologist qualified to act as construction monitor shall be submitted to USFWS for approval at least 15 days prior to commencement of work. – A qualified biologist shall conduct pre-construction surveys within aquatic habitat by two weeks prior to the onset of construction activities. Surveys shall be completed for all life cycle stages of CRLF (e.g., egg masses, tadpole, juveniles, and adults) that may occur within the project area. If adult CRLF, tadpoles or eggs are found within the construction disturbance zone, the approved biologist shall contact USFWS to determine if moving any of these life-stages is appropriate. If USFWS approves moving the animals, the approved biologist shall be allowed sufficient time to move them from the construction sites before work activities begin. If no frogs are detected during these surveys, construction-related activities may proceed without further requirements for the protection of individuals, although habitat protection measures (i.e., avoidance of intermittent drainages and riparian habitat) shall still be observed. 			

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Biological Resources (cont.)				
R4.3-8 (cont.)	<ul style="list-style-type: none"> - Exclusionary fencing, such as silt fences, shall be installed around the process ponds and around all construction areas that are within 100 feet of or adjacent to potential CRLF habitat. Once fencing is in place, it shall be maintained by the proponent until completion of construction within or adjacent to the enclosure. - Prior to commencement of any earthmoving activities, the monitoring biologist shall train all construction personnel and work crews on the sensitivity and identification of the CRLF and the penalties for the "take" of this species. In addition, visual materials shall be provided to assist in identifying the species. Training sessions will be repeated for all new employees before they access the project site and periodically throughout project construction. - The monitoring biologist will demarcate construction avoidance areas in the field and monitor construction activities within 300 feet of aquatic habitat for CRLF. The demarcation shall remain on-site until all initial vegetation clearing and habitat disturbance is completed. - All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from any riparian habitat or water. 			
R4.3-9: Reclamation activities and post-reclamation development activities conducted in the vicinity of the process water ponds in the NW Quadrant have the potential to impact northwestern pond turtles.	<p>R4.3-9: The applicant shall conduct reclamation and post-reclamation development activities in and around the process water ponds in the NW Quadrant in a manner that avoids take of northwestern pond turtle through surveys to determine whether the species is present, and, if so, to limit reclamation and post-reclamation development activities as specified below. Specifically, prior to filing for Phase 1 reclamation grading permits, a qualified biologist who is permitted by CDFG to move turtles and their nests shall perform northwestern pond turtle surveys within suitable habitat in and around the process ponds in the NW Quadrant. Surveys and subsequent actions shall include the following:</p> <ul style="list-style-type: none"> • Surveys shall be conducted for nests as well as individuals. 	<p>R4.3-9: The Marin County DPW shall verify the submittal of a northwestern pond turtle survey report, as well as the implementation of protective measures, if necessary, prior to issuance of Phase 1 grading permits.</p> <p>A report shall be prepared by a qualified biologist documenting the presence/absence of WPT at SRRQ, as well as the measures taken to protect them if present, and submit to the County and to CDFG.</p>	Prior to issuance of Phase 1 grading permit.	Verified by Marin County DPW, prior to issuance of Phase 1 grading permit.

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Biological Resources (cont.)				
R4.3-9 (cont.)	<ul style="list-style-type: none"> If WPT are found during initial surveys a qualified biologist shall be present when project-related activities within or adjacent to suitable aquatic habitat for northwestern pond turtle are occurring and will be responsible for temporarily relocating adult WPT that move into work areas. No work within the process ponds or on their banks will proceed until the work area is determined to be free of WPT or their nests. If a nest is located within the process pond area and may be impacted by reclamation activities, it shall be caged to exclude predators and monitored closely until the eggs hatch. Hatchlings shall be moved to an appropriate facility and reared until they are large enough to survive in the wild. They shall then be released into appropriate suitable habitat. All aspects of these activities shall be conducted by a qualified biologist in consultation with CDFG. If no turtles are found during surveys associated with Phase 1 reclamation activities the project proponent shall consult with CDFG regarding the need for further future surveys. 			
R4.3-10: Reclamation activities resulting in the destruction of abandoned buildings or tree removal within the San Rafael Rock Quarry could adversely impact special status bat species.	<p>R4.3-10: The applicant shall conduct reclamation activities involving tree removal and building demolition in a manner that avoids disturbance or mortality of bats, through surveys to determine whether bats are present, and, if so, to limit reclamation activities as specified below. Specifically, the applicant shall take the following measures to avoid direct mortality of roosting special-status bats and disturbance of maternity roosts or winter hibernacula:</p> <ul style="list-style-type: none"> A qualified bat biologist, acceptable to the CDFG, shall conduct surveys of all potential bat habitat within 500 feet of reclamation activities prior to initiation of such activities. Potentially suitable habitat shall be located visually. Bat emergence counts shall be made at dusk as the bats depart from any suitable habitat. In addition, an acoustic detector shall be used to determine any areas of bat activity. At least four nighttime emergence counts shall be undertaken on nights that are warm enough for bats to be active. The bat biologist shall determine the type of each active roost (i.e., maternity, winter hibernaculum, day or night). 	R4.3-10: The Marin County DPW shall verify that bat survey reports have been submitted prior to tree removal and shall not issue a grading permit, if required, prior to submittal of the bat survey report.	Upon submittal of application for grading permits for each reclamation phase, and prior to removal of trees or structures.	Verified by Marin County DPW prior to issuance of grading permit for each reclamation phase, and prior to tree or structure removal.

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Biological Resources (cont.)				
R4.3-10 (cont.)	<ul style="list-style-type: none"> • Removal of trees or demolition of buildings showing evidence of bat activity will occur during the period least likely to impact the bats as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula and between August 15 and April 15 for maternity roosts). If active day or night roosts are found the bat biologist shall take actions to make such roosts unsuitable habitat prior to tree removal or building demolition. • A no-disturbance buffer shall be created around active bat roosts being used for maternity or hibernation purposes at a distance to be determined in consultation with CDFG. Bat roosts initiated during construction are presumed to be unaffected, and no buffer is necessary. However, "take" of individuals, including harming, harassing, or killing, will be prohibited. • If pre-construction surveys indicate that roosts are inactive or potential habitat is unoccupied during the reclamation or construction period, no further mitigation is required. Trees and buildings that have been determined to be unoccupied by special status bats and that are located outside the no-disturbance buffer for active roosts may be removed or demolished. • If known bat roosting habitat is to be destroyed during tree removal or building demolition activities, artificial bat roosts shall be constructed at least two weeks prior to such disturbance in an undisturbed area of the property, at least 200 feet from any ongoing or future activities. The design and location of the artificial bat roost(s) shall be determined by a qualified bat biologist. 			

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Biological Resources (cont.)				
<p>R4.3-11: Reclamation activities and post-reclamation development could adversely affect special-status nesting raptors and other nesting birds.</p>	<p>R4.3-11a: ARP04 includes nesting raptor surveys as part of the “Standards for Preserving Sensitive Habitat Areas.”</p> <p>R4.3-11b: The applicant shall conduct reclamation and post-reclamation development activities in a manner that avoids direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success. Specifically:</p> <ul style="list-style-type: none"> • During the breeding bird season (January 1 through August 31) a qualified biologist will survey activity sites for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing activity or vegetation removal. • If reclamation or construction activities occur only during the non-breeding season between September 1 and December 31, no surveys will be required. • Results of the surveys will be forwarded to CDFG (as appropriate) and avoidance procedures will be adopted, if necessary, on a case-by-case basis. Avoidance procedures shall be reviewed and approved by CDFG. Depending on the species involved, these may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal restriction of activities. 	<p>R4.3-11: Each year, prior to the commencement of bird breeding season (January 1), SRRQ shall submit a memorandum to the Marin County DPW stating whether the quarry intends to conduct any reclamation activities during the following year that could impact breeding birds. If so, the quarry will be required to undertake the survey specified in Mitigation Measure R4.3-11b. The Marin County DPW shall verify the submittal of breeding bird surveys.</p> <p>Results of the surveys will be forwarded to CDFG and avoidance procedures will be adopted, if necessary, on a case-by-case basis. Avoidance procedures shall be reviewed and approved by CDFG. Depending on the species involved, these may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal restriction of activities.</p>	<p>Prior to January 1 of each year.</p>	<p>Verified by Marin County DPW and CDFG.</p>
<p>R4.3-12: Post-reclamation residential and commercial development adjacent to marsh habitat could result in long-term adverse impacts to special-status species inhabiting the adjacent marsh habitat through increases in the levels of human noise and activity, lighting, as well as the introduction of domestic animals.</p>	<p>R4.3-12a: ARP04 proposes to establish buffer areas around the marshes.</p> <p>R4.3-12b: The applicant shall submit revisions to ARP04 that include a standard for development of the final Development Plan (to be submitted three years prior to cessation of mining activities) that requires the applicant to conduct post-reclamation development activities in a manner that avoids harassment, disturbance, and mortality of nesting birds and other wildlife that inhabit the SRRQ marshes. The standard will include development of a Marsh Wildlife and Habitat Protection Plan, to be prepared as a part of the Development Plan, and subject to review and approval by the Marin County Community Development Agency, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service.</p> <p>Components of the plan will include, but not be limited to, the following:</p>	<p>R4.3-12a: The Marin County DPW will be responsible for reviewing the revised ARP for completeness prior to project approval.</p> <p>R4.3-12b: The Marin County Community Development Agency, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service shall be jointly responsible for review and approval of the Marsh Wildlife and Habitat Protection Plan as part of review and approval of the final Development Plan.</p>	<p>Upon submittal of Conforming Amended Reclamation Plan, within 60 days of permit approval.</p> <p>During review of final Development Plan</p>	<p>Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan.</p> <p>Marin County CDA and appropriate resource agencies, prior to approval of final Development Plan.</p>

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Biological Resources (cont.)				
R4.3-12 (cont.)	<ul style="list-style-type: none"> • In accordance with the policies set forth in the Marin Countywide Plan (2007) the project development footprint will maintain a setback of at least 100 feet from marsh habitat on the project site. • Cyclone fencing with vinyl slats for screening shall be installed at the setback distance between the marshes and all residential or commercial development. Appropriate native vegetation will be planted both inside and outside of the fence to provide further screening. The fence will be designed specifically to provide a barrier to exclude cats, dogs, and other household pets from marsh areas and will also provide a visual screen between marsh wildlife and human activity. • To minimize the potentially-adverse effect of night lighting on the adjacent salt marsh habitat the following will be utilized: street lighting only at intersections, low-intensity street lamps and low elevation lighting poles, and internal silvering of the globe or external opaque reflectors to direct light away from marsh habitat. In addition, private sources of illumination around homes shall also be directed and/or shaded to minimize glare into the marsh. • An education program for residents will be developed including posted interpretive signs and informational materials regarding the sensitivity of the marsh habitat, the dangers of unleashed domestic animals in this area, and discouragement of the practice of feeding feral cats. 			

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Biological Resources (cont.)				
<p>P4.3-13: Continued operations at the Quarry under an Amended Surface Mining and Quarrying Permit could adversely affect California red-legged frogs should they occur at the Quarry site.</p>	<p>P4.3-13: The applicant shall conduct Quarry operations in a manner that avoids take of California red-legged frog. This mitigation measure shall be implemented through the following:</p> <ul style="list-style-type: none"> • As a condition of approval of the AQP by the County, and prior to any site disturbing activity within 300 feet of the ponds or fresh water marsh, the applicant shall retain a qualified biologist to conduct a habitat assessment for CRLF according to U.S. Fish and Wildlife Service (USFWS) guidelines. The habitat assessment shall be submitted to USFWS for review. If, following the review of the habitat assessment, USFWS recommends protocol-level field surveys, then the project sponsor shall conduct protocol-level field surveys for CRLF within aquatic habitat that provides potential breeding habitat (the process ponds in the NW and SW Quadrants) on the project site. The project proponent shall provide the County with the results of the habitat assessment, USFWS review, and protocol-level surveys, if required, prior to any site disturbing activity within 300 feet of the subject areas. • If no CRLF are found during the habitat assessment or protocol level surveys, then with the concurrence of USFWS, no further mitigation shall be required. • If, as a result of the habitat assessment or protocol level surveys, CRLF are found to inhabit the process ponds in the NW and SW Quadrants, the project proponent shall initiate informal consultation with the USFWS to determine the need for formal consultation and preparation of a Biological Assessment and Biological Opinion (required by the Federal Endangered Species Act). Consultation will consider whether or not continued use of the process ponds in the NW and/or SW Quadrants is possible without take of CRLF and whether or not a take permit would be required for continued use. 	<p>P4.3-13: The Marin County DPW shall verify that a CRLF habitat assessment and protocol-level surveys, if required, have been completed and reviewed by USFWS prior to site disturbing activity within 300 feet of the three process water ponds or the freshwater marsh. Each year, as part of its annual report to the County, SRRQ shall provide a statement regarding its intent, if any, to conduct site-disturbing activity within 300 feet of the ponds or fresh water marsh, and of its plans for conducting the specified habitat assessment.</p> <p>The habitat assessment and survey results shall be submitted to USFWS for review.</p> <p>The project proponent shall provide the County with the results of the habitat assessment, USFWS review, and protocol-level surveys, if required, prior to any site disturbing activity within 300 feet of the subject areas.</p>	<p>Annually, and prior to site-disturbing activity within 300 feet of the ponds or fresh water marsh.</p>	<p>Verified by Marin County DPW, annually, and prior to site-disturbing activity as specified.</p>

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Biological Resources (cont.)				
<p>P4.3-14: Continued operations at the Quarry under an Amended Surface Mining and Quarrying Permit could adversely affect northwestern pond turtle should they occur at the Quarry site.</p>	<p>P4.3-14: The applicant shall conduct Quarry operations in a manner that avoids disturbance to or mortality of northwestern pond turtle. This mitigation measure shall be implemented through the following: As a condition of approval for the AQP by the County and prior to any site disturbing activity within 300 feet of the NW Quadrant process water ponds, a qualified biologist who is permitted by CDFG to move turtles and their nests shall perform western pond turtle surveys within suitable habitat in and around the process ponds in the NW Quadrant.</p> <ul style="list-style-type: none"> • Surveys shall be conducted for nests as well as individuals. • If WPT are found during initial surveys a qualified biologist shall be present when project-related activities within or adjacent to suitable aquatic habitat for northwestern pond turtle are occurring and will be responsible for temporarily relocating adult WPT that move into work areas. • No work within the process ponds or on their banks will proceed until the work area is determined to be free of WPT or their nests. • If a nest is located within the process pond area and may be impacted by Quarry associated operations, it shall be caged to exclude predators and monitored closely until the eggs hatch. Hatchlings shall be moved to an appropriate facility and reared until they are large enough to survive in the wild. They shall then be released into appropriate suitable habitat. All aspects of these activities shall be conducted by a qualified biologist in consultation with CDFG. • A report shall be prepared by a qualified biologist documenting the presence/absence of WPT at SRRQ, as well as the measures taken to protect them if present, and submitted to the County and to CDFG. 	<p>P4.3-14: The Marin County DPW shall verify the submittal of a WPT survey report, as well as the implementation of protective measures, if necessary, have been completed and reviewed by USFWS prior to site disturbing activity within 300 feet of the two process water ponds. Each year, as part of its annual report to the County, SRRQ shall provide a statement regarding its intent, if any, to conduct site-disturbing activity within 300 feet of the ponds or fresh water marsh, and of its plans for conducting the specified habitat assessment.</p> <p>A report shall be prepared by a qualified biologist documenting the presence/absence of WPT at SRRQ, as well as the measures taken to protect them if present, and submitted to the County and to CDFG.</p>	<p>Annually, and prior to site-disturbing activity within 300 feet of the ponds or fresh water marsh.</p>	<p>Verified by Marin County DPW, annually, and prior to site-disturbing activity as specified.</p>

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Biological Resources (cont.)				
<p>P4.3-15: Continued operations at the Quarry under an Amended Surface Mining and Quarrying Permit could adversely affect special-status birds at the Quarry site as well as heron and egret rookeries at the Marin Islands Wildlife Refuge.</p>	<p>P4.3-15: The applicant shall conduct Quarry operations in a manner that avoids direct losses of nests, eggs, and nestlings and potential indirect impacts to avian breeding success resulting from vegetation removal as well as variability in quarrying activity levels on South Hill. This mitigation measure will be implemented through the following:</p> <ul style="list-style-type: none"> • During the breeding bird season (January 1 through August 31) a qualified biologist will survey sites for nesting raptors and passerine birds not more than 14 days prior to any vegetation removal (including trees, shrubs, scrub, and grassland vegetation). In addition, vegetation on South Hill will be surveyed if quarrying activities on South Hill cease for a period of more than one week during breeding bird season. • Surveys shall also be conducted during breeding season in those areas of the project site that a qualified biologist determines may have nesting special status bird species present that could potentially be impacted by indirect noise impacts of operations such as truck traffic or blasting at that time. • If vegetation removal or cessation of mining activities on South Hill occurs only during the non-breeding season, between September 1 and December 31, no surveys will be required. • Results of the surveys will be forwarded to the County and CDFG (as appropriate) and avoidance procedures will be adopted, if necessary, on a case-by-case basis that will ensure that the potential for an impact on any nesting raptors or passerine birds is eliminated. Depending on the species, these can include buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance. Vegetation of any kind identified as supporting active nests will not be removed until nestlings have fledged. If survey results are positive for nesting birds, vegetation removal or mining on South Hill will not occur until submittal and review of reports and implementation of any necessary avoidance measures. Special-status bird sightings shall also be submitted to the CNDDB. 	<p>P4.3-15: The Marin County DPW shall verify the submittal of breeding bird surveys as part of routine quarry inspection or as a condition of any DPW permit, such as grading.</p> <p>Each year, prior to the commencement of bird breeding season (January 1), SRRQ shall submit a memorandum to the Marin County DPW stating whether the quarry intends to conduct any reclamation activities during the following year that could impact breeding birds. If so, the quarry will be required to undertake the survey specified in Mitigation Measure P4.3-15. The Marin County DPW shall verify the submittal of breeding bird surveys.</p> <p>Results of the surveys will be forwarded to the County and CDFG (as appropriate) and avoidance procedures will be adopted, if necessary, on a case-by-case basis that will ensure that the potential for an impact on any nesting raptors or passerine birds is eliminated. Depending on the species, these can include buffer areas (up to several hundred feet in the case of raptors) or seasonal avoidance.</p> <p>Vegetation of any kind identified as supporting active nests will not be removed until nestlings have fledged. If survey results are positive for nesting birds, vegetation removal or mining on South Hill will not occur until submittal and review of reports and implementation of any necessary avoidance measures. Special-status bird sightings shall also be submitted to the CNDDB.</p>	<p>Prior to January 1 of each year.</p>	<p>Verified by Marin County DPW and CDFG.</p>

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Biological Resources (cont.)				
<p>P4.3-16: Continued operations at the Quarry under an Amended Surface Mining and Quarrying Permit could adversely affect special-status bats at the Quarry site.</p>	<p>P4.3-16: The applicant shall conduct Quarry operations in a manner that avoids direct mortality of roosting special-status bats and disturbance of maternity roosts or winter hibernacula. This mitigation measure will be implemented through the following:</p> <ul style="list-style-type: none"> • A qualified bat biologist, acceptable to the CDFG, shall conduct surveys of trees slated for removal as a result of quarrying activity. Potentially suitable habitat shall be located visually. Bat emergence counts shall be made at dusk as the bats depart from any suitable habitat. In addition, an acoustic detector shall be used to determine any areas of bat activity. At least four nighttime emergence counts shall be undertaken on nights that are warm enough for bats to be active. The bat biologist shall determine the type of each active roost (i.e., maternity, winter hibernaculum, day or night). • Removal of trees showing evidence of bat activity will occur during the period least likely to impact the bats as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula and between August 15 and April 15 for maternity roosts). If active day or night roosts are found the bat biologist shall take actions to make such roosts unsuitable habitat prior to tree removal. • A no-disturbance buffer shall be created around active bat roosts being used for maternity or hibernation purposes at a distance to be determined in consultation with CDFG. Active bat roosts located within 500 feet and line of sight of existing centers of Quarry activities are presumed to be unaffected, and no buffer is necessary. However, "take" of individuals will be prohibited. • If surveys indicate that roosts are inactive or potential habitat is unoccupied, no further mitigation is required. Trees that have been determined to be unoccupied by special status bats and that are located outside the no-disturbance buffer for active roosts may be removed or demolished. 	<p>P4.3-16: The Marin County DPW shall verify that bat survey reports have been submitted as part of routine quarry inspection or as a condition of any DPW permit, such as grading.</p> <p>Prior to quarry-related tree removal a report shall be submitted to the County that details the survey results and any actions taken to protect special-status bats. Any special-status bat sightings shall also be submitted to the CNDDDB.</p>	<p>Prior to removal of trees or structures.</p>	<p>Verified by Marin County DPW prior to tree or structure removal.</p>

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Biological Resources (cont.)				
P4.3-16 (cont.)	<ul style="list-style-type: none"> • If known bat roosting habitat is to be destroyed during tree removal or building demolition activities, artificial bat roosts shall be constructed at least two weeks prior to such disturbance in an undisturbed area of the property, at least 200 feet from any ongoing or future activities. The design and location of the artificial bat roost(s) shall be determined by a qualified bat biologist. • Prior to quarry-related tree removal a report shall be submitted to the County that details the survey results and any actions taken to protect special-status bats. Any special-status bat sightings shall also be submitted to the CNDDB. 			
C4.3-18: Impacts of the ARP and AQP on the salt marshes present at the project site would make a considerable contribution to cumulative impacts on marsh habitat.	<p>C4.3-18a: See Mitigation Measure R4.3-5a.</p> <p>C4.3-18b: The applicant shall prepare a Marsh Restoration plan and implement the recommendations as soon as practicable, and in any case, shall complete the marsh restoration prior to completion of Phase 1 reclamation. This mitigation measure will be implemented through the following:</p> <ul style="list-style-type: none"> • The project proponent shall develop and submit a Tidal Marsh Restoration plan to the County and other applicable resource agencies within 1 year of approval of the AQP. The Plan will include, but not be limited to, the following elements: <ul style="list-style-type: none"> – A baseline study of existing marsh conditions, including topography, a complete analysis of current hydrology, vegetation, and wildlife that will be used to inform subsequent marsh restoration planning. – A thorough analysis of the potential effects of tidal restoration on adjacent infrastructure and existing marsh vegetation. – Development of a suite of restoration alternatives, with tidal restoration as the preferred alternative, providing constraints do not preclude this course of action. – Feasible goals for marsh restoration with quantifiable objectives that can be measured over time to determine whether goals are being met. – A detailed plan for marsh restoration, including, if necessary to achieve objectives, plans for excavation of new channels, addition of new culverts, setbacks, buffers, etc. 	C4.3-18: The Marin County DPW shall verify that that a Tidal Marsh Restoration Plan has been prepared within one year of approval of the AQP and shall monitor its implementation through periodic inspections and receipt of progress reports from the Quarry. The Marin County DPW, as well as any other permitting agencies (should permitting be required as part of restoration), shall review annual monitoring reports.	Plan to be prepared within one year of AQP approval; implementation schedule will be specified in the plan, but shall be completed prior to completion of phase 1 reclamation.	Verified by Marin County DPW with input from appropriate resource agencies, upon submittal of plan. Plan implementation monitoring verified on a periodic basis or at conclusion of specific restoration actions.

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Biological Resources (cont.)				
C4.3-18 (cont.)	<ul style="list-style-type: none"> - A maintenance schedule for any mechanical devices or features, such as tide gates, specified in the plan. - A monitoring plan to determine optimum inundation levels for the marshes. This would include measurements of hydrology, sediment accretion, and changes in vegetation over time. - A schedule for annual monitoring reports, which shall be submitted to the Department of Public Works, as well as all permitting agencies as required. 			
Geology, Soils, and Seismicity				
R4.4-1: Prior to the completion of site reclamation, the project site could be subject to slope instability hazards, including landslides, debris flows, and rockfalls caused by seismic or non-seismic mechanisms.	R4.4-1: The applicant shall include the recommendations made in the Supplemental Geotechnical Data Report Proposed Changes to Mining Plan by ENGEO, Incorporated dated April 11, 2005 as part of the proposed project. These recommendations include conducting supplemental geotechnical pit observations, groundwater monitoring, and slope monitoring which shall be conducted by a California Certified Engineering Geologist or Registered Professional Geotechnical Engineer with oversight by the State Office of Mine Reclamation. In addition, the average slope inclination shall not exceed 60 degrees for a maximum vertical height of 350 feet, a minimum of 30-foot-wide benches shall be constructed at maximum 90-foot intervals, and inter-bench face inclinations shall not exceed 75 degrees.	R4.4-1: It is anticipated that the requirements of Mitigation measure R4.4-1 will become conditions of approval of the ARP, and as such, will be monitored by the Marin County DPW.	Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and ongoing during quarry operations and reclamation. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these standards.
R4.4-2: Soil erosion of exposed cut or fill slopes, native slopes with removed vegetation, and soil stockpiles could result in soil erosion and loss of topsoil.	R4.4-2a: The applicant has prepared a Stormwater Management Plan and Stormwater Pollution Prevention Plan that specifies best management practices for reducing erosion and sedimentation. The applicant has also prepared Standards for Stormwater and Erosion Control of Reclaimed Areas and Standards for Revegetation of Reclaimed Areas, both of which will apply to reclamation activities (see Chapter 3, Project Description).	R4.4-2: It is anticipated that the requirements of Mitigation measure R4.4-2b will become conditions of approval of the ARP, and as such, will be monitored by the Marin County DPW.	Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and ongoing during quarry operations and reclamation. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these measures.

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Geology, Soils, and Seismicity (cont.)				
R4.4-2 (cont.)	<p>R4.4-2b: Mitigation Measure R4.4-2b: The project applicant shall incorporate into the grading and construction specifications provisions requiring that all phases of construction implement best management practices (BMPs) to reduce and eliminate soil erosion and loss of topsoil. The contractor shall implement these BMPs, and the contractor shall be responsible for the inspection and maintenance of the BMPs through all phases of reclamation.</p> <p>Mitigation Measure R4.5-2b in Section 4.5, Hydrology and Water Quality, also contains measures that would serve to further mitigate potential erosion effects.</p>			
R4.4-3: Unstable slopes or soils could adversely affect post-reclamation land uses of the Quarry site.	<p>R4.4-3a: The proposed grading and other earthwork activities included in ARP04 would be designed such that all potential development areas would be located on either bedrock or consolidated engineered fill, with known and predictable strengths and stability.</p> <p>R4.4-3b: The geotechnical recommendations provided in the Supplemental Geotechnical Data Report, which are being implemented as part of the project (see Mitigation Measure R4.4-1) include the preparation of a design-level geotechnical investigation following the cessation of mining.</p> <p>R4.4-3c: The additional studies recommended in the Supplemental Geotechnical Data Report and specified in Mitigation Measure R4.4-3b will include a study to determine how the site may be developed following reclamation in order to avoid or mitigate to less than significant impacts related to soil and slope stability.</p> <p>At the time the study is prepared, there will be a greater understanding of the bedrock stability and the properties and performance of the Quarry walls. A comprehensive re-evaluation of slope stability shall be performed based on results from geotechnical observations throughout the mining period, groundwater monitoring, slope monitoring, and laboratory testing of on-site materials which would include compression tests and shear tests of joint surfaces.</p>	R4.4-3: It is anticipated that the specifics of the final Development Plan, including site-specific geotechnical investigation and application of its results, will become conditions of approval of the ARP, and as such, will be monitored by the Marin County DPW.	Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval, and upon submittal of final Development Plan.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and during review of final Development Plan.

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Geology, Soils, and Seismicity (cont.)				
R4.4-3 (cont.)	<p>The design-level, site-specific geotechnical investigation shall be prepared by a California licensed Geotechnical Engineer or Certified Engineering Geologist and include review of the supplemental geotechnical evaluations and monitoring conducted throughout the history of mining activities. The investigation shall include final grading recommendations, mitigation of any identified compressible or liquefiable soils, slope stability analyses, calculation of factors of safety, and structural foundation recommendations to ensure that post-reclamation development will be in accordance with the then-current requirements of the California Building Code and the Marin County Building and Safety Division or City of San Rafael Building Code. These recommendations shall be incorporated into the final design plans for post-reclamation development.</p> <p>R4.4-3d: If the design-level, site-specific geotechnical investigation specified above determines that achievement of factors of safety adequate for the intended post-reclamation uses are infeasible in some or all of the reclaimed Quarry, the report shall specify appropriate alternative post-reclamation uses or limitations on the planned use.</p>			
Hydrology and Water Quality				
<p>R4.5-2: Grading associated with the proposed project would increase the potential for eroded sediments to degrade the quality of surface water sources including the San Francisco Bay.</p>	<p>R4.5-2a: ARP04 includes a Stormwater Management Plan and Stormwater Pollution Prevention Plan, both of which will be implemented as part of the project.</p> <p>R4.5-2b: The applicant shall include as part of the SWPPP and Stormwater Management Plan, a monitoring and maintenance element that would require scheduled periodic monitoring of BMP performance and condition. At a minimum, stormwater and erosion control BMPs shall be monitored after major storms, prior to the first rain event, and midway through large storm events extending over several days. Temporary BMPs (e.g., fiber rolls) shall be monitored for performance and immediately replaced if necessary.</p> <p>Performance and failure of BMPs shall be described in the annual report to the RWQCB as required under the SWPPP. Monitoring and maintenance shall be conducted by an erosion control specialist contracted by the applicant.</p> <p>Monitoring and maintenance reports shall be filed with the applicant and available to the County on request.</p>	<p>R4.5-2: The Marin County DPW will be responsible for monitoring implementation of the above mitigation measure, which will become a condition of approval of the project. Monitoring will occur during periodic inspections of the Quarry.</p>	<p>Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval, and ongoing during quarry operations and reclamation.</p>	<p>Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and ongoing during quarry operations and reclamation. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these plans.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Hydrology and Water Quality (cont.)				
R4.5-6: Poor water quality conditions could occur in the deep water within the flooded Main Quarry Bowl due to long residence times and stratification at depth. The proposed project may result in degradation of water quality within the deep areas of the harbor basin.	R4.5-6: Within one year of approval of the Amended Reclamation Plan, the applicant shall submit a concept engineering and economic report for use and future maintenance of a mechanical mixing or aeration system, or another engineered approach, that will result in avoidance or elimination of a stratified water column within the Main Quarry Bowl after it is flooded. The report will be conducted by qualified limnologists and water quality engineers. The system design will be at a schematic level and will be stamped by a California professional engineer, and will include calculations that demonstrate that the system will maintain water quality objectives established in the San Francisco Bay Regional Water Quality Control Board's Basin Plan. The report will include an analysis of operating and maintenance costs for the system, as well as predicted energy requirements and greenhouse gas emissions, and a plan for minimizing both of these; and will identify a funding source to ensure continued operation of the system after reclamation.	R4.5-6: The Marin County DPW will be responsible for reviewing the report and schematic design specified in Mitigation Measure R4.5-6.	Within one year of approval of the ARP.	Verified by Marin County DPW, within one year of approval of the ARP.
R4.5-8: The project reclamation and post-reclamation activities would result in an increase in the possibility of inundation by a mudflow, seiche, tsunami, or sea level rise.	R4.5-8: Prior to implementation of Phase 4 reclamation, the Quarry shall model effects of the maximum expected tsunami, seiche event, and anticipated sea level rise, considering the latest climate change information, and county policies and regulations in effect at the time, and proposed adequate setback and final contour elevations in a report to the County. A revised Phase 4 reclamation plan shall be submitted as appropriate.	R4.5-8: The Marin County DPW will be responsible for reviewing the modeling report and, if required, reviewing and approving the revised Phase 4 reclamation plan to backfill the Main Quarry Bowl.	Upon submittal of application for grading permit for Phase 4 reclamation.	Verified by Marin County DPW, during review of grading permit for Phase 4 reclamation, and during and at conclusion of Phase 4 reclamation grading.
R4.5-10: Post-reclamation development could produce stormwater runoff that would result in a degradation of surface water quality.	R4.5-10: The applicant shall submit a revised ARP that includes standards for preventing polluted stormwater runoff from entering the Main Quarry Bowl after it is flooded. The standards will be used to guide development of the final Development Plan, due to be submitted three years prior to the anticipated completion of mining.	R4.5-10: The Marin County DPW will be responsible for reviewing the revised ARP for completeness prior to project approval.	Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval, and upon submittal of final Development Plan.	Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and during review of final Development Plan.

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Land Use and Planning				
<p>R4.6-3: ARP04 would conflict with existing uses at the periphery of the project site as a result of incompatible land uses.</p>	<p>R4.6-3a: As stated in Section 4.7, as a project mitigation, SRRQ proposes to construct a berm along the northern border of the NE Quadrant, and to retrofit all rolling vehicles at the Quarry with broadband backup alarms. Broadband alarms reduce nuisance noise effects by being directional (unlike conventional backup alarms), by being 5 dBA quieter than conventional back-up alarms, and by generating noise that has a less intrusive tonal quality.</p> <p>R4.6-3b: Implement Mitigation Measure R4.7-1b.</p> <p>R4.6-3c: In addition to the requirements of Mitigation Measure R4.7-2, implementation of the following construction noise abatement measures would reduce the annoyance impact of construction and reclamation activity noise.</p> <ul style="list-style-type: none"> • The applicant shall limit all reclamation grading activities in the NE Quadrant to 7:00 a.m. to 5:00 p.m. Monday through Friday. • Equipment and trucks used for all reclamation activities 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). • All construction equipment powered by internal combustion engines shall be properly muffled and maintained; • Unnecessary idling of internal combustion engines shall be prohibited. <p>R4.6-3d: Each year by May 1 and not later than 30 days prior to the commencement of reclamation activities, SRRQ shall inform by mail all residences on Marin Bay Park Court, Heritage Drive, and San Marino Drive, and the public at large of the start date, nature of the work, and expected duration of the 8-10 week period during which reclamation grading activities will occur that year.</p>	<p>R4.6-3: The Marin County DPW will monitor implementation of and adherence to Mitigation Measures R4.6-3a, b, c, and d. The standards and measures specified in the mitigation measures will be incorporated into a revised Amended Reclamation Plan</p>	<p>Upon submittal of Conforming Amended Reclamation Plan within 60 days of permit approval, and ongoing during quarry operations and reclamation.</p>	<p>Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan and ongoing during quarry operations and reclamation. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these standards.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Land Use and Planning (cont.)				
<p>R4.6-5: Activities associated with the phased implementation of the reclamation plan would conflict with County Code Title 22 (Section 22.112.020) restrictions on nonconforming uses.</p>	<p>R4.6-5a: ARP04 proposes to limit reclamation grading activities to an 8-10 week period during each dry season.</p> <p>R4.6-5b: Although the effects of the intensification of site activities resulting from the reclamation plan cannot be precisely quantified, implementation of Mitigation Measure R4.6-3b, above, regarding noise, and measures to control dust currently being implemented, required by existing permits, proposed by the applicant or identified in this EIR as discussed at Impact 4.2-1 and Impact 4.2-2 in Section 4.2, Air Quality, would help reduce the environmental effects of intensified site use on land uses adjacent to the site.</p>	<p>R4.6-5: Mitigation Measures R4.6-5a and b will become conditions of approval of the ARP; as such, their implementation and effectiveness will be monitored by the Marin County DPW.</p>	<p>Upon submittal of Conforming Amended Reclamation Plan, within 60 days of permit approval, and ongoing during quarry operations and reclamation.</p>	<p>Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan, and ongoing during quarry operations and reclamation. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these standards.</p>
<p>P4.6-6: The Amended Surface Mining and Quarrying Permit would allow for an intensification of quarry operations beyond 1982 levels, in excess of the Quarry's legal nonconforming use under Title 22 of the County Code.</p>	<p>P4.6-6a: The applicant proposes to limit daily truck traffic to 250 one-way trips per day (125 in and 125 out). This appears to be less than the daily average during the period 1980-1982 and within the baseline for Quarry operations.</p> <p>P4.6-6b: Quarry operations shall be limited to the levels of intensity extant in 1982, at the time that the Quarry became a legal nonconforming use. This will include the following:</p> <ul style="list-style-type: none"> • Maximum annual production shall be limited to the fluctuating baseline level of production as defined in Chapter 3, Project Description i.e., a 5-year rolling average of no more than 1,414,667 tons per year, and a maximum level of production of 1,697,600 tons in any one year; • Operations shall be limited to those in place in 1982, i.e., noise-generating operations will be limited to daylight hours on weekdays, except during a declared emergency; • Blasting shall be limited to an annual (calendar year) average of two times per week (104 times per year). 	<p>P4.6-6: The specific requirements of these Mitigation Measures shall become conditions of approval of the AQP. As such, responsibility for monitoring implementation of this mitigation measure shall lie with the Marin County DPW.</p>	<p>Upon approval of the AQP, and annually thereafter</p>	<p>Verified by Marin County DPW. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these conditions.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Noise and Vibration				
<p>R4.7-1: Construction of a berm along the northern property line of the NE Quadrant would result in temporary construction noise (Significant) but would also result in the creation of a noise buffer for daily operations.</p>	<p>R4.7-1a: All rolling vehicles at the Quarry are retrofitted with broadband backup alarms. Broad band alarms reduce nuisance noise effects by being directional (unlike conventional backup alarms), be being 5 dBA quieter than conventional back-up alarms and by generating noise that is has a less intrusive tonal quality (Brigade Electronics, 2007; Hub-4, 2007).</p> <p>R4.7-1b: Implementation of the following construction noise abatement measures would reduce the impact of temporary construction noise. Because of its temporary nature, berm construction noise impacts would be similar to those resulting from site preparation and grading of most general development projects.</p> <ul style="list-style-type: none"> The applicant shall limit berm construction to 7:00 a.m. to 5:00 p.m. Monday through Friday; Equipment and trucks used for berm 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); All construction equipment powered by internal combustion engines shall be properly muffled and maintained; Unnecessary idling of internal combustion engines shall be prohibited. 	<p>R4.7-1: The Marin County DPW will be responsible for monitoring adherence to noise mitigation measures. Standards and measures will be incorporated into a revised Amended Reclamation Plan.</p>	<p>Upon submittal of Conforming Amended Reclamation Plan, within 60 days of permit approval, and ongoing during quarry operations and reclamation.</p>	<p>Verified by Marin County DPW, upon submittal of Conforming Amended Reclamation Plan, and ongoing during quarry operations and reclamation. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these requirements.</p>
<p>P4.7-7: Continued blasting at the Quarry would expose neighbors of San Rafael Rock Quarry to vibrations that exceed human annoyance levels.</p>	<p>P4.7-7a: The AQP contains the following provisions to limit the adverse effects of blasting:</p> <ul style="list-style-type: none"> Blasting vibration beyond the Quarry property boundary shall be limited to a maximum peak velocity of 0.5 inches per second. The quarry shall provide 36 hours advance notification of blasting to local residents and to the County of Marin by posting the date and approximate time of scheduled blasts on a web site. Blasting shall be limited to the hours of 11:30 a.m. to 1:30 p.m. Monday through Friday. No blasting is to occur on State holidays or weekends. 	<p>P4.7-7: As a condition of approval of the new AQP, SRRQ will be required to fund a seismic monitoring program. DPW will verify compliance with this requirement through the receipt and review of blasting reports from SRRQ.</p>	<p>Standards will apply upon approval of AQP. Blasting plan to be submitted within six months of approval of AQP.</p>	<p>Verified by Marin County DPW, on an ongoing basis. SRRQ's annual report of quarry operations and reclamation shall contain a review of their conformance with these standards.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Noise and Vibration (cont.)				
<p>P4.7-7 (cont.)</p>	<p>P4.7-7b: Implementation of the following would reduce the impact of vibration and air-overpressure from rock blasting activities:</p> <ul style="list-style-type: none"> • Blasts should be designed to maintain a minimum scaled distance of 52.8 ft/lb^{1/2}, as defined in the Revey Associates report (Appendix J). • Corresponding to the scale distance, the ground motion should not exceed 0.25 inches per second peak particle velocity. • All charges should be confined with clean crushed stone of height equal to or greater than 25 charge diameters, as defined on Page 21 of the Revey Associates report. Air-overpressure measured near residential home should never exceed 133 dBL, as measured with 2-Hz monitoring equipment. • All charges should be confined with rock burden equal to or greater than 25 charge diameters, as defined on Page 21 of the Revey Associates report. <p>All blast monitoring of ground motion and air-overpressure effects done by either SRRQ personnel or third-party service providers should be done in full conformance with ISEE guidelines provided in Attachment I of the Revey Associates report (Appendix J)</p>			
Hazardous Materials				
<p>R4.8-1: Hazardous materials transported or used onsite during proposed mining and reclamation activities (i.e., petroleum products,) could be spilled or otherwise released through improper handling or storage.</p>	<p>R4.8-1a: SRRQ maintains an updated Hazardous Material Business Plan that contains operator information, a hazardous material inventory, site maps, and an Emergency Response Action Plan.</p> <p>R4.8-1b: SRRQ shall maintain and periodically update its Hazardous Material Business Plan during the entire reclamation period.</p>	<p>R4.8-1: Review of the Hazardous Materials Business Plan will be the responsibility of the Marin County DPW.</p>	<p>Periodic updates to be submitted and reviewed biannually.</p>	<p>Verified by Marin County DPW, beginning one year after approval of ARP, and every two years thereafter.</p>

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Hazardous Materials (cont.)				
P4.8-3: Transport, storage, and use of explosives could result in accidental explosions or exposure to hazardous substances.	<p>P4.8-3a: As previously described under Mitigation Measure R4.8-1a, SRRQ maintains an updated Hazardous Material Business Plan that contains operator information, a hazardous material inventory, site maps, and an Emergency Response Action Plan.</p> <p>P4.8-3b: The applicant shall prepare and maintain a blasting plan that describes how the Quarry will consistently comply with applicable blasting regulations and standards of practice. The blasting plan will contain a complete description of clearing and guarding procedures; descriptions of how explosives will be safely transported, stored, and used at the site in accordance with applicable regulations; evacuation, security and fire prevention procedures; blasting equipment list, and procedures for notification of nearby receptors in the event of an accident or emergency involving explosives. The blasting plan shall incorporate the recommendations contained in the Revey Associates, Inc. report (pp. 23-24) attached as Appendix J. The blasting plan must be prepared within six months of approval of the AQP. The plan will be subject to review and approval by the County Department of Public Works.</p>	P4.8-3: The Marin County DPW will be responsible for review and approval of the blasting plan.	Blasting plan to be submitted within six months of approval of ARP.	Verified by Marin County DPW, upon submittal of blasting plan; implementation of blasting plan verified during periodic site inspections and in review of annual report of quarry operations.
Public Services, Utilities, and Energy				
None.				
Transportation and Traffic				
None.				
Population and Housing				
None.				

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Cultural Resources				
<p>R4.12-1: Phased reclamation grading activities could result in adverse effects to prehistoric or unique archaeological resources, including those previously unidentified.</p>	<p>R4.12-1a (applies to all project phases): <u>Prior to the commencement of reclamation grading activities in each year during which such activities are planned, all workers who will be involved in ground disturbing activities shall attend a cultural resources sensitivity crew training session that discusses (1) the reasons for archaeological resource monitoring; (2) regulatory policies protecting cultural resources and human remains; (3) basic identification of archaeological resources; (4) the protocol to follow in case of a discovery of such resources, and (5) Tribal Cultural Resources and concerns. The training session shall be led by a qualified archaeologist. At least 30 days prior to the training session, the Applicant shall request in writing that a representative of a Native American Tribe with ancestral affiliation to the Project area attend and co-lead the training session. Such request shall be made to any Native American Tribe that requested consultation regarding the Project, with a copy to the Community Development Agency. If no Native American Tribal representative is available to attend on the specified date, the training session may be led solely by a qualified archaeologist.</u></p> <p>In the event that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during site preparation or construction activities on any part of the Project site, all work at the vicinity of the discovered site shall stop and the Project sponsor shall contact the Marin County Environmental Coordinator immediately.</p> <p><u>In the event that archaeological or historic resources are discovered during any construction (including any reclamation grading activities), construction activities shall cease within a 15-meter (50-foot) radius of the discovery, and the Community Development Agency shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist, and disposition of artifacts may occur in compliance with State and Federal law, and in consultation with Native American Tribes with an ancestral affiliation to the Project area. The disturbance of a shellmound may require the issuance of an Excavation Permit by the Department of Public Works, in compliance with Chapter 5.32 (Excavating Indian Middens) of the County Code.</u></p>	<p>R4.12-1a: In the event of discovery, the Marin County DPW staff shall verify that a report has been submitted and all construction work has been stopped. In the event that the report indicates that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during site preparation or construction activities on any part of the project site, the Marin County DPW staff shall verify that a registered archaeologist has been retained to assess the site and had submitted a written evaluation to the Agency Director advancing appropriate conditions to protect the site and the resources discovered before work commences on the site. If human remains are encountered, the DPW staff shall verify that the County Coroner has been contacted and that all future work is carried out in accordance with the mitigation measures.</p>	<p>Upon approval of ARP and continuing for the duration of reclamation activities.</p>	<p>Verified by Marin County DPW on an as-needed basis. The Quarry shall include in its annual report to the County any instance of discovery of cultural resources in the course of quarry operations or reclamation, and how Mitigation Measure R4.12-1a was implemented.</p>

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Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Cultural Resources (cont.)				
<p>R4.12-1 (cont.)</p>	<p>If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist chosen by the County and paid for by the Project sponsor, shall assess the site and shall submit a written evaluation to the Community Development Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a "Most Likely Descendant" can be designated.</p> <p>No work at the site may recommence without approval of the <u>Community Development</u> Agency Director.</p> <p>R4.12-1b (applies to Phase 4 of reclamation grading): The applicant shall retain the services of a qualified archaeological consultant who has expertise in California prehistory, <u>and shall also retain a Native American representative with ancestral affiliation to the Project area,</u> to review reclamation grading plans and identify areas of potential concern, including <u>areas contained within the previously recorded prehistoric resource boundaries, areas within 15-meters (50 feet) of the previously recorded prehistoric resource boundaries,</u> and previously undisturbed or minimally disturbed areas. The archeological consultant and <u>Native American representative</u> shall monitor all ground-disturbing or vegetation removal activities in identified areas of concern during construction to ensure that any previously undiscovered cultural resources are properly identified and preserved or otherwise mitigated in accordance with prevailing professional standards and Public Resources Code Section 21083.2. If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit will cease. The archaeological monitor <u>and the Native American representative</u> will <u>both</u> be empowered to redirect crews and heavy equipment until the deposit is evaluated. The <u>archaeological</u> monitor will immediately notify the Marin County Department of Public Works of the encountered archaeological deposit. The <u>archaeological</u> monitor will, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, <u>and after consulting with the Native American representative,</u> present the findings of this assessment to Marin County. If</p>	<p>R4.12-1b: Prior to issuance of the Phase 4 Grading Permit for ground disturbing reclamation activities, the applicant will present to Marin County DPW written procedures for compliance with Mitigation Measure R4.12-1b. Compliance monitoring, and any consultations and approvals by the County required in the above mitigation measures, will be the responsibility of the Marin County.</p>	<p>Upon issuance of Phase 4 grading permit</p>	<p>Verified by Marin County DPW, during Phase 4 reclamation.</p>

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Cultural Resources (cont.)				
R4.12-1 (cont.)	<p>Marin County, in consultation with the archaeological monitor <u>and the Native American representative</u>, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed Project, the applicant shall take steps to:</p> <ul style="list-style-type: none"> • Redesign the Project to avoid any adverse effects on the significant archaeological resource; or • Develop and implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the resource is of greater interpretive than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archaeological data recovery program, an ADRP will be conducted that will preserve and recover important archeological data from the find, to the extent that adverse effects will be avoided. The Project archaeologist will consult with Marin County <u>and the Native American representative</u> to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP that will be submitted to Marin County, <u>the Native American representative</u>, and the state Office of Historic Preservation for review and approval. The ADRP will identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain (i.e., the ADRP will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions). Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed Project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical. 			

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Cultural Resources (cont.)				
R4.12-3: Construction of the top soil stockpile fill area "F" under Phase 1 of the proposed project would demolish or substantially alter the c. 1910 Caretaker's Residence, a potentially eligible historic resource pursuant to California Environmental Quality Act Section 15064.5.	R4.12-3a: The project sponsor shall relocate the top soil stockpile fill area "F" under Phase 1 of the proposed project, to avoid potentially adverse effects to the Caretaker's Residence. The fill area could be relocated either to the east or to the west of this potentially eligible historic resource, or split into two smaller stockpiles, to avoid the resource. R4.12-3b: Prior to commencement of Phase 1 reclamation grading, the applicant shall submit a detailed plan to the Marin County Department of Public Works detailing stockpiles and haul routes, and protection of historic resources. The plan will clearly show how the Caretaker's Residence and other potentially eligible historic resources will be protected and preserved.	R4.12-3: The Marin County DPW will be responsible for review, approval, and monitoring implementation of these mitigation measures.	Plans for preservation of the Caretaker's Residence shall be included in a conforming ARP, to be submitted within 60 days of AQP approval. Detailed grading plans showing preservation of this structure to be submitted with application for Phase 1 grading permit.	Verified by Marin County DPW, during review of Phase 1 grading permit application, and during Phase 1 grading.
R4.12-4: Construction of the surcharge berm under Phase 2 of the proposed project would demolish or substantially alter the McNear's Brickyard c. 1902 Boarding House and Office, two potentially eligible historic resources pursuant to California Environmental Quality Act Section 15064.5.	R4.12-4a: The project sponsor shall relocate and/or redesign the surcharge berm proposed under Phase 2 of the proposed project, to avoid potentially adverse impacts to the Boarding House and Office structures. The north-south leg of the berm could be narrowed to avoid these resources, allowing more fill to occur on the east-west portion of the berm. To ensure adherence to this mitigation measure, prior to commencement of Phase 2 reclamation grading, the applicant shall submit a detailed plan to the Marin County Department of Public Works detailing the precise location of the surcharge berm, as well as areas that will be used to support construction of the berm. The plan will clearly show how the Boarding House and Office structures and other potentially eligible historic resources will be protected and preserved. R4.12-4b: If relocation or alteration of the surcharge berm will affect the geotechnical properties of the site required for intended post-reclamation development, the applicant shall revise the conceptual design for the NW Quadrant Reclamation Plan accordingly.	R4.12-4: The Marin County DPW and the Marin County Community Development Agency will be responsible for review, approval, and monitoring implementation of the plan specified in Mitigation Measure R4.12-4a.	Plans for preservation of the Boarding House and Office shall be included in a conforming ARP, to be submitted within 60 days of AQP approval. Detailed grading plans showing preservation of these structures to be submitted with application for Phase 2 grading permit.	Verified by Marin County DPW, during review of Phase 2 grading permit application, and during Phase 2 grading.
R4.12-5: Reclamation activities in the SW Quadrant under Phase 3 of the phased grading plan may demolish or substantially alter the former c. 1935 U.S. Army Signal House, a potentially eligible historic resource pursuant to California Environmental Quality Act Section 15064.5.	R4.12-5a: The project sponsor shall redesign the reclamation activities in the SW and NW Quadrants under Phase 3 of the proposed project to avoid potentially adverse impacts to the former c. 1935 U.S. Army Signal House. The southernmost limits of the reclamation activity area could be reduced by approximately 100 feet to avoid this historic resource, potentially allowing more reclamation activities to occur on the northern, eastern, or western portions of SW-3.	R4.12-5: The Marin County DPW and the Marin County Community Development Agency will be responsible for review, approval, and monitoring implementation of the plan specified in Mitigation Measure R4.12-5c.	Plans for preservation of the U.S. Army Signal House shall be included in a conforming ARP, to be submitted within 60 days of AQP approval. Detailed grading plans	Verified by Marin County DPW, during review of Phase 3 grading permit application, and during Phase 3 grading.

**PROPOSED REVISIONS TO THE SAN RAFAEL ROCK
QUARRY ARP AND AQP MITIGATION MONITORING AND
REPORTING PROGRAM**

Proposed revisions shown in underline for insertions and
~~strike-through~~ for deletions

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Cultural Resources (cont.)				
P4.12-5 (cont.)	<p>R4.12-5b: The provisions of Mitigation Measures R4.12-3 and R4.12-4a to protect the Caretaker's residence and the McNear's Brickyard Boarding House and Office shall be kept in place for Phase 3 reclamation grading.</p> <p>R4.12-5c: To ensure adherence to mitigation measures R4.12-5a and b, prior to commencement of Phase 3 reclamation grading, the applicant shall submit a detailed plan to the Marin County Department of Public Works detailing reclamation grading activities. The plan will clearly show and describe how the affected potentially historic resources, including the c 1935 U.S. Army Signal House, the Caretaker's residence, and the McNear's Brickyard Boarding House and Office structures, as well as any other potentially eligible historic resources will be protected and preserved.</p>		showing preservation of these structures to be submitted with application for Phase 3 grading permit.	
<p>R4.12-6: Reclamation grading phase 4 of the 2004 Amended Reclamation Permit would demolish four potentially eligible historic buildings at McNear's Brickyard, including 1) c. 1902 Cookhouse, 2) c. 1902 Drysheds, 3) c. 1902 Hoffman Kiln #1, 4)c. 1904 Hoffman Kiln #2, and 5) c. 1910s Worker's Shed. Even with the possible retention of Hoffman Kiln #1 under the Amended Reclamation Plan, Phase 4 would additionally alter the historic setting of Hoffman Kiln #1 to the extent that it would no longer qualify for listing in the National Register of Historic Places or California Register of Historic Resources.</p>	<p>R4.12-6a: The ARP states that one of the Hoffman Kilns and its stack may be retained in the post-reclamation development.</p> <p>R4.12-6b: The project sponsor shall revise the applicable portion of ARP04 to specify preservation of the following four historic resources: 1) c. 1902 Cookhouse, 2) c. 1902 Drysheds, 3) c. 1902 Hoffman Kiln #1, 4) c. 1904 Hoffman Kiln #2, and 5) c. 1910s Worker's Shed. The neighborhood commercial uses proposed for the NW Quadrant shall be constructed to provide a sufficient setback to allow these structures to visually 'read' as a working brickyard, with all original components of the brickmaking industry intact.</p>	<p>R4.12-6: The Marin County DPW will be responsible for reviewing and approving revisions to ARP04 prior to project approval.</p>	<p>Plans for preservation of</p> <ol style="list-style-type: none"> 1) c. 1902 Cookhouse, 2) c. 1902 Drysheds, 3) c. 1902 Hoffman Kiln #1, 4)c. 1904 Hoffman Kiln #2, and 5) c. 1910s Worker's Shed shall be included in a conforming ARP, to be submitted within 60 days of AQP approval. Detailed grading plans showing preservation of these structures to be submitted with application for Phase 4 grading permit. 	<p>Verified by Marin County DPW, during review of Phase 4 grading permit application, and during Phase 4 grading.</p>

**PROPOSED REVISIONS TO THE SAN RAFAEL ROCK
QUARRY ARP AND AQP MITIGATION MONITORING AND
REPORTING PROGRAM**

Proposed revisions shown in underline for insertions and
~~strike-through~~ for deletions

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by and Date
Cultural Resources (cont.)				
<p>P4.12-9: Continued quarrying at the project site could adversely affect prehistoric or unique archaeological resources, including those previously unidentified.</p> <p>P4.12-9 (cont.)</p>	<p>P4.12-9: In the event that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during site preparation or construction activities on any part of the project site, all work at the vicinity of the discovered site shall stop and the project sponsor shall contact the Marin County Environmental Coordinator immediately. If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist, chosen by the County and paid for by the project sponsor, shall assess the site and shall submit a written evaluation to the Community Development Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a "Most Likely Descendant" can be designated. No work at the site may recommence without approval of the Agency Director.</p>	<p>P4.12-9: In the event of discovery, the Marin County Community Development Agency staff shall verify that a report has been submitted and all construction work has been stopped. In the event that the report indicates that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during site preparation or construction activities on any part of the project site, the Marin County CDA staff shall verify that a registered archaeologist has been retained to assess the site and had submitted a written evaluation to the Agency Director advancing appropriate conditions to protect the site and the resources discovered before work commences on the site. If human remains are encountered, the CDA staff shall verify that the County Coroner has been contacted and that all future work is carried out in accordance with the mitigation measures.</p>	<p>Upon approval of AQP and continuing for the duration of reclamation activities.</p>	<p>Verified by Marin County DPW on an as-needed basis. The Quarry shall include in its annual report to the County any instance of discovery of cultural resources in the course of quarry operations or reclamation, and how Mitigation Measure P4.12-9 was implemented.</p>

Key:

- AQP – Amended Quarry Permit
- ARP – Amended Reclamation Plan
- BAAQMD – Bay Area Air Quality Management District
- BCDC – Bay Conservation and Development Commission
- CDA – Community Development Agency
- CDFG – California Department of Fish and Game
- DPW – Department of Public Works
- RWQCB – Regional Water Quality Control Board
- SRRQ – San Rafael Rock Quarry
- USACE – US Army Corps of Engineers

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APPENDIX B

Full Text of Amendment 1 – Conditions of Approval

EXHIBIT 2

Marin County Surface Mining and Quarrying Permit Permit # Q-72-03, Amendment #1 Conditions of Approval Including Amended Reclamation Plan San Rafael Rock Quarry (CA Mine #91-21-0008)

This Permit is issued pursuant to Marin County Code Section 23.06. This Permit is intended to regulate the control of surface mining and quarrying operations and to insure that all lands affected by such operations shall be reclaimed according to the State Surface Mining and Reclamation Act (SMARA) and local ordinances.

Project Location

San Rafael Rock Quarry
1000 Point San Pedro Road
San Rafael, CA

Assessor Parcel Numbers (dry land in **bold**):

184-010-**09, -15, -16** -18, -19, -20, -44, -45, -47, -51, and **-52**

Dry land covers approximately 272 acres.

General Plan Designations: City-Center Corridor; Bayfront Corridor, Mineral Resource Area

Zoning: RMPC (Residential/Commercial Multiple Planned)

Definitions

“Permittee” means any person, partnership, corporation or public agency engaged in surface mining or quarrying and shall be defined as both the owner of the property, and the operator of the facility. All references herein to “Permittee” shall be defined to include the “permittee, or successor(s) in interest”.

“Operation” means all of the premises, facilities, roads and equipment used in the process of producing the mining or quarrying products, from the designed strip mine or quarry area or removing the overburden for the purpose of determining the location, quality or quantity of a natural deposit.

“Overburden” means all the earth and other materials, consolidated or unconsolidated, which lie above a natural deposit of mineral or useful rock, and shall also mean such earth and other material after removal from their natural state in the process of surface mining.

“(Northeast, Northwest, Southeast, Southwest) Quadrants” means the geographic division of the Quarry property as labeled and shown in Figure 1 of the 1982 Amended Reclamation Plan.

“Reclamation” means the combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses and creates no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.

Permit Format

Where Permit conditions of approval are derived from an Environmental Impact Report mitigation measure, the particular mitigation measure or measures are identified by parentheses and italics.

Quarry Plan Submittals

Except as amended by this Permit and these Conditions of Approval the Amended Reclamation Plan is comprised of:

- San Rafael Rock Quarry Amended Reclamation Plan 2004 (Volume 1) dated October 12, 2004 (three ring binder)
- San Rafael Rock Quarry Amended Reclamation Plan 2004 (Volume 2 - Appendices) dated October 12, 2004 (three ring binder)
- San Rafael Rock Quarry Amended Reclamation Plan 2004 Implementation Plan sheets containing sheets E1 thru E6, G1 thru G4, RV1 thru RV4, and CS1 thru CS5 (Size D sheets), dated ‘Revised 2004’,
- Supplemental Amended Reclamation Plan information letter dated December 14, 2004 from CSW/Stuber-Stroeh Engineering Group, Inc. including ledger size drawings revising Sheets E2, E3, E5, and RV1 thru RV4
- Supplemental Geotechnical Data Report by ENGE0, Inc. dated April 11, 2005
- Supplemental Information for Section 2.B.5.i – Maintenance, San Rafael Rock Quarry, Amended Reclamation Plan 2004 (October 12, 2004), Revised on March 24, 2005

General Quarry Operations

1. This Permit is granted for the surface mining and quarrying operations, and reclamation activities, consisting of the following:

- a. Mining and excavation, including removal of overburden, in accordance with the approved reclamation plan.

- b. On site processing of aggregate materials obtained from on site including, rock crushing, sorting, screening, conveying and storage/stockpiling.
 - c. Barge loading operations for materials obtained on site including conveyor and direct truck loading of barges, and barge unloading of dredged San Francisco Bay sand from barges for asphalt production.
 - d. The operation of an asphalt concrete batch plant using on-site aggregate materials and production of asphaltic concrete.
 - e. Access to and from the site by truck, and the loading of commercial and inter-facility trucks on site with rock, asphalt and processed aggregate materials quarried from the site.
 - f. Maintenance activities including repair, replacement and failure preventative measures on facilities, fixed plant, vehicles, vessels, and stationary and mobile equipment operating at the site.
 - g. Structures, facilities, equipment and other accessory uses and appurtenances including, but not limited to rock crushers, conveyor belts, asphalt batch plant, barging facilities, water supply ponds, water recycling ponds, scale house, truck wash racks, above ground fuel tanks, air pollution control equipment, administration offices, maintenance buildings and sheds as shown in the 2006 existing conditions aerial topography and map dated December 19, 2006, on record at the Marin County Department of Public Works. This is the last County required aerial map submittal prior to publishing the Notice of Preparation for the amended quarry permit EIR.
 - h. Reclamation, revegetation, reclamation monitoring, and biological studies at the quarry site per the approved reclamation plan and this Permit.
2. Mining shall not occur in the Northwest Quadrant. Mining shall not occur in the Northeast Quadrant except to the extent that rock is encountered when establishing the Quarry Bowl bench at the edge of the future flooded San Francisco Bay inlet. In no event shall mining occur beyond 100 feet north of the boundary line between the Northeast Quadrant and the Southeast Quadrant. Mining shall not occur on the non-land (on the bay side of the San Francisco Bay shoreline) portions of the Quarry lands. Quarrying on South Hill shall not be beyond what was described in the 1982 Amended Reclamation Plan.
3. The Permittee shall not import onto the Quarry property gravel, used asphalt concrete or concrete for recycling, or dredged non-sand material.
4. Pond fines, if produced in the future, shall not be placed in the Northeast or Northwest Quadrants.

5. Maximum annual production shall be limited to the fluctuating 1982 baseline level of production, i.e., a 5-year rolling average of no more than 1,414,667 tons per calendar year, and a maximum level of production of 1,697,600 tons in any one calendar year. (*Mitigation Measures P4.2-6c, P4.2-7d, C4.2-9b & P4.6-6b*)

a. Applicant shall keep a weekly operations production log, to the satisfaction of the Director of Public Works, which shall include the amount of product produced from all operations, the amount of product kept on-site, the amount of product removed from the Quarry site by barge and the amount of product removed from the Quarry site by truck. The log shall remain at the project site and be made available within 24 hours of a written request for such log from the Director of Public Works.

6. No equipment changes or other modifications to the plant, including but not limited to all crushers, screens and conveyors, shall be effected so as to increase plant capacity above existing conditions or limits set forth in BAAQMD permits at time of Permit issuance without Permittee obtaining County approval first. The Permittee shall not undertake operational or construction related activity which is not explicitly described in these conditions or applicable Exhibits without first contacting the Public Works Director to determine if said activity requires a modification or amendment to the Permit. A written description and/or map may be required by the Public Works Director prior to rendering a decision.

7. All Quarry operations and reclamation activity shall comply with the applicable Combined EIR mitigation measures.

8. This permit shall be kept on the site and must be shown to any representative of the Department of Public Works or any law enforcement officer on request.

General Reclamation Plan

9. As a condition to this Permit, and as further described below regarding a Conforming Amended Reclamation Plan, Permittee shall revise the 2004 Amended Reclamation Plan submittal to incorporate the following:

a. Add the same lands shown in the 1982 Amended Reclamation Plan, Figure 4, in the Northwest Quadrant labeled as 'preserve in natural state' (southerly and adjacent to kiln) as lands to be preserved in the 2004 Amended Reclamation Plan.

b. The toe of the 'surcharge berm' shown in the Northwest Quadrant of the 2004 Amended Reclamation Plan shall be no closer than 100 feet from the edge of the marsh area (edge of wetland delineation).

c. The 'surcharge berm' shown in the Northwest Quadrant shall be no higher than elevation 25 feet. McNear's Brickyard material storage or use

cannot occur on top of the surcharge berm above a surcharge berm grade of elevation 15 feet.

d. Phase 1 Reclamation plans shall be revised to: 1) provide an option to remove the new berm construction in the Northeast Quadrant (“Northeast Berm 1”), 2) not begin reclamation grading activity, except for erosion and sediment control, in the Northeast Quadrant for the first 18 months following approval of the Permit and amended reclamation plan, 3) relocate the top soil stockpile fill area “F” under Phase 1 of the proposed project, to avoid potentially adverse effects to the Caretaker’s Residence, and 4) schedule marsh restoration for the first phase of reclamation work, but after the marsh restoration plan has been completed, approved and necessary permits obtained from resource agencies. Sheet G1 of the 2004 Amended Reclamation Plan shall be revised to reflect changes and to provide two sets of plans, one with and one without the “Northeast Berm1”.

e. Phase 2 Reclamation plans shall be revised the Northwest quadrant surcharge berm maximum elevation to no greater than elevation 25 feet. Sheet G2 of the 2004 Amended Reclamation Plan shall be revised to reflect changes.

f. In order to preserve visual and sound screening between the mining and plant operations and adjacent residences, reclamation plans shall be revised so that the northern and easternmost hill/berm adjacent to the quarry bowl are maintained as a barrier until the later stage of reclamation or the last 5 years of the current approved amended reclamation plan. Sheets G1 through G4 of the 2004 Amended Reclamation Plan shall be revised to reflect changes.

g. Phase 4 Reclamation plans shall be revised to complete South Hill mining during this phase. Plans shall show amount of overburden or topsoil proposed as cover over final bedrock surface elevation. The Phase 1 Reclamation options in these conditions shall be reflected in two sets of Phase 4 plans. Final contour elevations shall be clearly labeled. Final South Hill contours shall be approximately no lower than those in the 1982 Amended Reclamation Plan. Provide at least two north-south cross sections across the quarry bowl and one cross section across the marsh/brickyard area, starting from the edge of property near Point San Pedro Road across the quarry to the Bay shoreline. Provide at least one east-west cross section through the quarry bowl and surcharge berm area. Show geologic conditions along the same cross sections. Indicate amount of backfill over rock on South Hill. Sheet G4 of the 2004 Amended Reclamation Plan shall be revised to reflect changes.

h. All Northeast Quadrant grading activities are limited to work and activities needed for geotechnical soil stabilization, erosion control and

successful revegetation of the area as approved by the Public Works Director. Grading activity that furthers the development beyond what is needed to readily adapt the area for alternative land uses is not approved under this Permit.

i. The four phase reclamation plan timeline shall be modified so that the ending date corresponds to the end of the Combined EIR analysis period date.

j. The erosion control and revegetation sheets shall be revised as needed to conform to the changes in this condition.

10. South Hill mining and quarrying shall be limited to no more than 75% of annual production for the first, second and third full calendar year, 50% of production the fourth year and 25% of production the fifth year after Permit approval; and thereafter a maximum of 141,467 tons per year, each year, until the quarry bowl depth shown in the 2004 Amended Reclamation Plan is reached or until year 2022. Excepting from this condition is the year that construction of the new ramp/road into the quarry bowl intersects with the existing ramp/road, in which case South Hill production shall not exceed 75% annual production for that single year. There are no South Hill annual production limits once the proposed bowl depth is reached or after calendar year 2022. The first three years of South Hill production reductions may be exchanged subject to prior approval by the Public Works Director. Annual production is defined as the rock/aggregate production provided to the State Office of Mine Reclamation annual operations report (excepting overburden sold as a result of a public emergency).

a. Materials shall be tested to ensure that they do not exceed hazardous waste standards prior to disposing excess overburden, pond fines or other mining wastes from other areas of the property in the Quarry Bowl.

b. The South Hill and Quarry Bowl production shall be provided in the Annual report to the County.

11. *Greenhouse Gas (GHG)* - The Permittee shall revise the amended reclamation plan, and include in the Conforming Amended Reclamation Plan described below, to add the following submittal requirement in the future post-reclamation development plan (*Mitigation Measure R4.2-5*):

a. A detail inventory of Greenhouse Gas (GHG) emissions associated with post-reclamation development, and

b. How the post reclamation development will incorporate measures to reduce GHG emissions consistent with Countywide (General) Plan policies and other relevant and applicable County, state and federal standards, in effect at the time of the Development Plan submittal.

12. Within 60 days of Permit approval, Permittee shall submit a statement of impact of reclamation on the future mining pursuant to Public Resource Code (PRC) Section 2772(c)(9).

13. Within 60 days of Permit approval, Permittee shall, to the satisfaction of the State Office of Mine Reclamation (OMR), revise the amended reclamation plan to give due consideration of the degree and type of present and probable future exposure of the public to the site (CCR Title 14, Section 3502(b)(2)).

14. Within 60 days of Permit approval, Permittee shall revise the amended reclamation plan to incorporate the State Office of Mine Reclamation (OMR) "Resoiling and Revegetation" comments contained in OMR's December 14, 2009 comment letter to the County.

15. *Conforming Amended Reclamation Plan:* Within 60 days of Permit approval, the Permittee shall submit a conforming reclamation plan incorporating these condition and approvals granted to the Permittee. The Public Works Director shall review the plan for conformance with all aspects of the County's approval. The Public Works Director may return the plan to the Permittee to correct any deficiencies, as determined by the Public Works Director at his sole direction. Thereafter, the Permittee shall have 30 days to resubmit the reclamation plan incorporating the comments and requested changes.

16. *Submittal of Financial Assurances Cost Estimate:* Within 60 days of Permit approval, Permittee shall submit a revised financial assurance (FA) cost estimate in conformance with the requirements of Surface Mining and Reclamation Act (SMARA) and, including but not limited to:

- a. A preliminary cost estimate to provide continuous funding of the operations and maintenance of the deep water quality equipment of the future harbor shall be included in the FA cost estimate.
- b. The FA cost estimate shall be amended at the time that the deep water quality engineering and economic report is completed and accepted by the County.
- c. Shall include all phases of reclamation over the entire Quarry property.

17. *Submittal of Financial Assurances:* The Permittee shall guarantee timely performance of reclamation requirements of the Marin County Surface Mining Ordinance and these conditions of approval by providing a mechanism for financial assurance of reclamation as described in, and in accordance with, the Surface Mining and Reclamation Act (SMARA) and the Marin County Surface Mining Ordinance. The mechanism shall be of sufficient value to cover the full costs of reclamation in any specific year for which it is calculated, and may take any form acceptable as determined by the County within the requirements of SMARA.

18. Financial assurance shall renew automatically and shall not expire or be terminated without 90-days advance written notice being provided to the County Department of Public Works. Marin County may adjust the amount of the security on an annual basis to account for additional lands disturbed or reclaimed, inflation, or revised cost estimates. The financial assurance shall reference the name of the mining site, and the County permit number.

19. The County may pursue redemption of the FA securities if: 1) the final reclamation does not meet the performance standards, 2) satisfactory progress is not made towards completing the reclamation in a timely manner, or 3) the operator is financially incapable of carrying out the reclamation

20. *Acceptance of Responsibility:* Within 60 days of Permit approval, the Permittee shall provide a written statement from the person submitting the conforming reclamation plan that they accept responsibility for reclaiming the mined lands in accordance with the reclamation plan.

21. *Grading Permit:* For each phase of reclamation, Permittee shall submit an application for Excavation, Grading or Filling, with plans, to the Department of Public Works prior to each phase of reclamation and which will be subject to review and approval by the Director of Public Works.

a. Reclamation grading shall be limited to a 10 week work period in any one calendar year. A reclamation phase may occur over multiple years.

b. Permittee shall submit the application at least 120 days in advance of the anticipated start of grading.

c. The Permittee shall provide a geotechnical evaluation and report on the pond fine to soil mixing ratio needed to comply with the California Surface Mining and Reclamation Act (SMARA) reclamation performance standards. Further, the geotechnical evaluation shall also examine the most efficient method and location to reclaim the pond fines which further reduces potential impacts to the environment and minimizes the amount of material imported into the NE Quadrant. The evaluation is subject to the Public Works Director's review and approval. The Permittee shall also fund an independent geotechnical review and site assessment (peer review) by the County on the submitted report.

22. *Interim Management Plan (Idle Mine):* In the event that the permitted operation is curtailed for a period of one year or more, by more than 90% of the operation's previous maximum annual mineral production, with the intent to resume those surface mining operations at future date, the Permittee shall file and implement an interim management plan in accordance with the provisions of SMARA.

23. All other parts of the reclamation plan are to be completed concurrently with the grading or as soon as practicable after completion of the grading specified in the reclamation plan (MCC 23.60.050 (6)).

24. Within ninety (90) days of termination of actual rock or mineral production, all structures, metal, lumber, tanks, or other debris or materials resulting from the operation are to be removed (MCC 23.06.050).

Specific Reclamation Limitations on Mining Area, Depth and Slopes

25. Mining, excavation and reclamation shall only occur as specified in the approved reclamation plan (Conforming Amended Reclamation Plan and any subsequent approved amendments). Nothing in the Permit conditions contained herein allows the Permittee to excavate beyond or below approved excavation contours.

26. All final slopes on approved reclamation plan shall meet the following criteria, unless subsequent geotechnical analysis indicate modifications are required to maintain slope integrity:

a. Within the quarry pit, the average (toe to top) slope inclination shall not exceed 60 degrees for a maximum vertical height of 350 feet, as depicted on Figure 15 of the ENGEO Supplemental Geotechnical Data Report, Proposed Changes to Mining Plan, San Rafael Rock Quarry, Marin County California, April 11, 2005 (ENGEO Supplemental Report).

b. Minimum 30-foot-wide safety benches shall be constructed at a maximum of 90-foot vertical intervals.

c. In general, the inclination of inter-bench faces should be maintained at less than 75 degrees where possible. The recommended safety bench spacing and width are depicted in ENGEO Supplemental Report Figure 15. Locally, inter-bench face inclinations will be influenced by splitting along pre-existing rock discontinuities, but overhanging faces should be avoided whenever possible.

27. No stockpiling or related reclamation or mining activity shall occur within 100 feet of the marsh areas (as defined by Biological Recommendations Under the Amended Reclamation Plan of 2004 for the San Rafael Rock Quarry, LSA, October 8, 2004, Potentially Jurisdictional Wetlands and Other Waters, Figure 2, or other subsequent and resource agency approved study/determination), or within 50 feet of the outer property boundary in the NE Quadrant, except where pond fines are found in the NE Quadrant at the time the Permit is issued.

Expiration of Permit Upon Conclusion of Complete Reclamation

28. This Permit shall expire when reclamation is complete. "Complete" reclamation is defined as that point in time when all mining has ceased, the

requirements of the approved reclamation plan have been met, including revegetation maintenance and monitoring, long term financial arrangements for harbor water quality maintenance are established, and the final financial assurance required by SMARA is returned to the Permittee.

29. All conditions of this Permit shall remain in effect until the Reclamation Plan is deemed “complete” by the County or the State, even though the operational aspects of mining have been terminated. A valid financial assurance (FA) shall be maintained on file until the County determines that all reclamation has been successfully carried out in compliance with the reclamation plan and Permit conditions.

30. The San Rafael Rock Quarry Combined EIR certified on October 27, 2009, analyzed potential impacts and the environment through year 2024. The term of the amended reclamation plan approval will be through December 31, 2024.

a. This permit may continue to be valid beyond 2024 insofar as quarrying and mining operations have ceased, and final Phase 4 reclamation is in progress per the approved reclamation plan and is substantially complete. Such activities may include vegetation management, marsh management, erosion and sediment control, historic structure preservation, and harbor and water quality management. However, continued quarry operations beyond 2024 would be considered a substantial extension of the termination date of mining operations as set out in the approved reclamation plan. In order for quarry operations, including but not limited to, crushing, trucking product, asphalt plant operation and barging, to continue beyond 2024, an application to amend the reclamation plan termination date, including continued mining operations if so desired, shall be filed at least 3 years before the termination date of the amended reclamation plan (no later than December 31, 2021).

31. Three years prior to the end of quarrying operations, Permittee shall submit a development plan for subsequent use of the quarry property.

a. Neither approval of this permit nor approval of the amended reclamation plan constitute approval of post reclamation land uses, regardless of the generalized land uses depicted in submittals, reclamation plans or the Combined FEIR. Pursuant to the Surface Mining and Reclamation Act (SMARA), the purpose of a reclamation plan is to assure that adverse environmental effects are prevented or minimize and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses. The proposed mix of land uses and intensities shall be reviewed and considered by the appropriate jurisdiction in the future, at the time a development plan is filed by the property owner as part of the required land use and environmental review entitlements process.

Days and Hours of Operations & Reclamation

32. Except for declared public emergencies, as described below, site quarry operations or reclamation shall exclude Sundays and State Holidays, and the hours of operations for quarry and reclamation operations shall be limited to:

Activity	Days of Week	Hours of Operations
Mining, Quarrying, Excavation, Drilling, Crushing Plant, Primary Crusher, Secondary Crusher, Aggregate Processing and Handling, and Asphalt Batch Plant	Mon. – Fri.	7 a.m. to 8 p.m.
Maintenance Activities (excluding maintenance activity with no off site noise at nearby residences)	Mon. – Fri.	Same as above (Mining, etc.)
	Sat.	Up to 10 Sat. per cal. yr. 7 a.m. to 5 p.m.
Reclamation Grading Activity in the N.E., N.W. and S.W. Quadrants	Mon. - Fri.	<i>Apr. 15 thru Oct. 15 only, up to 10 weeks</i> 7 a.m. to 5 p.m.
Material Haul Trucks Entering or Departing Quarry	Mon. – Fri.	7 a.m. to 5 p.m.
Barge Loading (truck or conveyor) Operations 'Winter', Nov.1 thru Mar. 31 ²	Mon. – Thu.	7 a.m. to 10 p.m.
	Fri.	7 a.m. to 7 p.m. Up to 26 Fri. per cal. yr. ² 7 a.m. to 10 p.m.
	Sat.	Up to 26 Sat. per cal. yr. ² , 7 a.m. to 10 p.m. only when combined with Friday work until 10 p.m.
Barge Loading (truck or conveyor) Operations 'Summer', Apr. 1 thru Oct. 31 ²	Mon. – Thu.	7 a.m. to 9 p.m. ¹
	Fri.	7 a.m. to 7 p.m. Up to 26 Fri. per cal. yr. ² 7 a.m. to 9 p.m. ¹
	Sat.	Up to 26 Sat. per cal. yr. ² , 7 a.m. to 9 p.m. only when combined with Friday work until 9 p.m. ¹
Blasting	Mon. – Fri.	11:30 a.m. to 1:30 p.m. max. 3 times per week
Quarry Office Use	Mon. – Sun.	No Restrictions

¹ In limited circumstances, if barge loading or trimming is not completed by 9 p.m., loading/trimming may continue until completed, but in no case shall barge loading/trimming occur later than 10 p.m. The Permittee shall maintain records of loading that occurs between 9 and 10 p.m. and shall make those records available to the community.

² The reference to “per cal. yr.” means that no more than a total of 26 such exceptions shall be exercised per calendar year, not 26 such exceptions per season. (*Mitigation Measures P4.1-9, P4.2-6c, P4.2-7a, P4.2-7d, C4.2-9b & P4.6-6b*)

a. The Permittee shall provide 36 hours advance notification of any of the above operations occurring later than 7 p.m. Fridays or on Saturdays to the Director of Public Works and by posting the date and activity type on a publically accessible web site.

b. The Permittee shall attempt to schedule any of the permitted 10 days of Saturday noise producing maintenance to be scheduled on the same days when weekend barge loading operations occur.

33. *Declared Public Emergency:* The hours and days of operations limitations, as well as truck trip per day limitation and trucking hours, may be suspended when there is a public emergency. A public emergency exists only when there is need to prevent or respond to a landslide, levee failure, structural failure, or other imminent harm from an earthquake, flood or other natural disaster, and when the emergency has been declared by an authorized local, state, or federal government agency. Any suspension shall last only as long as is necessary to deliver by truck or barge the material necessary for correcting the adverse conditions constituting the emergency. The public emergency suspension shall not increase, nor will there be any adjustment, regarding the 5 year annual average production (Condition 5). The suspension shall not be approval to increase plant capacity from those permitted.

Public Emergency Procedures

a. Within five (5) calendar days following Permittee’s determination to suspend aforementioned operations limitations, the public emergency shall have been declared by an authorized local, state, or federal government agency;

b. Within 24 hours after invoking the suspension under this paragraph, the Permittee shall send written notice to Marin County Director of Public Works in this matter and post on its website an explanation of the location of the public emergency and sufficient facts regarding the suspension to allow all parties to evaluate if the suspension is necessary and appropriate;

c. If the Marin County Director of Public Works determines at any time, based on the facts and notice provided in the preceding paragraph and/or from any other information the Director may obtain, that any suspension invoked by the Permittee is not being invoked as a result of a declared local, state or federal emergency, the Director may order termination of that suspension by written notice to the Permittee and the Permittee shall immediately comply with that written notice.

- d. Within 24 hours after the suspension is lifted, or the emergency declaration by the authorized local, state, or federal agency is no longer in effect, the Permittee shall send written notice to the Marin County Director of Public Works, and post on its website, the total hours of operation and number of truck-trips that occurred during the suspension.
34. Reclamation grading activities shall be limited to an 8-10 week period during each dry season, but shall not commence prior to April 15 nor active grading extend beyond October 15th. Erosion control measures may continue to be implemented after October 15th. (*Mitigation Measure R4.6-5a*)
- a. Each year by May 1 and not later than 30 days prior to the commencement of reclamation activities, the Permittee shall inform by mail all residences on Marin Bay Park Court, Heritage Drive, and San Marino Drive, and the public at large by web site posting, of the start date, nature of the work and expected duration of the 8-10 week period during which reclamation grading activities will occur that calendar year. (*Mitigation Measure R4.6-3d*)
35. *Lighting*: Permittee shall restrict and minimize lighting for night operations. Where lighting is necessary, Permittee shall utilize light shades, directional lighting, and other measures so as to minimize off site glare at residences adjacent to property.
- Trucking**
36. The Permittee shall limit daily truck traffic hauling aggregate, asphaltic concrete, rock and other quarry product from the Quarry to 250 one-way truck trips per day (125 in and 125 out). (*Mitigation Measures P4.6-6a & P4.2-7a*)
- a. The Permittee shall keep daily written records of truck trips in and from site and shall provide said records to the Department of Public Works upon request. Records shall include date, load weight or bill of lading, and time of departure, as well as daily number of inter-facility trucks and destination of non inter-facility trucks. Records of truck trips shall include in-bound trucks not used for rock and aggregate transport, e.g. asphalt batch plant oil, and diesel loads. Records shall be kept a minimum of one year and an annual calendar year tabulation shall be provided in an Annual Report.
37. All loaded trucks shall be required to pass over a material shakedown area before exiting the Quarry.
38. All trucks leaving the Quarry shall be washed down, including the undercarriage, prior to entering Point San Pedro Road (except trucks transporting asphalt). The wash down and adjoining areas shall be paved to minimize tracking of dust and dirt. Point San Pedro Road shall be swept by a sweeper truck two times per day by the Quarry, except on rain days, when sweeping is not required. Sweeping is subject to the approval of the City of San Rafael within City jurisdiction.

This condition applies as well to Phase 4 reclamation for any loaded trucks.
(*Mitigation Measure R4.2-1c, R4.2-1d, R4.2-2a & P4.2-6a*)

39. The access road leading between the scale house and Point San Pedro Road shall be paved.

40. The Permittee shall require all inter-facility trucks (those trucks transporting material from the Quarry to other facilities under ownership or control of the Permittee, its parent company or subsidiaries) to cover or tarp the load in order to prevent or reduce dust emissions.

41. Any material shipment from the Quarry to Dutra's currently proposed Haystack Landing facility in Petaluma shall be by barge only, provided that the facility is approved by the County of Sonoma with a barge unloading component and the barge unloading component is constructed.

42. Within 12 months of Permit approval the Permittee shall require that all trucks leaving the Quarry loaded with aggregate or asphalt materials shall have their loads covered by tarp or other means to prevent fugitive dust. Upon Permit approval, the Permittee shall notify their customers and post this requirement on a web site. Permittee shall incorporate this requirement in all applicable third party contracts or agreements. Aggregate materials shall have the same meaning as California Vehicle Section 23114.

43. The Permittee shall provide a pull out area onsite after exiting the truck scales for truckers to check their load and/or tarp their load.

44. Trucks leaving the Quarry shall be metered by the Permittee at a minimum of 2 minute intervals during peak traffic periods. The peaks periods shall be approximately 2 hours long in the a.m. peak, and 1 hour long in the noon time and p.m. peaks, as determined by the Public Works Director.

45. Permittee shall install and maintain a conspicuous sign onsite near all exits from the Quarry that states the following: "TRUCKS SHALL NOT USE NORTH SAN PEDRO ROAD." Such prohibition shall not apply in the event of temporary closure or blockage of Point San Pedro Road. In such case, Permittee shall immediately notify the Department of Public Works of trucks from the Quarry using North San Pedro Road.

46. Permittee shall be responsible for cleaning up material spills on Point San Pedro Road from loaded trucks leaving the Quarry.

47. The Permittee shall routinely advise in writing, but no less than once per calendar year, and shall train all Quarry employees, Permittee leased truck operators and inter-facility truck drivers of the following trucking 'rules of the road'. The Permittee shall implement a progressive discipline policy on violating the

trucking rules. Drivers who repeatedly violate trucking rules shall be prohibited from hauling materials from the Quarry by the Permittee. Independent truck drivers shall be provided with written 'rules of the road', either through their company or individually, and are to be held to the same requirements. If an independent truck driver is found to repeatedly violate trucking rules, they too shall be prohibited by the Permittee from driving loaded trucks from the Quarry. Sign(s) notifying drivers of these requirements shall be posted onsite in the vicinity of the scale house location. The following minimum trucking rules apply:

- a. Drivers shall keep their vehicles within prescribed legal speed limits at all times.
- b. Trucks are not permitted to park and stage along Point San Pedro Road (which is particularly an issue in the early morning hours before the Quarry gates are opened).
- c. Trucks are not permitted to enter the Quarry before business hours.
- d. Trucks are not permitted to convoy on Point San Pedro Road.
- e. Drivers shall avoid using 'jake brakes' on Point San Pedro Road except in emergencies.
- f. All material spills on public roads shall be reported to the Quarry immediately.
- g. Truck drivers and the trucking equipment shall comply with all federal, state, regional and local laws and ordinances.

48. The Permittee shall assign an employee with job duties as a 'Truck Marshall' to, on a daily basis, periodically inspect trucks travelling on Point San Pedro Road and departing the Quarry site for compliance with these applicable Permit conditions and trucking rules of the road. The Truck Marshall shall keep written records of inspections and any warning or action taken against a truck driver violating the Permit conditions or trucking 'rules'. The records shall be provided to the Department of Public Works upon request. The records shall be kept at least one year.

49. To reimburse the County and City of San Rafael for extra wear and tear to roads caused by the Quarry truck traffic, the Permittee shall annually (the remaining year after Permit approval shall be prorated based on allowed trucking days) obligate in kind materials (asphalt concrete and/or aggregate) with a total market value of \$100,000. The annual unused obligations shall accumulate from calendar year to calendar year, i.e., if all or part of the material was not used by the local jurisdictions in a calendar year, then the obligation would be added to the following year's obligation and made available to the County or City. Annual unused

obligations shall accrue up to a maximum of \$300,000. The Quarry shall annually report obligation used and unused in an annual report to the County. The County shall track the obligations and expenditures. The County shall work with the City of San Rafael to equitably use the materials, but the County shall retain final authority on use of the materials on Point San Pedro Road, or alternatively:

- a. The Public Works Director may substitute the following instead of an annual asphaltic concrete requirement for Point San Pedro Road described above. Upon 3 month notice by the Public Works Director, the Permittee shall provide as much as 12,000 tons of open grade asphaltic concrete for a project to repave Point San Pedro Road. Truck trips due to trucks delivering asphalt for this project shall not count against the daily truck trip limit (refer to Condition 36). Grindings from the Point San Pedro Road project shall be delivered to the Permittee quarry property and accepted at no cost to County or contractor (no tipping cost). If the project occurs later than December 31, 2011, the maximum tonnage shall be adjusted based on the ENR Bay Area Caltrans asphaltic oil index.

Air Quality

50. The Permittee shall use a minimum blend 20 percent biodiesel and 80 percent conventional diesel (B-20) biodiesel fuel in all on-site quarry rolling stock. To further reduce emissions from off-road diesel equipment, the applicant shall fuel on-site diesel-powered mobile equipment used in operations or reclamation activities with a minimum 80 percent biodiesel blend (B-80) or use other equipment and/or fuel that achieves the same reduction in particulate (PM-10) emissions. The applicant shall also use Purinoxtm, or another County or BAAQMD approved additive, or other measures to reduce NOx and PM-10 emissions to the maximum extent feasible given current technologies. This condition applies to all reclamation phases, including Phase 4 (last phase) reclamation. Permittee shall provide records in the annual report or upon request by the County documenting compliance with this condition. *(Mitigation Measures R4.2-1a, R4.2-1d, R4.2-1g, R4.2-2a, R4.2-3a R4.2-3b, P4.2-6a, P4.2-7b & C4.2-9a)*

51. The Permittee shall operate a fleet of non-road diesel equipment to USEPA Tier 3 or higher standards, including for Phase 4 reclamation. The Permittee shall upgrade its tug boat fleet operating at the SRRQ to Tier 2 standards within one year of Permit approval. *(Mitigation Measures R4.2-1b, R4.2-1d, R4.2-2a, & P4.2-6a)*

52. The Permittee shall continue to use existing emission reduction practices, including use of alternative fuels, use of low-emission diesel equipment, and dust abatement measures (as found in other Permit conditions). *(Mitigation Measures R4.2-1d & P4.2-6a P4.2-6b P4.2-7c & C4.2-9a)*

53. Within one year of Permit issuance, the Permittee shall prepare and implement a Greenhouse Gas (GHG) Reduction Plan. The plan will include a complete inventory of reclamation-related GHG emissions and will demonstrate how the Quarry will reduce or offset remaining un-mitigated GHG emissions as identified

in the Combined EIR. The plan will prioritize emission reduction through energy conservation and other measures; and for those emissions that cannot be reduced, the plan shall specify how emissions will be offset. Offsets may take the form of installation of on-site alternative energy generation facilities (such as solar power) or off-site compensation, such as monetary contribution to a project that sequesters carbon. Examples of such projects include wetland restoration, purchase of carbon credits verified by the California Climate Action Registry, and reforestation. On-site offsets will be given higher priority than off-site offsets, and offsets with co-benefits, such as reduction of particulate emissions within the vicinity of the Quarry, and restoration of habitat for special status species, will be given higher priority. The plan must demonstrate how, at a minimum, the Quarry will reduce reclamation-related, non-biogenic GHG emissions consistent with the Marin County Greenhouse Gas Reduction Plan and Countywide Plan Update policies: the plan must demonstrate how reclamation-related emissions are reduced or offset, such that total emissions are 15% below the emissions associated with Amended Reclamation Plan 1982 (ARP82), or no more than 2,489 tons of eCO₂. The plan will include an implementation schedule. The plan will be submitted to the Marin County Public Works Department for review and approval. The Greenhouse Gas Reduction (GHG) Plan shall also include an inventory of operations-related GHG emissions and a plan to reduce these emissions by 15 percent. In addition, the initial emissions inventory prepared as part of the plan will be reported to the California Climate Action Registry or a successor organization as a baseline inventory, and the Quarry will conduct and report additional inventories annually. (*Mitigation Measures R4.2-3c & P4.2-7e*)

54. The Permittee shall implement the following dust abatement measures identified by BAAQMD as feasible dust control, during all reclamation grading activities or operations, including through the end of Phase 4 reclamation (*Mitigation Measures R4.2-1e, R4.2-2b P4.2-6b P4.2-7c & C4.2-9a*):

- a. Cover all trucks hauling soil, sand, and other loose materials as a part of reclamation activities, or require such trucks to maintain at least two feet of freeboard between the top of the material and top of truck.
- b. Pave, apply water at a minimum three times daily in dry weather, or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at the Quarry;
- c. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at the Quarry;
- d. Hydroseed, apply non-toxic soil stabilizers, or water to inactive reclamation areas (previously graded areas inactive for ten days or more);
- e. Limit traffic speeds on unpaved roads to 15 miles per hour;

- f. Install sandbags or other erosion control measures to prevent silt runoff to public roadways;
 - g. Replant vegetation in disturbed areas as soon as the growing season dictates. Install wind breaks or plant trees/vegetative wind breaks at the windward sides of the reclamation areas until such time as the vegetation is established;
 - h. Suspend reclamation-related excavation and grading activities when wind (as instantaneous gusts) exceeds 25 miles per hour in the area being graded as measured by a hand held anemometer; and
 - i. Limit the area subject to reclamation-related excavation, grading and other construction activity at any one time.
55. The Permittee shall implement the following additional dust abatement measures:
- a. Initial clearing of areas to be mined, including removal and stockpiling of topsoil, shall be accompanied by surface watering to control dust generation.
 - b. Stockpiles of crushed rock shall be kept moist or shall be watered before loading.
 - c. Minimize drop heights while loading/unloading aggregate to the maximum extent feasible.
 - d. The operator of a facility/operation shall not cause or allow any visible fugitive dust plume from exceeding 100 feet in any direction from any mining or grading activity, equipment, storage pile, or disturbed surface area. Blasting is exempt from this condition (reference South Coast Air Quality Management District Rules).
56. The Permittee shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for all operating equipment at the Quarry. Permittee shall provide documentation to the County in an annual report (*Mitigation Measures R4.2-1f, R4.2-3b, P4.2-6b, P4.2-7c & C4.2-9c*)
57. Off-road diesel equipment operators shall be required to shut down their engines rather than idle for more than 5 minutes, unless such idling is necessary for proper operation of the vehicle. (*Mitigation Measures R4.2-1h R4.2-3b P4.2-6b P4.2-7c & C4.2-9c*)

58. The Permittee will limit on-site mining operations on days on which reclamation grading activities are performed concurrently such that total criteria air pollutants emissions from the site are not increased above BAAQMD significance thresholds. To ensure the effectiveness of this measure, the Permittee will be required to maintain daily records and report to the BAAQMD and the County Public Works Department a record of reclamation and operations activities, with an estimate of emissions from each, at the end of each annual season of reclamation activities. The baseline for combined emissions is the current level of emissions for mining operations as shown in the Combined FEIR Table 4.2-13.1 plus the baseline emissions for the reclamation grading phase, as shown in Tables 4.2-10 and 4.2-11 of the Combined EIR. The limit for combined emissions from mining and reclamation will therefore be the sum of the current emissions levels from mining operations, the baseline emission levels for reclamation grading, and the BAAQMD's threshold values for criteria pollutants, as shown in the Combined FEIR Table 4.2-10.1 for all reclamation phases. (*Mitigation Measures R4.2-1j, P4.2-6b, P4.2-7c & C4.2-9c*)

59. If the Permit conditional mitigation measures do not reduce emissions to below threshold values, the Permittee shall acquire BAAQMD off-site emission offset credits in sufficient quantity to reduce criteria air pollutant emissions from reclamation grading only to levels below BAAQMD significance levels. (*Mitigation Measures RR4.2-1i, P4.2-6b, P4.2-7c & C4.2-9c*)

60. The Permittee shall suspend excavation, grading, hauling, and/or unloading soil and rock (except within the quarry bowl) activities when wind gusts exceed 25 mph, as measured at the top of the quarry bowl. Wind speed shall be determined when an on-site anemometer registers at least two wind gusts in excess of 25 miles per hour within a consecutive 30-minute period.

61. New onsite diesel equipment, or new or used replacement of onsite diesel equipment purchase after Permit approval shall meet or exceed EPA 2003 emission standards for diesel particulate matter (DPM) reduction controls. The Permittee shall provide a report, on an annual basis, to the County when heavy equipment changes occur on-site which identifies and describes the additional or new replacement equipment with regard to emission standards.

62. Within 4 months of Permit approval, Permittee shall provide a public forum to consult with residents along Point San Pedro Road on purchase of a vacuum sweeper truck, the primary concerns being dust collection efficiency and sweeper noise level. Within an additional 5 months (9 months total) Permittee shall implement use of a vacuum truck street sweeper on Point San Pedro Road (currently broom sweeper). Point San Pedro Road shall be swept to remove aggregate and road dust two times per day during business hours by the Quarry when trucking from the Quarry occurs, except on rain days, when sweeping is not required. Sweeping is subject to the approval of the City of San Rafael within City jurisdiction.

63. Permittee shall maintain all quarry-operated equipment in accordance with manufacturers' recommendations to reduce exhaust emissions from heavy equipment and haul trucks.
64. All non road diesel trucks and road diesel trucks shall meet or exceed federal and State emission regulations and requirements.
65. The Permittee shall maintain all required erosion control measures and stormwater management plans, and shall keep current and comply with all permits required by the Regional Water Quality Control Board. This condition applies through the end of reclamation (Phase 4). (*Mitigation Measures R4.2-1c, R4.2-1d, R4.2-2a & P4.2-6a*)
66. The Permittee shall maintain all dust abatement devices and air pollution control devices, and shall keep current and comply with all permits required by the Bay Area Air Quality Management district (BAAQMD). This condition applies through the end of reclamation (Phase 4). (*Mitigation Measures R4.2-1c, R4.2-1d, R4.2-2a P4.2-6a & C4.2-9a*)
67. Copies of all BAAQMD permits for the Quarry property shall be provided to the Department of Public Works. The Permittee shall document compliance with BAAQMD permits as part of the Annual Report.
68. Recordkeeping: The Permittee shall keep the following records on-site for 3 years and make such records available to the Public Works Director upon request:
- a. Watering and sweeping schedule for on site quarry operations or reclamation;
 - b. Days when reclamation or other operations were suspended due to high winds (greater than 25 mph) or days when work was suspended because of visible dust plumes greater then 100 feet;
 - c. Days of non-toxic dust suppressant application other than water;
 - d. Annual use of Purinox or similar additive; and
 - e. Quarry operations engine hours curtailed when reclamation equipment is in use and engine hours and equipment type of reclamation equipment used.
69. Permittee shall fund an on-going air quality monitoring program by the County to measure ambient air quality in the vicinity of the Quarry. The monitoring shall focus on measuring respirable particulate matter (PM-10 & PM-2.5) and determining metals content of particulate matter using BAAQMD and State monitoring standards. The monitoring program shall be funded sufficiently before reclamation activities

begin in the Northeast Quadrant. The air monitoring program will be operational for two full consecutive years. Thereafter, at the discretion of the Public Works Director, the continuous monitoring program may be suspended should long term monitoring results document that the Quarry operations or reclamation activities do not cause exceedences of state and federal air quality standards, or should the program be suspended, the Public Works Director may recommence the air monitoring program. Monitoring shall occur when reclamation grading activity occurs in the Northeast Quadrant. A one year continuous monitoring program shall be implemented should state or federal ambient air quality standards change.

Noise

70. Noise levels due to Quarry operations or reclamation, measured at the residential receptor property line, shall be limited to: 60 dBA day/night Ldn, 70 dBA maximum (sound level measurement made with "slow" meter response) and 65 dBA impulsive (sound level measurement made with "fast" meter response).

71. Within 30 days of permit issuance, the Permittee shall provide the County with the name and telephone number of the individual empowered to manage operational noise from the quarry. The individual's name, telephone number, and responsibility for noise management shall be posted at the project site in a location easily visible to the public and on the Quarry's web site. The individual shall record all noise complaints received and actions taken in response, and submit this record to the County upon request and annually at the time of the Annual Report.

72. The Permittee shall implementation of the following noise abatement measures to reduce the annoyance impact of reclamation activity noise (*Mitigation Measures R4.6-3c, R4.6-5b R4.7-1b*):

- a. The applicant shall limit all reclamation grading activities in the NE Quadrant or berm construction in NW Quadrant to 7:00 a.m. to 5:00 p.m. Monday through Friday.
- b. Equipment and trucks used for all construction and reclamation activities 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).
- c. All construction equipment powered by internal combustion engines shall be properly muffled and maintained;
- d. Unnecessary idling of internal combustion engines shall be prohibited.

73. The Permittee shall retrofit all rolling vehicles with backup alarms at the quarry with broadband backup alarms. Broadband alarms reduce nuisance noise effects by being directional (unlike conventional backup alarms), by being 5 dBA

quieter than conventional back-up alarms, and by generating noise that has a less intrusive tonal quality. (*Mitigation Measure R4.6-3a, R4.7-1a*)

74. The Permittee shall implement the following noise reduction program which shall be maintained in good operating condition:

- a. Enclose the conveyor systems at the Quarry crushing and processing plant including barge loading, primary, and secondary conveyors.
- b. Screens and secondary crushers shall have sound curtains with sound deadening materials installed between the equipment and residences.
- c. Enclosed transfer points along the conveyor system where material transfers from one belt to another by means of a hopper. The enclosures shall incorporate sound deadening materials.
- d. Permittee shall line all unenclosed hoppers and chutes on the conveyor at which aggregate materials fall onto a metal surface with a sound deadening material such as heavy neoprene, rubber or HDPE.
- e. Permittee shall implement the above noise reduction program as a phased program over 3 years from Permit approval. The noise reduction program shall include a barge loading noise reduction component to be included in the phasing plan. Proposed plans and phasing shall be prepared by a qualified acoustical engineer and then provided to the Public Works Director within 6 months of Permit issuance for review and approval. The phasing goal is to have the noisiest equipment, relative to nearby residences, retrofitted in the first 12 months following plan approval. The applicant shall have a qualified acoustical engineer inspect the site and equipment and submit a verification of compliance with these conditions after each phase.

75. The flat deck barge fleet associated with Permittee quarry operations shall be fully converted to concrete deck barges within three years. At least two steel deck barges shall be converted per 500,000 tons of annual (calendar) quarry production. Within three years of Permit approval, only non metallic flat deck barges, i.e. concrete deck barges, shall be permitted to be loaded at the Quarry site.

- a. Upon Permit approval, only concrete surface flat deck barges shall be loaded later than 8 p.m.
- b. Non-concrete surface flat deck barges from contracted third parties may be used in a declared public emergency.

76. Engines on all equipment used for surface mining operations shall be equipped with manufacturer-recommend mufflers, and no muffler or exhaust system

shall be equipped with a cutout, bypass, or similar device intended to thwart quieting.

77. Permittee shall fund an on-going noise monitoring program by the County to measure ambient and Quarry noise levels in the vicinity of the Quarry. Noise monitoring shall occur at the property line annually at the start of each season of reclamation work in the Northeast Quadrant and shall last the entire period of Northeast Quadrant activity. The noise monitoring program i.e., number of stations station locations, and other operational monitoring characteristics, shall be as required by the Public Works Director and performed by an acoustical consultant retained by the County. If the Permit noise levels are not met, the Permittee will have 15 days to correct the problem. If after 15 days the problem has not been corrected, the Permittee will only be allowed to operate compliant equipment, which will meet the permitted noise levels.

Blasting

78. Blasting shall be limited to an annual (calendar year) average of two times per week (104 times per year) and a maximum of three times per week. (Mitigation Measures P4.1-9, P4.2-6c, P4.2-7a, P4.2-7d, C4.2-9b & P4.6-6b)

79. Blasting shall be limited to the hours of 11:30 a.m. to 1:30 p.m. Monday through Friday. No blasting is to occur on State holidays or weekends.

80. The Permittee shall provide 36 hours advance notification of blasting to local residents and to the County of Marin by posting the date and approximate time of scheduled blasts on a publically accessible web site.

81. The Permittee shall design blasts to maintain a minimum scaled distance of 52.8 ft/lb^{1/2}, as defined in the REVEY Associates, Inc. report in Appendix J of the Combine FEIR, Volume III: Appendices. The Permittee shall provide the County with a blast report providing charge weight, delay, and other information needed to confirm compliance with these conditions, with 24 hours following each blast.

82. All charges should be confined with clean crushed stone of height equal to or greater than 25 charge diameters, as defined on Page 21 of the REVEY Associates, Inc. report in Appendix J of the Combine FEIR, Volume III: Appendices.

83. All charges should be confined with rock burden equal to or greater than 25 charge diameters, as defined on Page 21 of the REVEY Associates, Inc. report in Appendix J of the Combine FEIR, Volume III: Appendices.

84. Air-overpressure measured near residential home should never exceed 133 dBL, as measured with 2-Hz monitoring equipment.

85. Blasting vibration beyond the Quarry property boundary shall be limited to a maximum peak velocity of 0.25 inches per second.

86. All blast monitoring of ground motion and air-overpressure effects done by either Permittee personnel or third-party service providers should be done in full conformance with ISEE guidelines provided in Attachment I of the REVEY Associates, Inc. report in Appendix J of the Combine FEIR, Volume III: Appendices. *(All above in Blasting section, Mitigation Measures P4.7-7a, P4.7-7b)*

87. No blasting shall take place when wind velocity equals or exceeds 25 miles per hour. The wind speed shall be measured at the top of the quarry bowl.

88. No blasting shall take place on days when 'Spare the Air Days' declared by Bay Area Air Quality Management District are in effect, provided the BAAQMD gives at least 48 hours notice.

89. Within 60 days of Permit approval Permittee shall prepare and provide to the County a graph showing distance (ft.) to nearest off site residence and charge weight per delay (lb) using the scale factor and detonation delay of individual charges of 8 milliseconds or greater.

90. Permittee shall fund an on-going blasting seismic and air overpressure monitoring program of up to 3 stations, as determined by the Marin County Public Works Director.

Biological Resources

91. The Permittee shall implement amended reclamation plan "Standards for Preserving Sensitive Habitat Areas." Implementation of these standards will protect specific areas of oak woodland and native grassland. *(Mitigation Measure R4.3-2a)*

92. The Permittee shall submit to the Marin County Department of Public Works a revised 'conforming reclamation plan' that includes the preservation of the small hill near the kilns, consistent with ARP82. Any plans for future alteration of the small hill for post-reclamation development may be proposed as part of the Development Plan, due to be submitted three years prior to the cessation of mining. The conforming reclamation plans shall continue to preserved areas originally described, including portions of South Hill, the Grassy Knoll, and the marsh areas *(Mitigation Measures R4.3-2b R4.3-3a, R4.3-4a, R4.3-4b)*

93. Prior to each reclamation phase and during the planning for post-reclamation development, presence/absence surveys for special-status plants will be conducted by an independent qualified botanist within areas to be disturbed. *(Mitigation Measure R4.3-3b)*

- a. Surveys will be conducted in accordance with CNPS and CDFG rare plant survey guidelines.

- b. Surveys will be conducted prior to the start of each phase of reclamation activities, during the flowering period when the species is most readily identifiable (June – October).
- c. The results of the surveys will be filed with the County; if the presence of any of these species is confirmed, a copy of the survey results will be forwarded to CDFG, and following Permit condition will be implemented.
- d. In the event that special-status plants are proven absent, then no additional mitigation is necessary.

94. In the event that special-status plant populations are found during the surveys conducted pursuant to the above condition, the Permittee will avoid disturbance to the species by establishing a visible buffer zone of not less than 25 feet prior to construction or by relocating reclamation activities, if feasible, to avoid disturbance. Where necessary reclamation activities cannot be altered to avoid disturbance, the applicant shall relocate affected special-plant populations and/or restore similar habitat in another location: *(Mitigation Measure R4.3-c)*

- a. Protection of special status species will be coordinated by a qualified biologist.
- b. Disturbance or mortality of special status plant habitat and species shall be avoided as a priority. If a qualified biologist determines that restoration would provide equivalent or more effective mitigation, special-status plant habitat and/or sensitive plant communities may instead be restored on-site at a 2:1 ratio in areas that are to remain as post-reclamation open space, such as the Grassy Knoll or within the salt marshes.
- c. Special-status plants and/or seeds will be salvaged from areas of disturbance and moved to restoration areas on or off the site; if this is not feasible, an alternate source of seed or plant material will be selected by a qualified biologist.
- d. A five-year restoration mitigation and monitoring program will be developed and implemented. Appropriate performance standards will include, but are not limited to: a 75 percent survival rate of restoration plantings or plant cover; absence of invasive plant species (any species listed on the California Invasive Plant Council's California Invasive Plant Inventory); and a functioning, self-sustaining plant community at the end of five years.
(Mitigation Measure R4.3-c)

95. The Permittee will implement the following measures in order to minimize damage to protected trees that are to be preserved on-site: *(Mitigation Measure R4.3-4c)*

- a. Prior to the start of any clearing, stockpiling, excavation, grading, compaction, paving, change in ground elevation, or construction, preserved trees that occur adjacent to project construction areas shall be identified as preserved and clearly delineated by constructing short post and plank walls, or other protective fencing material, at the dripline of each tree.
- b. The delineation markers shall remain in place for the duration of the work.
- c. Where reclamation activities would encroach upon the dripline of a preserved tree, special construction techniques will be required to allow the roots of remaining trees within the project site to breathe and obtain water (examples include, but are not limited to, use of hand equipment for tunnels and trenching, and/or allowance of only one pass through a tree's dripline).
- d. Tree wells or other techniques may be used.
- e. The following shall not occur within the dripline of any retained tree: parking; storage of vehicles, equipment, machinery, stockpiles of excavated soils, or construction materials; or dumping of oils or chemicals.
- f. If a tree within a preserved area is damaged or destroyed, the applicant shall replace the tree at a ratio of 2:1 with trees of the same species. Tree replacement shall be performed by a certified arborist. *(Mitigation Measure R4.3-4c)*

96. All pruning activities of preserved trees shall be performed by a certified arborist. No more than 25 percent of a tree's canopy shall be removed during pruning activities of retained trees. *(Mitigation Measure R4.3-4d)*

97. The Permittee shall develop and implement a five-year monitoring program for any required replacement plantings, as specified in Combined EIR Mitigation Measure R4.3-4c. The performance standards for tree replacement include all of the following: 75 percent survival rate of restoration plantings; absence of invasive plant species (any species listed on the California Invasive Plant Council's California Invasive Plant Inventory); and self-sustaining trees at the end of five years. If these criteria are not met, the applicant shall re-plant and success shall again be assessed after five years. *(Mitigation Measure R4.3-4e)*

98. All jurisdictional wetland areas to be avoided shall be protected by setbacks throughout site reclamation and post-reclamation development consistent with the Baylands Corridor designation of the site in the 2007 Countywide Plan:

- a. Setbacks for the NW Quadrant marshes shall be consistent with the requirements of the Baylands Corridor designation for the site. During reclamation activities, no temporary or permanent reclamation stockpiles,

berms, or other features shall be placed within 100 feet of the NW Quadrant marshes. Buffers shall be included as part of post-reclamation development design in the vicinity of the NW Quadrant marshes and shall be a minimum of 100 feet in width.

b. Setbacks for seeps and seasonal wetlands shall be a minimum of 50 feet.

c. Areas that are avoided and provided with setbacks will be further protected by Best Management Practices (BMPs), as described in the Combine EIR Mitigation Measure R4.3-5d. Such measures include the installation of silt fencing, straw wattles or other appropriate erosion and sediment control methods or devices along roads and at the 100 foot setback limits. Such BMPs shall also be employed if and when reclamation grading and post-reclamation development requires work within the setbacks as described above, between the feature and the activity. (*Mitigation Measure R4.3-5a, C4.3-18a, R4.3-5b, & 4.3-12a*)

99. All necessary jurisdictional wetland permits and approvals of appropriate regulatory agencies shall be obtained prior to each relevant phase of reclamation. Copies of the permits or approvals shall be provided to the Department of Public Works. (*Mitigation Measure R4.3-5c*)

100. The Permittee shall conduct reclamation activities in a manner that avoids erosion and sedimentation of wetland areas, through implementation of standard BMPs to maintain water quality and control erosion and sedimentation during construction as required by compliance with the General National Pollution Discharge Elimination System (NPDES) Permit for Construction Activities and as established by mitigation measures set forth in the Combined EIR and this Permit.

101. Water quality and Best Management Practice mitigation measures include, but not limited to, installing silt fencing between jurisdictional waters and project related activities, locating fueling stations away from potentially jurisdictional features, and otherwise isolating construction work areas from any identified jurisdictional features. In addition, BMPs identified in the Long-term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region (LTMS) (Corps, 2001) shall be implemented to prevent degradation of water quality resulting from dredging activities within open waters. These BMPs include: silt fencing and gunderbooms or other appropriate methods for keeping dredged materials from leaving the project site. (*Mitigation Measure R4.3-5d*)

102. The Permittee shall revise the amended reclamation plan to include as a standard for guiding development of the Development Plan that post-reclamation residential, commercial, and mixed use development, except as otherwise permitted by BCDC, shall not occur within the 100 foot shoreline band subject to BCDC

jurisdiction. This revision shall be provided at the time of the Conforming Amended Reclamation Plan. *(Mitigation Measure R4.3-5e)*

103. Prior to open-water construction activities, the Permittee shall obtain the necessary permits from the US Army Corps of Engineers (USACE) and other regulatory agencies. Open-water construction will not begin prior to obtaining necessary permits. Copies of the permits or approvals shall be provided to the Department of Public Works. *(Mitigation Measure R4.3-6a)*

104. All open-water construction activities shall adhere to the guidelines of the then-current version of the LTMS. *(Mitigation Measure R4.3-6b)*

105. To minimize wetland disturbance, the construction of the connecting channel from the Main Quarry Bowl to the Bay, and removal or installation of rip-rap along the Bay shoreline, will either operate from dry land or from water-based equipment such as barges, scows, derrick barges, and tugs. *(Mitigation Measure R4.3-6c)*

106. Permittee shall include surveys for California red-legged frog (CRLF) in its "Standards for Preserving Sensitive Habitat Areas," to be conducted prior to filing for grading permits for each reclamation phase, as well as undefined setbacks to be established in the site's Development Plan. *(Mitigation Measure R4.3-8a)*

107. The Permittee shall conduct reclamation and post-reclamation development activities in and around the process water ponds in the NW and SW Quadrants in a manner that avoids take of California red-legged frog (CRLF) through surveys to determine whether the species is present, and, if so, to reduce the risk of take of individuals of the species, as specified below. The Permittee shall conduct quarry operations in a manner that avoids take of CRLF. Specifically, the following measures shall be implemented *(Mitigation Measures R4.3-8b, P4.3-13)*:

a. The Permittee shall retain a qualified biologist to conduct a habitat assessment for CRLF according to U.S. Fish and Wildlife Service (USFWS) guidelines prior to filing for grading permits for Reclamation Phase 1 or prior to any site disturbing activity within 300 feet of the ponds or fresh water marsh. The habitat assessment shall be submitted to USFWS for review. If, following the review of the habitat assessment, USFWS recommends protocol-level field surveys, then the project sponsor shall conduct protocol-level field surveys for CRLF within aquatic habitat that provides potential breeding habitat (the process water ponds in the NW and SW Quadrants) on the project site. The Permittee shall provide the County with the results of the habitat assessment, USFWS review, and protocol level surveys, if required, prior to any site disturbing activity within 300 feet of the subject areas.

b. If no CRLF are found during the habitat assessment and/or protocol level surveys associated with Phase 1 reclamation activities then the project proponent shall consult with USFWS as to the necessity of conducting further

assessments or surveys for Phases 2 through 4 and/or for post-reclamation development.

c. If, as a result of the habitat assessment and/or protocol level surveys, CRLF are found on the project site, the project applicant shall initiate informal consultation with the USFWS to determine the need for formal consultation and preparation of a Biological Assessment and Biological Opinion (required by the federal Endangered Species Act). Specific measures to protect CRLF shall be determined in consultation with USFWS and may include, but are not limited to, the following measures, which are derived from the USFWS Programmatic Biological Opinion (PBO) for impacts to CRLF. The PBO summarizes typical project effects and provides generic preventive measures designed to substantially reduce the risk of incidental “take” of CRLF within the project area:

i. The name and credentials of a biologist qualified to act as construction monitor shall be submitted to USFWS for approval at least 15 days prior to commencement of work.

ii. A qualified biologist shall conduct pre-construction surveys within aquatic habitat by two weeks prior to the onset of construction activities. Surveys shall be completed for all life cycle stages of CRLF (e.g., egg masses, tadpole, juveniles, and adults) that may occur within the project area. If adult CRLF, tadpoles or eggs are found within the construction disturbance zone, the approved biologist shall contact USFWS to determine if moving any of these life-stages is appropriate. If USFWS approves moving the animals, the approved biologist shall be allowed sufficient time to move them from the construction sites before work activities begin. If no frogs are detected during these surveys, construction-related activities may proceed without further requirements for the protection of individuals, although habitat protection measures (i.e., avoidance of intermittent drainages and riparian habitat) shall still be observed.

iii. Exclusionary fencing, such as silt fences, shall be installed around the process ponds and around all construction areas that are within 100 feet of or adjacent to potential CRLF habitat. Once fencing is in place, it shall be maintained by the proponent until completion of construction within or adjacent to the enclosure.

iv. Prior to commencement of any earthmoving activities, the monitoring biologist shall train all construction personnel and work crews on the sensitivity and identification of the CRLF and the penalties for the “take” of this species. In addition, visual materials shall be provided to assist in identifying the species. Training sessions

will be repeated for all new employees before they access the project site and periodically throughout project construction.

v. The monitoring biologist will demarcate construction avoidance areas in the field and monitor construction activities within 300 feet of aquatic habitat for CRLF. The demarcation shall remain on-site until all initial vegetation clearing and habitat disturbance is completed.

vi. All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 100 feet from any riparian habitat or water.

108. The Permittee shall conduct quarry operations, reclamation and post-reclamation development activities on site, and in and around the process water ponds in the NW Quadrant, in a manner that avoids take of northwestern pond turtle through surveys to determine whether the species is present, and, if so, to limit activities as specified below. Specifically, prior to any site disturbing activity within 300 feet of the NW Quadrant process water ponds or filing for Phase 1 reclamation grading permits, a qualified biologist who is permitted by CDFG to move turtles and their nests shall perform northwestern pond turtle (WPT) surveys within suitable habitat in and around the process ponds in the NW Quadrant. Surveys and subsequent actions shall include the following (*Mitigation Measures R4.3-9, P4.3-14*):

a. Surveys shall be conducted for nests as well as individuals.

b. If WPT are found during initial surveys a qualified biologist shall be present when project-related activities within or adjacent to suitable aquatic habitat for northwestern pond turtle are occurring and will be responsible for temporarily relocating adult WPT that move into work areas.

c. No work within the process ponds or on their banks will proceed until the work area is determined to be free of WPT or their nests.

d. If a nest is located within the process pond area and may be impacted by reclamation activities, it shall be caged to exclude predators and monitored closely until the eggs hatch. Hatchlings shall be moved to an appropriate facility and reared until they are large enough to survive in the wild. They shall then be released into appropriate suitable habitat. All aspects of these activities shall be conducted by a qualified biologist in consultation with CDFG.

e. A report shall be prepared by a qualified biologist documenting the presence/absence of WPT at SRRQ, as well as the measures taken to protect them if present, and submitted to the County and to CDFG.

f. If no turtles are found during surveys associated with Phase 1 reclamation activities the project proponent shall consult with CDFG regarding the need for further future surveys.

109. The Permittee shall conduct quarry operations or reclamation activities involving tree removal and building demolition in a manner that avoids disturbance or mortality of bats, through surveys to determine whether bats are present, and, if so, to limit reclamation activities as specified below. Specifically, the applicant shall take the following measures to avoid direct mortality of roosting special-status bats and disturbance of maternity roosts or winter hibernacula (*Mitigation Measures R4.3-10, P4.3-16*):

a. A qualified bat biologist, acceptable to the CDFG, shall conduct surveys of all potential bat habitats within 500 feet of reclamation activities prior to initiation of such activities, including surveying trees slated for removal as a result of quarrying activity. Potentially suitable habitat shall be located visually. Bat emergence counts shall be made at dusk as the bats depart from any suitable habitat. In addition, an acoustic detector shall be used to determine any areas of bat activity. At least four nighttime emergence counts shall be undertaken on nights that are warm enough for bats to be active. The bat biologist shall determine the type of each active roost (i.e., maternity, winter hibernaculum, day or night).

b. Removal of trees or demolition of buildings showing evidence of bat activity will occur during the period least likely to impact the bats as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula and between August 15 and April 15 for maternity roosts). If active day or night roosts are found the bat biologist shall take actions to make such roosts unsuitable habitat prior to tree removal or building demolition.

c. A no-disturbance buffer shall be created around active bat roosts being used for maternity or hibernation purposes at a distance to be determined in consultation with CDFG. Bat roosts initiated during construction are presumed to be unaffected, and no buffer is necessary. However, "take" of individuals, including harming, harassing, or killing, will be prohibited.

d. If pre-construction surveys indicate that roosts are inactive or potential habitat is unoccupied during the reclamation, construction or mining periods, no further mitigation is required. Trees and buildings that have been determined to be unoccupied by special status bats and that are located outside the no-disturbance buffer for active roosts may be removed or demolished.

e. If known bat roosting habitat is to be destroyed during tree removal or building demolition activities, artificial bat roosts shall be constructed at least two weeks prior to such disturbance in an undisturbed area of the property, at least 200 feet from any ongoing or future activities. The design and location of the artificial bat roost(s) shall be determined by a qualified bat biologist.

f. Prior to quarry-related tree removal a report shall be submitted to the County that details the survey results and any actions taken to protect special-status bats. Any special-status bat sightings shall also be submitted to the CNDDB.

110. The Permittee shall implement nesting raptor surveys described as part of the "Standards for Preserving Sensitive Habitat Areas in the amended reclamation plan. (*Mitigation Measure R4.3-11a*)

111. The Permittee shall conduct quarry operations and reclamation activities, including vegetation removal as well as variability in quarrying activity levels on South Hill in a manner that avoids direct losses of nests, eggs, and nestlings and indirect impacts to avian breeding success. Specifically (*Mitigation Measures R4.3-11b, P4.3-15*):

a. During the breeding bird season (January 1 through August 31) a qualified biologist will survey sites for nesting raptors and passerine birds not more than 14 days prior to any ground-disturbing or vegetation removal (including trees, shrubs, and grassland vegetation) activity. In addition, vegetation on South Hill will be surveyed if quarrying activities on South Hill cease for a period of more than one week during breeding bird season.

b. If reclamation activities occur only during the non-breeding season between September 1 and December 31, no surveys will be required.

c. Surveys shall also be conducted during breeding season in those areas of the project site that a qualified biologist determines may have nesting special status bird species present that could potentially be impacted by indirect noise impacts of operations such as truck traffic or blasting at that time.

d. Results of the surveys will be forwarded to the County and CDFG (as appropriate) and avoidance procedures will be adopted, if necessary, on a case-by-case basis. Avoidance procedures shall be reviewed and approved by CDFG. Depending on the species involved, these may include construction buffer areas (up to several hundred feet in the case of raptors) or seasonal restriction or avoidance of activities. Vegetation of any kind identified as supporting active nests will not be removed until nestlings have fledged. If survey results are positive for nesting birds, vegetation removal or mining on South Hill will not occur until submittal and review of reports and

implementation of any necessary avoidance measures. Special-status bird sightings shall also be submitted to the CNDDDB.

112. The Permittee shall submit revisions to the amended reclamation plan that include a standard for post-reclamation development (to be submitted three years prior to cessation of mining activities or by December 31, 2021, whichever is earlier) that requires the applicant to conduct post-reclamation development activities in a manner that avoids harassment, disturbance, and mortality of nesting birds and other wildlife that inhabit the SRRQ marshes. The standard will include development of a Marsh Wildlife and Habitat Protection Plan, to be prepared as a part of the Development Plan, and subject to review and approval by the Marin County Community Development Agency, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. Components of the plan will include, but not be limited to, the following:

a. In accordance with the policies set forth in the 2007 Marin Countywide Plan the project development footprint will maintain a set back of at least 100 feet from marsh habitat on the project site.

b. Cyclone fencing with vinyl slats for screening shall be installed at the setback distance between the marshes and all residential or commercial development. Appropriate native vegetation will be planted both inside and outside of the fence to provide further screening. The fence will be designed specifically to provide a barrier to exclude cats, dogs, and other household pets from marsh areas and will also provide a visual screen between marsh wildlife and human activity.

c. To minimize the potentially-adverse effect of night lighting on the adjacent salt marsh habitat the following will be utilized: street lighting only at intersections, low-intensity street lamps and low elevation lighting poles, and internal silvering of the globe or external opaque reflectors to direct light away from marsh habitat. In addition, private sources of illumination around homes shall also be directed and/or shaded to minimize glare into the marsh.

d. An education program for residents will be developed including posted interpretive signs and informational materials regarding the sensitivity of the marsh habitat, the dangers of unleashed domestic animals in this area, and discouragement of the practice of feeding feral cats. (*Mitigation Measure R4.3-12b*)

113. The Permittee shall prepare a Marsh Restoration plan and implement the recommendations as soon as practicable, and in any case, shall complete the tidal marsh restoration prior to completion of Phase 1 reclamation. This mitigation measure will be implemented through the following:

- a. The Permittee shall develop and submit a Marsh Restoration Plan to the County and other applicable resource agencies within 1 year of approval of the amended quarry permit. The Plan will include, but not be limited to, the following elements:
 - i. A baseline study of existing marsh conditions, including topography, a complete analysis of current hydrology, vegetation, and wildlife that will be used to inform subsequent marsh restoration planning.
 - ii. A thorough analysis of the potential effects of tidal restoration on adjacent infrastructure and existing marsh vegetation.
 - iii. Development of a suite of restoration alternatives, with tidal restoration as the preferred alternative, providing constraints do not preclude this course of action.
 - iv. Feasible goals for marsh restoration with quantifiable objectives that can be measured over time to determine whether goals are being met.
 - v. A detailed plan for marsh restoration, including, if necessary to achieve objectives, plans for excavation of new channels, addition of new culverts, setbacks, buffers, etc.
 - vi. A maintenance schedule for any mechanical devices or features, such as tide gates, specified in the plan.
 - vii. A monitoring plan to determine optimum inundation levels for the marshes. This would include measurements of hydrology, sediment accretion, and changes in vegetation over time.
 - viii. A schedule for annual monitoring reports, which shall be submitted to the Department of Public Works, as well as all permitting agencies as required. (*Mitigation Measure C4.3-18b*)

Geology/Geotechnical/Seismicity

Design

114. The Permittee shall include the recommendations made in the Supplemental Geotechnical Data Report Proposed Changes to Mining Plan by ENGEO, Incorporated dated April 11, 2005 as part of the quarry design and submittal of the Conforming Amended Reclamation Plan. These recommendations include conducting supplemental geotechnical pit observations, groundwater monitoring, and slope monitoring which shall be conducted by a California Certified Engineering Geologist or Registered Professional Geotechnical Engineer with oversight by the State Office of Mine Reclamation. In addition, the average slope inclination (toe to

top) shall not exceed 60 degrees for a maximum vertical height of 350 feet, a minimum of 30-foot-wide benches shall be constructed at maximum 90-foot intervals, and inter-bench face inclinations shall not exceed 75 degrees. (*Mitigation Measure R4.4-1 & R4.4-3b*)

115. The quarry access ramp placement required to deepen the quarry shall be configured to minimize excavation at the south face and create a buttressing effect to the slopes at the south side of the quarry.

116. Quarry pit design shall consider the potential effect of large-scale horizontal curvature of pit walls on slope stability. In general, convex-inward horizontal curves in quarry slopes should be avoided. Concave inward-sloped offer some degree of increased confinement by “arching” of the rock mass between discontinuities, and effectively decrease the area of free face available for kinematically possible failure geometries. Convex-inward slopes can actually contribute to potential instability, since lateral confinement is reduced and the area of the kinematically-available free face is effectively increased.

Monitoring

117. Mine quarry highwalls and the South Hill cut slope shall be periodically observed, mapped, and evaluated by a qualified engineering geologist and/or geotechnical engineer to determine if there are any rock structures or conditions that adversely impact or otherwise contradict the assumptions of the slope stability analyses provided with the 2004 Amended Reclamation Plan. In addition, the observations during mining would be to identify possible adverse rock structure as excavations proceed, so that the quarry operations can avoid undesirable slope failures in critical improvements such as access ramps or quarry brow improvements. At least annually, as part of the required SMARA mine inspection, the mine highwalls and South Hill cut slope shall be evaluated by a qualified engineering geologist and/or geotechnical engineer. If an adverse condition occurs, additional geotechnical studies shall be undertaken and slope modifications made to ensure stability of the final mine slopes. Copies of all evaluation reports shall be provided to the Department of Public Works as part of the Annual Report.

118. Piezometers shall be installed within a year following approval of the Permit around the margins of the quarry pit to allow periodic monitoring of ground water elevations to demonstrate that the assumptions in the slope stability analysis about pore water pressures are valid. The actual configuration of the piezometer array should be determined based on the final proposed pit configuration and on proposed planning of quarry operations to allow optimum placement of instruments and to avoid conflicts with future operations. Ground water level monitoring shall be done at least quarterly. Copies of all monitoring data and reports shall be provided to the Department of Public Works at least annually.

119. A network of survey monitoring points shall be established around the quarry pit and on benches to allow for measurement of any movement in the highwalls.

These monitoring points shall be surveyed initially at a monthly interval. The Quarry geotechnical engineer shall periodically evaluate whether additional survey points are necessary, and determine if more or less frequent survey monitoring is needed (reference page 77, ENGEO Supplemental Report). Results of this survey monitoring shall be reported to the Department of Public Works as part of the Annual Report.

120. The south face quarry access ramp shall be constructed to provide for a buttressing effect on the Wedge 1 failure area and any similarly unstable areas. Additional remedial grading and placement of engineered fill materials may be necessary to provide this buttressing effect. Any fill placed for structural support shall be designed, inspected, and tested by a qualified geotechnical or soils engineer. An engineer's report on placement and compaction of any engineered soils shall be provided to the Department of Public Works for review.

121. The periodic geotechnical inspections recommended above shall include evaluation of mining faces for potentially unstable blocks. Localized face failures are an expected part of surface mining, and the location and potential size of unstable blocks can be evaluated during periodic inspections as mining proceeds. If it appears that a critical facility such as the access ramp could be threatened by a potential block failure, the geotechnical engineer shall recommend appropriate correction action such as the installation of rock bolts, or local modification of mining excavations to increase stability.

122. The large-scale stability of the quarry walls shall be periodically evaluated by the geotechnical engineer based on the results of monitoring of slope performance, groundwater levels, and geotechnical inspection of mining exposures. If unacceptable slope performance is detected, it will be possible to implement several possible mitigation measures as described below. The actual recommended mitigation measures shall be based on site-specific evaluations:

- a. Mitigation measures shall be employed if adverse groundwater conditions are encountered (unacceptably high pore pressures or excessive seepage, etc.) Mitigation measures could include horizontal drains, extraction wells, slurry walls, etc.
- b. If unacceptable levels of mining-concurrent slope deformation are encountered, mining activities shall be modified to improve stability. At the quarry brow, stockpiles of products, quarry waste piles or areas of overburden can be excavated and moved to reduce driving forces. In the pit, bench configurations can be modified by "stepping out" or increasing bench width, effectively flattening the mining slope angle.

123. At the south quarry brow, it is anticipated that the final slopes will locally expose quarry fills and areas of native soils and weathered rock. The anticipated extent of soils and weaker materials in the proposed face is presented in Figure 13

of the ENGEO Supplemental Report. ENGEO Supplemental Report Figure 14 presents options for mitigation, including construction of a sheet pile wall or an engineered fill buttress. Both options would allow the quarry limits depicted in the Quarry's mining plan to be preserved. The Quarry shall select an appropriate method based on conditions actually encountered at the time of construction. The Quarry shall provide the engineering evaluation and method chosen to the Department of Public Works for review prior to implementation.

Future Geologic/Geotechnical Studies

124. A thorough re-evaluation of excavated slopes shall be performed near the conclusion of the mining operations, but no later than three years from mining cessation, so that the proposed post-reclamation conversion to secondary uses can be re-evaluated based on revealed conditions with a comprehensive re-evaluation of quarry slope stability based on the results of on-site geotechnical pit observations made during mining, groundwater monitoring, slope monitoring, and a program of laboratory testing of on-site materials. An appropriate testing program shall, as a minimum, include unconfined compressions tests, triaxial testing, and direct shear tests of joint surfaces. The re-evaluation shall be provided to the Department of Public Works.

125. The additional studies recommended in the condition above and the ENGEO Supplemental Report will include a study to determine how the site may be developed following reclamation in order to avoid or mitigate to less than significant impacts related to soil and slope stability. At the time the study is prepared, there will be a greater understanding of the bedrock stability and the properties and performance of the Quarry walls. A comprehensive re-evaluation of slope stability shall be performed based on results from geotechnical observations throughout the mining period, groundwater monitoring, slope monitoring, and laboratory testing of on-site materials which would include compression tests and shear tests of joint surfaces.

- a. The design-level, site-specific geotechnical investigation shall be prepared by a California licensed Geotechnical Engineer or Certified Engineering Geologist and include review of the supplemental geotechnical evaluations and monitoring conducted throughout the history of mining activities. The investigation shall include final grading recommendations, mitigation of any identified compressible or liquefiable soils, slope stability analyses, calculation of factors of safety, and structural foundation recommendations to ensure that post-reclamation development will be in accordance with the then-current requirements of the California Building Code and the Marin County Building and Safety Division or City of San Rafael Building Code. These recommendations shall be incorporated into the final design plans for post-reclamation development. (*Mitigation Measure R4.4-3c*)
- b. A qualified Geotechnical Engineer or Certified Engineering Geologist shall prepare a revised geologic map of the Quarry Pit and South Hill, and

provide supplemental recommendations, if any, for implementation of the proposed reclamation plan. The study shall confirm that the final mine slopes are stable and suitable for the proposed post-reclamation land use. As necessary, the study shall provide recommendations for any geotechnical investigation and/or analysis needed to demonstrate the stability of the slopes is suitable for any proposed post-reclamation end land use(s). The study shall be provided to the County. If determined by the County or engineering geologist, supplemental rock slope engineering recommendations shall be provided to maintain acceptable factors of safety for proposed adjacent land uses.

c. If the design-level, site-specific geotechnical investigation determines that achievement of factors of safety adequate for the intended post-reclamation uses are infeasible in some or all of the reclaimed Quarry, the report shall specify appropriate alternative post-reclamation uses or limitations on the planned use. An amended reclamation plan shall be submitted to the County as required under State law and/or the Marin County Code. (*Mitigation Measure R4.4-3d*)

d. The location of secondary use structures and critical facilities such as lifeline roads and utilities with respect to the top finished pit reclamation slopes shall be based on the results of the recommended detailed post-mining studies

126. The Permittee shall incorporate into the reclamation grading and construction specifications provisions requiring that all phases of reclamation construction implement best management practices (BMPs) to reduce and eliminate soil erosion and loss of topsoil. The Permittee shall implement these BMPs, and the Permittee shall be responsible for the inspection and maintenance of the BMPs through all phases of reclamation. (*Mitigation Measure R4.4-2b*)

127. The proposed reclamation grading and other earthwork activities included in the amended reclamation plan shall be designed such that all potential development areas would be located on either bedrock or consolidated engineered fill, with known and predictable strengths and stability. (*Mitigation Measure R4.4-3a*)

Water Quality

128. Within 6 months, the Permittee shall provide a Stormwater Management Plan and Stormwater Pollution Prevention Plan, both of which will be implemented as part of the projects. The Permittee shall include as part of the Stormwater Pollution Prevention Plan (SWPPP) and Stormwater Management Plan, a monitoring and maintenance element that would require scheduled periodic monitoring of BMP performance and condition. At a minimum, stormwater and erosion control BMPs shall be monitored after major storms, prior to the first rain event, and midway through large storm events extending over several days. Temporary BMPs (e.g., fiber rolls) shall be monitored for performance and immediately replaced if

necessary. Performance and failure of BMPs shall be described in the annual report to the RWQCB as required under the SWPPP. Monitoring and maintenance shall be conducted by an erosion control specialist contracted by the applicant. Monitoring and maintenance reports shall be filed with the Permittee and available to the County on request. *(Mitigation Measures R4.4-2a, R4.5-2a & R4.5-2b)*

129. Within one year of Permit approval, the Permittee shall submit an engineering and economic report for construction, operation and future maintenance of a mechanical mixing or aeration system, or another engineered approach, which will result in avoidance or elimination of a stratified water column within the Main Quarry Bowl after it is flooded. The report will be conducted by qualified limnologists and water quality engineers. The system design will be at a schematic level and will be stamped by a California professional engineer, and will include calculations that demonstrate that the system will maintain water quality objectives established in the San Francisco Bay Regional Water Quality Control Board's Basin Plan. The report will include an analysis of operating and maintenance costs for the system, as well as predicted energy requirements and greenhouse gas emissions, and a plan for minimizing both of these; estimate the funds needed to construct and operate in perpetuity the system to meet water quality objectives and what the financial assurance amount should be for the reclamation plan financial assurances; and will identify funding sources to ensure continued operation of the system after reclamation. The need for, and design of a mechanical mixing or aeration system shall be subject to further study and review as part of the post reclamation development plan, which shall be submitted at least three years prior to cessation of mining. *(Mitigation Measure R4.3-7, R4.5-6)*

130. Prior to implementation of the last phase of reclamation (Phase 4), the Permittee shall model effects of the maximum expected tsunami, seiche event, and anticipated sea level rise, considering the latest climate change information, and county policies and regulations in effect at the time, and proposed adequate setback and final contour elevations in a report to the County. If changes to the approved reclamation plan are needed, a revised Phase 4 reclamation plan shall be submitted to the County for review and approval prior to implementation. *(Mitigation Measure R4.5-8)*

131. The Permittee shall submit a revised amended reclamation plan that includes standards for preventing polluted stormwater runoff from entering the Main Quarry Bowl after it is flooded. The standards will be used to guide development of the post reclamation Development Plan, due to be submitted three years prior to the anticipated completion of mining. *(Mitigation Measure R4.5-10)*

132. Permittee shall abide by all standards and monitoring requirements of its State of California Regional Water Quality Control Board (RWQCB) discharge permit, including monitoring by a State of California certified sampling laboratory of all specified constituents and subsequent correction of any problems indicated by sampling results in excess of specified water quality standards; or any subsequent

requirements of the Regional Water Quality Control Board that may be implemented to augment or supersede the requirements.

133. The Permittee shall maintain all erosion control measures and keep current and comply with all permits required by the RWQCB. Copies of all RWQCB permits for the Quarry property shall be provided to the Department of Public Works.

Revegetation

134. Within 60 days of Permit approval, Permittee shall revise the amended reclamation plan (ARP04) to incorporate the State Office of Mine Reclamation (OMR) "Resoiling and Revegetation" comments contained in OMR's December 14, 2009 comment letter to the County. The revisions shall be included in the Conforming Amended Reclamation Plan submitted to the County.

135. In areas to be reclaimed by secondary development uses, temporary Type I, II, or III vegetation shall be installed as soon as reclamation grading is complete.

Hazardous Materials/ Public Health

136. Permittee shall maintain and periodically updated a Hazardous Material Business Plan that contains operator information, a hazardous material inventory, site maps, and an Emergency Response Action Plan. (*Mitigation Measure R4.8-1a, R4.8-1b, & P4.8-3a*)

137. The Permittee shall prepare and maintain a blasting plan that describes how the Quarry will consistently comply with applicable blasting regulations and standards of practice. The blasting plan will contain a complete description of clearing and guarding procedures; descriptions of how explosives will be safely transported, stored, and used at the site in accordance with applicable regulations; evacuation, security and fire prevention procedures; blasting equipment list, and procedures for notification of nearby receptors in the event of an accident or emergency involving explosives. The blasting plan shall incorporate the recommendations contained in the REVEY Associates, Inc. report in Appendix J of the Combine FEIR, Volume III: Appendices (pp. 23-24). The blasting plan shall be prepared and submitted within six months of approval of the Permit. The plan will be subject to review and approval by the County Department of Public Works. (*Mitigation Measure P4.8-3b*)

138. A potable water supply and adequate toilet facilities shall be provided for employees according to requirements of the Marin County Environmental Health Division.

139. *Reporting Accidents:* The Permittee shall immediately notify the Public Works Director by telephone, FAX, and/or voice mail of any incidents such as fires, explosions, spills, land or slope failures, or other conditions at the site, which could pose a hazard to life or property outside the Permit or Quarry area. Upon request of any County agency, the Permittee shall provide a written report of any incident within

seven calendar days, which shall include, but not be limited to, a description of the facts of the incidents, the corrective measures used, and the steps taken to prevent a recurrence of the incident. This condition does not supersede nor replace any requirement of any other governmental entity for reporting incidents.

Cultural Resources

140. In the event that any human remains, artifacts, or other indicators of prehistoric or historic use of the parcel are encountered during quarrying, site preparation, construction, or reclamation activities on any part of the project site, all work at the vicinity of the discovered site shall stop and the project sponsor shall contact the Marin County Environmental Coordinator immediately. If human remains are encountered, the County Coroner must also be contacted. A registered archaeologist, chosen by the County and paid for by the project sponsor, shall assess the site and shall submit a written evaluation to the Community Development Agency Director advancing appropriate conditions to protect the site and the resources discovered. State law designates procedures should human remains be encountered. If the remains are deemed to be Native American and prehistoric, the Coroner must contact the Native American Heritage Commission so that a "Most Likely Descendant" can be designated. No work at the site may recommence without approval of the Community Development Agency Director. (*Mitigation Measures R4.12-1a, & P4.12-9*)

141. The following applies to the last Phase of reclamation (Phase 4). The Permittee shall retain the services of a qualified archaeological consultant who has expertise in California prehistory to review reclamation grading plans and identify areas of potential concern, including previously undisturbed or minimally disturbed areas. The archeological consultant shall monitor all ground-disturbing or vegetation removal activities in identified areas of concern during mining or construction to ensure that any previously undiscovered cultural resources are properly identified and preserved or otherwise mitigated in accordance with prevailing professional standards and Public Resources Code §21083.2. If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit will cease. The archaeological monitor will be empowered to redirect crews and heavy equipment until the deposit is evaluated. The monitor will immediately notify the Marin County Department of Public Works of the encountered archaeological deposit. The monitor will, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to Marin County. If Marin County, in consultation with the archaeological monitor, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, the Permittee shall take steps to:

- a. Redesign the project to avoid any adverse effects on the significant archaeological resource; or
- b. Develop and implement an archaeological data recovery program

(ADRP) (unless the archaeologist determines that the resource is of greater interpretive than research significance and that interpretive use of the resource is feasible). If the circumstances warrant an archaeological data recovery program, an ADRP will be conducted that will preserve and recover important archeological data from the find, to the extent that adverse effects will be avoided. The project archaeologist will consult with Marin County to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP that will be submitted to Marin County and the state Office of Historic Preservation for review and approval. The ADRP will identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain (i.e., the ADRP will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions). Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical. *(Mitigation Measure R4.12-1b)*

142. The Permittee shall relocate the top soil stockpile fill area "F" under Phase 1 of the proposed project, to avoid potentially adverse effects to the Caretaker's Residence. The fill area could be relocated either to the east or to the west of this potentially eligible historic resource, or split into two smaller stockpiles, to avoid the resource. *(Mitigation Measures R4.12-3a & R4.12-5b)*

143. Prior to commencement of Phase 1 reclamation grading, the Permittee shall submit a detailed plan to the Marin County Department of Public Works detailing stockpiles and haul routes, and protection of historic resources. The plan will clearly show how the Caretaker's Residence and other potentially eligible historic resources will be protected and preserved. *(Mitigation Measures R4.12-3b & R4.12-5b)*

144. The Permittee shall relocate and/or redesign the surcharge berm proposed under Phase 2 of the proposed project, to avoid potentially adverse impacts to the Boarding House and Office structures. The north-south leg of the berm could be narrowed to avoid these resources, allowing more fill to occur on the east-west portion of the berm. To ensure adherence to this mitigation measure, prior to commencement of Phase 2 reclamation grading, the applicant shall submit a detailed plan to the Marin County Department of Public Works detailing the precise location of the surcharge berm, as well as areas that will be used to support construction of the berm. The plan will clearly show how the Boarding House and Office structures and other potentially eligible historic resources will be protected and preserved. *(Mitigation Measures R4.12-4a, & R4.12-5b)*

145. If relocation or alteration of the surcharge berm will affect the geotechnical properties of the site required for intended post-reclamation development, the

Permittee shall revise the conceptual design for the NW Quadrant Reclamation Plan accordingly. *(Mitigation Measure R4.12-4b)*

146. The Permittee shall redesign the reclamation activities in the SW and NW Quadrants under Phase 3 of the proposed project to avoid potentially adverse impacts to the former c. 1935 U.S. Army Signal House. The southernmost limits of the reclamation activity area could be reduced by approximately 100 feet to avoid this historic resource, potentially allowing more reclamation activities to occur on the northern, eastern, or western portions of SW-3. *(Mitigation Measures R4.1-1b, R4.1-2, & R4.12-5a)*

147. Prior to commencement of Phase 3 reclamation grading, the Permittee shall submit a detailed plan to the Marin County Department of Public Works detailing reclamation grading activities. The plan will clearly show and describe how the affected potentially historic resources, including the c 1935 U.S. Army Signal House, the Caretaker's residence, and the McNear's Brickyard Boarding House and Office structures, as well as any other potentially eligible historic resources will be protected and preserved. *(Mitigation Measure R4.12-5c)*

148. The Permittee shall revise the applicable portion of ARP04 to specify preservation of the following four historic resources: 1) c. 1902 Cookhouse, 2) c. 1902 Drysheds, 3) c. 1902 Hoffman Kiln #1, 4) c. 1904 Hoffman Kiln #2, and 5) c. 1910s Worker's Shed. The neighborhood commercial uses proposed for the NW Quadrant shall be constructed to provide a sufficient setback to allow these structures to visually 'read' as a working brickyard, with all original components of the brickmaking industry intact. *(Mitigation Measures R4.1-1a, R4.1-2, R4.1-1b, R4.12-6a, & R4.12-6b)*

Quarry Monitoring and Reporting

149. Within 60 days of Permit approval, the Permittee shall provide, in a form approved by the Public Works Director, three (3) copies, in binders, of all Exhibits to this Permit, and a mitigation, monitoring and reporting program plan to implement all required mitigation and monitoring programs and studies. In addition, the binders shall include all permits issued by or applied for from any other agencies.

150. Within 30 days of Permit approval, the Permittee shall contact the California Department of Mines and Geology, Office of Mine Reclamation, to determine what additional information is required by that agency given the County's approval of the project. The requested information shall then be provided in a timely manner with a copy to the County.

151. *Annual Report.* The Permittee shall furnish the Director of Public Works with an annual report by February 1st of each year describing how all conditions and mitigation measures of this permit are being implemented, any problems with such implementation and the resolution of such problems compliance with these conditions.

- a. With each report, the Permittee shall provide a topographic map at the same scale as the approved mining and reclamation plans, and if a different scale, a topographic map 1 inch to 200 feet.
- b. With each report the Permittee shall also provide an annotated map showing current progress of mining and reclamation and with information on drainage, erosion and sedimentation control facilities installed, and 'as-built' plans of revegetation areas.
- c. The report shall summarize air quality, noise, and biological monitoring data that has been collected over the preceding year.
- d. The report shall document conformance with the adopted Mitigation, Monitoring and Reporting Program (MMRP).
- e. The report shall specify planned biological surveys, reports, protective measures or mitigation that the Permittee intends to undertake in the upcoming year.
- f. The report shall contain information prescribed elsewhere in these permit conditions.
- g. The Permittee shall certify the accuracy of this report.

152. Permittee shall consult with the California Department of Fish and Game and US Fish and Wildlife Service in preparation of final mitigation plans for habitat preservation and enhancement. The methods, results, and recommendations of the field surveys shall be approved by the Public Works Director, and successful implementation shall be completed by the Permittee prior to site disturbance, or prior to final reclamation, as the case may be. Monitoring shall be performed by a qualified third party professional, who shall submit a report as part of the Permittee's Annual Report.

153. Permittee shall maintain a public web site where information and notices regarding this Permit, applicable condition noticing and the Permittee's operations will be posted as applicable.

154. Upon reasonable notice, Permittee hereby authorizes the County, or its designee, to enter and inspect the Quarry site for compliance with these permit conditions and/or the Marin County Code.

County and Consultant Work, Compliance Monitoring and Enforcement

155. Annual inspection, review of reports or plans required under these Permit conditions or approval, monitoring and enforcement costs, and fees shall be paid by the Permittee in order to cover all actual costs incurred by the County, including but

not limited to materials, staff time and consultant costs, for the inspection, monitoring and enforcement of the applicable Permit conditions and reclamation plan inspections. Where monitoring service of a qualified professional is required or needed by the County, additional monitoring fees may be levied on the Permittee to cover such costs. The County may request advance deposits prior to starting the work.

a. Within 45 days of Permit approval, Permittee shall deposit \$100,000 in a deposit account for monitoring. Said deposit will be used by County agencies to cover staff costs and/or County-initiated consultant contracts associated with these Permit conditions. As funds are drawn down the County may request additional funds in order to maintain an adequate fund balance. Standard accounting practices shall be employed by the County to account for the funds.

b. All phases of operations and reclamation shall conform with the adopted Mitigation, Monitoring and Reporting Program (MMRP), and the County of Marin will verify compliance with each of the required mitigation. Pursuant to the MMRP, the Permittee shall bear all cost associated with the management of the MMRP, including direct County staff costs. In the event County staff cannot absorb the task of managing the MMRP, an independent contractor will be hired by the County at the expense of the Permittee to carry out the responsibilities for managing the MMRP.

156. The County retains the right to hire its own consultants to evaluate any work undertaken by the Quarry or Quarry consultants under contract with the Quarry. Prior to the County engaging any independent consultants or contractors which will be paid for by the Permittee pursuant to the conditions of this Permit, the County shall confer with the Permittee regarding the scope and necessity of the work to be contracted for, as well as the costs of such work. County staff shall prepare a detailed proposed scope of work for services proposed to be provided by any consultant. These proposed contracts and scopes of work shall be provided to Permittee prior to retaining any consultant. The Permittee shall have the opportunity to review and comment on all such consultant contracts. Any decisions made by County staff may be appealed to the Board of Supervisors per the appeal procedures contained in the Marin County Ordinance Code then in effect.

Permit or Monitoring Modifications

157. Prior to undertaking any operational or construction related activity which is not expressly described in these conditions or approved Conformation Amended Reclamation Plan, the Permittee shall contact the Department of Public Works to determine if such activity requires a modification of this Permit.

a. The Public Works Director may, at his/her discretion, require that the Permittee file a written description of the proposed activity prior to rendering a decision whether a permit or monitoring modification is required. If a permit

or monitoring modification is required, such modification shall be subject to the then applicable standards for permit modification in the Marin County Code and the environmental review required by CEQA. Such permit or monitoring modifications shall be accompanied by a fee to process the request and reimburse the County staff time, as determined by the Public Works Director.

158. The Public Works Director may in his/her discretion extend the time limits for compliance with permit conditions if the Permittee demonstrates that it has diligently attempted to meet the deadline specified. The monitoring programs and plans submittals required by the Permit conditions herein may also be reasonably modified at the discretion of the Public Works Director after consultation with the resource agency with applicable expertise.

159. The County and all other permitting agencies shall have the option of referring any and all subsequent permit modification application requests of the Permittee to an independent and qualified consultant for review and evaluation of issues beyond the expertise or manpower of staff. The costs for all such consultant work shall be borne by the Permittee and are independent of the fees paid for staff processing of a permit application or review.

Community Relations

160. At least twice annually, or more frequently as determined by the Public Works Director, the Permittee shall hold a local community forum to review and discuss Quarry operations and reclamation, and answer questions from the public in attendance. The meeting announcement shall be made at least 30 days in advance of the meeting and posted on a web site, provided to the Public Works Director, and provided to local community organizations.

Mining Operation or Reclamation Not in Compliance with Permit

161. If the Director of Public Works determines, based upon an inspection or otherwise confirmed by credible evidence, that the surface mining operation or reclamation activity is not in compliance with this Permit, approved reclamation plan, County of Marin Code or State law, the Director may notify the Permittee of that violation by personal service or certified mail. If the violation extends beyond 5 days after the date of the Director's notification, the Director may issue an order by personal service or certified mail requiring the Permittee to comply with this Permit, County of Marin Code or State law.

a. Any order issued under this section shall specify which aspects of the surface mine's activities, operations or reclamation are inconsistent with this Permit, County of Marin Code or State law, shall specify a time for compliance which the Director determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

b. If the Permittee violates or fails to comply with an order issued under this section after the order's effective date, the Permittee shall be subject to an order of the Director imposing an administrative penalty of not more than five thousand dollars (\$5,000) per day, per violation, assessed from the original date of noncompliance with this Permit, County of Marin Code or State law. The penalty may be imposed administratively by the Director.

c. In determining the amount of the administrative penalty, Director shall take into consideration the nature, circumstances, extent, and gravity of the violation or violations, any prior history of violations, the degree of culpability, economic savings, if any, resulting from the violation, and any other matters justice may require.

d. Orders setting administrative penalties shall become a final order and effective upon issuance thereof and payment shall be made to the County of Marin within 30 days, unless the Permittee appeals to the Board of Supervisors for review.

e. Within 15 days of the issuance of an order or orders setting administrative penalties the Permittee may appeal to the Board of Supervisors for review of the order(s). If no appeal is requested from the Director of Public Works Order(s), such shall be deemed a failure to exhaust administrative remedies and a waiver of any further administrative and legal rights.

f. If an appeal is requested, the Board of Supervisors may, after hearing the appeal, affirm, modify, or set aside, in whole or in part, by its own order, any order of the Director of Public Works.

g. The Permittee aggrieved by a final order of the Board of Supervisors may obtain review of the order by filing in the superior court a petition for writ of mandate within the statutory time following the issuance of the final order. If the Permittee does not petition for a writ of mandate within the statutory time limits, a final order of the Board of Supervisors shall not be subject to review by any Court or Agency.

h. The remedies and civil penalties provided by this section shall be in addition to any other remedies and penalties provided by law.

162. A current set of Permit conditions, approved reclamation plan and associated exhibits and reports shall be retained at the Quarry site.

Revocation (ref. MCC 23.06.070)

163. In the event any Permittee holding a permit hereunder fails, neglects or refuses to fulfill any of the requirements or any of the conditions of the permit or violates any other applicable law or ordinance, or conducts or carries on the

operation in such a manner as to materially affect adversely the health welfare or safety of persons residing or working in the neighborhood of the property wherein the operations is being conducted, or conducts or carries on an operation so that it is materially detrimental to the public welfare or injurious to property or improvements in the neighborhood, the Director of Public Works may revoke or suspend the permit. No permit shall be revoked or suspended until a hearing is held by the Board of Supervisors.

Correspondence from Other Agencies/Jurisdictions

164. Copies of all violations or abatement notices, or requests for reports or information related to this Permit and its authorized uses by federal, state or local jurisdictions/agencies, shall be provided to the Public Works Director within 30 days of the Permittee's receipt of said notices or requests. Within 30 days of any subsequent modification of another agency's permit or submission of an application for any permit to another agency, the applicable materials shall be submitted to the Public Works Director.

Change of Ownership Notice

165. Permittee, property owner and their authorized agents, and any other person in control of the property, individually or collectively, are responsible for the observation and compliance with all the provisions of this permit and the Marin County Surface Mining Ordinance. Said responsibility shall run with the land under permit as a covenant. Successive owners, heirs, and assigns of this real property are bound to comply with all the requirements of these conditions. Prior to any lease, sale, transfer, or conveyance of any portion of the real property that is the subject of the Quarry, the owner shall provide a copy of the adopted conditions to the prospective lessee, buyer, transferee, or one to whom the conveyance is made.

166. At least 10 calendar days prior to the effective date of change of property ownership, or of lessee(s), or operator(s) of the permitted use, there shall be filed, as an initial notice with the Public Works Director, the name(s), address(es), and telephone/FAX number(s) of the new owner(s), lessee(s) or operator(s), and company officer(s). A final statement that a transfer of ownership has occurred shall be provided to the Public Works Director within 15 calendar days of said transfer. Said statement shall include any changes in name(s), address(es), and telephone/FAX number(s) of the new owner(s), lessee(s), or operator(s), and company officer(s) from the initial notice. Said statement shall be accompanied by a letter from the new property owner(s), lessee(s), and/or operator(s) acknowledging and agreeing to comply with all conditions of this Permit. Said statement shall specify the effective date and time of the transfer.

Severability

167. If any of the conditions of this permit are held to be invalid, that holding shall not invalidate any of the remaining conditions or limitations set forth.

168. If any condition(s) is invalidated by a court of law, and said invalidation would change the findings and/or mitigation measures associated with the approval of this Permit, the project may be reviewed, at the discretion of the Board of Supervisors, and substitute feasible condition(s)/mitigation measures may be imposed to adequately address the subject matter of the invalidated condition(s).

Permittee Defense Costs

169. As a condition of permit issuance and use of this permit, including adjustment, modification or renewal of the permit, the Permittee agrees to:

- a. Defend, at the Permittee's sole expense, any action brought against the County by a third party challenging either its decision to issue this Permit or the manner in which the County is interpreting or enforcing the conditions of the Permit; and
- b. Indemnify the County against any settlements, awards, or judgments, including attorney's fees, arising out of or resulting from any such action.

170. Upon demand from the County, the Permittee shall reimburse the County for any court costs and or attorney's fees which the County may be required by a court to pay as a result of any such action the Permittee defended or of which it had control of the defense. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relive the Permittee of its obligations under this condition.

Duty to Defend & Indemnity

171. As a condition of permit issuance and use of this permit, including adjustment, modification or renewal of the permit, the Permittee agrees to defend, indemnify and hold harmless the County, its agents, officers and employees, from any claim, action or proceeding against the County, to challenge any portions of the EIR certification, permit or reclamation plan process or approval; In addition to damages, indemnification includes reimbursing the County for staff and consultants cost, court costs, and attorney's fees (including claims for private Attorney General fees).

172. Neither the issuance of a permit hereunder nor compliance with the conditions thereof shall relieve the Permittee from any responsibility otherwise imposed by law for damage to persons or property, nor shall the issuance of any permit hereunder serve to impose any liability upon the County of Marin, its officers or employees for injury or damage to persons or property.

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APPENDIX C

Air Quality and GHGs Technical Report

San Rafael Rock Quarry Application Extension Air Quality Technical Report



Prepared for:

Sicular Environmental Consulting and Natural Lands Management

Prepared by:

RCH Group
11060 White Rock Road
Rancho Cordova, California 95670



December 8, 2020

This document provides supporting information associated with the air emission calculations and health risk assessment (HRA) for the San Rafael Rock Quarry Amended Reclamation Plan Supplemental Environmental Review. The supporting information, methodology, assumptions, and results for the air quality analysis are provided in **Attachment A: Air Quality Calculation Methodology and Assumptions** and **Attachment B: Health Risk Assessment Methodology and Assumptions**.

The air quality analysis includes a review of criteria pollutant¹ emissions such as carbon monoxide (CO)², nitrogen oxides (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOC) as reactive organic gases (ROG)³, particulate matter less than 10 micrometers (coarse or PM₁₀), particulate matter less than 2.5 micrometers (fine or PM_{2.5}).⁴

The HRA focuses on health impacts on existing residences from emissions of toxic air contaminants (TAC)⁵ such as diesel particulate matter (DPM)⁶ from diesel equipment and haul truck emissions associated with the proposed Project reclamation activities and crystalline silica from fugitive dust emissions. The HRA was conducted to determine the health impacts, in terms of excess cancer risk and non-cancer hazards, using the significance levels identified by the Bay Area Air Quality Management District (BAAQMD)'s *CEQA Air Quality Guidelines*.⁷ The HRA was prepared based on the California Office of Environmental Health Hazard Assessment (OEHHA)'s *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*.⁸

¹ Criteria air pollutants refer to those air pollutants for which the United States Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) has established National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) under the Federal Clean Air Act (CAA).

² CO is a non-reactive pollutant that is a product of incomplete combustion of organic material, and is mostly associated with motor vehicle traffic, and in wintertime, with wood-burning stoves and fireplaces.

³ VOC means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions and thus, a precursor of ozone formation. ROG are any reactive compounds of carbon, excluding methane, CO, CO₂ carbonic acid, metallic carbides or carbonates, ammonium carbonate, and other exempt compounds. The terms VOC and ROG are often used interchangeably.

⁴ PM₁₀ and PM_{2.5} consists of airborne particles that measure 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs, causing adverse health effects.

⁵ Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality. TAC are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (for example, gasoline service stations and dry cleaners). TAC are typically found in low concentrations, even near their source (for example, diesel particulate matter near a freeway). Because chronic exposure can result in adverse health effects, TAC are regulated at the regional, state, and Federal level.

⁶ In 1998, the CARB classified DPM as a toxic air contaminant, citing its potential to cause cancer and other health problems. USEPA concluded that long-term exposure to diesel engine exhaust is likely to pose a lung cancer hazard to humans and can also contribute to other acute and chronic health effects.

⁷ Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017,

http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

⁸ Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, February 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

Attachment A

Air Quality Calculations Methodology and Assumptions

Air emission calculations were developed for criteria pollutant emissions such as carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOC) as reactive organic gases (ROG), particulate matter less than 10 micrometers (PM₁₀), particulate matter less than 2.5 micrometers (PM_{2.5}). Regulatory models used to estimate air emissions include:

- California Air Resources Board's (CARB) EMFAC¹ emissions inventory model. EMFAC is the latest emission inventory model that calculates emission inventories and emission rates for motor vehicles operating on roads in California. This model reflects CARB's current understanding of how vehicles travel and how much they emit. EMFAC can be used to show how California motor vehicle emissions have changed over time and are projected to change in the future.
- CARB OFFROAD² emissions inventory model. OFFROAD is the latest emission inventory model that calculates emission inventories and emission rates for off-road equipment such as loaders, excavators, and off-road haul trucks operating in California. This model reflects CARB's current understanding of how equipment operates and how much they emit. OFFROAD can be used to show how California off-road equipment emissions have changed over time and are projected to change in the future.
- USEPA AP-42, Compilation of Air Pollutant Emission Factors, has been published since 1972 as the primary compilation of USEPA's emission factor information. It contains emission factors and process information for more than 200 air pollution source categories. A source category is a specific industry sector or group of similar emitting sources. The emission factors have been developed and compiled from source test data, material balance studies, and engineering estimates.³
- AERMOD (American Meteorological Society/USEPA Regulatory Model, Version 19181) is an atmospheric dispersion model which can simulate point, area, volume, and line emissions sources and has the capability to include simple, intermediate, and complex

¹ California Air Resources Board, EMFAC2017 User's Guide, March 1, 2018, <https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-i-users-guide.pdf> and <https://www.arb.ca.gov/emfac/2017/>

² California Air Resources Board, OFFROAD Instructions, <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road>

³ US Environmental Protection Agency, AP 42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Volume I Chapter 3: Stationary Internal Combustion Source, <https://www3.epa.gov/ttn/chief/ap42/ch03/index.html>

terrain along with meteorological conditions and multiple receptor locations.^{4,5} AERMOD is commonly executed to yield 1-hour maximum and annual average concentrations (in $\mu\text{g}/\text{m}^3$) at each receptor.

Greenhouse gases (GHG) emissions such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) were also calculated. CO_2 is the reference gas for climate change because it is the prominent GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2 . CH_4 and N_2O are substantially more potent GHGs than CO_2 , with GWP of 28 and 265 times that of CO_2 , respectively (IPCC, 2014).⁶

In emissions inventories, GHG emissions are typically reported in terms of metric tons (MT) of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWP than CO_2 , CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e . **Equation 1** shows the general calculation methodology for GHG emissions.

Equation 1

$$\text{CO}_2\text{e Emissions (metric tons)} = \text{CO}_2 \text{ Emissions (metric tons)} + \text{CH}_4 \text{ Emissions (metric tons)} * 28 \\ + \text{N}_2\text{O Emissions (metric tons)} * 265$$

For the reclamation activities, emission sources include combustion exhaust from on-road vehicles such as haul/pickup trucks and construction equipment such as scrapers, graders, backhoes, and loaders. For the Quarry operations, emission sources include offroad equipment, haul trucks, barges, blasting, the McNear's Brickyard, asphalt processing activities, and aggregate processing.

Detailed information regarding the air emission calculations are found after this document.

Air Emission Calculation Methodology

The following sections describe the air emission calculation methodology for these emission sources.

⁴ USEPA Preferred/Recommended Models, *AERMOD Modeling System*, <https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models#aermod>

⁵ Title 40 CFR Part 51, *Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions; Final Rule*, http://www.epa.gov/ttn/scram/guidance/guide/appw_05.pdf

⁶ IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. https://www.ipcc.ch/site/assets/uploads/2018/05/SYR_AR5_FINAL_full_wcover.pdf

On-Road Vehicles

Vehicular emissions were computed using the CARB's emission factor model, EMFAC, to estimate on-road emissions. Foreman pickup trucks used on-site were modeled as gasoline and diesel light heavy-duty trucks. Haul trucks were modeled using the diesel T7 single construction haul truck classification, which is a heavy-heavy duty truck emission factor for public vehicles. Criteria pollutant emissions associated with on-road vehicles were calculated by combining the activity information with emissions factors, in grams per mile, derived using the EMFAC emissions model. Emissions calculations were based on **Equation 2. Table A-1** displays the emission factors for pickup trucks and haul trucks for 2015 through 2044.

Reclamation activities includes travel of ½ of a mile (one way) on unpaved surfaces between activity quadrants. The number of trips per day is a function of the total grading volume divided by the number of years of operation (10) divided by the number of days per year. This results in 4,019 cubic yards per day. Based on a 20 cubic yard truck, a total of 201 truck trips would occur. Haul trucks occur from 7 am to 5 pm, five days (Monday through Friday) per week. In addition, two pickup trucks are estimate to be onsite during reclamation activities, traveling three miles per day.

Quarry operations for haul trucks includes travel of 80 miles each way between the facility and the aggregate markets with 250 trips per day during 260 days per year. Each haul truck trip is based on a travel distance of ½ of a mile (one way) on unpaved surfaces from the quarry to the access roads. Haul trucks occur from 7 am to 5 pm, five days (Monday through Friday) per week.

Equation 2

$$\text{Emission Rate (tons/year)} = \text{Emission Factor (gram/mile)} * \text{trips per day} * \text{miles per trip} * \text{days/year} * \\ (453.59/2000 \text{ tons/gram})$$

$$\text{Emission Rate (pounds/day)} = \text{Emission Factor (gram/mile)} * \text{trips per day} * \text{miles per trip} * \\ (1/453.59 \text{ pounds/gram})$$

**TABLE A-1
EMISSIONS FACTORS (g/mile) FOR ON-ROAD VEHICLES**

Vehicle Type	VOC	CO	NO_x	CO₂	SO₂	PM₁₀	PM_{2.5}	N₂O	CH₄
Calendar Year 2015									
Pickup Truck	0.06	2.32	0.24	394	<0.01	<0.01	<0.01	0.02	0.01
Haul Truck	0.72	3.13	11.11	1,831	0.02	0.37	0.35	0.29	0.03
Calendar Year 2016									
Pickup Truck	0.05	2.03	0.20	384	<0.01	<0.01	<0.01	0.01	0.01
Haul Truck	0.59	2.49	9.51	1,788	0.02	0.29	0.27	0.28	0.03
Calendar Year 2017									
Pickup Truck	0.04	1.78	0.17	375	<0.01	<0.01	<0.01	0.01	0.01
Haul Truck	0.48	1.99	8.54	1,758	0.02	0.22	0.21	0.28	0.02
Calendar Year 2018									
Pickup Truck	0.03	1.57	0.14	365	<0.01	<0.01	<0.01	0.01	0.01
Haul Truck	0.41	1.67	7.89	1,737	0.02	0.18	0.17	0.27	0.02
Calendar Year 2019									
Pickup Truck	0.03	1.40	0.12	354	<0.01	<0.01	<0.01	0.01	0.01
Haul Truck	0.36	1.42	7.39	1,716	0.02	0.15	0.14	0.27	0.02
Calendar Year 2020									
Pickup Truck	0.02	1.26	0.11	344	<0.01	<0.01	<0.01	0.01	0.01
Haul Truck	0.25	0.93	6.23	1,691	0.02	0.09	0.08	0.27	0.01
Calendar Year 2021									
Pickup Truck	0.02	1.14	0.09	333	<0.01	<0.01	<0.01	0.01	0.01
Haul Truck	0.21	0.79	5.41	1,657	0.02	0.07	0.07	0.26	0.01
Calendar Year 2022									
Pickup Truck	0.02	1.05	0.08	323	<0.01	<0.01	<0.01	0.01	<0.01
Haul Truck	0.09	0.46	3.90	1,584	0.01	0.03	0.02	0.25	<0.01
Calendar Year 2023									
Pickup Truck	0.02	0.96	0.07	313	<0.01	<0.01	<0.01	0.01	<0.01
Haul Truck	0.02	0.25	2.89	1,500	0.01	0.01	0.01	0.24	<0.01
Calendar Year 2024									
Pickup Truck	0.01	0.90	0.06	303	<0.01	<0.01	<0.01	0.01	<0.01
Haul Truck	0.02	0.25	2.86	1,480	0.01	0.01	0.01	0.23	<0.01
Calendar Year 2025									
Pickup Truck	0.01	0.84	0.06	293	<0.01	<0.01	<0.01	0.01	<0.01
Haul Truck	0.02	0.25	2.84	1,461	0.01	0.01	0.01	0.23	<0.01
Calendar Year 2026									
Pickup Truck	0.01	0.79	0.05	284	<0.01	<0.01	<0.01	0.01	<0.01
Haul Truck	0.02	0.25	2.81	1,442	0.01	0.01	0.01	0.23	<0.01
Calendar Year 2027									
Pickup Truck	0.01	0.75	0.05	276	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.25	2.79	1,420	0.01	0.01	0.01	0.22	<0.01

Calendar Year 2028									
Pickup Truck	0.01	0.71	0.04	268	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.25	2.78	1,401	0.01	0.01	0.01	0.22	<0.01
Calendar Year 2029									
Pickup Truck	0.01	0.68	0.04	262	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.25	2.77	1,384	0.01	0.01	0.01	0.22	<0.01
Calendar Year 2030									
Pickup Truck	0.01	0.65	0.03	256	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.25	2.77	1,368	0.01	0.01	0.01	0.22	<0.01
Calendar Year 2031									
Pickup Truck	0.01	0.63	0.03	250	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.77	1,353	0.01	0.01	0.01	0.21	<0.01
Calendar Year 2032									
Pickup Truck	0.01	0.61	0.03	246	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.76	1,338	0.01	0.01	0.01	0.21	<0.01
Calendar Year 2033									
Pickup Truck	0.01	0.59	0.03	241	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.76	1,322	0.01	0.01	0.01	0.21	<0.01
Calendar Year 2034									
Pickup Truck	0.01	0.58	0.03	238	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.76	1,306	0.01	0.01	0.01	0.21	<0.01
Calendar Year 2035									
Pickup Truck	<0.01	0.56	0.03	234	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.75	1,289	0.01	0.01	0.01	0.20	<0.01
Calendar Year 2036									
Pickup Truck	<0.01	0.55	0.02	232	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.74	1,274	0.01	0.01	0.01	0.20	<0.01
Calendar Year 2037									
Pickup Truck	<0.01	0.54	0.02	229	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.74	1,258	0.01	0.01	0.01	0.20	<0.01
Calendar Year 2038									
Pickup Truck	<0.01	0.53	0.02	227	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.73	1,243	0.01	0.01	0.01	0.20	<0.01
Calendar Year 2039									
Pickup Truck	<0.01	0.52	0.02	225	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.73	1,230	0.01	0.01	0.01	0.19	<0.01
Calendar Year 2040									
Pickup Truck	<0.01	0.52	0.02	224	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.72	1,216	0.01	0.01	0.01	0.19	<0.01
Calendar Year 2041									
Pickup Truck	<0.01	0.51	0.02	223	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.72	1,203	0.01	0.01	0.01	0.19	<0.01

Calendar Year 2042									
Pickup Truck	<0.01	0.50	0.02	222	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.72	1,192	0.01	0.01	0.01	0.19	<0.01
Calendar Year 2043									
Pickup Truck	<0.01	0.50	0.02	221	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.71	1,181	0.01	0.01	0.00	0.19	<0.01
Calendar Year 2044									
Pickup Truck	<0.01	0.50	0.02	220	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Truck	0.02	0.24	2.71	1,171	0.01	0.01	0.00	0.18	<0.01

Source: CARB EMFAC Emissions Model.

Off-Road Equipment

Reclamation activities would require the use of heavy-duty equipment, such as scrapers, graders, loaders, and backhoes. Equipment used in reclamation activities would include five scrapers (422 hp), four bulldozers (372 hp), one front-end loader (84 hp), one backhoe (84 hp), one road grader (217 hp), and one water truck (378 hp). Quarry operations require the use of heavy-duty equipment, such as graders, water trucks, bulldozer, scraper, and backhoes. **Table A-2** displays the list of offroad equipment used for Quarry operations consistent with the 2099 FEIR.

**TABLE A-2
QUARRY OPERATIONS OFFROAD EQUIPMENT LIST**

Equipment	Amount	HP	Daily Hours	Annual Hours
Diesel Grader	7	75	9	2,250
Diesel Water Truck	3	300	6	1,625
Diesel Bulldozer	1	520	4	950
Diesel Scraper	1	475	6	1,500
Diesel Backhoe	8	375	8	2,000

This equipment would be used to load and unload material. Emission factors from the OFFROAD emissions model were used. Offroad equipment emissions from reclamation activities and Quarry operations were estimated based on the projected construction activity schedule, the number of vehicles/pieces of equipment, the types of equipment/type of fuel used, vehicle/equipment utilization rates, and equipment horsepower.

This information was applied to criteria pollutant emissions factors, in grams per horsepower-hour, primarily derived using the OFFROAD emissions model. **Equation 3** outlines how off-road construction equipment emissions were computed, and the emissions factors used in this assessment are summarized, by equipment tier within **Table A-3** for Tier 4 engine emission standards.⁷ Based on OFFROAD, the CO₂ emission factors range from 195 to 255 grams per

⁷ USEPA and CARB have implemented regulations and a tiering system to reduce emissions from off-road equipment with increasing combustion efficiency (i.e., decreasing emissions) where Tier 1 is the least efficient (greatest emissions)

horsepower-hour (g/hp-hour) depending on the type of offroad equipment. CH4 emissions factors are approximately 0.002 g/hp-hour.

**TABLE A-3
EMISSIONS FACTORS (g/hp-hour) FOR OFF-ROAD EQUIPMENT**

Tier	Low HP	High HP	CO	NO _x	PM ₁₀	PM _{2.5}	ROG
Tier 4	25	49	4.1	2.75	0.008	0.008	0.12
	50	74	3.7	2.74	0.008	0.008	0.12
	75	119	3.7	0.26	0.008	0.008	0.06
	120	174	3.7	0.26	0.008	0.008	0.06
	175	299	2.2	0.26	0.008	0.008	0.06
	300	599	2.2	0.26	0.008	0.008	0.06
	600	750	2.2	0.26	0.008	0.008	0.06
	751	2000	2.6	2.24	0.016	0.016	0.06

Source: CARB OFFROAD Emissions Model.

Equation 3

$$\text{Emission Rate (tons/year)} = \text{Emission Factor (gram/hp-hour)} * \text{size (hp)} * \text{hours of operation per year} * \text{Load Factor} * \text{usage factor} * (453.59/2000 \text{ tons/gram})$$

$$\text{Emission Rate (pounds/day)} = \text{Emission Factor (gram/hp-hour)} * \text{size (hp)} * \text{hours of operation per day} * \text{Load Factor} * (1/453.59 \text{ pounds/gram})$$

Handling and Storage

Fugitive particulate matter emissions are expected from the handling and storage of raw materials from quarry processing. The methodology for the calculation of particulate emissions from the handling and storage of raw materials is described in Section 13.2.4 of USEPA's Compilation of Air Pollutant Emission Factors (AP-42) for aggregate handling and storage piles.⁸ The quantity of dust emissions from aggregate handling and storage operations varies with the volume of aggregate passing through the storage cycle. The emission factor for the quantity of emissions per quantity of material was estimated using the following equation:

$$E = [0.00112 * (([G/5]^{1.3}) / ([H/2]^{1.4}))] * [I/J]$$

where:

G = Mean wind speed in miles per hour, 13 mph

H = Moisture Content of soil, 2.0 (dry)

I = pounds of material handled

and Tier 4 is the most efficient (least emissions). The regulations have been implemented over time such that Tier 1 was phased out in the 1990's and Tier 2 was required, followed by implementation of Tier 3 and Tier 4 by 2015 with a phase out of Tier 2.

⁸ https://www.epa.gov/sites/production/files/2020-10/documents/13.2.4_aggregate_handling_and_storage_piles.pdf

J = 2,000 (conversion factor, pounds to tons)

The emission factor used in the analysis for handling and storage activities was 0.00388 pounds of PM₁₀ per ton of material processed (uncontrolled) and 0.00116 pounds of PM₁₀ per ton of material processed (controlled). The PM_{2.5} emissions were assumed to be 15 percent of the PM₁₀ emissions (based on AP-42). To account for emission controls, a control efficiency of 70 percent (based on AP-42) was also applied.

Unpaved Vehicle Movement

When a vehicle travels over an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. Additionally, the turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed. The following is the equation used to develop the emission factor is:

$$EF = k (s/12)^a (S/30)^b (W/3)^c (M/4)^d [(365-p)/365] (1-CE)$$

where:

k (PM₁₀) = 2.1 (empirical constant)

s = Silt content of 8% (use whole number value)

S = Vehicle speed of 15 (mph)

W = Mean vehicle weight, 33 tons unloaded and 69 tons loaded

M = Number of wheels, 6

p = Number of days with measurable precipitation (0 days, work during dry season only)

a = 1.0 (empirical constant)

b = 0.7 (empirical constant)

c = 0.5 (empirical constant)

CE = Control efficiency rate of 70 percent

The methodology for the calculation of particulate emissions from the travel on unpaved surfaces is described in Section 13.2.2 of USEPA's AP-42.⁹ The uncontrolled emission factor for unpaved roads was 7.7 and 4.6 pounds per vehicle mile for loaded and unloaded trucks, respectively. The controlled emission factor for unpaved roads was 2.3 and 1.4 pounds per vehicle mile for loaded and unloaded trucks, respectively. The PM_{2.5} emissions were assumed to be 15 percent of the PM₁₀ emissions (based on AP-42). To account for emission controls, a control efficiency of 70

⁹ <https://www3.epa.gov/ttnchie1/ap42/ch13/final/c13s0202.pdf>

percent (based on AP-42) was also applied. Finally, each vehicle was assumed to travel a distance of ½ of a mile on unpaved area from one reclamation quadrant to another or during Quarry operations between the Project site and the haul access.

Aggregate Processing

In the general aggregate processing, rock and crushed stone are loosened by drilling and blasting, loaded by front-end loader into large haul trucks that transport the material to the processing operations. Processing operations include crushing, screening, size classification, conveyance, material handling and storage operations. Air emissions include PM₁₀ and PM_{2.5}.

Fugitive dust sources include the transfer of aggregate, truck loading and unloading, and wind erosion from aggregate storage piles. The amount of fugitive emissions generated during the transfer of the aggregate depends primarily on the surface moisture content of these materials.

The air emission calculations accounted for the production level, the number, types, and size of equipment, the type of material processed, and emission controls. The emission factors were determined using the methodology found in Section 11.19 of USEPA's AP-42.¹⁰ **Table A-4** presents the emission factors for the aggregate processing operations. A ratio of 0.15 is applied to determine the amount of PM_{2.5} per mass of PM₁₀ based on AP-42. Emissions control is based on periodic watering. Thus, the daily emission rates would be the daily process rate (in tons per hour) times 8 hours per day times the respective emission factors within **Table 4**.

Soil sampling (McC Campbell Analytical, Inc, November 2007) was conducted to determine the crystalline silica and metals content of the aggregate processing operations. For example, soil sampling (McC Campbell Analytical, Inc, November 2007) found that 56 percent of the PM₁₀ is considered crystalline silica. Thus, the PM₁₀ emissions were multiplied by 0.56 to estimate crystalline silica emissions. The same technique was used to determine metals emissions from aggregate processing.

Per the 2009 FEIR, Quarry operations emissions includes an aggregate production level of 1,200 tons per hour, 9,600 tons per day, an average of 1,414,667 tons per year, and a maximum of 1,697,000 tons per year for the stationary unit. Quarry operations includes an aggregate production level of 550 tons per hour, 4,400 tons per day, and 1,144,000 tons per year for the portable unit.

Per the 2009 FEIR, Quarry operations for aggregate processing occurs from 7 am to 5 pm, five days (Monday through Friday) per week from December 1 through April 30 and 7 am to 10 pm, five days (Monday through Friday) from May 1 through November 30.

¹⁰ <https://www3.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf>

**TABLE A-4
EMISSIONS FACTORS (pounds/tons or material) FOR AGGREGATE PROCESSING**

Emission Point	Process Rate (tons/hour)	Number of Units	Uncontrolled	Controlled
			PM ₁₀	PM ₁₀
Primary Crusher	1,200	1	0.0024	0.00054
Secondary Crusher	960	1	0.0024	0.00054
Primary Screening	720	1	0.0087	0.00074
Primary Conveying	1,200	1	0.0011	0.000046
SWOOP Plant Primary Crusher	360	1	0.0024	0.00054
Conveyed Crushed Rock	1,200	1	0.0011	0.000046
SWOOP Plant Screen	720	1	0.0087	0.00074
E6 Secondary Cone Crusher	480	1	0.0024	0.00054
E10 Secondary Cone Crusher	450	1	0.0024	0.00054
E11 Secondary Cone Crusher	450	1	0.0024	0.00054
Belts	1,200	1	0.0011	0.000046
E5 Secondary Screen	1,200	1	0.0087	0.00074
6x20 Simplicity Screen	420	1	0.0087	0.00074
E8 Secondary Screen	960	1	0.0087	0.00074
E7 Secondary Screen	960	1	0.0087	0.00074
E12 Secondary Screen	480	1	0.0087	0.00074
E13 Secondary Screen	480	1	0.0087	0.00074

Source: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.19.2 Crushed Stone Processing, November 2006 and 2009 FEIR.

Asphalt Processing Plant

In the general asphalt process, hot mix asphalt materials are a mixture of size-graded, high quality aggregate, and liquid asphalt cement, which is heated and mixed. The material is metered from the hoppers onto a conveyer belt and transported into a rotary natural gas/propane fired dryer.

As the hot aggregate leaves the dryer, it is transferred to a set of vibrating screens, where it is classified into different grades (sizes) and dropped into individual "hot" bins according to size. Liquid asphalt cement is pumped from a heated storage tank to an asphalt bucket, where it is weighed to achieve the desired aggregate-to-asphalt cement ratio in the final mix. The aggregate from the weigh hopper is dropped into the mixer and dry-mixed. The liquid asphalt is then dropped into a mill where it is mixed for an additional period of time. Then the hot mix is conveyed to a hot storage silo.

The most significant air emission source from the asphalt process is the rotary dryer, which is vented to a stack. Air emissions include criteria pollutants such as SO₂, PM₁₀, PM_{2.5}, NO_x, CO, and VOC.

The air emission calculations accounted for the production levels, the number, types, and size of equipment, the type of material processed, and emission controls. The emission factors were determined using the methodology found in Section 11.1 of USEPA's AP-42.¹¹ **Table A-5** presents the emission factors for the asphalt processing operations and **Table A-6** presents the emission factors for the asphalt silo.

Per the 2009 FEIR, Quarry operations includes an asphalt production level of 100 tons per hour and 200,000 tons per year and the asphalt production occurs from 7 am to 7 pm, five days (Monday through Friday) per week.

TABLE A-5
EMISSIONS FACTORS (pounds/tons of material) FOR ASPHALT PROCESSING

Pollutant	Hot Mix Plant
PM10	0.0042
PM2.5	0.0029
CO	0.13
NOx	0.026
SO2	0.0034
VOC	0.016

Source: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.1 Hot Mix Asphalt Plans, March 2006.

TABLE A-6
EMISSIONS FACTORS (pounds/tons of material) FOR ASPHALT SILO

Pollutant	Loadout	Filling	Storage
PM10	0.0003	0.00042	-
PM2.5	0.0003	0.0039	-
CO	0.00046	0.0004	0.000001
VOC	0.00133	0.0039	0.00001

Source: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.1 Hot Mix Asphalt Plans, March 2006.

Brick Manufacturing

The brick making process involves mining, crushing/grinding, screening and blending of raw materials, forming, cutting or shaping, drying, firing, cooling, storage, and shipping of the final product. Emission points from these processes include crushing, grinding and screening operations, raw material handling and storage piles, brick drying and kiln firing. Air emissions include criteria pollutants such as CO, SO₂, PM₁₀, PM_{2.5}, NO_x, and VOC.

¹¹ <https://www3.epa.gov/ttnchie1/ap42/ch11/final/c11s01.pdf>

The air emission calculations accounted for the production level, the number, types, and size of equipment, the type of material processed, and emission controls. Much of this information is based on air quality permits for the facility. Per the 2009 FEIR, Quarry operations emissions are based on a production level of 131 bricks fired per day and 47,680 bricks fired per year. The emission factors were determined using the methodology found in Section 11.3 of USEPA's AP-42.¹² **Table A-2** presents the emission factors for the aggregate processing operations. An emission factor for hydrogen fluoride of 0.23 pounds/ton of material was used (National Brick Research Center, 2005).

TABLE A-7
EMISSIONS FACTORS (pounds/tons of material) FOR BRICK MANUFACTURING

Pollutant	Emission Factor
PM10	0.87
PM2.5	0.87
NOx	0.35
CO	1.2
VOC	0.054
SO2	0.67

Source: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.3 Brick and Structural Clay Product Manufacturing, August 1997

Blasting Operations

Air emissions from blasting include PM₁₀, PM_{2.5}, crystalline silica, and various metals. The emission factor for the quantity of emissions (in pounds) per blast event was estimated using the following equation from Section 11.9 of USEPA's AP-42¹³:

$$EF = 0.000014 * (A)^{1.5}$$

where:

EF = PM₃₀ emission factor (pounds/blast)

A = blast area (6,750 square feet)

A ratio of 0.52 was applied to determine the amount of PM₁₀ per PM₃₀ based on AP-42. A ratio of 0.15 was applied to determine the amount of PM_{2.5} per mass PM₁₀ based on AP-42. Soil sampling (McCampbell Analytical, Inc, November 2007) was conducted to determine the crystalline silica and metals content of the blasting operations. The PM₁₀ emission factor used in the analysis was 4.0 pounds per blast event. Per the 2009 FEIR, Quarry operations includes 180 blasts per year and blasting occurs from 11:30 am to 1:30 pm with up to three per week.

¹² <https://www3.epa.gov/ttnchie1/ap42/ch11/final/c11s03.pdf>

¹³ <https://www3.epa.gov/ttnchie1/ap42/ch11/final/c11s09.pdf>

Barge Tugs

Tugboats are used to propel barges to and from the quarry. Emissions are based on an average tugboat engine size of 4,268 kW and a load factor of 70 percent. Tugboats are assumed to be in cruise mode prior to arrival and after departure, in slow cruise, and maneuvering mode for 80, 10, and 10 percent, respectively, of their operating time within the Bay Area air basin geographic boundaries. **Table A-8** presents the emission factors for the tugboat operations. The SO₂ emission factor is based on the use of distillate fuel at 2.5 percent sulfur content. Per the 2009 FEIR, Quarry operations includes 980 barges per year (three barges per day) between 7 am and 10 pm, four days (Monday through Thursday) per week, between 7 am and 10 pm, and one day (Saturday) per week.

TABLE A-8
EMISSIONS FACTORS (gram/kW-hour) FOR BARGE TUGS

Pollutant	Emission Factor
PM10	0.265
PM2.5	0.265
NOx	10.7
SO2	14.48
CO	1.20
VOC	0.114

Source: U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, February 2000, <https://nepis.epa.gov/Exe/ZyPDF.cgi/P1009Z2K.PDF?Dockey=P1009Z2K.PDF>.

Annual Usage for Past Quarry Operations

When available, during the period of 2015 through 2020, actual aggregate production levels, number of blasting events, barge, and haul truck trips were based on SRRQ Annual Reports to determine the Quarry operation emissions. When actual data was not available (such as asphalt and brick production levels) or during future conditions of 2021 through 2044, permitted values were used. **Table A-9** presents the annual usage rates for aggregate production, blasts, truck trips, and barges during the past six years. This information was used to develop the health impacts from past Quarry operations as part of the cumulative analysis.

**TABLE A-9
ANNUAL USAGE**

Year	Aggregate Production (tons)	Blast	Truck Trips	Barges
2015	611,224	21	19,212	126
2016	378,255	21	20,050	25
2017	341,795	18	17,432	50
2018	432,939	15	17,929	55
2019	402,518	12	20,103	10
2020*	433,346	17	18,945	53

Source: SRRQ Annual Reports for 2015 through 2019.

* Average of 2015 through 2019

Greenhouse Gas Emissions and Energy Usage for Reclamation Activities

For CARP10 and CARP19, GHG emissions were calculated using the current versions of CARB’s EMFAC2017 emission model and the OFFROAD2017 emission model with the same assumptions and methodology as described in Section 2.3, Air Quality). The CO₂ emission factors from OFFROAD2017 and EMFAC2017 emissions models were adjusted to account for a 40% biodiesel and 60% diesel blend. This blend was used in the SRRQ GHG Reduction Plan, although that calculation used older versions of the OFFROAD and EMFAC emissions models.

Table A-10 displays a summary of the GHG emissions and fuel usage for reclamation activities. For CARP10 and CARP19, the fuel usage during reclamation activities was estimated as 2,364 metric tons (over the ten year period), using standard GHG emission factors per fuel consumption¹⁴, reclamation activities would require a total of 233,354 gallons of 60/40 diesel/biodiesel fuel blend or an average annual fuel usage of 23,335 gallons.

**TABLE A-10
ESTIMATED GHG EMISSIONS AND FUEL USAGE FOR RECLAMATION ACTIVITIES**

Year	Annual CO ₂ e (metric tons) for all Diesel	Annual Fuel Usage (gallons) for all Diesel	Annual CO ₂ e (metric tons) for all Biodiesel	Annual Fuel Usage (gallons) for all Biodiesel	Annual CO ₂ e (metric tons) for 60/40 Blend	Annual Fuel Usage (gallons) for 60/40 Blend
2021	239	23,564	221	23,426	232	23,509
2022	239	23,499	221	23,361	231	23,443
2023	238	23,430	220	23,293	231	23,375
2024	238	23,404	220	23,267	230	23,349
2025	237	23,385	220	23,248	230	23,330
2026	237	23,369	220	23,231	230	23,314
2027	237	23,343	219	23,206	230	23,288
2028	237	23,325	219	23,188	230	23,270

¹⁴ Fuel usage is estimated using the CalEEMod output for CO₂, and a 10.15 kgCO₂/gallon conversion factor for diesel fuel and 9.45 kgCO₂/gallon conversion factor for biodiesel fuel, as cited in https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

2029	236	23,300	219	23,164	229	23,246
2030	236	23,283	219	23,146	229	23,229
Total	2,374	233,903	2,197	232,529	2,303	233,354

Source: CARB OFFROAD Emissions Model and https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

Attachment A

Emission Calculations

- Reclamation Mobile Equipment
- Reclamation Fugitive
- SRRQ Mobile Equipment - Operations Past
- SRRQ Mobile Equipment - Operations Future
- SRRQ Onsite Emission Sources - Operations
- SRRQ Onsite Fugitive Dust Emissions - Operations

Reclamation Activities

Operating Assumptions

Cut and Fill Volume	2,009,653	cy
Cut and fill per day	4,019	cy
Cut and fill per day	14,469,498	pounds
Years	10	
Years	2021-2030	cy
Days per year	50	

Fugitive Dust Emissions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.5 mile (approx. length across each quadrant)
Number of trucks/day	402
VMT =	201 miles/day

Calculated Emission Factor for travel on unpaved roads

$$F = 2.1 * (G/12) * (H/30) * [(I/3)^{0.7}] * [(J/4)^{0.5}] * [(365-K)/365]$$

G = silt content :Mining Haul Road, 8%

H = Mean vehicle speed, 15 mph

I = Mean vehicle weight, 33 tons unloaded per cat 735 web site , 69 tons when loaded

J = Mean # of wheels, 6

K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission Factor = 7.70 pounds pm10/vmt

Unloaded Emission Factor = 4.59 pounds pm10/vmt

	PM10 Uncontrolled	PM10 Controlled	PM2.5 Uncontrolled	PM2.5 Controlled
Phase 1 Unpaved Fugitive Emissions (pounds/day)	1,235	371	185	55.6

Fugitive PM10 emissions from material handling

$$E = [0.00112 * ((G/5)^{1.3} / (H/2)^{1.4})] * [I/J]$$

G = Mean wind speed in miles per hour, 13 mph

H = Moisture Content of soil, 2.0 (dry)

I = lbs of material handled

J = 2,000 (conversion factor, lbs to tons)

	PM10 Uncontrolled	PM10 Controlled	PM2.5 Uncontrolled	PM2.5 Controlled
Phase 1 Material Handling Fugitive Emissions (pounds/day)	28.1	8.42	4.21	1.26

	ROG	Daily Emission for Reclamation Activities (pounds)								All Diesel		All Diesel	All Biodiesel	All Biodiesel	40/60 Blend	40/60 Blend	Worker
		CO	NOx	CO2 Exhaust	SOx	PM10	PM2.5	N2O Exhaust	CH4 Exhaust	Annual CO2 (metric tons)	Days	Annual Fuel (gallons)	Annual CO2 (metric tons)	Annual Fuel (gallons)	Annual CO2 (metric tons)	Annual Fuel (gallons)	Annual CO2 (metric tons)
2021	2.63	95.8	13.4	10508.62	0.10	0.37	0.37	0.12	0.09	239	50	23,555	221	23,417	232	23,500	8
2022	2.58	95.6	12.7	10480.74	0.10	0.35	0.35	0.12	0.09	239	50	23,498	221	23,360	231	23,443	7
2023	2.54	95.4	12.3	10451.95	0.10	0.34	0.34	0.12	0.09	238	50	23,429	220	23,292	231	23,374	7
2024	2.54	95.3	12.2	10440.81	0.10	0.34	0.34	0.11	0.09	238	50	23,403	220	23,265	230	23,348	7
2025	2.54	95.3	12.2	10432.61	0.10	0.34	0.34	0.11	0.09	237	50	23,383	220	23,246	230	23,328	7
2026	2.54	95.2	12.2	10425.80	0.10	0.34	0.34	0.11	0.09	237	50	23,367	220	23,229	230	23,312	6
2027	2.54	95.2	12.2	10414.75	0.10	0.34	0.34	0.11	0.09	237	50	23,341	219	23,204	230	23,286	6
2028	2.53	95.1	12.2	10407.10	0.10	0.34	0.34	0.11	0.08	237	50	23,323	219	23,186	230	23,268	6
2029	2.53	95.1	12.2	10396.58	0.10	0.34	0.34	0.11	0.08	236	50	23,298	219	23,161	229	23,243	6
2030	2.53	95.1	12.2	10389.25	0.10	0.34	0.34	0.10	0.08	236	50	23,281	219	23,144	229	23,226	6
										2,374 Total		233,878	2,197	232,503	2,303	233,328	66

2021 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.79	0.00	0.008	0.008		0.002	217	1	0.41	10	500	0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	201.51	0.00	0.008	0.008		0.002	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	209.93	0.00	0.008	0.008		0.002	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	254.98	0.00	0.008	0.008		0.002	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.07	0.00	0.008	0.008		0.002	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.02	1.14	0.09	333	0.00	0.00	0.00	0.01	0.01				Daily Miles 451	22530	0.02	1.13	0.09	0.00	0.00	0.00
Subtotal															2.54	95.5	11.0	0.09	0.34	0.34
Haul Trucks	0.21	0.79	5.41	1,657	0.02	0.07	0.07	0.26	0.01				201	10,048	0.09	0.35	2.40	0.01	0.03	0.03

2022 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.79	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	201.62	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.15	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.03	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.21	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.02	1.05	0.08	323	0.00	0.00	0.00	0.01	0.00				Daily Miles 451	22530	0.02	1.04	0.08	0.00	0.00	0.00
Subtotal															2.53	95.36	10.98	0.09	0.34	0.34
Haul Trucks	0.09	0.46	3.90	1,584	0.01	0.03	0.02	0.25	0.00				201	10,048	0.04	0.20	1.73	0.01	0.01	0.01

2023 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.93	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	201.86	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.38	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.22	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.21	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.02	0.96	0.07	313	0.00	0.00	0.00	0.01	0.00				Daily Miles 451	22530	0.02	0.96	0.07	0.00	0.00	0.00
Subtotal															2.53	95.28	10.97	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.89	1,500	0.01	0.01	0.01	0.24	0.00				201	10,048	0.01	0.11	1.28	0.01	0.00	0.00

2024																				
Source Type	ROG	CO	NOx	CO2	Emission Factors (g/hp-hr)					HP	Number of Load Equipment	Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
					SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.75	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	201.55	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.38	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.17	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.28	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.90	0.06	303	0.00	0.00	0.00	0.01	0.00				Daily Miles 451	22530	0.01	0.89	0.06	0.00	0.00	0.00
Subtotal															2.53	95.21	10.97	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.86	1,480	0.01	0.01	0.01	0.23	0.00				201	10,048	0.01	0.11	1.27	0.01	0.00	0.00

2025 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.67	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	201.87	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.37	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.16	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.25	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.84	0.06	293	0.00	0.00	0.00	0.01	0.00				Daily Miles 451	22530	0.01	0.83	0.06	0.00	0.00	0.00
Subtotal															2.53	95.15	10.96	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.84	1,461	0.01	0.01	0.01	0.23	0.00				201	10,048	0.01	0.11	1.26	0.01	0.00	0.00

2026 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.67	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	202.09	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.52	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.12	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.20	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.79	0.05	284	0.00	0.00	0.00	0.01	0.00				Daily Miles 451	22530	0.01	0.78	0.05	0.00	0.00	0.00
Subtotal															2.53	95.11	10.95	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.81	1,442	0.01	0.01	0.01	0.23	0.00				201	10,048	0.01	0.11	1.25	0.01	0.00	0.00

2027 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.78	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	202.03	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.52	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.05	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.16	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.75	0.05	276	0.00	0.00	0.00	0.00	0.00				Daily Miles 451	22530	0.01	0.74	0.04	0.00	0.00	0.00
Subtotal															2.53	95.06	10.95	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.79	1,420	0.01	0.01	0.01	0.22	0.00				201	10,048	0.01	0.11	1.24	0.01	0.00	0.00

2028 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.80	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	202.14	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.64	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	255.00	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.14	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.71	0.04	268	0.00	0.00	0.00	0.00	0.00				Daily Miles 451	22530	0.01	0.71	0.04	0.00	0.00	0.00
Subtotal															2.53	95.03	10.95	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.78	1,401	0.01	0.01	0.01	0.22	0.00				201	10,048	0.01	0.11	1.23	0.01	0.00	0.00

2029 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.77	0.00	0.008	0.008		0.00	217	1	0.41	10	500	0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	202.22	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	254.96	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.03	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.68	0.04	262	0.00	0.00	0.00	0.00	0.00				Daily Miles 451	22530	0.01	0.68	0.04	0.00	0.00	0.00
Subtotal															2.52	95.00	10.94	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.77	1,384	0.01	0.01	0.01	0.22	0.00				201	10,048	0.01	0.11	1.23	0.01	0.00	0.00

2030 Source Type	Emission Factors (g/hp-hr)									HP	Number of Load Equipment	Daily Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	N2O	CH4						ROG	CO	NOx	SOx	PM10	PM2.5
Diesel Grader	0.06	2.20	0.26	215.77	0.00	0.008	0.008		0.00	217	1	0.41	10		0.12	4.32	0.51	0.00	0.02	0.02
Diesel Water Truck	0.06	2.20	0.26	202.22	0.00	0.008	0.008		0.00	378	1	0.38	10	500	0.19	6.97	0.82	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.45	0.00	0.008	0.008		0.00	372	4	0.40	10	500	0.79	28.85	3.41	0.03	0.10	0.10
Diesel Scraper	0.06	2.20	0.26	254.96	0.00	0.008	0.008		0.00	422	5	0.48	10	500	1.34	49.11	5.80	0.05	0.18	0.18
Diesel Backhoe	0.06	3.70	0.26	195.03	0.00	0.008	0.008		0.00	84	2	0.37	10	500	0.08	5.07	0.36	0.00	0.01	0.01
Pickup Trucks/Workers	0.01	0.65	0.03	256	0.00	0.00	0.00	0.00	0.00				Daily Miles 451	22530	0.01	0.65	0.03	0.00	0.00	0.00
Subtotal															2.52	94.97	10.94	0.09	0.34	0.34
Haul Trucks	0.02	0.25	2.77	1,368	0.01	0.01	0.01	0.22	0.00				201	10,048	0.01	0.11	1.23	0.01	0.00	0.00

2021 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.07	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.04	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	209.93	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	267.02	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	201.51	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.02	1.14	0.09	333	0.00	0.00	0.00												
Haul Trucks	0.21	0.79	5.41	1,657	0.02	0.07	0.07												
											Daily Miles								
											1677	524901	0.08	4.22	0.34	0.01	0.01	0.01	
											20160	6310080	9.23	35.20	240.46	0.70	3.22	3.08	
													1.61	82.33	6.96	0.05	0.21	0.21	
													9.31	39.42	240.80	0.71	3.23	3.09	

2022 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.21	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	200.92	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.15	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	268.09	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	201.62	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.02	1.05	0.08	323	0.00	0.00	0.00											
Haul Trucks	0.09	0.46	3.90	1,584	0.01	0.03	0.02											
										Daily Miles								
											1677	524901	0.07	3.87	0.30	0.01	0.01	0.01
											20160	6310080	4.17	20.53	173.31	0.66	1.11	1.06
													1.61	82.33	6.96	0.05	0.21	0.21
													4.24	24.39	173.61	0.68	1.12	1.07

2023 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.21	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.18	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.38	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	267.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	201.86	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.02	0.96	0.07	313	0.00	0.00	0.00											
Haul Trucks	0.02	0.25	2.89	1,500	0.01	0.01	0.01											
											Daily Miles							
											1677	524901	0.06	3.56	0.26	0.01	0.01	0.01
											20160	6310080	0.98	11.19	128.51	0.63	0.35	0.33
													1.61	82.33	6.96	0.05	0.21	0.21
													1.04	14.75	128.77	0.64	0.36	0.34

2024 Source Type	Emission Factors (g/hp-hr)												Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.28	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.26	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	210.38	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	267.61	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	201.55	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.01	0.90	0.06	303	0.00	0.00	0.00												
											Daily Miles								
Haul Trucks	0.02	0.25	2.86	1,480	0.01	0.01	0.01				1677	524901	0.05	3.31	0.23	0.01	0.01	0.01	
											20160	6310080	0.95	11.11	127.11	0.62	0.33	0.32	
													1.61	82.33	6.96	0.05	0.21	0.21	
													1.00	14.42	127.34	0.63	0.34	0.32	

2025 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.25	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.26	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.37	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.48	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	201.87	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.01	0.84	0.06	293	0.00	0.00	0.00											
Haul Trucks	0.02	0.25	2.84	1,461	0.01	0.01	0.01											
										Daily Miles								
											1677	524901	0.05	3.10	0.20	0.01	0.01	0.01
											20160	6310080	0.91	11.05	126.01	0.61	0.31	0.30
													1.61	82.33	6.96	0.05	0.21	0.21
													0.96	14.14	126.21	0.62	0.32	0.30

2026 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.20	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.32	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.52	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	267.18	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.09	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.01	0.79	0.05	284	0.00	0.00	0.00											
Haul Trucks	0.02	0.25	2.81	1,442	0.01	0.01	0.01											
										Daily Miles								
											1677	524901	0.04	2.92	0.18	0.01	0.01	0.01
											20160	6310080	0.89	10.99	125.03	0.61	0.30	0.28
													1.61	82.33	6.96	0.05	0.21	0.21
													0.93	13.91	125.21	0.62	0.30	0.29

2027 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.16	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.27	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.52	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.94	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.03	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.01	0.75	0.05	276	0.00	0.00	0.00											
											Daily Miles							
											1677	524901	0.04	2.76	0.17	0.01	0.01	0.01
Haul Trucks	0.02	0.25	2.79	1,420	0.01	0.01	0.01				20160	6310080	0.86	10.95	124.16	0.60	0.29	0.27
													1.61	82.33	6.96	0.05	0.21	0.21
													0.90	13.71	124.33	0.61	0.29	0.28

2028 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.14	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.28	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.64	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.81	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.14	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.01	0.71	0.04	268	0.00	0.00	0.00											
Haul Trucks	0.02	0.25	2.78	1,401	0.01	0.01	0.01											
											Daily Miles							
											1677	524901	0.03	2.63	0.15	0.01	0.01	0.00
											20160	6310080	0.84	10.92	123.59	0.59	0.28	0.26
													1.61	82.33	6.96	0.05	0.21	0.21
													0.88	13.55	123.74	0.60	0.28	0.27

2029 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.01	0.68	0.04	262	0.00	0.00	0.00												
Haul Trucks	0.02	0.25	2.77	1,384	0.01	0.01	0.01												
											Daily Miles								
											1677	524901	0.03	2.51	0.14	0.01	0.00	0.00	
											20160	6310080	0.82	10.90	123.27	0.58	0.27	0.26	
													1.61	82.33	6.96	0.05	0.21	0.21	
													0.85	13.41	123.41	0.59	0.27	0.26	

2031 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	210.45	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.01	0.63	0.03	250	0.00	0.00	0.00												
Haul Trucks	0.02	0.24	2.77	1,353	0.01	0.01	0.01												
											Daily Miles								
											1677	524901	0.03	2.33	0.12	0.01	0.00	0.00	
											20160	6310080	0.80	10.89	123.00	0.57	0.26	0.25	
													1.61	82.33	6.96	0.05	0.21	0.21	
													0.82	13.22	123.11	0.58	0.26	0.25	

2032 Source Type	Emission Factors (g/hp-hr)							Number of Load				Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Daily Hours	Annual Hours	ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.01	0.61	0.03	246	0.00	0.00	0.00											
										Daily Miles								
											1677	524901	0.02	2.25	0.11	0.01	0.00	0.00
Haul Trucks	0.02	0.24	2.76	1,338	0.01	0.01	0.01				20160	6310080	0.79	10.88	122.88	0.56	0.25	0.24
													1.61	82.33	6.96	0.05	0.21	0.21
													0.81	13.13	122.99	0.57	0.26	0.25

2033 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.01	0.59	0.03	241	0.00	0.00	0.00												
Haul Trucks	0.02	0.24	2.76	1,322	0.01	0.01	0.01												
											Daily Miles								
											1677	524901	0.02	2.19	0.10	0.01	0.00	0.00	
											20160	6310080	0.78	10.87	122.73	0.56	0.25	0.24	
													1.61	82.33	6.96	0.05	0.21	0.21	
													0.80	13.06	122.84	0.56	0.25	0.24	

2034 Source Type	ROG	CO	Emission Factors (g/hp-hr)					PM10	PM2.5	HP	Number of Load		Daily Hours	Annual Hours	Daily Emissions (lbs/day)					
			NOx	CO2	SOx	Equipment	Factor				ROG	CO			NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03		
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03		
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01		
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02		
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13		
Pickup Trucks/Workers	0.01	0.58	0.03	238	0.00	0.00	0.00				Daily Miles 1677	524901	0.02	2.13	0.10	0.01	0.00	0.00		
Haul Trucks	0.02	0.24	2.76	1,306	0.01	0.01	0.01				20160	6310080	0.77	10.85	122.47	0.55	0.25	0.23		
													1.61	82.33	6.96	0.05	0.21	0.21		
													0.79	12.98	122.57	0.56	0.25	0.24		

2036		Emission Factors (g/hp-hr)						Number of Load				Daily Emissions (lbs/day)							
Source Type	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Daily Hours	Annual Hours	ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.00	0.55	0.02	232	0.00	0.00	0.00												
										Daily Miles									
											1677	524901	0.02	2.03	0.09	0.01	0.00	0.00	
Haul Trucks	0.02	0.24	2.74	1,274	0.01	0.01	0.01				20160	6310080	0.76	10.82	121.91	0.53	0.24	0.23	
													1.61	82.33	6.96	0.05	0.21	0.21	
													0.77	12.85	122.00	0.54	0.24	0.23	

2037		Emission Factors (g/hp-hr)						Number of Load				Daily Emissions (lbs/day)							
Source Type	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Daily Hours	Annual Hours	ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03	
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03	
Diesel Bulldozer	0.06	2.20	0.26	210.45	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01	
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02	
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13	
Pickup Trucks/Workers	0.00	0.54	0.02	229	0.00	0.00	0.00												
										Daily Miles									
											1677	524901	0.02	2.00	0.09	0.01	0.00	0.00	0.00
Haul Trucks	0.02	0.24	2.74	1,258	0.01	0.01	0.01				20160	6310080	0.75	10.81	121.66	0.53	0.24	0.23	
													1.61	82.33	6.96	0.05	0.21	0.21	
													0.77	12.80	121.75	0.54	0.24	0.23	

2039 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.00	0.52	0.02	225	0.00	0.00	0.00											
Haul Trucks	0.02	0.24	2.73	1,230	0.01	0.01	0.01											
										Daily Miles								
											1677	524901	0.01	1.93	0.08	0.01	0.00	0.00
											20160	6310080	0.74	10.78	121.26	0.52	0.24	0.23
													1.61	82.33	6.96	0.05	0.21	0.21
													0.76	12.71	121.34	0.52	0.24	0.23

2041 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.00	0.51	0.02	223	0.00	0.00	0.00											
Haul Trucks	0.02	0.24	2.72	1,203	0.01	0.01	0.01											
										Daily Miles								
											1677	524901	0.01	1.88	0.08	0.01	0.00	0.00
											20160	6310080	0.74	10.76	120.86	0.51	0.23	0.22
													1.61	82.33	6.96	0.05	0.21	0.21
													0.75	12.64	120.93	0.51	0.24	0.23

2043 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.45	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.00	0.50	0.02	221	0.00	0.00	0.00											
Haul Trucks	0.02	0.24	2.71	1,181	0.01	0.01	0.00											
										Daily Miles								
											1677	524901	0.01	1.84	0.07	0.01	0.00	0.00
											20160	6310080	0.73	10.74	120.58	0.50	0.23	0.22
													1.61	82.33	6.96	0.05	0.21	0.21
													0.74	12.58	120.65	0.50	0.23	0.22

2044 Source Type	Emission Factors (g/hp-hr)							HP	Number of Load Equipment Factor	Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5					ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	195.03	0.00	0.008	0.008	75	7	0.41	7	2250	0.20	7.50	0.89	0.01	0.03	0.03
Diesel Water Truck	0.06	2.20	0.26	201.38	0.00	0.008	0.008	300	3	0.38	5	1625	0.23	8.61	1.02	0.01	0.03	0.03
Diesel Bulldozer	0.06	2.20	0.26	210.47	0.00	0.008	0.008	520	1	0.40	3	950	0.08	3.06	0.36	0.00	0.01	0.01
Diesel Scraper	0.06	2.20	0.26	266.95	0.00	0.008	0.008	475	1	0.48	5	1500	0.14	5.30	0.63	0.01	0.02	0.02
Diesel Backhoe	0.06	3.70	0.26	202.22	0.00	0.008	0.008	375	8	0.37	6	2000	0.94	57.86	4.07	0.03	0.13	0.13
Pickup Trucks/Workers	0.00	0.50	0.02	220	0.00	0.00	0.00											
Haul Trucks	0.02	0.24	2.71	1,171	0.01	0.01	0.00											
										Daily Miles								
											1677	524901	0.01	1.83	0.07	0.01	0.00	0.00
											20160	6310080	0.73	10.73	120.46	0.49	0.23	0.22
													1.61	82.33	6.96	0.05	0.21	0.21
													0.74	12.56	120.53	0.50	0.23	0.22

2015 Source Type	Emission Factors (g/hp-hr)							Number of Load			Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Daily Hours		ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	194.67	0.00	0.008	0.008	75	7	0.41	3	972	0.09	3.24	0.38	0.00	0.01	0.01	
Diesel Water Truck	0.06	2.20	0.26	201.21	0.00	0.008	0.008	300	3	0.38	2	702	0.10	3.72	0.44	0.00	0.01	0.01	
Diesel Bulldozer	0.06	2.20	0.26	208.95	0.00	0.008	0.008	520	1	0.40	1	410	0.04	1.32	0.16	0.00	0.00	0.00	
Diesel Scraper	0.06	2.20	0.26	266.49	0.00	0.008	0.008	475	1	0.48	2	648	0.06	2.29	0.27	0.00	0.01	0.01	
Diesel Backhoe	0.06	3.70	0.26	201.17	0.00	0.008	0.008	375	8	0.37	3	864	0.41	25.00	1.76	0.01	0.05	0.05	
Pickup Trucks/Workers	0.06	2.32	0.24	394	0.00	0.00	0.00												
											Daily Miles								
											1,677	226,790	0.23	8.59	0.87	0.01	0.01	0.01	
Haul Trucks	0.72	3.13	11.11	1,831	0.02	0.37	0.35												
											20,160	1,865,065	32.15	139.14	493.60	0.77	16.48	15.77	
													0.69	35.57	3.01	0.02	0.09	0.09	
													32.38	147.73	494.47	0.78	16.49	15.77	

2016 Source Type	Emission Factors (g/hp-hr)							Number of Load			Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment	Factor			ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	194.61	0.00	0.008	0.008	75	7	0.41	2	602	0.05	2.01	0.24	0.00	0.01	0.01	
Diesel Water Truck	0.06	2.20	0.26	201.09	0.00	0.008	0.008	300	3	0.38	1	434	0.06	2.30	0.27	0.00	0.01	0.01	
Diesel Bulldozer	0.06	2.20	0.26	208.96	0.00	0.008	0.008	520	1	0.40	1	254	0.02	0.82	0.10	0.00	0.00	0.00	
Diesel Scraper	0.06	2.20	0.26	267.66	0.00	0.008	0.008	475	1	0.48	1	401	0.04	1.42	0.17	0.00	0.01	0.01	
Diesel Backhoe	0.06	3.70	0.26	201.20	0.00	0.008	0.008	375	8	0.37	2	535	0.25	15.47	1.09	0.01	0.03	0.03	
Pickup Trucks/Workers	0.05	2.03	0.20	384	0.00	0.00	0.00												
											Daily Miles								
												1,677	140,349	0.19	7.50	0.74	0.01	0.01	0.01
Haul Trucks	0.59	2.49	9.51	1,788	0.02	0.29	0.27												
												20,160	1,946,417	26.09	110.51	422.89	0.75	12.70	12.15
														0.43	22.01	1.86	0.01	0.06	0.06
														26.28	118.01	423.62	0.76	12.70	12.15

2017 Source Type	Emission Factors (g/hp-hr)							Number of Load			Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Factor			ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	194.61	0.00	0.008	0.008	75	7	0.41	2	544	0.05	1.81	0.21	0.00	0.01	0.01	
Diesel Water Truck	0.06	2.20	0.26	201.21	0.00	0.008	0.008	300	3	0.38	1	393	0.06	2.08	0.25	0.00	0.01	0.01	
Diesel Bulldozer	0.06	2.20	0.26	209.27	0.00	0.008	0.008	520	1	0.40	1	230	0.02	0.74	0.09	0.00	0.00	0.00	
Diesel Scraper	0.06	2.20	0.26	267.01	0.00	0.008	0.008	475	1	0.48	1	362	0.03	1.28	0.15	0.00	0.00	0.00	
Diesel Backhoe	0.06	3.70	0.26	201.31	0.00	0.008	0.008	375	8	0.37	2	483	0.23	13.98	0.98	0.01	0.03	0.03	
Pickup Trucks/Workers	0.04	1.78	0.17	375	0.00	0.00	0.00												
Haul Trucks											Daily Miles								
											1,677	126,820	0.15	6.58	0.62	0.01	0.01	0.01	
											20,160	1,692,266	21.46	88.51	379.60	0.74	9.79	9.37	
													0.39	19.89	1.68	0.01	0.05	0.05	
													21.61	95.10	380.23	0.75	9.80	9.38	

2018 Source Type	Emission Factors (g/hp-hr)							Number of Load			Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Daily Hours		ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	194.75	0.00	0.008	0.008	75	7	0.41	2	689	0.06	2.30	0.27	0.00	0.01	0.01	
Diesel Water Truck	0.06	2.20	0.26	201.10	0.00	0.008	0.008	300	3	0.38	2	497	0.07	2.64	0.31	0.00	0.01	0.01	
Diesel Bulldozer	0.06	2.20	0.26	209.61	0.00	0.008	0.008	520	1	0.40	1	291	0.03	0.94	0.11	0.00	0.00	0.00	
Diesel Scraper	0.06	2.20	0.26	266.62	0.00	0.008	0.008	475	1	0.48	1	459	0.04	1.62	0.19	0.00	0.01	0.01	
Diesel Backhoe	0.06	3.70	0.26	201.32	0.00	0.008	0.008	375	8	0.37	2	612	0.29	17.71	1.24	0.01	0.04	0.04	
Pickup Trucks/Workers	0.03	1.57	0.14	365	0.00	0.00	0.00												
Haul Trucks	0.41	1.67	7.89	1,737	0.02	0.18	0.17												
											Daily Miles								
											1,677	160,639	0.13	5.82	0.53	0.01	0.01	0.01	
											20,160	1,740,514	18.37	74.23	350.81	0.73	7.93	7.59	
													0.49	25.20	2.13	0.02	0.07	0.07	
													18.50	80.04	351.34	0.74	7.94	7.60	

2019 Source Type	Emission Factors (g/hp-hr)							Number of Load			Daily Hours	Annual Hours	Daily Emissions (lbs/day)						
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Factor			ROG	CO	NOx	SOx	PM10	PM2.5	
Diesel Grader	0.06	2.20	0.26	194.81	0.00	0.008	0.008	75	7	0.41	2	640	0.06	2.14	0.25	0.00	0.01	0.01	
Diesel Water Truck	0.06	2.20	0.26	201.13	0.00	0.008	0.008	300	3	0.38	1	462	0.07	2.45	0.29	0.00	0.01	0.01	
Diesel Bulldozer	0.06	2.20	0.26	209.84	0.00	0.008	0.008	520	1	0.40	1	270	0.02	0.87	0.10	0.00	0.00	0.00	
Diesel Scraper	0.06	2.20	0.26	267.81	0.00	0.008	0.008	475	1	0.48	1	427	0.04	1.51	0.18	0.00	0.01	0.01	
Diesel Backhoe	0.06	3.70	0.26	201.31	0.00	0.008	0.008	375	8	0.37	2	569	0.27	16.46	1.16	0.01	0.04	0.04	
Pickup Trucks/Workers	0.03	1.40	0.12	354	0.00	0.00	0.00												
											Daily Miles								
Haul Trucks	0.36	1.42	7.39	1,716	0.02	0.15	0.14												
												1,677	149,351	0.11	5.18	0.45	0.01	0.01	0.01
												20,160	1,951,562	15.98	63.15	328.62	0.72	6.52	6.24
														0.46	23.43	1.98	0.01	0.06	0.06
														16.08	68.33	329.07	0.73	6.53	6.25

2020 Source Type	Emission Factors (g/hp-hr)							Number of Load			Annual Hours	Daily Emissions (lbs/day)							
	ROG	CO	NOx	CO2	SOx	PM10	PM2.5	HP	Equipment Factor	Daily Hours		ROG	CO	NOx	SOx	PM10	PM2.5		
Diesel Grader	0.06	2.20	0.26	194.99	0.00	0.008	0.008	75	7	0.41	2	689	0.06	2.30	0.27	0.00	0.01	0.01	
Diesel Water Truck	0.06	2.20	0.26	201.18	0.00	0.008	0.008	300	3	0.38	2	498	0.07	2.64	0.31	0.00	0.01	0.01	
Diesel Bulldozer	0.06	2.20	0.26	209.85	0.00	0.008	0.008	520	1	0.40	1	291	0.03	0.94	0.11	0.00	0.00	0.00	
Diesel Scraper	0.06	2.20	0.26	267.86	0.00	0.008	0.008	475	1	0.48	1	459	0.04	1.62	0.19	0.00	0.01	0.01	
Diesel Backhoe	0.06	3.70	0.26	201.40	0.00	0.008	0.008	375	8	0.37	2	613	0.29	17.72	1.25	0.01	0.04	0.04	
Pickup Trucks/Workers	0.02	1.26	0.11	344	0.00	0.00	0.00												
											Daily Miles								
											1,677	160,790	0.09	4.65	0.39	0.01	0.01	0.01	
Haul Trucks	0.25	0.93	6.23	1,691	0.02	0.09	0.08												
											20,160	1,839,165	10.99	41.46	276.85	0.71	3.92	3.75	
													0.49	25.22	2.13	0.02	0.07	0.07	
													11.08	46.11	277.24	0.72	3.92	3.75	

Asphalt Processing

200,000 ton/year 100 tons/hr	2000 hours/year
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112 MMBTU/year 0.0560 MMBTU/hr

Drum Mix Hot Mix Natural Gas fired (AP42 11.1)	ton/year	lb/day	lbs/hr	Heater (AP42 1.4)	ton/year	lb/day	lbs/hr	
PM	0.033 lb/ton	3.30	26.4	3.30	0.00745 lb/mmbtu	4.17E-04	0.003	4.17E-04
PM10	0.0042 lb/ton	0.42	3.36	0.420	0.00745 lb/mmbtu	4.17E-04	0.003	4.17E-04
PM2.5	0.0029 lb/ton	0.290	2.32	0.290	0.00745 lb/mmbtu	4.17E-04	0.003	4.17E-04
CO	0.13 lb/ton	13.0	104	13.0	0.08235 lb/mmbtu	0.005	0.04	0.005
Nox	0.026 lb/ton	2.60	20.8	2.60	0.09804 lb/mmbtu	0.005	0.04	0.005
SO2	0.0034 lb/ton	0.34	2.72	0.340	0.00059 lb/mmbtu	3.29E-05	2.64E-04	3.29E-05
TOC (50% CE)	0.022 lb/ton	2.20	17.6	2.20				
VOC (50% CE)	0.016 lb/ton	1.60	12.8	1.60	0.00539 lb/mmbtu	3.02E-04	0.002	3.02E-04
H2S	0.005 lb/ton	0.500	4.00	0.50				

		lbs/yr	g/s	lbs/hr	
Non-PAH HAPs	Benzene	0.00039 lb/ton	78.0	1.12E-03	3.90E-02
	Ethylbenzene	0.00024 lb/ton	48.0	6.90E-04	2.40E-02
	Formaldehyde	0.0031 lb/ton	620	8.92E-03	0.310
	Hexane	0.00092 lb/ton	184	2.65E-03	0.092
	Methyl chloroform	0.000048 lb/ton	9.60	1.38E-04	4.80E-03
	Toluene	0.00015 lb/ton	30.0	4.32E-04	1.50E-02
	Xylene	0.0002 lb/ton	40.0	5.75E-04	2.00E-02
PAH HAPs	2-Methylnaphthalene	7.40E-05 lb/ton	14.8	2.13E-04	7.40E-03
	Acenaphthene	1.40E-06 lb/ton	0.280	4.03E-06	1.40E-04
	Acenaphthylene	8.60E-06 lb/ton	1.72	2.47E-05	8.60E-04
	Anthracene	2.20E-07 lb/ton	4.40E-02	6.33E-07	2.20E-05
	Benzo(a)anthracene	2.10E-07 lb/ton	4.20E-02	6.04E-07	2.10E-05
	Benzo(a)pyrene	1.10E-07 lb/ton	2.20E-02	3.16E-07	1.10E-05
	Benzo(b)fluoranthene	1.00E-07 lb/ton	2.00E-02	2.88E-07	1.00E-05
	Benzo(ghi)perylene	4.00E-08 lb/ton	8.00E-03	1.15E-07	4.00E-06
	Benzo(k)fluoranthene	4.10E-08 lb/ton	8.20E-03	1.18E-07	4.10E-06
	Chrysene	1.80E-07 lb/ton	3.60E-02	5.18E-07	1.80E-05
	Fluoranthene	6.10E-07 lb/ton	0.122	1.75E-06	6.10E-05
	Fluorene	3.80E-06 lb/ton	0.760	1.09E-05	3.80E-04
	Indeno(123-cd)pyrene	7.00E-09 lb/ton	1.40E-03	2.01E-08	7.00E-07
	Naphthalene	9.00E-05 lb/ton	18.0	2.59E-04	9.00E-03
	Phenanthrene	7.60E-06 lb/ton	1.52	2.19E-05	7.60E-04
Pyrene	5.40E-07 lb/ton	1.08E-01	1.55E-06	5.40E-05	
Perylene	8.80E-09 lb/ton	1.76E-03	2.53E-08	8.80E-07	
Metals	Arsenic	5.60E-07 lb/ton	1.12E-01	1.61E-06	5.60E-05
	Barium	5.80E-06 lb/ton	1.160	1.67E-05	5.80E-04
	Cadmium	4.10E-07 lb/ton	8.20E-02	1.18E-06	4.10E-05
	Chromium	5.50E-06 lb/ton	1.100	1.58E-05	5.50E-04
	Chromium VI	4.50E-07 lb/ton	9.00E-02	1.29E-06	4.50E-05
	Copper	3.10E-06 lb/ton	0.620	8.92E-06	3.10E-04
	Lead	6.20E-07 lb/ton	0.124	1.78E-06	6.20E-05
	Manganese	7.70E-06 lb/ton	1.54	2.22E-05	7.70E-04
	Mercury	2.40E-07 lb/ton	4.80E-02	6.90E-07	2.40E-05
	Nickel	6.30E-05 lb/ton	12.6	1.81E-04	6.30E-03
	Selenium	3.50E-07 lb/ton	7.00E-02	1.01E-06	3.50E-05
	Zinc	6.10E-05 lb/ton	12.2	1.75E-04	6.10E-03
	Antimony	1.80E-07 lb/ton	3.60E-02	5.18E-07	1.80E-05
	Cobalt	2.60E-08 lb/ton	5.20E-03	7.48E-08	2.60E-06
	Phosphorous	2.80E-05 lb/ton	5.60	8.05E-05	2.80E-03
	Silver	4.80E-07 lb/ton	9.60E-02	1.38E-06	4.80E-05
	Thallium	4.10E-09 lb/ton	8.20E-04	1.18E-08	4.10E-07

Asphalt Silo

200,000 ton/year	2000 hours/year
100 tons/hr	

		tons/yr	lb/day	lb/hr	g/s
Loadout PM10/PM2.5	0.00030 lb/ton	0.0297	0.713	2.97E-02	3.74E-03
Loadout TOC	0.00142 lb/ton	0.142	3.40	1.42E-01	1.79E-02
Loadout VOC	0.00133 lb/ton	0.133	3.20	1.33E-01	1.68E-02
Loadout CO	0.00046 lb/ton	4.60E-02	1.103	4.60E-02	5.79E-03
Silo Filling PM10/PM2.5	0.00042 lb/ton	4.18E-02	1.004	4.18E-02	5.27E-03
Silo Filling TOC	0.00415 lb/ton	0.415	9.96	0.415	5.23E-02
Silo Filling VOC	0.00390 lb/ton	0.390	9.37	0.390	4.92E-02
Silo Filling CO	0.00040 lb/ton	4.02E-02	0.965	4.02E-02	5.06E-03
Storage Tank TOC	1.37E-05 lb/ton	1.37E-03	3.29E-02	1.37E-03	1.73E-04
Storage Tank VOC	0.00001 lb/ton	1.29E-03	3.09E-02	1.29E-03	1.62E-04
Storage Tank CO	1.33E-06 lb/ton	1.33E-04	3.19E-03	1.33E-04	1.67E-05
Storage Tank H2S	0.0049 lb/ton	0.490	11.76	0.490	6.17E-02

	Loadout	Silo/Storage	lbs/yr	g/s	lb/hr	g/s	
Non-PAH HAPs TOC	Benzene	0.052%	0.032% lb/ton	0.414	5.95E-06	2.07E-04	2.61E-05
	Ethylbenzene	0.28%	0.038% lb/ton	1.110	1.60E-05	5.55E-04	6.99E-05
	Formaldehyde	0.088%	0.69% lb/ton	6.00	8.63E-05	3.00E-03	3.78E-04
	Hexane	0.15%	0.10% lb/ton	1.26	1.81E-05	6.29E-04	7.93E-05
	Toluene	0.21%	0.062% lb/ton	1.112	1.60E-05	5.56E-04	7.00E-05
	Xylene	0.41%	0.20% lb/ton	2.83	4.07E-05	1.41E-03	1.78E-04
	Bromomethane	0.0096%	0.0049% lb/ton	6.80E-02	9.78E-07	3.40E-05	4.29E-06
	2-Butanone	0.049%	0.039% lb/ton	0.464	6.67E-06	2.32E-04	2.92E-05
	Carbon Disulfide	0.013%	0.016% lb/ton	0.170	2.45E-06	8.51E-05	1.07E-05
	Chloroethane	0.00021%	0.004% lb/ton	3.39E-02	4.88E-07	1.70E-05	2.14E-06
	Chloromethane	0.015%	0.023% lb/ton	0.234	3.37E-06	1.17E-04	1.47E-05
	Cumene	0.11%	lb/ton	0.312	4.48E-06	1.56E-04	1.96E-05
	Methylene Chloride		0.00027% lb/ton	2.25E-03	3.24E-08	1.12E-06	1.42E-07
	Styrene	0.0073%	0.0054% lb/ton	6.57E-02	9.45E-07	3.28E-05	4.14E-06
	Tetrachloroethane	0.0077%	lb/ton	2.18E-02	3.14E-07	1.09E-05	1.37E-06
PAH HAPs PM	2-Methylnaphthalene	2.38%	5.27% lb/ton	50.6	7.28E-04	2.91E-03	3.67E-04
	Acenaphthene	0.26%	0.47% lb/ton	4.65	6.69E-05	2.74E-04	3.45E-05
	Acenaphthylene	0.028%	0.014% lb/ton	0.196	2.82E-06	1.42E-05	1.79E-06
	Anthracene	0.07%	0.13% lb/ton	1.28	1.84E-05	7.52E-05	9.48E-06
	Benzo(a)anthracene	0.019%	0.056% lb/ton	0.520	7.48E-06	2.91E-05	3.66E-06
	Benzo(a)pyrene	0.0078%	0.0095% lb/ton	1.01E-01	1.46E-06	6.29E-06	7.93E-07
	Benzo(b)fluoranthene	0.0076%	lb/ton	2.15E-02	3.10E-07	2.26E-06	2.85E-07
	Benzo(ghi)perylene	0.0019%	lb/ton	5.38E-03	7.74E-08	5.65E-07	7.11E-08
	Benzo(k)fluoranthene	0.0022%	lb/ton	6.23E-03	8.97E-08	6.54E-07	8.24E-08
	Chrysene	0.103%	0.21% lb/ton	2.04	2.94E-05	1.18E-04	1.49E-05
	Dibenzo(ah)anthracene	0.00037%	lb/ton	1.05E-03	1.51E-08	1.10E-07	1.39E-08
	Fluoranthene	0.05%	0.15% lb/ton	1.39	2.00E-05	7.76E-05	9.78E-06
	Fluorene	0.77%	1.01% lb/ton	10.60	1.52E-04	6.51E-04	8.21E-05
	Indeno(123-cd)pyrene	0.00047%	lb/ton	1.33E-03	1.92E-08	1.40E-07	1.76E-08
	Naphthalene	1.25%	1.82% lb/ton	18.7	2.69E-04	1.13E-03	1.43E-04
Phenanthrene	0.81%	1.80% lb/ton	17.3	2.49E-04	9.94E-04	1.25E-04	
Pyrene	0.15%	0.40% lb/ton	3.76	5.40E-05	2.12E-04	2.67E-05	
Perylene	0.022%	0.03% lb/ton	0.312	4.49E-06	1.91E-05	2.41E-06	
Phenol	1.18%	lb/ton	3.34	4.81E-05	3.51E-04	4.42E-05	

Aggregate Processing Operating Assumptions Stationary Portable

Hourly Process Rate (ton)	1,200	550	
Daily Process Rate (ton)	9,600	4,400	
Annual Process Rate (ton)	1,414,667	1,144,000	2,080 hours/year

Aggregate Plant PM Emissions						Controlled					
Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	PM10 Emissions			PM2.5 Emissions		
						Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
						Primary Crusher	1200	1	8	0.0024	0.00054
Secondary Crusher	960	1	8	0.0024	0.00054	0.52	4.15	0.31	0.08	0.62	0.05
Primary Screening	720	1	8	0.0087	0.00074	0.53	4.26	0.31	0.08	0.64	0.05
Primary Conveying	1200	1	8	0.0011	0.000046	0.06	0.44	0.03	0.01	0.07	0.00
SWOOP Plant Primary Crusher	360	1	8	0.0024	0.00054	0.19	1.56	0.11	0.03	0.23	0.02
Conveyed Crushed Rock	1200	1	8	0.0011	0.000046	0.06	0.44	0.03	0.01	0.07	0.00
SWOOP Plant Screen	720	1	8	0.0087	0.00074	0.53	4.26	0.31	0.08	0.64	0.05
E6 Secondary Cone Crusher	480	1	8	0.0024	0.00054	0.26	2.07	0.15	0.04	0.31	0.02
E10 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.14	0.04	0.29	0.02
E11 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.14	0.04	0.29	0.02
Belts	1200	1	8	0.0011	0.000046	0.06	0.44	0.03	0.01	0.07	0.00
E5 Secondary Screen	1200	1	8	0.0087	0.00074	0.89	7.10	0.52	0.13	1.07	0.08
6x20 Simplicity Screen	420	1	8	0.0087	0.00074	0.31	2.49	0.18	0.05	0.37	0.03
E8 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.42	0.11	0.85	0.06
E7 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.42	0.11	0.85	0.06
E12 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.21	0.05	0.43	0.03
E13 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.21	0.05	0.43	0.03
Total Aggregate Plant PM Emissions						6.67	53.34	3.93	1.00	8.00	0.59

Uncontrolled					
PM10 Emissions			PM2.5 Emissions		
Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
2.88	23.04	1.70	0.43	3.46	0.25
2.30	18.43	1.36	0.35	2.76	0.20
6.26	50.11	3.69	0.94	7.52	0.55
1.32	10.56	0.78	0.20	1.58	0.12
0.86	6.91	0.51	0.13	1.04	0.08
1.32	10.56	0.78	0.20	1.58	0.12
6.26	50.11	3.69	0.94	7.52	0.55
1.15	9.22	0.68	0.17	1.38	0.10
1.08	8.64	0.64	0.16	1.30	0.10
1.08	8.64	0.64	0.16	1.30	0.10
1.32	10.56	0.78	0.20	1.58	0.12
10.44	83.52	6.15	1.57	12.53	0.92
3.65	29.23	2.15	0.55	4.38	0.32
8.35	66.82	4.92	1.25	10.02	0.74
8.35	66.82	4.92	1.25	10.02	0.74
4.18	33.41	2.46	0.63	5.01	0.37
4.18	33.41	2.46	0.63	5.01	0.37
65.00	519.98	38.31	9.75	78.00	5.75

Aggregate Portable Plant PM Emissions						Controlled					
Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	PM10 Emissions			PM2.5 Emissions		
						Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
						Portable Jaw Crusher	550	1	8	0.0024	0.00054
Portable Conveyors	550	4	8	0.0011	0.000046	0.10	0.81	0.03	0.02	0.12	0.00
Portable Screen	550	1	8	0.0087	0.00074	0.41	3.26	0.42	0.06	0.49	0.06
Portable Cone Crusher	550	1	8	0.0024	0.00054	0.30	2.38	0.31	0.04	0.36	0.05
Total Aggregate Portable Plant PM Emissions						1.10	8.82	1.07	0.17	1.32	0.16

Uncontrolled					
PM10 Emissions			PM2.5 Emissions		
Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
1.32	10.56	1.37	0.20	1.58	0.21
2.42	19.36	0.63	0.36	2.90	0.09
4.79	38.28	4.98	0.72	5.74	0.75
1.32	10.56	1.37	0.20	1.58	0.21
9.85	78.76	8.35	1.48	11.81	1.25

Total Aggregate PM Emissions						7.77	62.16	5.00	1.17	9.32	0.75
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74.84	598.74	46.66	11.23	89.81	7.00
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Brick Kiln Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
SO2	0.67	3.65	87.5	16.0
PM10/2.5	0.87	4.74	114	20.7
NOx	0.35	1.91	45.7	8.34
CO	1.20	6.53	157	28.6
CO2	400	2,177	52,256	9,536
VOC	0.054	0.29	7.05	1.29

Operating Assumptions

47,680 tons brick fired per year
 365 days per year
 131 tons brick fired per day
 24 hours per day
 5.44 tons brick fired per hour

8,760 hours/year

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
Hydrogen Fluoride	0.23	1.25	30.0	5.48
1,1,1-trichloroethane	4.70E-06	2.56E-05	6.14E-04	1.12E-04
2-butanone	0.00022	1.20E-03	0.03	5.24E-03
benzene	0.0029	0.02	0.38	0.07
bis(2-ethylhexy)phthalate	0.002	0.01	0.26	0.05
carbon disulfide	4.30E-05	2.34E-04	5.62E-03	1.03E-03
chlorine	0.0013	7.08E-03	1.70E-01	3.10E-02
chloroethane	0.00057	3.10E-03	7.45E-02	1.36E-02
chloromethane	0.00067	3.65E-03	8.75E-02	1.60E-02
di-n-butylphthalate	0.00014	7.62E-04	1.83E-02	3.34E-03
ethylbenzene	4.40E-05	2.40E-04	5.75E-03	1.05E-03
m-/p-xylene	6.70E-05	3.65E-04	8.75E-03	1.60E-03
iodomethane	9.30E-05	5.06E-04	1.21E-02	2.22E-03
naphthalene	6.50E-05	3.54E-04	8.49E-03	1.55E-03
o-xylene	5.80E-05	3.16E-04	7.58E-03	1.38E-03
phenol	8.60E-05	4.68E-04	1.12E-02	2.05E-03
styrene	2.00E-05	1.09E-04	2.61E-03	4.77E-04
tetrachloroethene	2.80E-06	1.52E-05	3.66E-04	6.68E-05
toluene	0.00016	8.71E-04	2.09E-02	3.81E-03
antimony	2.70E-05	1.47E-04	3.53E-03	6.44E-04
cadmium	1.50E-05	8.17E-05	1.96E-03	3.58E-04
chromium	5.10E-05	2.78E-04	6.66E-03	1.22E-03
cobalt	2.10E-06	1.14E-05	2.74E-04	5.01E-05
lead	1.50E-04	8.17E-04	1.96E-02	3.58E-03
nickel	7.20E-05	3.92E-04	9.41E-03	1.72E-03
selenium	2.30E-04	1.25E-03	3.00E-02	5.48E-03
arsenic	3.10E-05	1.69E-04	4.05E-03	7.39E-04
beryllium	4.20E-07	2.29E-06	5.49E-05	1.00E-05
manganese	2.90E-04	1.58E-03	3.79E-02	6.91E-03
mercury	7.50E-06	4.08E-05	9.80E-04	1.79E-04

Exhaust Parameters

Temperature 280 F 411 K
 Flow Rate 10,631 cfm 11.0 m/s
 Diameter 30 in 0.762 m
 Area 4.91 ft2

Tug Emission Factors

Pollutant	gm/kW-hr
CO	1.20
HC	0.114
Nox	10.7
PM10/2.5	0.265
SO2	14.48
CO2	712

Operation Assumptions

3 Barges per day
6 hours per day per barge
980 Barges per year
4,268 Ave tug engine size (hp)
0.7 Average load
226 Fuel Consumption (g/kW-hr)

Emission factors from U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data February 2000

Fractional load assumption: 80 percent cruise, 10 percent slow cruise, 10 percent maneuvering

Tug Emission Rates

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
CO	2,668	5.87	94.9	46.50
HC	254	0.559	9.03	4.42
Nox	23,776	52.3	845.5	414.3
PM10/2.5	591	1.30	21.02	10.30
SO2	32,275	71.00	1,148	562.4
CO2	#####	3,490	56,419	27,645

Tug Emission Rates for DPM

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
DPM	591	1.30	1.75	0.86

Maneuvering	0.2	0.26	0.35	0.17	3 Barges per day
Cruise	0.8	1.04	1.40	0.69	0.5 hours per day per barge 980 Barges per year

**Quarry Operations
Trucks on Unpaved Surfaces**

Operating Assumptions

Haul road length = 0.25 mile 9,600 tons/day
 Trucks/day = 125 5,333 cy/day
 VMT = 31 miles/day 1,414,667 tons/year
 Days/year 260 days 785,926 cy/year 2,080 hours/year

Calculated Emission Factor for travel on unpaved roads
 $F = 2.1 * (G/12) * (H/30) * [(I/3)^{0.7}] * [(J/4)^{0.5}] * [(365-K)/365]$

G = silt content :Mining Haul Road, 8%
 H = Mean vehicle speed, 15 mph
 I = Mean vehicle weight, 33 tons unloaded per cat 735 web site , 69 tons when loaded
 J = Mean # of wheels, 6
 K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
 Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94.4	47.2	14.2	177	53.0
Unpaved Fugitive Emissions (tons/year)	40.9	12.3	6.14	1.84	23.0	6.89

Fugitive PM10 emissions from material handling

$E = [0.00112 * ((G/5)^{1.3} / (H/2)^{1.4})] * [I/J]$

G = Mean wind speed in miles per hour, 13 mph
 H = Moisture Content of soil, 2.0 (dry)
 I = lbs of material handled
 J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Material Handling Fugitive Emissions (pounds/day)	37.2	11.2	5.59	1.68	20.9	6.27
Material Handling Fugitive Emissions (tons/year)	4.84	1.45	0.73	0.22	2.72	0.81

Blasting

$E = 0.000014 (A)^{1.5}$ from AP-42 11.9

E= PM30 emissions
 A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
 Approx area = 6,750 sf

E= 7.76 pounds of TSP/blast
PM10 = 4.04 pounds/blast
 727 pounds/year 180 blasts/year
PM2.5 = 0.61 pounds/blast
 109 pounds/year
Silica 2.27 pounds/blast
 408 pounds/year

Attachment B

Health Risk Assessment Methodology and Assumptions

A health risk assessment (HRA) is accomplished in four steps: 1) hazards identification, 2) exposure assessment, 3) toxicity assessment, and 4) risk characterization. These steps cover the estimation of air emissions, the estimation of the air concentrations resulting from a dispersion analysis, the incorporation of the toxicity of the pollutants emitted, and the characterization of the risk based on exposure parameters such as breathing rate, age adjustment factors, and exposure duration; each depending on receptor type (i.e., residence, school, daycare centers, hospitals, senior care facilities, recreational areas, adult, infant, child).

This HRA was conducted in accordance with technical guidelines developed by federal, state, and regional agencies, including U.S. Environmental Protection Agency (USEPA), California Environmental Protection Agency (CalEPA), California Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*¹ and the Bay Area Air Quality Management District (BAAQMD) *Health Risk Screening Analysis Guidelines*.² This HRA addresses the emissions from reclamation activities including onsite equipment and haul trucks. Specific focus was on diesel particulate matter (DPM) and particulate matter equal to or less than 2.5 micrometers (fine particulate or PM_{2.5}) emissions. Secondly, a cumulative HRA addressed the emissions from Quarry operations including offroad equipment, haul trucks, barges, blasting, the McNear's Brickyard, asphalt processing activities, and aggregate processing. For the cumulative HRA, specific focus was also on DPM and PM_{2.5} emissions but also other air toxics such as hydrogen sulfide and certain metals.

According to CalEPA, a HRA should not be interpreted as the expected rates of cancer or other potential human health effects, but rather as estimates of potential risk or likelihood of adverse effects based on current knowledge, under a number of highly conservative assumptions and the best assessment tools currently available.

TERMS AND DEFINITIONS

As the practice of conducting a HRA is particularly complex and involves concepts that are not altogether familiar to most people, several terms and definitions are provided that are considered essential to the understanding of the approach, methodology and results:

¹ Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, March 6, 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

² Bay Area Air Quality Management District, *Health Risk Screening Analysis Guidelines*, January 2010, http://www.baaqmd.gov/~media/Files/Engineering/Air%20Toxics%20Programs/hrsa_guidelines.ashx

Acute effect – a health effect (non-cancer) produced within a short period of time (few minutes to several days) following an exposure to toxic air contaminants (TAC).

Cancer risk – the probability of an individual contracting cancer from a lifetime (i.e., 70 year) exposure to TAC such as DPM in the ambient air.

Chronic effect – a health effect (non-cancer) produced from a continuous exposure occurring over an extended period of time (weeks, months, years).

Hazard Index (HI) – the unitless ratio of an exposure level over the acceptable reference dose. The HI can be applied to multiple compounds in an additive manner.

Hazard Quotient (HQ) – the unitless ratio of an exposure level over the acceptable reference dose. The HQ is applied to individual compounds.

Toxic Air Contaminants – any air pollutant that is capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). The current California list of TAC lists approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Human Health Effects - comprise disorders such as eye watering, respiratory or heart ailments, and other (i.e., non-cancer) related diseases.

Health Risk Assessment – an analysis designed to predict the generation and dispersion of TAC in the outdoor environment, evaluate the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

Incremental – under CEQA, the net difference (or change) in conditions or impacts when comparing the baseline to future year project conditions.

Maximum exposed individual (MEI) – an individual assumed to be located at the point where the highest concentrations of TAC, and therefore, health risks are predicted to occur.

Non-cancer risks – health risks such as eye watering, respiratory or heart ailments, and other non-cancer related diseases.

Receptors – the locations where potential health impacts or risks are predicted (i.e., schools, residences, and recreational sites).

LIMITATIONS AND UNCERTAINTIES

There are a number of important limitations and uncertainties commonly associated with a HRA due to the wide variability of human exposures to TAC, the extended timeframes over which the exposures are evaluated, and the inability to verify the results. Limitations and uncertainties associated with the HRA and identified by the CalEPA include: (a.) lack of reliable

monitoring data; (b.) extrapolation of toxicity data in animals to humans; (c.) estimation errors in calculating TAC emissions; (d.) concentration prediction errors with dispersion models; and (e.) the variability in lifestyles, fitness and other confounding factors of the human population. This HRA was performed using the best available data and methodologies, notwithstanding the following uncertainties:

- There are uncertainties associated with the estimation of emissions from project activities. Where project-specific data, such as emission factors, are not available, default assumptions in emission models were used.
- The limitations of the air dispersion model provide a source of uncertainty in the estimation of exposure concentrations. According to USEPA, errors due to the limitation of the algorithms implemented in the air dispersion model in the highest estimated concentrations of +/- 10 percent to 40 percent are typical.³
- The source parameters used to model emission sources add uncertainty. For all emission sources, the source parameters used source-specific, recommended as defaults, or expected to produce more conservative results. Discrepancies might exist in actual emissions characteristics of an emission source and its representation in the dispersion model.
- The exposure duration estimates do not take into account that people do not usually reside at the same location for 30 years and that other exposures (i.e., school children) are also of much shorter durations than was assumed in this HRA. This exposure duration is a highly conservative assumption, since most people do not remain at home all day and on average residents change residences every 11 to 12 years. In addition, this assumption adopts that residents are experiencing outdoor concentrations for the entire exposure period.
- For the risk and hazards calculations as well as the cumulative health impact, numerous assumptions must be made in order to estimate human exposure to pollutants. These assumptions include parameters such as breathing rates, exposure time and frequency, exposure duration, and human activity patterns. While a mean value derived from scientifically defensible studies is the best estimate of central tendency, most of the exposure variables used in this HRA are high-end estimates. The combination of several high-end estimates used as exposure parameters may substantially overestimate pollutant intake. The excess lifetime cancer risks calculated in this HRA are therefore likely to be higher than may be required to be protective of public health.

³ US Environmental Protection Agency, *Guideline on Air Quality Models (Revised)*, 40 Code of Federal Regulations, Part 51, Appendix W, November 2005, https://www3.epa.gov/scram001/guidance/guide/appw_05.pdf

- The Cal/EPA cancer potency factor for DPM was used to estimate cancer risks associated with exposure to DPM emissions from construction activities. However, the cancer potency factor derived by Cal/EPA for DPM is highly uncertain in both the estimation of response and dose. In the past, due to inadequate animal test data and epidemiology data on diesel exhaust, the International Agency for Research on Cancer (IARC), a branch of the World Health Organization, had classified DPM as Probably Carcinogenic to Humans (Group 2); the USEPA had also concluded that the existing data did not provide an adequate basis for quantitative risk assessment.⁴ However, based on two recent scientific studies,⁵ IARC recently re-classified DPM as Carcinogenic to Humans to Group 1,⁶ which means that the agency has determined that there is “sufficient evidence of carcinogenicity” of a substance in humans and represents the strongest weight-of-evidence rating in IARC’s carcinogen classification scheme. This determination by the IARC may provide additional impetus for the USEPA to identify a quantitative dose-response relationship between exposure to DPM and cancer.

In summary, the estimated health impacts are based primarily on a series of conservative assumptions related to predicted environmental concentrations, exposure, and chemical toxicity. The use of conservative assumptions tends to produce upper-bound estimates of risk. BAAQMD acknowledges this uncertainty by stating: “the methods used [to estimate risk] are conservative, meaning that the real risks from the source may be lower than the calculations, but it is unlikely that they will be higher.” The USEPA notes that the conservative assumptions used in a HRA are intended to assure that the estimated risks do not underestimate the actual risks posed by a site and that the estimated risks do not necessarily represent actual risks experienced by populations at or near a site.⁷

HAZARDS IDENTIFICATION

California Air Resources Board (CARB) has developed a list of TAC, where a TAC is “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health (California Health and Safety Code Section 39655). All USEPA hazardous air pollutants are TAC. CARB administers the Air

⁴ US Environmental Protection Agency, *Health Assessment Document for Diesel Engine Exhaust*, May 2002, https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=29060

⁵ Attfield MD, Schleiff PL, Lubin JH, Blair A, Stewart PA, Vermeulen R, Coble JB, Silverman DT, *The Diesel Exhaust in Miners Study: A Nested Case-Control Study of Lung Cancer and Diesel Exhaust*, June 2012, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3369553/>

⁶ International Agency for Research on Cancer, *Diesel Engine Exhaust Carcinogenic*, June 2012, https://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

⁷ US Environmental Protection Agency, *Risk Assessment Guidance for Superfund Human Health Risk Assessment*, December 1989, https://www.epa.gov/sites/production/files/2015-09/documents/rags_a.pdf

Toxics “Hot Spots” program under Assembly Bill 2588 “Hot Spots” Information and Assessment Act, which requires periodic local review of facilities which emit TAC. Local air agencies periodically must prioritize stationary sources of TAC and prepare health risk assessments for high-priority sources.

DPM, crystalline silica, and hydrogen sulfide (H₂S) are three air toxics of concern associated with Quarry operations and reclamation activities and are also discussed below

Diesel Particulate Matter

Diesel exhaust is a complex mixture of numerous individual gaseous and particulate compounds emitted from diesel-fueled combustion engines. Diesel particulate matter is formed primarily through the incomplete combustion of diesel fuel. DPM is removed from the atmosphere through physical processes including atmospheric fall-out and washout by rain. Humans can be exposed to airborne DPM by deposition on water, soil, and vegetation; although the main pathway of exposure is inhalation. Cal/EPA has concluded that potential cancer risk from inhalation exposure to whole diesel exhaust outweigh the multi-pathway cancer risk from the speciated components.

In August 1998, the CARB identified DPM as an air toxic. CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel- Fueled Engines and Vehicles* and *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* and approved these documents on September 28, 2000.^{8 9} The documents represent proposals to reduce DPM emissions, with the goal of reducing emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The program aimed to require the use of state-of-the-art catalyzed DPM filters and ultra-low-sulfur diesel fuel.

In 2001, CARB assessed the state-wide health risks from exposure to diesel exhaust and to other toxic air contaminants. It is difficult to distinguish the health risks of diesel emissions from those of other air toxics, since diesel exhaust contains approximately 40 different TAC. The CARB study detected diesel exhaust by using ambient air carbon soot measurements as a surrogate for diesel emissions. The study reported that the state-wide cancer risk from exposure to diesel exhaust was about 540 per million population as compared to a total risk for exposure to all ambient air toxics of 760 per million. This estimate, which accounts for about 70 percent of the total risk from TAC, included both urban and rural areas in the state. The estimate can also be considered an average worst-case for the state, since it assumes constant exposure to outdoor concentrations of diesel exhaust and does not account for expected lower concentrations

⁸ California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000, <http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf>

⁹ California Air Resources Board, *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines*, October 2000, <https://www.arb.ca.gov/diesel/documents/rmgFinal.pdf>

indoors, where most of time is spent. DPM is estimated to increase statewide cancer risk by 520 cancers per million residents exposed over a lifetime.¹⁰

Exposure to DPM results in a greater incidence of chronic non-cancer health effects, such as cough, labored breathing, chest tightness, wheezing, and bronchitis. Individuals particularly vulnerable to DPM are children, whose lung tissue is still developing, the elderly and people with illnesses who may have other serious health problems that can be aggravated by exposure to DPM. In general, children are more vulnerable than adults to air pollutants because they have higher inhalation rates, narrower airways, and less mature immune systems. In addition, children with allergies may have an enhanced allergic response when exposed to diesel exhaust).

Crystalline Silica

In 2005, the California Office of Environmental Health Hazard Assessment (OEHHA) added a chronic reference exposure level (REL) for crystalline silica. Silica is a hazardous substance when it is inhaled, and the airborne dust particles that are formed when the material containing the silica are broken, crushed, or sawn pose potential risks.

Respirable crystalline silica refers to crystalline silicon dioxide with aerodynamic diameter less than four microns (i.e., 0.0004 cm). Crystalline silica or quartz is ubiquitous in nature. Most dust generated by reclamation activities and Quarry operations including blasting produces dust particles larger than 4 microns. These particles are too large to reach the alveoli of the lungs which are the target organ. Thus, crystalline silica constitutes a tiny fraction of the dust from these sources and does not represent a significant health risk to neighbors of these types of projects. In order to result in toxic effects the silica needs to be crystalline, smaller than 4 microns, inhaled, and not exhaled.

Inhalation of crystalline silica initially causes respiratory irritation and an inflammatory reaction in the lungs. Silicosis results from chronic exposure; it is characterized by the presence of histologically unique silicotic nodules and by fibrotic scarring of the lung. Lung diseases other than cancer associated with silica exposure include silicosis, tuberculosis/silicotuberculosis, chronic bronchitis, small airways disease, and emphysema. Ambient air exposures do not cause concern but levels to which workers (e.g., miners, sandblasters) may be exposed have been shown to cause cancer.

Hydrogen Sulfide

Hydrogen sulfide is found in nature around some hot springs, geothermal sources, and oil fields (sour gas). It is also produced by anaerobic decomposition, and is sometimes called

¹⁰ California Air Resources Board, *Summary: Diesel Particulate Matter Health Impacts*, April 12, 2016, https://www.arb.ca.gov/research/diesel/diesel-health_summ.htm

swamp gas. The human nose can detect H₂S at concentrations well below toxic levels. Heavier than air, this gas is considered obnoxious and unpleasant. At higher levels, it desensitizes the nose, and can be fatal because it blocks oxygen uptake by the blood. Mainly a health threat to industrial workers, H₂S is usually regulated to eliminate nuisance for nearby residents or property owners.

EXPOSURE ASSESSMENT

Dispersion is the process by which atmospheric pollutants disseminate due to wind and vertical stability. The results of a dispersion analysis are used to assess pollutant concentrations at or near an emission source. The results of an analysis allow predicted concentrations of pollutants to be compared directly to air quality standards and other criteria such as health risks based on modeled concentrations.

A rising pollutant plume reacts with the environment in several ways before it levels off. First, the plume's own turbulence interacts with atmospheric turbulence to entrain ambient air. This mixing process reduces and eventually eliminates the density and momentum differences that cause the plume to rise. Second, the wind transports the plume during its rise and entrainment process. Higher winds mix the plume more rapidly, resulting in a lower final rise. Third, the plume interacts with the vertical temperature stratification of the atmosphere, rising as a result of buoyancy in the unstable-to-neutrally stratified mixed layer. However, after the plume encounters the mixing lid and the stably stratified air above, its vertical motion is dampened.

Molecules of gas or small particles injected into the atmosphere will separate from each other as they are acted on by turbulent eddies. The Gaussian mathematical model such as AERMOD simulates the dispersion of the gas or particles within the atmosphere. The formulation of the Gaussian model is based on the following assumptions:

- The predictions are not time-dependent (all conditions remain unchanged with time)
- The wind speed and direction are uniform, both horizontally and vertically, throughout the region of concern
- The rate of diffusion is not a function of position
- Diffusion in the direction of the transporting wind is negligible when compared to the transport flow

Dispersion Modeling Approach

Air dispersion modeling was performed to estimate the downwind dispersion of air toxic emissions resulting from the proposed project. The following sections present the fundamental components of an air dispersion modeling analysis including air dispersion model selection and options, receptor locations, meteorological data, and source exhaust parameters.

Model Selection and Options

AERMOD (Version 19191)¹¹ was used for the dispersion analysis. AERMOD is the USEPA preferred atmospheric dispersion modeling system for general industrial sources. The model can simulate point, area, volume, and line sources. AERMOD is the appropriate model for this analysis based on the coverage of simple, intermediate, and complex terrain. It also predicts both short-term and long-term (annual) average concentrations. The model was executed using the regulatory default options (stack-tip downwash, buoyancy-induced dispersion, and final plume rise), default wind speed profile categories, default potential temperature gradients, and assuming no pollutant decay.

The selection of the appropriate dispersion coefficients depends on the land use within three kilometers (km) of the project site. The types of land use were based on the classification method defined by Auer (1978); using pertinent United States Geological Survey (USGS) 1:24,000 scale (7.5 minute) topographic maps of the area. If the Auer land use types of heavy industrial, light-to-moderate industrial, commercial, and compact residential account for 50 percent or more of the total area, the USEPA *Guideline on Air Quality Models*¹² recommends using urban dispersion coefficients; otherwise, the appropriate rural coefficients can be used. Based on observation of the area surrounding the project site, rural (urban is only designated within dense city centers such as downtown San Francisco) dispersion coefficients were applied within AERMOD. Particle gravitational settling was not accounts for in the analysis; this would tend to produce conservative higher values because more particulates would tend to deposit closer to the source.

Receptor Locations

Some receptors are considered more sensitive to air pollutants than others, because of preexisting health problems, proximity to the emissions source, or duration of exposure to air pollutants. Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also considered sensitive to poor air quality because people in residential areas are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution because vigorous exercise associated with recreation places having a high demand on respiratory system function.

¹¹ US Environmental Protection Agency, AERMOD Modeling System, <https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models>

¹² US Environmental Protection Agency, *Guideline on Air Quality Models (Revised)*, 40 Code of Federal Regulations, Part 51, Appendix W, November 2005, https://www3.epa.gov/scram001/guidance/guide/appw_05.pdf

The nearest sensitive receptors identified in the 2009 FEIR remain unchanged. Sensitive receptors include the residences along Heritage Drive and Marin Bay Park Court. These include the residences along Heritage Drive, located about 670 feet from the nearest reclamation activities and residences along Marin Bay Park Court, the closest of which are about 410 feet from the nearest reclamation activities. These residences are approximately 200 feet from the fence line of the Quarry and 1,200 feet from the main quarrying area. Residences on San Marino Drive and Via Montebello also overlook the Quarry at a distance of approximately 1,600 feet from the Quarry operations area.

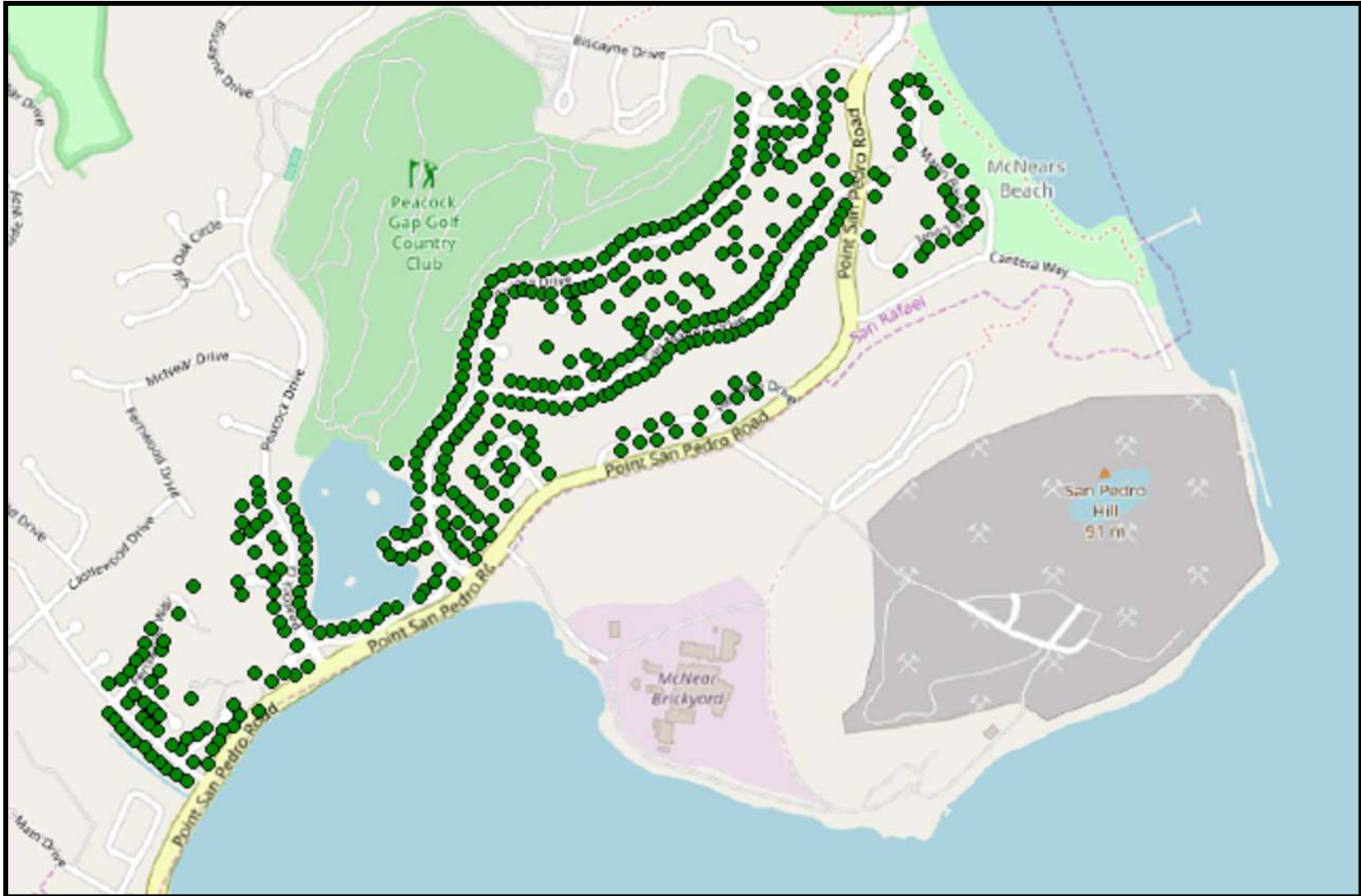
Sensitive receptors were placed at receptors to estimate health impacts due to existing and proposed project activities on existing residences. **Figure B-1** displays the location of the sensitive receptors used in this HRA. No changes to the receptor grid were made compared to the 2009 FEIR. Receptors were placed at a height of 1.8 meters (typical breathing height). Terrain elevations for receptor locations were used based on available USGS information for the area.

Meteorological Data

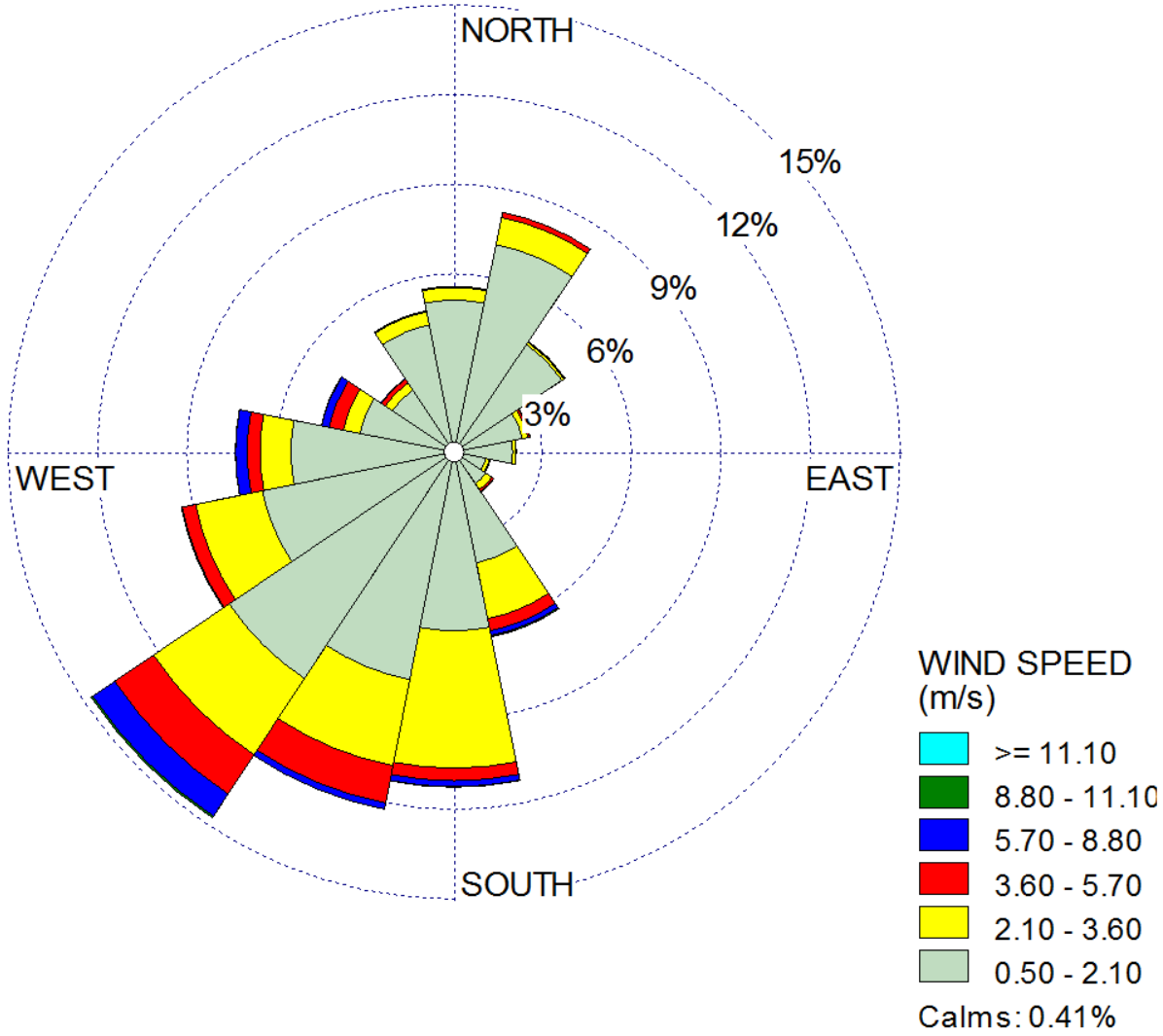
Surface meteorological data and upper air meteorological (mixing height) data from San Rafael Rock Quarry and Oakland, California, respectively, were used for the modeling analysis. Onsite meteorological data was monitored at two location; Marin Bay Park and Via Montebello Pump. Meteorological data were obtained from STI and used for modeling impacts of the proposed project. Data from April 2004 through June 2005 were used. This information is the same meteorological data used for the 2009 FEIR. Each meteorological data set was modeled and the maximum health impacts from either data was reported.

Figure B-2 displays the wind rose during this period for Marin Bay Park. Wind directions are predominately from the southwest with a high frequency of low wind conditions for Marin Bay Park, as shown in **Figure B-3**. The average annual wind speed is 5.7 miles per hour. **Figure B-4** displays the wind rose during this period for Via Montebello Pump. Wind directions are predominately from the south with a high frequency of low wind conditions for Via Montebello Pump, as shown in **Figure B-5**. The average annual wind speed is 5.7 miles per hour.

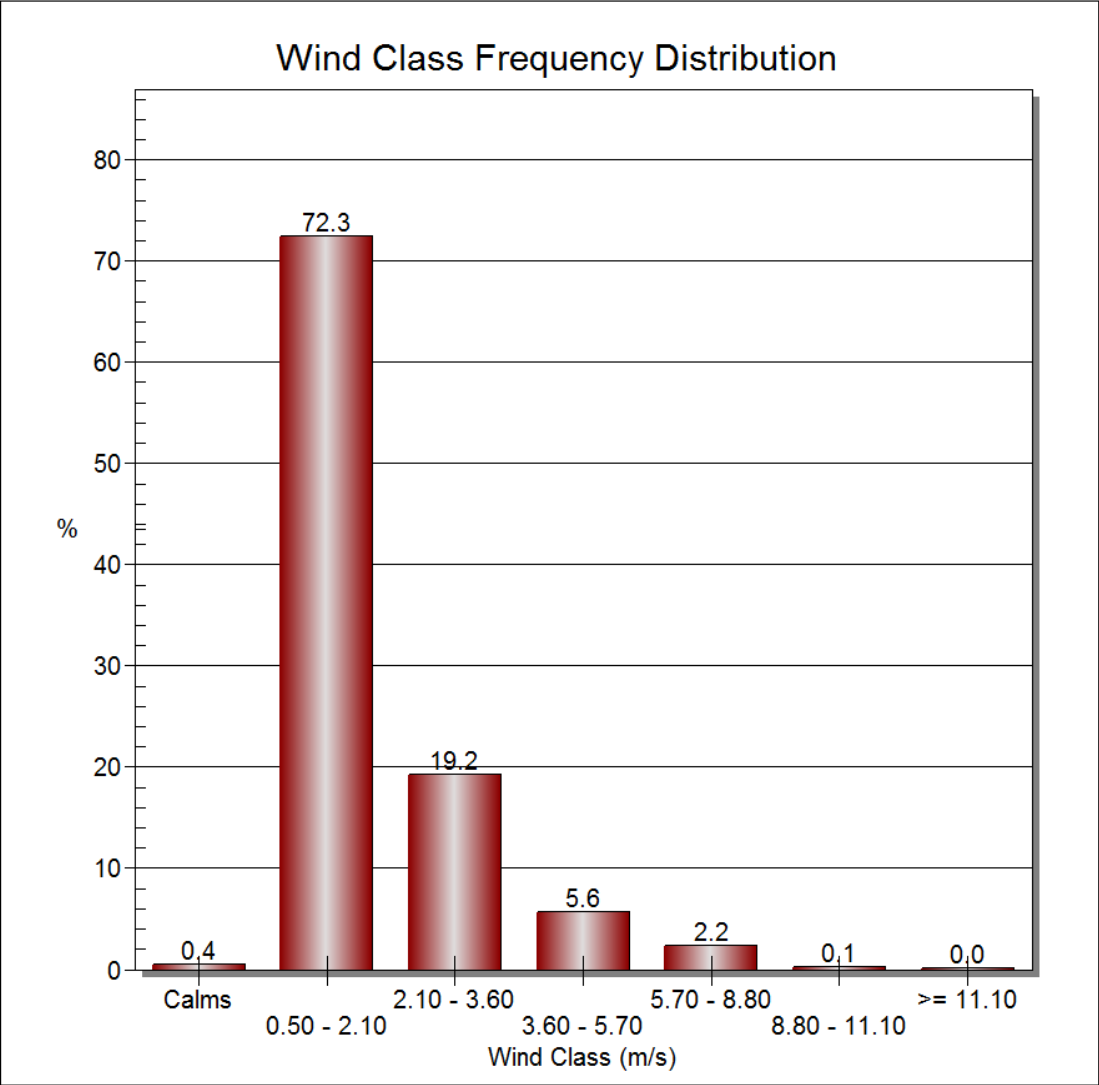
FIGURE B-1
HEALTH RISK ASSESSMENT RECEPTORS



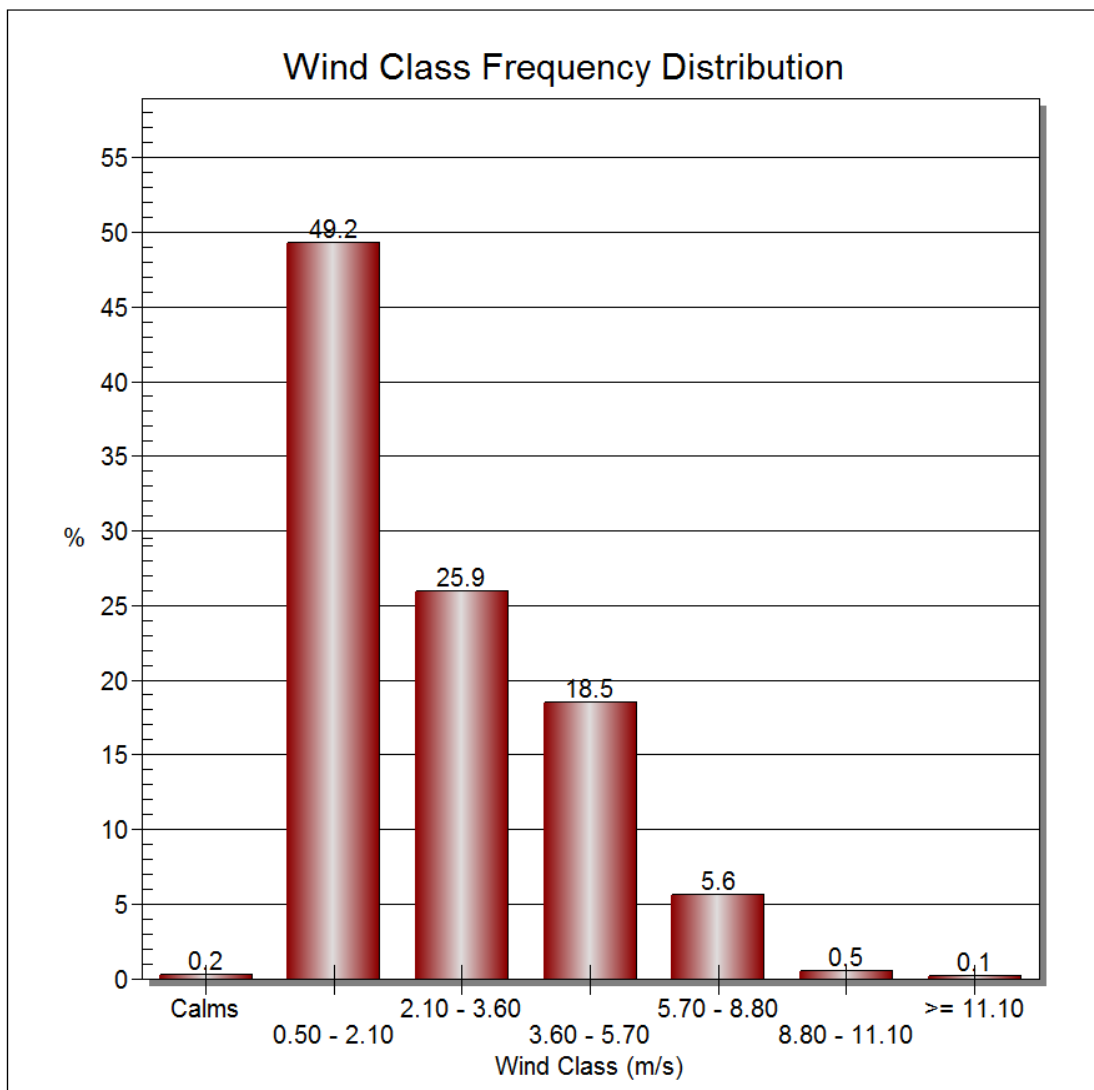
**FIGURE B-2
WINDROSE FOR MARIN BAY PARK**



**FIGURE B-3
WIND SPEED DISTRIBUTION FOR MARIN BAY PARK**



**FIGURE B-5
WIND SPEED DISTRIBUTION FOR VIA MONTEBELLO PUMP**



Source Release Characteristics

The source release characteristics used for dispersion modeling were the same as the 2009 FEIR.

Offroad equipment was treated as area sources located within the boundary of the mining operations. These sources were assigned a release height of 4.15 meters and an initial vertical dimension of 4.85 meters, which reflects the height of the equipment plus an additional height of the exhaust plume above the exhaust point to account for plume rise due to buoyancy and momentum. Haul trucks were treated as a line source (i.e., volume sources placed at regular intervals) located along unpaved roads, egress/ingress routes and the Point San Pedro Road (haul route). The haul route was modeled from the quarry to Highway 101 to the west along Point San Pedro Road. These sources were assigned a release height of 4.15 meters and an initial vertical dimension of 8.3 meters, which accounts for dispersion from the movement of vehicles. Barge operations were treated as a line sources with two shipping routes, one to the northeast and one to the south west. These sources were assigned a release height of 10 meters and a source width of 180 meters (for maneuvering) and 800 meters (for cruise). Because barge activities occurs to the northeast (toward the Sacramento Delta and to the southwest (towards Oakland and San Francisco), two line sources were modeled, each assuming a distance of approximately two kilometers to the berth.

Brick processing was treated as a point source with a release height of 7.92 meters, an exhaust temperature of 410 Kelvin, an exhaust velocity of 11 meters per second and a diameter of 0.76 meters. The asphalt processing was treated as a point source with a release height of 12.2 meters, an exhaust temperature of 422 Kelvin, an exhaust velocity of 17.4 meters per second and a diameter of 1.4 meters. The asphalt silo was treated as a volume source with a release height of 4.2 meters and horizontal dimension of 12 meters.

Blasting activities were treated as a volume source with a release height of 12 meters and a width of 200 meters. The aggregate processing operation was treated as an area source with a release height of 10 meters and a width of 120 meters. The fugitive dust sources associated with the quarry was treated as an area source with a release height of two meters and an initial vertical ca dimension of 4.65 meters.

Terrain elevations for emission source locations were used based on available USGS information for the area. AERMAP (Version 18081)¹³ was used to develop the terrain elevations.

EXPOSURE PARAMETERS

This HRA was conducted following methodologies in OEHHA's *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*.¹⁴ This was accomplished by applying the

¹³ US Environmental Protection Agency, AERMAP, <https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models>

¹⁴ Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, March 6, 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

estimated concentrations at the receptors analyzed to the established cancer risk estimates and acceptable reference concentrations for non-cancer health effects.

OEHHA's revisions to its *Guidance Manual* were primarily designed to ensure that the greater sensitivity of children to cancer and other health risks is reflected in HRAs. For example, OEHHA now recommends that risks be analyzed separately for multiple age groups, focusing especially on young children and teenagers, rather than the past practice of analyzing risks to the general population, without distinction by age. OEHHA also now recommends that statistical "age sensitivity factors" be incorporated into a HRA, and that children's relatively high breathing rates be accounted for. On the other hand, the *Guidance Manual* revisions also include some changes that would reduce calculated health risks. For example, under the former guidance, OEHHA recommended that residential cancer risks be assessed by assuming 70 years of exposure at a residential receptor; under the *Guidance Manual*, this assumption is lessened to 30 years.

OEHHA has developed exposure factors (e.g., daily breathing rates) for six age groups including the last trimester to birth, birth to 2 years, 2 to 9 years, 2 to 16 years, 16 to 30 years, and 16 to 70 years. These age bins allow for more refined exposure information to be used when estimating exposure and the potential for developing cancer over a lifetime. This means that exposure variates are needed for the third trimester, ages zero to less than two, ages two to less than nine, ages two to less than 16, ages 16 to less than 30, and ages 16 to 70. Residential receptors utilize the 95th percentile breathing rate values. The breathing rates are age-specific and are 1,090 liters per kilogram-day for ages less than 2 years, 745 liters per kilogram-day for ages 2 to 16 years, 335 liters per kilogram-day for ages 16 to 30 years, and 290 liters per kilogram-day for ages 30 to 70 years. A school child breathing rate is 520 liters per kilogram-day and an off-site worker breathing rate is 230 liters per kilogram-day.

OEHHA developed age sensitivity factors (ASF) to take into account the increased sensitivity to carcinogens during early-in-life exposures. OEHHA recommends that cancer risks be weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to 2 years of age, and by a factor of 3 for exposures from 2 years through 15 years of age.

Based on OEHHA recommendations, the cancer risk to residential receptors assumes exposure occurs 24 hours per day for 350 days per year while accounting for a percentage of time at home. OEHHA evaluated information from activity pattern databases to estimate the fraction of time at home (FAH) during the day. This information was used to adjust exposure duration and cancer risk based on the assumption that a person is not present at home continuously for 24 hours and therefore exposure to emissions is not occurring when a person is away from their home. In general, the FAH factors are age-specific and are 0.85 for ages less than 2 years, 0.72 for ages 2 to 16 years, and 0.73 for ages 30 to 70 years.

OEHHA has decreased the exposure duration currently being used for estimating cancer risk at the maximum exposed individual resident from 70 years to 30 years. This is based on studies

showing that 30 years is a reasonable estimate of the 90th to 95th percentile of residency duration in the population. Additionally, OEHHA recommends using the 9 and 70-year exposure duration to represent the potential impacts over the range of residency periods.

Given the exposure durations of less than 24 hours, sensitive recreational receptors were evaluated for acute impacts only. Based on OEHHA recommendations, for children at school sites, exposure is assumed to occur 10 hours per day for 180 days (or 36 weeks) per year. Cancer risk estimates for children at school sites are calculated based on 9 year exposure duration. School sites also include teachers and other adult staff which are treated as off-site workers.

Table B-1 presents a summary of the health risk assessment exposure factors.

**TABLE B-1
HEALTH RISK ASSESSMENT EXPOSURE FACTORS**

Receptor	Age	Age Specific Factor	Breathing Rate (L/kg-day)	Fraction of Time	Daily Exposure	Annual Exposure
Residential	Third Trimester	10	361	1	24 hours	350 days
	0 to 2	10	1,090	1	24 hours	350 days
	2 to 16	3	572	1	24 hours	350 days
	16 to 30	1	261	0.73	24 hours	350 days
School Child	2 to 16	3	581	1	10 hours	180 days

Source: Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, March 6, 2015, http://oehha.ca.gov/air/hot_spots/hotspots2015.html

RISK CHARACTERIZATION

Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances. Cancer risks are expressed as the chance in one million of getting cancer (i.e., number of cancer cases among one million people exposed). The cancer risks are assumed to occur exclusively through the inhalation pathway. The cancer risk can be estimated by using the cancer potency factor (milligrams per kilogram of body weight per day [mg/kg-day]), the 30-year annual average concentration (microgram per cubic meter [$\mu\text{g}/\text{m}^3$]), and the lifetime exposure adjustment.

Following guidelines established by OEHHA, the incremental cancer risks attributable to the Project were calculated by applying exposure parameters to modeled DPM concentrations in order to determine the inhalation dose (mg/kg-day) or the amount of pollutants inhaled per body weight mass per day. The cancer risks occur exclusively through the inhalation pathway; therefore, the cancer risks can be estimated from the following equation:

$$\text{Dose-inh} = \frac{C_{\text{air}} * \{DBR\} * A * ASF * FAH * EF * ED * 10^{-6}}{AT}$$

where:

Dose-inh = Dose of the toxic substance through inhalation in mg/kg-day

10^{-6}	= Micrograms to milligrams conversion, Liters to cubic meters conversion
C_{air}	= Concentration in air in microgram (μg)/cubic meter (m^3)
{DBR}	= Daily breathing rate in liter (L)/kg body weight – day
A	= Inhalation absorption factor, 1.0
ASF	= Age Sensitivity Factor
EF	= Exposure frequency (days/year)
ED	= Exposure duration (years)
FAH	= Fraction of Time at Home
AT	= Averaging time period over which exposure is averaged in days (25,550 days for a 30 year cancer risk)

To determine incremental cancer risk, the estimated inhalation dose attributed to the Project was multiplied by the cancer potency slope factor (cancer risk per mg/kg-day). The cancer potency slope factor is the upper bound on the increased cancer risk from a lifetime exposure to a pollutant. These slope factors are based on epidemiological studies and are different values for different pollutants. This allows the estimated inhalation dose to be equated to a cancer risk.

Non-cancer adverse health impacts, acute (short-term) and chronic (long-term), are measured against a hazard index (HI), which is defined as the ratio of the predicted incremental exposure concentration from the Project to a published reference exposure level (REL) that could cause adverse health effects as established by OEHHA. The ratio (referred to as the Hazard Quotient [HQ]) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system. The overall HI is calculated as the total for each organ system. If the overall HI for the highest-impacted organ system is greater than one, then the impact is considered to be significant.

The HI is an expression used for the potential for non-cancer health effects. The relationship for the non-cancer health effects is given by the annual concentration (in $\mu\text{g}/\text{m}^3$) and the REL (in $\mu\text{g}/\text{m}^3$). The acute hazard index was determined using the “simple” concurrent maximum approach, which tends to be conservative (i.e., overpredicts).

The relationship for the non-cancer health effects is given by the following equation:

$$\text{HI} = \text{C}/\text{REL}$$

Where:

HI	= Hazard index; an expression of the potential for non-cancer health effects.
C	= Annual average concentration ($\mu\text{g}/\text{m}^3$) during the 30 year exposure period.
REL	= Concentration at which no adverse health effects are anticipated.

The cancer risk and health index are determined by pollutant and then totaled for comparison with the significance thresholds.

The concentration level at or below which no adverse non-cancer health effects are anticipated for a specified exposure duration is termed the REL. REL are based on the most sensitive, relevant, adverse health effect reported in the medical and toxicological literature. REL are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety. Since margins of safety are incorporated to address data gaps and uncertainties, exceeding the REL does not automatically indicate an adverse health impact.¹⁵ **Table B-2** displays the toxicity values for the 35 pollutants of concern associated with the Quarry operations with the cumulative health risk assessment. The toxicity values have been updated since the 2009 FEIR was completed.

**TABLE B-2
HEALTH RISK ASSESSMENT TOXICITY VALUES**

Compound	Acute REL ($\mu\text{g}/\text{m}^3$)	Chronic REL ($\mu\text{g}/\text{m}^3$)	Inhalation Unit Risk ($\mu\text{g}/\text{m}^3$) ⁻¹	Inhalation Cancer Potency Factor ($\text{mg}/\text{kg}\cdot\text{day}$) ⁻¹
DPM		5	0.0003	1.1
Crystalline Silica		3		
Hydrogen Fluoride	240	14		
Hydrogen Sulfide	42	10		
1,1,1-trichloroethane	68000	1000		
Benzene	27	3	0.000029	0.1
Benzo(a)anthracene			0.00011	0.39
Benzo(a)pyrene			0.0011	3.9
Benzo(k)fluoranthene			0.00011	0.39
bis(2-ethylhexy)phthalate			0.0000024	0.0084
Carbon Disulfide	6200	800		
Chlorine	210	0.2		
Chloroethane		30000		
Chrysene			0.000011	0.0039
Ethylbenzene		2000	0.0000025	0.0087
Formaldehyde	55	9	0.000006	0.021
Hexane		7000		
Indeno(123-cd)pyrene			0.00011	0.39
Methyl Chloroform	68000	1000		
Methylene Chloride	14000	400	0.000001	0.0035
Naphthalene		9	0.000034	0.12
Phenol	5800	200		
Styrene	21000	900		
Toluene	5000	420		
Xylene	22000	700		
Arsenic	0.2	0.015	0.0033	12

¹⁵ Office of Environmental Health Hazards Assessment - Consolidated Health Values Table, August 20, 2018, <https://www.arb.ca.gov/toxics/healthval/contable.pdf>

Beryllium		0.007	0.0024	8.4
Cadmium		0.02	0.0042	15
Copper	100			
Lead			0.000012	0.042
Manganese		0.09		
Mercury	0.6	0.03		
Nickel	0.2	0.14	0.00026	0.91
Selenium		20		
Vanadium	30			

Source: Office of Environmental Health Hazards Assessment – Chemical Database, <https://oehha.ca.gov/chemicals>

Attachment B

Health Risk Assessment

- HRA Results - MBP – Reclamation
- HRA Results - VMP - Reclamation
- HRA Results - MBP - Operations 24 Years
- HRA Results - MBP - Operations 30 Years
- HRA Results - VMP - Operations 24 Years
- HRA Results - VMP - Operations 30 Years

Health Risk Assessment Assumptions

5 DPM Chronic Reference Exposure Level (ug/m3)
 3 Silica Chronic Reference Exposure Level (ug/m3)
 1.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)
 350 days per year
 25,550 days per lifetime

1,090 95th Percentile Daily Breathing Rates (L/kg-day) 0<2 Years
 861 95th Percentile Daily Breathing Rates (L/kg-day) 2<9 Years
 745 95th Percentile Daily Breathing Rates (L/kg-day) 2<16 Years
 335 95th Percentile Daily Breathing Rates (L/kg-day) 16<30 Years
 290 95th Percentile Daily Breathing Rates (L/kg-day) 30<70 Years

0.85 fraction of time at home 0<2 Years
 0.72 fraction of time at home 2<16 Years
 0.73 fraction of time at home 16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Reclamation Activities
 Receptor: Existing Residence
 Pollutant: DPM/Silica
 Meteorological: MBP

Exposure Year	Calendar Year	Annual PM2.5 Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	Significance Threshold (ug/m3)
1	2021	0.00	1,090	10.0	0.85	0.01	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.00	1,090	10.0	0.85	0.01	0.3 Significance Threshold (ug/m3)
3	2023	0.00	745	4.75	0.72	0.00	No Significant?
4	2024	0.00	745	3.00	0.72	0.00	0.02 Chronic Hazard Impact
5	2025	0.00	745	3.00	0.72	0.00	1 Significance Threshold
6	2026	0.00	745	3.00	0.72	0.00	No Significant?
7	2027	0.00	745	3.00	0.72	0.00	0.05 Cancer Risk
8	2028	0.00	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	0.00	745	3.00	0.72	0.00	No Significant?
10	2030	0.00	745	3.00	0.72	0.00	

Health Risk Assessment Assumptions

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Reclamation Activities
 Receptor: Existing Residence
 Pollutant: DPM/Silica
 Meteorological: VMP

5 DPM Chronic Reference Exposure Level (ug/m3)	
3 Silica Chronic Reference Exposure Level (ug/m3)	
1.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Exposure Year	Calendar Year	Annual PM2.5 Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.00	1,090	10.0	0.85	0.01	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.00	1,090	10.0	0.85	0.01	0.3 Significance Threshold (ug/m3)
3	2023	0.00	745	4.75	0.72	0.00	No Significant?
4	2024	0.00	745	3.00	0.72	0.00	0.02 Chronic Hazard Impact
5	2025	0.00	745	3.00	0.72	0.00	1 Significance Threshold
6	2026	0.00	745	3.00	0.72	0.00	No Significant?
7	2027	0.00	745	3.00	0.72	0.00	0.03 Cancer Risk
8	2028	0.00	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	0.00	745	3.00	0.72	0.00	No Significant?
10	2030	0.00	745	3.00	0.72	0.00	

Health Risk Assessment Assumptions

5 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
1.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: DPM
 Meteorological: MBP

Exposure Year	Calendar Year	Annual PM2.5 Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.08	1,090	10.0	0.85	11.8	0.08 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.07	1,090	10.0	0.85	10.4	0.8 Significance Threshold (ug/m3)
3	2023	0.07	745	4.75	0.72	2.72	No Significant?
4	2024	0.07	745	3.00	0.72	1.72	0.02 Chronic Hazard Impact
5	2025	0.07	745	3.00	0.72	1.72	10 Significance Threshold
6	2026	0.07	745	3.00	0.72	1.71	No Significant?
7	2027	0.07	745	3.00	0.72	1.71	Acute Hazard Impact
8	2028	0.07	745	3.00	0.72	1.71	10 Significance Threshold
9	2029	0.07	745	3.00	0.72	1.71	No Significant?
10	2030	0.07	745	3.00	0.72	1.71	
11	2031	0.07	745	3.00	0.72	1.71	
12	2032	0.07	745	3.00	0.72	1.71	49.4 Cancer Risk (Child)
13	2033	0.07	745	3.00	0.72	1.71	100 Significance Threshold
14	2034	0.07	745	3.00	0.72	1.71	No Significant?
15	2035	0.07	745	3.00	0.72	1.71	
16	2036	0.07	745	3.00	0.72	1.71	
17	2037	0.07	335	1.70	0.73	0.44	10.7 Cancer Risk (Adult)
18	2038	0.07	335	1.00	0.73	0.26	100 Significance Threshold
19	2039	0.07	335	1.00	0.73	0.26	No Significant?
20	2040	0.07	335	1.00	0.73	0.26	
21	2041	0.07	335	1.00	0.73	0.26	
22	2042	0.07	335	1.00	0.73	0.26	
23	2043	0.07	335	1.00	0.73	0.26	
24	2044	0.07	335	1.00	0.73	0.26	

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Crystalline Silica
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		0.30	1,090	10.0	0.85		0.30 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		0.30	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023		0.30	745	4.75	0.72		No Significant?
4	2024		0.30	745	3.00	0.72		0.10 Chronic Hazard Impact
5	2025		0.30	745	3.00	0.72		10 Significance Threshold
6	2026		0.30	745	3.00	0.72		No Significant?
7	2027		0.30	745	3.00	0.72		Acute Hazard Impact
8	2028		0.30	745	3.00	0.72		10 Significance Threshold
9	2029		0.30	745	3.00	0.72		No Significant?
10	2030		0.30	745	3.00	0.72		Acute Hazard Impact
11	2031		0.30	745	3.00	0.72		10 Significance Threshold
12	2032		0.30	745	3.00	0.72		No Significant?
13	2033		0.30	745	3.00	0.72		Cancer Risk (Child)
14	2034		0.30	745	3.00	0.72		100 Significance Threshold
15	2035		0.30	745	3.00	0.72		No Significant?
16	2036		0.30	745	3.00	0.72		Cancer Risk (Adult)
17	2037		0.30	335	1.70	0.73		100 Significance Threshold
18	2038		0.30	335	1.00	0.73		No Significant?
19	2039		0.30	335	1.00	0.73		
20	2040		0.30	335	1.00	0.73		
21	2041		0.30	335	1.00	0.73		
22	2042		0.30	335	1.00	0.73		
23	2043		0.30	335	1.00	0.73		
24	2044		0.30	335	1.00	0.73		

Health Risk Assessment Assumptions

14 Chronic Reference Exposure Level (ug/m3)	
240 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Fluoride
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	2.82	0.11	1,090	10.0	0.85		0.11 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	2.82	0.11	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	2.82	0.11	745	4.75	0.72		No Significant?
4	2024	2.82	0.11	745	3.00	0.72		0.01 Chronic Hazard Impact
5	2025	2.82	0.11	745	3.00	0.72		10 Significance Threshold
6	2026	2.82	0.11	745	3.00	0.72		No Significant?
7	2027	2.82	0.11	745	3.00	0.72		0.01 Acute Hazard Impact
8	2028	2.82	0.11	745	3.00	0.72		10 Significance Threshold
9	2029	2.82	0.11	745	3.00	0.72		No Significant?
10	2030	2.82	0.11	745	3.00	0.72		Cancer Risk (Child)
11	2031	2.82	0.11	745	3.00	0.72		100 Significance Threshold
12	2032	2.82	0.11	745	3.00	0.72		No Significant?
13	2033	2.82	0.11	745	3.00	0.72		Cancer Risk (Adult)
14	2034	2.82	0.11	745	3.00	0.72		100 Significance Threshold
15	2035	2.82	0.11	745	3.00	0.72		No Significant?
16	2036	2.82	0.11	745	3.00	0.72		Cancer Risk (Adult)
17	2037	2.82	0.11	335	1.70	0.73		100 Significance Threshold
18	2038	2.82	0.11	335	1.00	0.73		No Significant?
19	2039	2.82	0.11	335	1.00	0.73		
20	2040	2.82	0.11	335	1.00	0.73		
21	2041	2.82	0.11	335	1.00	0.73		
22	2042	2.82	0.11	335	1.00	0.73		
23	2043	2.82	0.11	335	1.00	0.73		
24	2044	2.82	0.11	335	1.00	0.73		

Health Risk Assessment Assumptions

10 Chronic Reference Exposure Level (ug/m3)	
42 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Sulfide
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	9.28	0.04	1,090	10.0	0.85		0.04 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	9.28	0.04	1,090	10.0	0.85		
3	2023	9.28	0.04	745	4.75	0.72		
4	2024	9.28	0.04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	9.28	0.04	745	3.00	0.72		
6	2026	9.28	0.04	745	3.00	0.72		
7	2027	9.28	0.04	745	3.00	0.72		
8	2028	9.28	0.04	745	3.00	0.72		0.22 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	9.28	0.04	745	3.00	0.72		
10	2030	9.28	0.04	745	3.00	0.72		
11	2031	9.28	0.04	745	3.00	0.72		
12	2032	9.28	0.04	745	3.00	0.72		
13	2033	9.28	0.04	745	3.00	0.72		
14	2034	9.28	0.04	745	3.00	0.72		
15	2035	9.28	0.04	745	3.00	0.72		
16	2036	9.28	0.04	745	3.00	0.72		
17	2037	9.28	0.04	335	1.70	0.73		
18	2038	9.28	0.04	335	1.00	0.73		
19	2039	9.28	0.04	335	1.00	0.73		
20	2040	9.28	0.04	335	1.00	0.73		
21	2041	9.28	0.04	335	1.00	0.73		
22	2042	9.28	0.04	335	1.00	0.73		
23	2043	9.28	0.04	335	1.00	0.73		
24	2044	9.28	0.04	335	1.00	0.73		

Health Risk Assessment Assumptions

0.015 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Arsenic
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	1.42E-03	1.91E-05	1,090	10.0	0.85	0.03	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	1.42E-03	1.91E-05	1,090	10.0	0.85	0.03	0.8 Significance Threshold (ug/m3)
3	2023	1.42E-03	1.91E-05	745	4.75	0.72	0.01	No Significant?
4	2024	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.00 Chronic Hazard Impact
5	2025	1.42E-03	1.91E-05	745	3.00	0.72	0.01	10 Significance Threshold
6	2026	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
7	2027	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.01 Acute Hazard Impact
8	2028	1.42E-03	1.91E-05	745	3.00	0.72	0.01	10 Significance Threshold
9	2029	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
10	2030	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.14 Cancer Risk (Child)
11	2031	1.42E-03	1.91E-05	745	3.00	0.72	0.01	100 Significance Threshold
12	2032	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
13	2033	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.03 Cancer Risk (Adult)
14	2034	1.42E-03	1.91E-05	745	3.00	0.72	0.01	100 Significance Threshold
15	2035	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
16	2036	1.42E-03	1.91E-05	745	3.00	0.72	0.01	
17	2037	1.42E-03	1.91E-05	335	1.70	0.73	0.00	
18	2038	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
19	2039	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
20	2040	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
21	2041	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
22	2042	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
23	2043	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
24	2044	1.42E-03	1.91E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.007 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
8.4 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Beryllium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.46E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.46E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.46E-06	745	4.75	0.72	0.00	No Significant?
4	2024		1.46E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		1.46E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.46E-06	745	3.00	0.72	0.00	No Significant?
7	2027		1.46E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.46E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.46E-06	745	3.00	0.72	0.00	No Significant?
10	2030		1.46E-06	745	3.00	0.72	0.00	
11	2031		1.46E-06	745	3.00	0.72	0.00	
12	2032		1.46E-06	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2033		1.46E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.46E-06	745	3.00	0.72	0.00	No Significant?
15	2035		1.46E-06	745	3.00	0.72	0.00	
16	2036		1.46E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		1.46E-06	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		1.46E-06	335	1.00	0.73	0.00	No Significant?
19	2039		1.46E-06	335	1.00	0.73	0.00	
20	2040		1.46E-06	335	1.00	0.73	0.00	
21	2041		1.46E-06	335	1.00	0.73	0.00	
22	2042		1.46E-06	335	1.00	0.73	0.00	
23	2043		1.46E-06	335	1.00	0.73	0.00	
24	2044		1.46E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.02 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
15 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Cadmium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		7.39E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		7.39E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		7.39E-06	745	4.75	0.72	0.00	No Significant?
4	2024		7.39E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		7.39E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		7.39E-06	745	3.00	0.72	0.00	No Significant?
7	2027		7.39E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		7.39E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		7.39E-06	745	3.00	0.72	0.00	No Significant?
10	2030		7.39E-06	745	3.00	0.72	0.00	
11	2031		7.39E-06	745	3.00	0.72	0.00	
12	2032		7.39E-06	745	3.00	0.72	0.00	0.07 Cancer Risk (Child)
13	2033		7.39E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		7.39E-06	745	3.00	0.72	0.00	No Significant?
15	2035		7.39E-06	745	3.00	0.72	0.00	
16	2036		7.39E-06	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
17	2037		7.39E-06	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		7.39E-06	335	1.00	0.73	0.00	No Significant?
19	2039		7.39E-06	335	1.00	0.73	0.00	
20	2040		7.39E-06	335	1.00	0.73	0.00	
21	2041		7.39E-06	335	1.00	0.73	0.00	
22	2042		7.39E-06	335	1.00	0.73	0.00	
23	2043		7.39E-06	335	1.00	0.73	0.00	
24	2044		7.39E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
100 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Copper
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	Maximum Annual PM2.5 Concentration (ug/m3)
1	2021	0.01		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.01		1,090	10.0	0.85		Chronic Hazard Impact 10 Significance Threshold No Significant?
3	2023	0.01		745	4.75	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
4	2024	0.01		745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
5	2025	0.01		745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
6	2026	0.01		745	3.00	0.72		
7	2027	0.01		745	3.00	0.72		
8	2028	0.01		745	3.00	0.72		
9	2029	0.01		745	3.00	0.72		
10	2030	0.01		745	3.00	0.72		
11	2031	0.01		745	3.00	0.72		
12	2032	0.01		745	3.00	0.72		
13	2033	0.01		745	3.00	0.72		
14	2034	0.01		745	3.00	0.72		
15	2035	0.01		745	3.00	0.72		
16	2036	0.01		745	3.00	0.72		
17	2037	0.01		335	1.70	0.73		
18	2038	0.01		335	1.00	0.73		
19	2039	0.01		335	1.00	0.73		
20	2040	0.01		335	1.00	0.73		
21	2041	0.01		335	1.00	0.73		
22	2042	0.01		335	1.00	0.73		
23	2043	0.01		335	1.00	0.73		
24	2044	0.01		335	1.00	0.73		

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.042 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Lead
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		8.67E-05	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		8.67E-05	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		8.67E-05	745	4.75	0.72	0.00	No Significant?
4	2024		8.67E-05	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		8.67E-05	745	3.00	0.72	0.00	No Significant?
7	2027		8.67E-05	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		8.67E-05	745	3.00	0.72	0.00	No Significant?
10	2030		8.67E-05	745	3.00	0.72	0.00	
11	2031		8.67E-05	745	3.00	0.72	0.00	
12	2032		8.67E-05	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		8.67E-05	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		8.67E-05	745	3.00	0.72	0.00	No Significant?
15	2035		8.67E-05	745	3.00	0.72	0.00	
16	2036		8.67E-05	745	3.00	0.72	0.00	
17	2037		8.67E-05	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		8.67E-05	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		8.67E-05	335	1.00	0.73	0.00	No Significant?
20	2040		8.67E-05	335	1.00	0.73	0.00	
21	2041		8.67E-05	335	1.00	0.73	0.00	
22	2042		8.67E-05	335	1.00	0.73	0.00	
23	2043		8.67E-05	335	1.00	0.73	0.00	
24	2044		8.67E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.09 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Manganese
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.50E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.50E-05	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023		1.50E-05	745	4.75	0.72		No Significant?
4	2024		1.50E-05	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025		1.50E-05	745	3.00	0.72		10 Significance Threshold
6	2026		1.50E-05	745	3.00	0.72		No Significant?
7	2027		1.50E-05	745	3.00	0.72		Acute Hazard Impact
8	2028		1.50E-05	745	3.00	0.72		10 Significance Threshold
9	2029		1.50E-05	745	3.00	0.72		No Significant?
10	2030		1.50E-05	745	3.00	0.72		Acute Hazard Impact
11	2031		1.50E-05	745	3.00	0.72		10 Significance Threshold
12	2032		1.50E-05	745	3.00	0.72		No Significant?
13	2033		1.50E-05	745	3.00	0.72		Cancer Risk (Child)
14	2034		1.50E-05	745	3.00	0.72		100 Significance Threshold
15	2035		1.50E-05	745	3.00	0.72		No Significant?
16	2036		1.50E-05	745	3.00	0.72		Cancer Risk (Adult)
17	2037		1.50E-05	335	1.70	0.73		100 Significance Threshold
18	2038		1.50E-05	335	1.00	0.73		No Significant?
19	2039		1.50E-05	335	1.00	0.73		
20	2040		1.50E-05	335	1.00	0.73		
21	2041		1.50E-05	335	1.00	0.73		
22	2042		1.50E-05	335	1.00	0.73		
23	2043		1.50E-05	335	1.00	0.73		
24	2044		1.50E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

0.03 Chronic Reference Exposure Level (ug/m3)	
0.6 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Mercury
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	7.93E-04	6.27E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	7.93E-04	6.27E-06	1,090	10.0	0.85		
3	2023	7.93E-04	6.27E-06	745	4.75	0.72		
4	2024	7.93E-04	6.27E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	7.93E-04	6.27E-06	745	3.00	0.72		
6	2026	7.93E-04	6.27E-06	745	3.00	0.72		
7	2027	7.93E-04	6.27E-06	745	3.00	0.72		
8	2028	7.93E-04	6.27E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	7.93E-04	6.27E-06	745	3.00	0.72		
10	2030	7.93E-04	6.27E-06	745	3.00	0.72		
11	2031	7.93E-04	6.27E-06	745	3.00	0.72		
12	2032	7.93E-04	6.27E-06	745	3.00	0.72		
13	2033	7.93E-04	6.27E-06	745	3.00	0.72		
14	2034	7.93E-04	6.27E-06	745	3.00	0.72		
15	2035	7.93E-04	6.27E-06	745	3.00	0.72		
16	2036	7.93E-04	6.27E-06	745	3.00	0.72		
17	2037	7.93E-04	6.27E-06	335	1.70	0.73		
18	2038	7.93E-04	6.27E-06	335	1.00	0.73		
19	2039	7.93E-04	6.27E-06	335	1.00	0.73		
20	2040	7.93E-04	6.27E-06	335	1.00	0.73		
21	2041	7.93E-04	6.27E-06	335	1.00	0.73		
22	2042	7.93E-04	6.27E-06	335	1.00	0.73		
23	2043	7.93E-04	6.27E-06	335	1.00	0.73		
24	2044	7.93E-04	6.27E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

0.14 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
0.91 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Nickel
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.01	9.12E-05	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.01	9.12E-05	1,090	10.0	0.85	0.0	
3	2023	0.01	9.12E-05	745	4.75	0.72	0.00	
4	2024	0.01	9.12E-05	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.01	9.12E-05	745	3.00	0.72	0.00	
6	2026	0.01	9.12E-05	745	3.00	0.72	0.00	
7	2027	0.01	9.12E-05	745	3.00	0.72	0.00	
8	2028	0.01	9.12E-05	745	3.00	0.72	0.00	0.04 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.01	9.12E-05	745	3.00	0.72	0.00	
10	2030	0.01	9.12E-05	745	3.00	0.72	0.00	
11	2031	0.01	9.12E-05	745	3.00	0.72	0.00	
12	2032	0.01	9.12E-05	745	3.00	0.72	0.00	
13	2033	0.01	9.12E-05	745	3.00	0.72	0.00	0.05 Cancer Risk (Child) 100 Significance Threshold No Significant?
14	2034	0.01	9.12E-05	745	3.00	0.72	0.00	
15	2035	0.01	9.12E-05	745	3.00	0.72	0.00	
16	2036	0.01	9.12E-05	745	3.00	0.72	0.00	
17	2037	0.01	9.12E-05	335	1.70	0.73	0.00	0.01 Cancer Risk (Adult) 100 Significance Threshold No Significant?
18	2038	0.01	9.12E-05	335	1.00	0.73	0.00	
19	2039	0.01	9.12E-05	335	1.00	0.73	0.00	
20	2040	0.01	9.12E-05	335	1.00	0.73	0.00	
21	2041	0.01	9.12E-05	335	1.00	0.73	0.00	
22	2042	0.01	9.12E-05	335	1.00	0.73	0.00	
23	2043	0.01	9.12E-05	335	1.00	0.73	0.00	
24	2044	0.01	9.12E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

20 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Selenium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		7.00E-07	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		7.00E-07	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023		7.00E-07	745	4.75	0.72		No Significant?
4	2024		7.00E-07	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025		7.00E-07	745	3.00	0.72		10 Significance Threshold
6	2026		7.00E-07	745	3.00	0.72		No Significant?
7	2027		7.00E-07	745	3.00	0.72		Acute Hazard Impact
8	2028		7.00E-07	745	3.00	0.72		10 Significance Threshold
9	2029		7.00E-07	745	3.00	0.72		No Significant?
10	2030		7.00E-07	745	3.00	0.72		Acute Hazard Impact
11	2031		7.00E-07	745	3.00	0.72		10 Significance Threshold
12	2032		7.00E-07	745	3.00	0.72		No Significant?
13	2033		7.00E-07	745	3.00	0.72		Cancer Risk (Child)
14	2034		7.00E-07	745	3.00	0.72		100 Significance Threshold
15	2035		7.00E-07	745	3.00	0.72		No Significant?
16	2036		7.00E-07	745	3.00	0.72		Cancer Risk (Adult)
17	2037		7.00E-07	335	1.70	0.73		100 Significance Threshold
18	2038		7.00E-07	335	1.00	0.73		No Significant?
19	2039		7.00E-07	335	1.00	0.73		
20	2040		7.00E-07	335	1.00	0.73		
21	2041		7.00E-07	335	1.00	0.73		
22	2042		7.00E-07	335	1.00	0.73		
23	2043		7.00E-07	335	1.00	0.73		
24	2044		7.00E-07	335	1.00	0.73		

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
30 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Vanadium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.01		1,090	10.0	0.85		- Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.01		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	0.01		745	4.75	0.72		No Significant?
4	2024	0.01		745	3.00	0.72		Chronic Hazard Impact
5	2025	0.01		745	3.00	0.72		10 Significance Threshold
6	2026	0.01		745	3.00	0.72		No Significant?
7	2027	0.01		745	3.00	0.72		
8	2028	0.01		745	3.00	0.72		0.00 Acute Hazard Impact
9	2029	0.01		745	3.00	0.72		10 Significance Threshold
10	2030	0.01		745	3.00	0.72		No Significant?
11	2031	0.01		745	3.00	0.72		
12	2032	0.01		745	3.00	0.72		Cancer Risk (Child)
13	2033	0.01		745	3.00	0.72		100 Significance Threshold
14	2034	0.01		745	3.00	0.72		No Significant?
15	2035	0.01		745	3.00	0.72		
16	2036	0.01		745	3.00	0.72		Cancer Risk (Adult)
17	2037	0.01		335	1.70	0.73		100 Significance Threshold
18	2038	0.01		335	1.00	0.73		No Significant?
19	2039	0.01		335	1.00	0.73		
20	2040	0.01		335	1.00	0.73		
21	2041	0.01		335	1.00	0.73		
22	2042	0.01		335	1.00	0.73		
23	2043	0.01		335	1.00	0.73		
24	2044	0.01		335	1.00	0.73		

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: 1,1,1-trichloroethane
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	5.77E-05	2.28E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	5.77E-05	2.28E-06	1,090	10.0	0.85		
3	2023	5.77E-05	2.28E-06	745	4.75	0.72		
4	2024	5.77E-05	2.28E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	5.77E-05	2.28E-06	745	3.00	0.72		
6	2026	5.77E-05	2.28E-06	745	3.00	0.72		
7	2027	5.77E-05	2.28E-06	745	3.00	0.72		
8	2028	5.77E-05	2.28E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	5.77E-05	2.28E-06	745	3.00	0.72		
10	2030	5.77E-05	2.28E-06	745	3.00	0.72		
11	2031	5.77E-05	2.28E-06	745	3.00	0.72		
12	2032	5.77E-05	2.28E-06	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	5.77E-05	2.28E-06	745	3.00	0.72		
14	2034	5.77E-05	2.28E-06	745	3.00	0.72		
15	2035	5.77E-05	2.28E-06	745	3.00	0.72		
16	2036	5.77E-05	2.28E-06	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	5.77E-05	2.28E-06	335	1.70	0.73		
18	2038	5.77E-05	2.28E-06	335	1.00	0.73		
19	2039	5.77E-05	2.28E-06	335	1.00	0.73		
20	2040	5.77E-05	2.28E-06	335	1.00	0.73		
21	2041	5.77E-05	2.28E-06	335	1.00	0.73		
22	2042	5.77E-05	2.28E-06	335	1.00	0.73		
23	2043	5.77E-05	2.28E-06	335	1.00	0.73		
24	2044	5.77E-05	2.28E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
27 Acute Reference Exposure Level (ug/m3)	
0.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	5.78E-02	1.52E-03	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	5.78E-02	1.52E-03	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023	5.78E-02	1.52E-03	745	4.75	0.72	0.01	No Significant?
4	2024	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	5.78E-02	1.52E-03	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
7	2027	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2028	5.78E-02	1.52E-03	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
10	2030	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.09 Cancer Risk (Child)
11	2031	5.78E-02	1.52E-03	745	3.00	0.72	0.00	100 Significance Threshold
12	2032	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
13	2033	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
14	2034	5.78E-02	1.52E-03	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
16	2036	5.78E-02	1.52E-03	745	3.00	0.72	0.00	
17	2037	5.78E-02	1.52E-03	335	1.70	0.73	0.00	
18	2038	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
19	2039	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
20	2040	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
21	2041	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
22	2042	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
23	2043	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
24	2044	5.78E-02	1.52E-03	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)anthracene
 Meteorological: MBP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		2.52E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		2.52E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		2.52E-06	745	4.75	0.72	0.00	No Significant?
4	2024		2.52E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		2.52E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		2.52E-06	745	3.00	0.72	0.00	No Significant?
7	2027		2.52E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		2.52E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		2.52E-06	745	3.00	0.72	0.00	No Significant?
10	2030		2.52E-06	745	3.00	0.72	0.00	
11	2031		2.52E-06	745	3.00	0.72	0.00	
12	2032		2.52E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		2.52E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		2.52E-06	745	3.00	0.72	0.00	No Significant?
15	2035		2.52E-06	745	3.00	0.72	0.00	
16	2036		2.52E-06	745	3.00	0.72	0.00	
17	2037		2.52E-06	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		2.52E-06	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		2.52E-06	335	1.00	0.73	0.00	No Significant?
20	2040		2.52E-06	335	1.00	0.73	0.00	
21	2041		2.52E-06	335	1.00	0.73	0.00	
22	2042		2.52E-06	335	1.00	0.73	0.00	
23	2043		2.52E-06	335	1.00	0.73	0.00	
24	2044		2.52E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
3.9 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)pyrene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		0.00	1,090	10.0	0.85	1.37	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		0.00	1,090	10.0	0.85	1.37	0.8 Significance Threshold (ug/m3)
3	2023		0.00	745	4.75	0.72	0.38	No Significant?
4	2024		0.00	745	3.00	0.72	0.24	Chronic Hazard Impact
5	2025		0.00	745	3.00	0.72	0.24	10 Significance Threshold
6	2026		0.00	745	3.00	0.72	0.24	No Significant?
7	2027		0.00	745	3.00	0.72	0.24	Acute Hazard Impact
8	2028		0.00	745	3.00	0.72	0.24	10 Significance Threshold
9	2029		0.00	745	3.00	0.72	0.24	No Significant?
10	2030		0.00	745	3.00	0.72	0.24	
11	2031		0.00	745	3.00	0.72	0.24	
12	2032		0.00	745	3.00	0.72	0.24	6.51 Cancer Risk (Child)
13	2033		0.00	745	3.00	0.72	0.24	100 Significance Threshold
14	2034		0.00	745	3.00	0.72	0.24	No Significant?
15	2035		0.00	745	3.00	0.72	0.24	
16	2036		0.00	745	3.00	0.72	0.24	
17	2037		0.00	335	1.70	0.73	0.06	1.47 Cancer Risk (Adult)
18	2038		0.00	335	1.00	0.73	0.04	100 Significance Threshold
19	2039		0.00	335	1.00	0.73	0.04	No Significant?
20	2040		0.00	335	1.00	0.73	0.04	
21	2041		0.00	335	1.00	0.73	0.04	
22	2042		0.00	335	1.00	0.73	0.04	
23	2043		0.00	335	1.00	0.73	0.04	
24	2044		0.00	335	1.00	0.73	0.04	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(b)fluoranthene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		8.62E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		8.62E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		8.62E-08	745	4.75	0.72	0.00	No Significant?
4	2024		8.62E-08	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		8.62E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		8.62E-08	745	3.00	0.72	0.00	No Significant?
7	2027		8.62E-08	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		8.62E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		8.62E-08	745	3.00	0.72	0.00	No Significant?
10	2030		8.62E-08	745	3.00	0.72	0.00	
11	2031		8.62E-08	745	3.00	0.72	0.00	
12	2032		8.62E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		8.62E-08	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		8.62E-08	745	3.00	0.72	0.00	No Significant?
15	2035		8.62E-08	745	3.00	0.72	0.00	
16	2036		8.62E-08	745	3.00	0.72	0.00	
17	2037		8.62E-08	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		8.62E-08	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		8.62E-08	335	1.00	0.73	0.00	No Significant?
20	2040		8.62E-08	335	1.00	0.73	0.00	
21	2041		8.62E-08	335	1.00	0.73	0.00	
22	2042		8.62E-08	335	1.00	0.73	0.00	
23	2043		8.62E-08	335	1.00	0.73	0.00	
24	2044		8.62E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0084 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: bis(2-ethylhexy)phthalate
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		9.69E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		9.69E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		9.69E-04	745	4.75	0.72	0.00	No Significant?
4	2024		9.69E-04	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		9.69E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		9.69E-04	745	3.00	0.72	0.00	No Significant?
7	2027		9.69E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		9.69E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		9.69E-04	745	3.00	0.72	0.00	No Significant?
10	2030		9.69E-04	745	3.00	0.72	0.00	
11	2031		9.69E-04	745	3.00	0.72	0.00	
12	2032		9.69E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		9.69E-04	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		9.69E-04	745	3.00	0.72	0.00	No Significant?
15	2035		9.69E-04	745	3.00	0.72	0.00	
16	2036		9.69E-04	745	3.00	0.72	0.00	
17	2037		9.69E-04	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		9.69E-04	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		9.69E-04	335	1.00	0.73	0.00	No Significant?
20	2040		9.69E-04	335	1.00	0.73	0.00	
21	2041		9.69E-04	335	1.00	0.73	0.00	
22	2042		9.69E-04	335	1.00	0.73	0.00	
23	2043		9.69E-04	335	1.00	0.73	0.00	
24	2044		9.69E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

800 Chronic Reference Exposure Level (ug/m3)	
6200 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Carbon Disulfide
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	5.28E-04	2.08E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	5.28E-04	2.08E-05	1,090	10.0	0.85		
3	2023	5.28E-04	2.08E-05	745	4.75	0.72		
4	2024	5.28E-04	2.08E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	5.28E-04	2.08E-05	745	3.00	0.72		
6	2026	5.28E-04	2.08E-05	745	3.00	0.72		
7	2027	5.28E-04	2.08E-05	745	3.00	0.72		
8	2028	5.28E-04	2.08E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	5.28E-04	2.08E-05	745	3.00	0.72		
10	2030	5.28E-04	2.08E-05	745	3.00	0.72		
11	2031	5.28E-04	2.08E-05	745	3.00	0.72		
12	2032	5.28E-04	2.08E-05	745	3.00	0.72		
13	2033	5.28E-04	2.08E-05	745	3.00	0.72		
14	2034	5.28E-04	2.08E-05	745	3.00	0.72		
15	2035	5.28E-04	2.08E-05	745	3.00	0.72		
16	2036	5.28E-04	2.08E-05	745	3.00	0.72		
17	2037	5.28E-04	2.08E-05	335	1.70	0.73		
18	2038	5.28E-04	2.08E-05	335	1.00	0.73		
19	2039	5.28E-04	2.08E-05	335	1.00	0.73		
20	2040	5.28E-04	2.08E-05	335	1.00	0.73		
21	2041	5.28E-04	2.08E-05	335	1.00	0.73		
22	2042	5.28E-04	2.08E-05	335	1.00	0.73		
23	2043	5.28E-04	2.08E-05	335	1.00	0.73		
24	2044	5.28E-04	2.08E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

0.2 Chronic Reference Exposure Level (ug/m3)	
210 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Chlorine
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.02	6.30E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.02	6.30E-04	1,090	10.0	0.85		
3	2023	0.02	6.30E-04	745	4.75	0.72		
4	2024	0.02	6.30E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.02	6.30E-04	745	3.00	0.72		
6	2026	0.02	6.30E-04	745	3.00	0.72		
7	2027	0.02	6.30E-04	745	3.00	0.72		
8	2028	0.02	6.30E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.02	6.30E-04	745	3.00	0.72		
10	2030	0.02	6.30E-04	745	3.00	0.72		
11	2031	0.02	6.30E-04	745	3.00	0.72		
12	2032	0.02	6.30E-04	745	3.00	0.72		
13	2033	0.02	6.30E-04	745	3.00	0.72		
14	2034	0.02	6.30E-04	745	3.00	0.72		
15	2035	0.02	6.30E-04	745	3.00	0.72		
16	2036	0.02	6.30E-04	745	3.00	0.72		
17	2037	0.02	6.30E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038	0.02	6.30E-04	335	1.00	0.73		
19	2039	0.02	6.30E-04	335	1.00	0.73		
20	2040	0.02	6.30E-04	335	1.00	0.73		
21	2041	0.02	6.30E-04	335	1.00	0.73		
22	2042	0.02	6.30E-04	335	1.00	0.73		
23	2043	0.02	6.30E-04	335	1.00	0.73		
24	2044	0.02	6.30E-04	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

30000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Chloroethane
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.37E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022		1.37E-06	1,090	10.0	0.85		
3	2023		1.37E-06	745	4.75	0.72		
4	2024		1.37E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025		1.37E-06	745	3.00	0.72		
6	2026		1.37E-06	745	3.00	0.72		
7	2027		1.37E-06	745	3.00	0.72		
8	2028		1.37E-06	745	3.00	0.72		Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029		1.37E-06	745	3.00	0.72		
10	2030		1.37E-06	745	3.00	0.72		
11	2031		1.37E-06	745	3.00	0.72		
12	2032		1.37E-06	745	3.00	0.72		
13	2033		1.37E-06	745	3.00	0.72		
14	2034		1.37E-06	745	3.00	0.72		
15	2035		1.37E-06	745	3.00	0.72		
16	2036		1.37E-06	745	3.00	0.72		
17	2037		1.37E-06	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038		1.37E-06	335	1.00	0.73		
19	2039		1.37E-06	335	1.00	0.73		
20	2040		1.37E-06	335	1.00	0.73		
21	2041		1.37E-06	335	1.00	0.73		
22	2042		1.37E-06	335	1.00	0.73		
23	2043		1.37E-06	335	1.00	0.73		
24	2044		1.37E-06	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0039 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Chrysene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		9.59E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		9.59E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		9.59E-06	745	4.75	0.72	0.00	No Significant?
4	2024		9.59E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		9.59E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		9.59E-06	745	3.00	0.72	0.00	No Significant?
7	2027		9.59E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		9.59E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		9.59E-06	745	3.00	0.72	0.00	No Significant?
10	2030		9.59E-06	745	3.00	0.72	0.00	
11	2031		9.59E-06	745	3.00	0.72	0.00	
12	2032		9.59E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		9.59E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		9.59E-06	745	3.00	0.72	0.00	No Significant?
15	2035		9.59E-06	745	3.00	0.72	0.00	
16	2036		9.59E-06	745	3.00	0.72	0.00	
17	2037		9.59E-06	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		9.59E-06	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		9.59E-06	335	1.00	0.73	0.00	No Significant?
20	2040		9.59E-06	335	1.00	0.73	0.00	
21	2041		9.59E-06	335	1.00	0.73	0.00	
22	2042		9.59E-06	335	1.00	0.73	0.00	
23	2043		9.59E-06	335	1.00	0.73	0.00	
24	2044		9.59E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

2000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0087 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Ethylbenzene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		2.47E-04	1,090	10.0	0.85	0.00	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		2.47E-04	1,090	10.0	0.85	0.00	0.8 Significance Threshold (ug/m3)
3	2023		2.47E-04	745	4.75	0.72	0.00	No Significant?
4	2024		2.47E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		2.47E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		2.47E-04	745	3.00	0.72	0.00	No Significant?
7	2027		2.47E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		2.47E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		2.47E-04	745	3.00	0.72	0.00	No Significant?
10	2030		2.47E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2031		2.47E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2032		2.47E-04	745	3.00	0.72	0.00	No Significant?
13	2033		2.47E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2034		2.47E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2035		2.47E-04	745	3.00	0.72	0.00	No Significant?
16	2036		2.47E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		2.47E-04	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		2.47E-04	335	1.00	0.73	0.00	No Significant?
19	2039		2.47E-04	335	1.00	0.73	0.00	
20	2040		2.47E-04	335	1.00	0.73	0.00	
21	2041		2.47E-04	335	1.00	0.73	0.00	
22	2042		2.47E-04	335	1.00	0.73	0.00	
23	2043		2.47E-04	335	1.00	0.73	0.00	
24	2044		2.47E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
55 Acute Reference Exposure Level (ug/m3)	
0.021 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Formaldehyde
 Meteorological: MBP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.22	0.00	1,090	10.0	0.85	0.01	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.22	0.00	1,090	10.0	0.85	0.01	0.8 Significance Threshold (ug/m3)
3	2023	0.22	0.00	745	4.75	0.72	0.00	No Significant?
4	2024	0.22	0.00	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	0.22	0.00	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	0.22	0.00	745	3.00	0.72	0.00	No Significant?
7	2027	0.22	0.00	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2028	0.22	0.00	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	0.22	0.00	745	3.00	0.72	0.00	No Significant?
10	2030	0.22	0.00	745	3.00	0.72	0.00	0.04 Cancer Risk (Child)
11	2031	0.22	0.00	745	3.00	0.72	0.00	100 Significance Threshold
12	2032	0.22	0.00	745	3.00	0.72	0.00	No Significant?
13	2033	0.22	0.00	745	3.00	0.72	0.00	0.01 Cancer Risk (Adult)
14	2034	0.22	0.00	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	0.22	0.00	745	3.00	0.72	0.00	No Significant?
16	2036	0.22	0.00	745	3.00	0.72	0.00	
17	2037	0.22	0.00	335	1.70	0.73	0.00	
18	2038	0.22	0.00	335	1.00	0.73	0.00	
19	2039	0.22	0.00	335	1.00	0.73	0.00	
20	2040	0.22	0.00	335	1.00	0.73	0.00	
21	2041	0.22	0.00	335	1.00	0.73	0.00	
22	2042	0.22	0.00	335	1.00	0.73	0.00	
23	2043	0.22	0.00	335	1.00	0.73	0.00	
24	2044	0.22	0.00	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

7000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Hexane
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		7.98E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022		7.98E-04	1,090	10.0	0.85		
3	2023		7.98E-04	745	4.75	0.72		
4	2024		7.98E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025		7.98E-04	745	3.00	0.72		
6	2026		7.98E-04	745	3.00	0.72		
7	2027		7.98E-04	745	3.00	0.72		
8	2028		7.98E-04	745	3.00	0.72		Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029		7.98E-04	745	3.00	0.72		
10	2030		7.98E-04	745	3.00	0.72		
11	2031		7.98E-04	745	3.00	0.72		
12	2032		7.98E-04	745	3.00	0.72		
13	2033		7.98E-04	745	3.00	0.72		
14	2034		7.98E-04	745	3.00	0.72		
15	2035		7.98E-04	745	3.00	0.72		
16	2036		7.98E-04	745	3.00	0.72		
17	2037		7.98E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038		7.98E-04	335	1.00	0.73		
19	2039		7.98E-04	335	1.00	0.73		
20	2040		7.98E-04	335	1.00	0.73		
21	2041		7.98E-04	335	1.00	0.73		
22	2042		7.98E-04	335	1.00	0.73		
23	2043		7.98E-04	335	1.00	0.73		
24	2044		7.98E-04	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Inden(123-cd)opyrene
 Meteorological: MBP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.70E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.70E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.70E-08	745	4.75	0.72	0.00	No Significant?
4	2024		1.70E-08	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		1.70E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.70E-08	745	3.00	0.72	0.00	No Significant?
7	2027		1.70E-08	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.70E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.70E-08	745	3.00	0.72	0.00	No Significant?
10	2030		1.70E-08	745	3.00	0.72	0.00	
11	2031		1.70E-08	745	3.00	0.72	0.00	
12	2032		1.70E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		1.70E-08	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.70E-08	745	3.00	0.72	0.00	No Significant?
15	2035		1.70E-08	745	3.00	0.72	0.00	
16	2036		1.70E-08	745	3.00	0.72	0.00	
17	2037		1.70E-08	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		1.70E-08	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		1.70E-08	335	1.00	0.73	0.00	No Significant?
20	2040		1.70E-08	335	1.00	0.73	0.00	
21	2041		1.70E-08	335	1.00	0.73	0.00	
22	2042		1.70E-08	335	1.00	0.73	0.00	
23	2043		1.70E-08	335	1.00	0.73	0.00	
24	2044		1.70E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Methyl Chloroform
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	3.06E-03	3.90E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	3.06E-03	3.90E-05	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	3.06E-03	3.90E-05	745	4.75	0.72		No Significant?
4	2024	3.06E-03	3.90E-05	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025	3.06E-03	3.90E-05	745	3.00	0.72		10 Significance Threshold
6	2026	3.06E-03	3.90E-05	745	3.00	0.72		No Significant?
7	2027	3.06E-03	3.90E-05	745	3.00	0.72		0.00 Acute Hazard Impact
8	2028	3.06E-03	3.90E-05	745	3.00	0.72		10 Significance Threshold
9	2029	3.06E-03	3.90E-05	745	3.00	0.72		No Significant?
10	2030	3.06E-03	3.90E-05	745	3.00	0.72		
11	2031	3.06E-03	3.90E-05	745	3.00	0.72		Cancer Risk (Child)
12	2032	3.06E-03	3.90E-05	745	3.00	0.72		100 Significance Threshold
13	2033	3.06E-03	3.90E-05	745	3.00	0.72		No Significant?
14	2034	3.06E-03	3.90E-05	745	3.00	0.72		
15	2035	3.06E-03	3.90E-05	745	3.00	0.72		Cancer Risk (Adult)
16	2036	3.06E-03	3.90E-05	745	3.00	0.72		100 Significance Threshold
17	2037	3.06E-03	3.90E-05	335	1.70	0.73		No Significant?
18	2038	3.06E-03	3.90E-05	335	1.00	0.73		
19	2039	3.06E-03	3.90E-05	335	1.00	0.73		
20	2040	3.06E-03	3.90E-05	335	1.00	0.73		
21	2041	3.06E-03	3.90E-05	335	1.00	0.73		
22	2042	3.06E-03	3.90E-05	335	1.00	0.73		
23	2043	3.06E-03	3.90E-05	335	1.00	0.73		
24	2044	3.06E-03	3.90E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

400 Chronic Reference Exposure Level (ug/m3)	
14000 Acute Reference Exposure Level (ug/m3)	
0.0035 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Methylene Chloride
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	2.09E-05	9.10E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	2.09E-05	9.10E-08	1,090	10.0	0.85	0.0	
3	2023	2.09E-05	9.10E-08	745	4.75	0.72	0.00	
4	2024	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
6	2026	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
7	2027	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
8	2028	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
10	2030	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
11	2031	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
12	2032	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
14	2034	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
15	2035	2.09E-05	9.10E-08	745	3.00	0.72	0.00	
16	2036	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	2.09E-05	9.10E-08	335	1.70	0.73	0.00	
18	2038	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
19	2039	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
20	2040	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
21	2041	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
22	2042	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
23	2043	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
24	2044	2.09E-05	9.10E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Naphthalene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.75E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.75E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.75E-04	745	4.75	0.72	0.00	No Significant?
4	2024		1.75E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		1.75E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.75E-04	745	3.00	0.72	0.00	No Significant?
7	2027		1.75E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.75E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.75E-04	745	3.00	0.72	0.00	No Significant?
10	2030		1.75E-04	745	3.00	0.72	0.00	
11	2031		1.75E-04	745	3.00	0.72	0.00	
12	2032		1.75E-04	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2033		1.75E-04	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.75E-04	745	3.00	0.72	0.00	No Significant?
15	2035		1.75E-04	745	3.00	0.72	0.00	
16	2036		1.75E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		1.75E-04	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		1.75E-04	335	1.00	0.73	0.00	No Significant?
19	2039		1.75E-04	335	1.00	0.73	0.00	
20	2040		1.75E-04	335	1.00	0.73	0.00	
21	2041		1.75E-04	335	1.00	0.73	0.00	
22	2042		1.75E-04	335	1.00	0.73	0.00	
23	2043		1.75E-04	335	1.00	0.73	0.00	
24	2044		1.75E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

200 Chronic Reference Exposure Level (ug/m3)	
5800 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Phenol
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	7.05E-03	4.65E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	7.05E-03	4.65E-05	1,090	10.0	0.85		
3	2023	7.05E-03	4.65E-05	745	4.75	0.72		
4	2024	7.05E-03	4.65E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	7.05E-03	4.65E-05	745	3.00	0.72		
6	2026	7.05E-03	4.65E-05	745	3.00	0.72		
7	2027	7.05E-03	4.65E-05	745	3.00	0.72		
8	2028	7.05E-03	4.65E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	7.05E-03	4.65E-05	745	3.00	0.72		
10	2030	7.05E-03	4.65E-05	745	3.00	0.72		
11	2031	7.05E-03	4.65E-05	745	3.00	0.72		
12	2032	7.05E-03	4.65E-05	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	7.05E-03	4.65E-05	745	3.00	0.72		
14	2034	7.05E-03	4.65E-05	745	3.00	0.72		
15	2035	7.05E-03	4.65E-05	745	3.00	0.72		
16	2036	7.05E-03	4.65E-05	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	7.05E-03	4.65E-05	335	1.70	0.73		
18	2038	7.05E-03	4.65E-05	335	1.00	0.73		
19	2039	7.05E-03	4.65E-05	335	1.00	0.73		
20	2040	7.05E-03	4.65E-05	335	1.00	0.73		
21	2041	7.05E-03	4.65E-05	335	1.00	0.73		
22	2042	7.05E-03	4.65E-05	335	1.00	0.73		
23	2043	7.05E-03	4.65E-05	335	1.00	0.73		
24	2044	7.05E-03	4.65E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

900 Chronic Reference Exposure Level (ug/m3)	
21000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Styrene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	7.37E-04	1.01E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	7.37E-04	1.01E-05	1,090	10.0	0.85		
3	2023	7.37E-04	1.01E-05	745	4.75	0.72		
4	2024	7.37E-04	1.01E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	7.37E-04	1.01E-05	745	3.00	0.72		
6	2026	7.37E-04	1.01E-05	745	3.00	0.72		
7	2027	7.37E-04	1.01E-05	745	3.00	0.72		
8	2028	7.37E-04	1.01E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	7.37E-04	1.01E-05	745	3.00	0.72		
10	2030	7.37E-04	1.01E-05	745	3.00	0.72		
11	2031	7.37E-04	1.01E-05	745	3.00	0.72		
12	2032	7.37E-04	1.01E-05	745	3.00	0.72		
13	2033	7.37E-04	1.01E-05	745	3.00	0.72		
14	2034	7.37E-04	1.01E-05	745	3.00	0.72		
15	2035	7.37E-04	1.01E-05	745	3.00	0.72		
16	2036	7.37E-04	1.01E-05	745	3.00	0.72		
17	2037	7.37E-04	1.01E-05	335	1.70	0.73		
18	2038	7.37E-04	1.01E-05	335	1.00	0.73		
19	2039	7.37E-04	1.01E-05	335	1.00	0.73		
20	2040	7.37E-04	1.01E-05	335	1.00	0.73		
21	2041	7.37E-04	1.01E-05	335	1.00	0.73		
22	2042	7.37E-04	1.01E-05	335	1.00	0.73		
23	2043	7.37E-04	1.01E-05	335	1.00	0.73		
24	2044	7.37E-04	1.01E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

420 Chronic Reference Exposure Level (ug/m3)	
5,000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Toluene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.02	1.93E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.02	1.93E-04	1,090	10.0	0.85		
3	2023	0.02	1.93E-04	745	4.75	0.72		
4	2024	0.02	1.93E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.02	1.93E-04	745	3.00	0.72		
6	2026	0.02	1.93E-04	745	3.00	0.72		
7	2027	0.02	1.93E-04	745	3.00	0.72		
8	2028	0.02	1.93E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.02	1.93E-04	745	3.00	0.72		
10	2030	0.02	1.93E-04	745	3.00	0.72		
11	2031	0.02	1.93E-04	745	3.00	0.72		
12	2032	0.02	1.93E-04	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	0.02	1.93E-04	745	3.00	0.72		
14	2034	0.02	1.93E-04	745	3.00	0.72		
15	2035	0.02	1.93E-04	745	3.00	0.72		
16	2036	0.02	1.93E-04	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	0.02	1.93E-04	335	1.70	0.73		
18	2038	0.02	1.93E-04	335	1.00	0.73		
19	2039	0.02	1.93E-04	335	1.00	0.73		
20	2040	0.02	1.93E-04	335	1.00	0.73		
21	2041	0.02	1.93E-04	335	1.00	0.73		
22	2042	0.02	1.93E-04	335	1.00	0.73		
23	2043	0.02	1.93E-04	335	1.00	0.73		
24	2044	0.02	1.93E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

700 Chronic Reference Exposure Level (ug/m3)	
22000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Xylene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.03	2.88E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.03	2.88E-04	1,090	10.0	0.85		
3	2023	0.03	2.88E-04	745	4.75	0.72		
4	2024	0.03	2.88E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.03	2.88E-04	745	3.00	0.72		
6	2026	0.03	2.88E-04	745	3.00	0.72		
7	2027	0.03	2.88E-04	745	3.00	0.72		
8	2028	0.03	2.88E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.03	2.88E-04	745	3.00	0.72		
10	2030	0.03	2.88E-04	745	3.00	0.72		
11	2031	0.03	2.88E-04	745	3.00	0.72		
12	2032	0.03	2.88E-04	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	0.03	2.88E-04	745	3.00	0.72		
14	2034	0.03	2.88E-04	745	3.00	0.72		
15	2035	0.03	2.88E-04	745	3.00	0.72		
16	2036	0.03	2.88E-04	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	0.03	2.88E-04	335	1.70	0.73		
18	2038	0.03	2.88E-04	335	1.00	0.73		
19	2039	0.03	2.88E-04	335	1.00	0.73		
20	2040	0.03	2.88E-04	335	1.00	0.73		
21	2041	0.03	2.88E-04	335	1.00	0.73		
22	2042	0.03	2.88E-04	335	1.00	0.73		
23	2043	0.03	2.88E-04	335	1.00	0.73		
24	2044	0.03	2.88E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

5 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
1.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: DPM
 Meteorological: MBP

Exposure Year	Calendar Year	Annual PM2.5 Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.09	1,090	10.0	0.85	12.0	0.09 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.06	1,090	10.0	0.85	8.6	0.8 Significance Threshold (ug/m3)
3	2017	0.05	745	4.75	0.72	1.90	No Significant?
4	2018	0.04	745	3.00	0.72	1.00	0.02 Chronic Hazard Impact
5	2019	0.04	745	3.00	0.72	0.86	10 Significance Threshold
6	2020	0.02	745	3.00	0.72	0.57	No Significant?
7	2021	0.08	745	3.00	0.72	2.04	Acute Hazard Impact
8	2022	0.07	745	3.00	0.72	1.81	10 Significance Threshold
9	2023	0.07	745	3.00	0.72	1.72	No Significant?
10	2024	0.07	745	3.00	0.72	1.72	
11	2025	0.07	745	3.00	0.72	1.72	
12	2026	0.07	745	3.00	0.72	1.71	46.3 Cancer Risk (Child)
13	2027	0.07	745	3.00	0.72	1.71	100 Significance Threshold
14	2028	0.07	745	3.00	0.72	1.71	No Significant?
15	2029	0.07	745	3.00	0.72	1.71	
16	2030	0.07	745	3.00	0.72	1.71	12.6 Cancer Risk (Adult)
17	2031	0.07	335	1.70	0.73	0.44	100 Significance Threshold
18	2032	0.07	335	1.00	0.73	0.26	No Significant?
19	2033	0.07	335	1.00	0.73	0.26	
20	2034	0.07	335	1.00	0.73	0.26	
21	2035	0.07	335	1.00	0.73	0.26	
22	2036	0.07	335	1.00	0.73	0.26	
23	2037	0.07	335	1.00	0.73	0.26	
24	2038	0.07	335	1.00	0.73	0.26	
25	2039	0.07	335	1.00	0.73	0.26	
26	2040	0.07	335	1.00	0.73	0.26	
27	2041	0.07	335	1.00	0.73	0.26	
28	2042	0.07	335	1.00	0.73	0.26	
29	2043	0.07	335	1.00	0.73	0.26	
30	2044	0.07	335	1.00	0.73	0.26	

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Crystalline Silica
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		0.30	1,090	10.0	0.85		0.30 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		0.30	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		0.30	745	4.75	0.72		No Significant?
4	2018		0.30	745	3.00	0.72		0.10 Chronic Hazard Impact
5	2019		0.30	745	3.00	0.72		10 Significance Threshold
6	2020		0.30	745	3.00	0.72		No Significant?
7	2021		0.30	745	3.00	0.72		Acute Hazard Impact
8	2022		0.30	745	3.00	0.72		10 Significance Threshold
9	2023		0.30	745	3.00	0.72		No Significant?
10	2024		0.30	745	3.00	0.72		Acute Hazard Impact
11	2025		0.30	745	3.00	0.72		10 Significance Threshold
12	2026		0.30	745	3.00	0.72		No Significant?
13	2027		0.30	745	3.00	0.72		Cancer Risk (Child)
14	2028		0.30	745	3.00	0.72		100 Significance Threshold
15	2029		0.30	745	3.00	0.72		No Significant?
16	2030		0.30	745	3.00	0.72		Cancer Risk (Adult)
17	2031		0.30	335	1.70	0.73		100 Significance Threshold
18	2032		0.30	335	1.00	0.73		No Significant?
19	2033		0.30	335	1.00	0.73		
20	2034		0.30	335	1.00	0.73		
21	2035		0.30	335	1.00	0.73		
22	2036		0.30	335	1.00	0.73		
23	2037		0.30	335	1.00	0.73		
24	2038		0.30	335	1.00	0.73		
25	2039		0.30	335	1.00	0.73		
26	2040		0.30	335	1.00	0.73		
27	2041		0.30	335	1.00	0.73		
28	2042		0.30	335	1.00	0.73		
29	2043		0.30	335	1.00	0.73		
30	2044		0.30	335	1.00	0.73		

Health Risk Assessment Assumptions

14 Chronic Reference Exposure Level (ug/m3)	
240 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Fluoride
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	2.82	0.11	1,090	10.0	0.85		0.11 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	2.82	0.11	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017	2.82	0.11	745	4.75	0.72		No Significant?
4	2018	2.82	0.11	745	3.00	0.72		0.01 Chronic Hazard Impact
5	2019	2.82	0.11	745	3.00	0.72		10 Significance Threshold
6	2020	2.82	0.11	745	3.00	0.72		No Significant?
7	2021	2.82	0.11	745	3.00	0.72		0.01 Acute Hazard Impact
8	2022	2.82	0.11	745	3.00	0.72		10 Significance Threshold
9	2023	2.82	0.11	745	3.00	0.72		No Significant?
10	2024	2.82	0.11	745	3.00	0.72		Cancer Risk (Child)
11	2025	2.82	0.11	745	3.00	0.72		100 Significance Threshold
12	2026	2.82	0.11	745	3.00	0.72		No Significant?
13	2027	2.82	0.11	745	3.00	0.72		Cancer Risk (Adult)
14	2028	2.82	0.11	745	3.00	0.72		100 Significance Threshold
15	2029	2.82	0.11	745	3.00	0.72		No Significant?
16	2030	2.82	0.11	745	3.00	0.72		Cancer Risk (Adult)
17	2031	2.82	0.11	335	1.70	0.73		100 Significance Threshold
18	2032	2.82	0.11	335	1.00	0.73		No Significant?
19	2033	2.82	0.11	335	1.00	0.73		
20	2034	2.82	0.11	335	1.00	0.73		
21	2035	2.82	0.11	335	1.00	0.73		
22	2036	2.82	0.11	335	1.00	0.73		
23	2037	2.82	0.11	335	1.00	0.73		
24	2038	2.82	0.11	335	1.00	0.73		
25	2039	2.82	0.11	335	1.00	0.73		
26	2040	2.82	0.11	335	1.00	0.73		
27	2041	2.82	0.11	335	1.00	0.73		
28	2042	2.82	0.11	335	1.00	0.73		
29	2043	2.82	0.11	335	1.00	0.73		
30	2044	2.82	0.11	335	1.00	0.73		

Health Risk Assessment Assumptions

10 Chronic Reference Exposure Level (ug/m3)	
42 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Sulfide
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	9.28	0.04	1,090	10.0	0.85		0.04 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	9.28	0.04	1,090	10.0	0.85		
3	2017	9.28	0.04	745	4.75	0.72		
4	2018	9.28	0.04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	9.28	0.04	745	3.00	0.72		
6	2020	9.28	0.04	745	3.00	0.72		
7	2021	9.28	0.04	745	3.00	0.72		
8	2022	9.28	0.04	745	3.00	0.72		0.22 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	9.28	0.04	745	3.00	0.72		
10	2024	9.28	0.04	745	3.00	0.72		
11	2025	9.28	0.04	745	3.00	0.72		
12	2026	9.28	0.04	745	3.00	0.72		
13	2027	9.28	0.04	745	3.00	0.72		
14	2028	9.28	0.04	745	3.00	0.72		
15	2029	9.28	0.04	745	3.00	0.72		
16	2030	9.28	0.04	745	3.00	0.72		
17	2031	9.28	0.04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	9.28	0.04	335	1.00	0.73		
19	2033	9.28	0.04	335	1.00	0.73		
20	2034	9.28	0.04	335	1.00	0.73		
21	2035	9.28	0.04	335	1.00	0.73		
22	2036	9.28	0.04	335	1.00	0.73		
23	2037	9.28	0.04	335	1.00	0.73		
24	2038	9.28	0.04	335	1.00	0.73		
25	2039	9.28	0.04	335	1.00	0.73		
26	2040	9.28	0.04	335	1.00	0.73		
27	2041	9.28	0.04	335	1.00	0.73		
28	2042	9.28	0.04	335	1.00	0.73		
29	2043	9.28	0.04	335	1.00	0.73		
30	2044	9.28	0.04	335	1.00	0.73		

Health Risk Assessment Assumptions

0.015 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Arsenic
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	1.42E-03	1.91E-05	1,090	10.0	0.85	0.03	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	1.42E-03	1.91E-05	1,090	10.0	0.85	0.03	0.8 Significance Threshold (ug/m3)
3	2017	1.42E-03	1.91E-05	745	4.75	0.72	0.01	No Significant?
4	2018	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.00 Chronic Hazard Impact
5	2019	1.42E-03	1.91E-05	745	3.00	0.72	0.01	10 Significance Threshold
6	2020	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
7	2021	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.01 Acute Hazard Impact
8	2022	1.42E-03	1.91E-05	745	3.00	0.72	0.01	10 Significance Threshold
9	2023	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
10	2024	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.14 Cancer Risk (Child)
11	2025	1.42E-03	1.91E-05	745	3.00	0.72	0.01	100 Significance Threshold
12	2026	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
13	2027	1.42E-03	1.91E-05	745	3.00	0.72	0.01	0.04 Cancer Risk (Adult)
14	2028	1.42E-03	1.91E-05	745	3.00	0.72	0.01	100 Significance Threshold
15	2029	1.42E-03	1.91E-05	745	3.00	0.72	0.01	No Significant?
16	2030	1.42E-03	1.91E-05	745	3.00	0.72	0.01	
17	2031	1.42E-03	1.91E-05	335	1.70	0.73	0.00	
18	2032	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
19	2033	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
20	2034	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
21	2035	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
22	2036	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
23	2037	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
24	2038	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
25	2039	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
26	2040	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
27	2041	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
28	2042	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
29	2043	1.42E-03	1.91E-05	335	1.00	0.73	0.00	
30	2044	1.42E-03	1.91E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.007 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
8.4 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Beryllium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.46E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.46E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.46E-06	745	4.75	0.72	0.00	No Significant?
4	2018		1.46E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		1.46E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.46E-06	745	3.00	0.72	0.00	No Significant?
7	2021		1.46E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.46E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.46E-06	745	3.00	0.72	0.00	No Significant?
10	2024		1.46E-06	745	3.00	0.72	0.00	
11	2025		1.46E-06	745	3.00	0.72	0.00	
12	2026		1.46E-06	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2027		1.46E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2028		1.46E-06	745	3.00	0.72	0.00	No Significant?
15	2029		1.46E-06	745	3.00	0.72	0.00	
16	2030		1.46E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2031		1.46E-06	335	1.70	0.73	0.00	100 Significance Threshold
18	2032		1.46E-06	335	1.00	0.73	0.00	No Significant?
19	2033		1.46E-06	335	1.00	0.73	0.00	
20	2034		1.46E-06	335	1.00	0.73	0.00	
21	2035		1.46E-06	335	1.00	0.73	0.00	
22	2036		1.46E-06	335	1.00	0.73	0.00	
23	2037		1.46E-06	335	1.00	0.73	0.00	
24	2038		1.46E-06	335	1.00	0.73	0.00	
25	2039		1.46E-06	335	1.00	0.73	0.00	
26	2040		1.46E-06	335	1.00	0.73	0.00	
27	2041		1.46E-06	335	1.00	0.73	0.00	
28	2042		1.46E-06	335	1.00	0.73	0.00	
29	2043		1.46E-06	335	1.00	0.73	0.00	
30	2044		1.46E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.02 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
15 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Cadmium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		7.39E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		7.39E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		7.39E-06	745	4.75	0.72	0.00	No Significant?
4	2018		7.39E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		7.39E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		7.39E-06	745	3.00	0.72	0.00	No Significant?
7	2021		7.39E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		7.39E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		7.39E-06	745	3.00	0.72	0.00	No Significant?
10	2024		7.39E-06	745	3.00	0.72	0.00	
11	2025		7.39E-06	745	3.00	0.72	0.00	
12	2026		7.39E-06	745	3.00	0.72	0.00	0.07 Cancer Risk (Child)
13	2027		7.39E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2028		7.39E-06	745	3.00	0.72	0.00	No Significant?
15	2029		7.39E-06	745	3.00	0.72	0.00	
16	2030		7.39E-06	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
17	2031		7.39E-06	335	1.70	0.73	0.00	100 Significance Threshold
18	2032		7.39E-06	335	1.00	0.73	0.00	No Significant?
19	2033		7.39E-06	335	1.00	0.73	0.00	
20	2034		7.39E-06	335	1.00	0.73	0.00	
21	2035		7.39E-06	335	1.00	0.73	0.00	
22	2036		7.39E-06	335	1.00	0.73	0.00	
23	2037		7.39E-06	335	1.00	0.73	0.00	
24	2038		7.39E-06	335	1.00	0.73	0.00	
25	2039		7.39E-06	335	1.00	0.73	0.00	
26	2040		7.39E-06	335	1.00	0.73	0.00	
27	2041		7.39E-06	335	1.00	0.73	0.00	
28	2042		7.39E-06	335	1.00	0.73	0.00	
29	2043		7.39E-06	335	1.00	0.73	0.00	
30	2044		7.39E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
100 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Copper
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	Maximum Annual PM2.5 Concentration (ug/m3)
1	2015	0.01		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.01		1,090	10.0	0.85		Chronic Hazard Impact 10 Significance Threshold No Significant?
3	2017	0.01		745	4.75	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
4	2018	0.01		745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
5	2019	0.01		745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
6	2020	0.01		745	3.00	0.72		
7	2021	0.01		745	3.00	0.72		
8	2022	0.01		745	3.00	0.72		
9	2023	0.01		745	3.00	0.72		
10	2024	0.01		745	3.00	0.72		
11	2025	0.01		745	3.00	0.72		
12	2026	0.01		745	3.00	0.72		
13	2027	0.01		745	3.00	0.72		
14	2028	0.01		745	3.00	0.72		
15	2029	0.01		745	3.00	0.72		
16	2030	0.01		745	3.00	0.72		
17	2031	0.01		335	1.70	0.73		
18	2032	0.01		335	1.00	0.73		
19	2033	0.01		335	1.00	0.73		
20	2034	0.01		335	1.00	0.73		
21	2035	0.01		335	1.00	0.73		
22	2036	0.01		335	1.00	0.73		
23	2037	0.01		335	1.00	0.73		
24	2038	0.01		335	1.00	0.73		
25	2039	0.01		335	1.00	0.73		
26	2040	0.01		335	1.00	0.73		
27	2041	0.01		335	1.00	0.73		
28	2042	0.01		335	1.00	0.73		
29	2043	0.01		335	1.00	0.73		
30	2044	0.01		335	1.00	0.73		

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.042 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Lead
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		8.67E-05	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		8.67E-05	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		8.67E-05	745	4.75	0.72	0.00	No Significant?
4	2018		8.67E-05	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		8.67E-05	745	3.00	0.72	0.00	No Significant?
7	2021		8.67E-05	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		8.67E-05	745	3.00	0.72	0.00	No Significant?
10	2024		8.67E-05	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		8.67E-05	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		8.67E-05	745	3.00	0.72	0.00	No Significant?
13	2027		8.67E-05	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		8.67E-05	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		8.67E-05	745	3.00	0.72	0.00	No Significant?
16	2030		8.67E-05	745	3.00	0.72	0.00	
17	2031		8.67E-05	335	1.70	0.73	0.00	
18	2032		8.67E-05	335	1.00	0.73	0.00	
19	2033		8.67E-05	335	1.00	0.73	0.00	
20	2034		8.67E-05	335	1.00	0.73	0.00	
21	2035		8.67E-05	335	1.00	0.73	0.00	
22	2036		8.67E-05	335	1.00	0.73	0.00	
23	2037		8.67E-05	335	1.00	0.73	0.00	
24	2038		8.67E-05	335	1.00	0.73	0.00	
25	2039		8.67E-05	335	1.00	0.73	0.00	
26	2040		8.67E-05	335	1.00	0.73	0.00	
27	2041		8.67E-05	335	1.00	0.73	0.00	
28	2042		8.67E-05	335	1.00	0.73	0.00	
29	2043		8.67E-05	335	1.00	0.73	0.00	
30	2044		8.67E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.09 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Manganese
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.50E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.50E-05	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		1.50E-05	745	4.75	0.72		No Significant?
4	2018		1.50E-05	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		1.50E-05	745	3.00	0.72		10 Significance Threshold
6	2020		1.50E-05	745	3.00	0.72		No Significant?
7	2021		1.50E-05	745	3.00	0.72		Acute Hazard Impact
8	2022		1.50E-05	745	3.00	0.72		10 Significance Threshold
9	2023		1.50E-05	745	3.00	0.72		No Significant?
10	2024		1.50E-05	745	3.00	0.72		Acute Hazard Impact
11	2025		1.50E-05	745	3.00	0.72		10 Significance Threshold
12	2026		1.50E-05	745	3.00	0.72		No Significant?
13	2027		1.50E-05	745	3.00	0.72		Acute Hazard Impact
14	2028		1.50E-05	745	3.00	0.72		10 Significance Threshold
15	2029		1.50E-05	745	3.00	0.72		No Significant?
16	2030		1.50E-05	745	3.00	0.72		Acute Hazard Impact
17	2031		1.50E-05	335	1.70	0.73		10 Significance Threshold
18	2032		1.50E-05	335	1.00	0.73		No Significant?
19	2033		1.50E-05	335	1.00	0.73		Acute Hazard Impact
20	2034		1.50E-05	335	1.00	0.73		10 Significance Threshold
21	2035		1.50E-05	335	1.00	0.73		No Significant?
22	2036		1.50E-05	335	1.00	0.73		Acute Hazard Impact
23	2037		1.50E-05	335	1.00	0.73		10 Significance Threshold
24	2038		1.50E-05	335	1.00	0.73		No Significant?
25	2039		1.50E-05	335	1.00	0.73		Acute Hazard Impact
26	2040		1.50E-05	335	1.00	0.73		10 Significance Threshold
27	2041		1.50E-05	335	1.00	0.73		No Significant?
28	2042		1.50E-05	335	1.00	0.73		Acute Hazard Impact
29	2043		1.50E-05	335	1.00	0.73		10 Significance Threshold
30	2044		1.50E-05	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

0.03 Chronic Reference Exposure Level (ug/m3)	
0.6 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Mercury
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	7.93E-04	6.27E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	7.93E-04	6.27E-06	1,090	10.0	0.85		
3	2017	7.93E-04	6.27E-06	745	4.75	0.72		
4	2018	7.93E-04	6.27E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	7.93E-04	6.27E-06	745	3.00	0.72		
6	2020	7.93E-04	6.27E-06	745	3.00	0.72		
7	2021	7.93E-04	6.27E-06	745	3.00	0.72		
8	2022	7.93E-04	6.27E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	7.93E-04	6.27E-06	745	3.00	0.72		
10	2024	7.93E-04	6.27E-06	745	3.00	0.72		
11	2025	7.93E-04	6.27E-06	745	3.00	0.72		
12	2026	7.93E-04	6.27E-06	745	3.00	0.72		
13	2027	7.93E-04	6.27E-06	745	3.00	0.72		
14	2028	7.93E-04	6.27E-06	745	3.00	0.72		
15	2029	7.93E-04	6.27E-06	745	3.00	0.72		
16	2030	7.93E-04	6.27E-06	745	3.00	0.72		
17	2031	7.93E-04	6.27E-06	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	7.93E-04	6.27E-06	335	1.00	0.73		
19	2033	7.93E-04	6.27E-06	335	1.00	0.73		
20	2034	7.93E-04	6.27E-06	335	1.00	0.73		
21	2035	7.93E-04	6.27E-06	335	1.00	0.73		
22	2036	7.93E-04	6.27E-06	335	1.00	0.73		
23	2037	7.93E-04	6.27E-06	335	1.00	0.73		
24	2038	7.93E-04	6.27E-06	335	1.00	0.73		
25	2039	7.93E-04	6.27E-06	335	1.00	0.73		
26	2040	7.93E-04	6.27E-06	335	1.00	0.73		
27	2041	7.93E-04	6.27E-06	335	1.00	0.73		
28	2042	7.93E-04	6.27E-06	335	1.00	0.73		
29	2043	7.93E-04	6.27E-06	335	1.00	0.73		
30	2044	7.93E-04	6.27E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

0.14 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
0.91 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Nickel
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.01	9.12E-05	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.01	9.12E-05	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017	0.01	9.12E-05	745	4.75	0.72	0.00	No Significant?
4	2018	0.01	9.12E-05	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	0.01	9.12E-05	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	0.01	9.12E-05	745	3.00	0.72	0.00	No Significant?
7	2021	0.01	9.12E-05	745	3.00	0.72	0.00	0.04 Acute Hazard Impact
8	2022	0.01	9.12E-05	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	0.01	9.12E-05	745	3.00	0.72	0.00	No Significant?
10	2024	0.01	9.12E-05	745	3.00	0.72	0.00	0.05 Cancer Risk (Child)
11	2025	0.01	9.12E-05	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	0.01	9.12E-05	745	3.00	0.72	0.00	No Significant?
13	2027	0.01	9.12E-05	745	3.00	0.72	0.00	0.01 Cancer Risk (Adult)
14	2028	0.01	9.12E-05	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	0.01	9.12E-05	745	3.00	0.72	0.00	No Significant?
16	2030	0.01	9.12E-05	745	3.00	0.72	0.00	
17	2031	0.01	9.12E-05	335	1.70	0.73	0.00	
18	2032	0.01	9.12E-05	335	1.00	0.73	0.00	
19	2033	0.01	9.12E-05	335	1.00	0.73	0.00	
20	2034	0.01	9.12E-05	335	1.00	0.73	0.00	
21	2035	0.01	9.12E-05	335	1.00	0.73	0.00	
22	2036	0.01	9.12E-05	335	1.00	0.73	0.00	
23	2037	0.01	9.12E-05	335	1.00	0.73	0.00	
24	2038	0.01	9.12E-05	335	1.00	0.73	0.00	
25	2039	0.01	9.12E-05	335	1.00	0.73	0.00	
26	2040	0.01	9.12E-05	335	1.00	0.73	0.00	
27	2041	0.01	9.12E-05	335	1.00	0.73	0.00	
28	2042	0.01	9.12E-05	335	1.00	0.73	0.00	
29	2043	0.01	9.12E-05	335	1.00	0.73	0.00	
30	2044	0.01	9.12E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

20 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Selenium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		7.00E-07	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		7.00E-07	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		7.00E-07	745	4.75	0.72		No Significant?
4	2018		7.00E-07	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		7.00E-07	745	3.00	0.72		10 Significance Threshold
6	2020		7.00E-07	745	3.00	0.72		No Significant?
7	2021		7.00E-07	745	3.00	0.72		Acute Hazard Impact
8	2022		7.00E-07	745	3.00	0.72		10 Significance Threshold
9	2023		7.00E-07	745	3.00	0.72		No Significant?
10	2024		7.00E-07	745	3.00	0.72		Acute Hazard Impact
11	2025		7.00E-07	745	3.00	0.72		10 Significance Threshold
12	2026		7.00E-07	745	3.00	0.72		No Significant?
13	2027		7.00E-07	745	3.00	0.72		Acute Hazard Impact
14	2028		7.00E-07	745	3.00	0.72		10 Significance Threshold
15	2029		7.00E-07	745	3.00	0.72		No Significant?
16	2030		7.00E-07	745	3.00	0.72		Acute Hazard Impact
17	2031		7.00E-07	335	1.70	0.73		10 Significance Threshold
18	2032		7.00E-07	335	1.00	0.73		No Significant?
19	2033		7.00E-07	335	1.00	0.73		Acute Hazard Impact
20	2034		7.00E-07	335	1.00	0.73		10 Significance Threshold
21	2035		7.00E-07	335	1.00	0.73		No Significant?
22	2036		7.00E-07	335	1.00	0.73		Acute Hazard Impact
23	2037		7.00E-07	335	1.00	0.73		10 Significance Threshold
24	2038		7.00E-07	335	1.00	0.73		No Significant?
25	2039		7.00E-07	335	1.00	0.73		Acute Hazard Impact
26	2040		7.00E-07	335	1.00	0.73		10 Significance Threshold
27	2041		7.00E-07	335	1.00	0.73		No Significant?
28	2042		7.00E-07	335	1.00	0.73		Acute Hazard Impact
29	2043		7.00E-07	335	1.00	0.73		10 Significance Threshold
30	2044		7.00E-07	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
30 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Vanadium
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.01		1,090	10.0	0.85		- Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.01		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017	0.01		745	4.75	0.72		No Significant?
4	2018	0.01		745	3.00	0.72		Chronic Hazard Impact
5	2019	0.01		745	3.00	0.72		10 Significance Threshold
6	2020	0.01		745	3.00	0.72		No Significant?
7	2021	0.01		745	3.00	0.72		
8	2022	0.01		745	3.00	0.72		0.00 Acute Hazard Impact
9	2023	0.01		745	3.00	0.72		10 Significance Threshold
10	2024	0.01		745	3.00	0.72		No Significant?
11	2025	0.01		745	3.00	0.72		
12	2026	0.01		745	3.00	0.72		Cancer Risk (Child)
13	2027	0.01		745	3.00	0.72		100 Significance Threshold
14	2028	0.01		745	3.00	0.72		No Significant?
15	2029	0.01		745	3.00	0.72		
16	2030	0.01		745	3.00	0.72		Cancer Risk (Adult)
17	2031	0.01		335	1.70	0.73		100 Significance Threshold
18	2032	0.01		335	1.00	0.73		No Significant?
19	2033	0.01		335	1.00	0.73		
20	2034	0.01		335	1.00	0.73		
21	2035	0.01		335	1.00	0.73		
22	2036	0.01		335	1.00	0.73		
23	2037	0.01		335	1.00	0.73		
24	2038	0.01		335	1.00	0.73		
25	2039	0.01		335	1.00	0.73		
26	2040	0.01		335	1.00	0.73		
27	2041	0.01		335	1.00	0.73		
28	2042	0.01		335	1.00	0.73		
29	2043	0.01		335	1.00	0.73		
30	2044	0.01		335	1.00	0.73		

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: 1,1,1-trichloroethane
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	5.77E-05	2.28E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	5.77E-05	2.28E-06	1,090	10.0	0.85		
3	2017	5.77E-05	2.28E-06	745	4.75	0.72		
4	2018	5.77E-05	2.28E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	5.77E-05	2.28E-06	745	3.00	0.72		
6	2020	5.77E-05	2.28E-06	745	3.00	0.72		
7	2021	5.77E-05	2.28E-06	745	3.00	0.72		
8	2022	5.77E-05	2.28E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	5.77E-05	2.28E-06	745	3.00	0.72		
10	2024	5.77E-05	2.28E-06	745	3.00	0.72		
11	2025	5.77E-05	2.28E-06	745	3.00	0.72		
12	2026	5.77E-05	2.28E-06	745	3.00	0.72		
13	2027	5.77E-05	2.28E-06	745	3.00	0.72		
14	2028	5.77E-05	2.28E-06	745	3.00	0.72		
15	2029	5.77E-05	2.28E-06	745	3.00	0.72		
16	2030	5.77E-05	2.28E-06	745	3.00	0.72		
17	2031	5.77E-05	2.28E-06	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	5.77E-05	2.28E-06	335	1.00	0.73		
19	2033	5.77E-05	2.28E-06	335	1.00	0.73		
20	2034	5.77E-05	2.28E-06	335	1.00	0.73		
21	2035	5.77E-05	2.28E-06	335	1.00	0.73		
22	2036	5.77E-05	2.28E-06	335	1.00	0.73		
23	2037	5.77E-05	2.28E-06	335	1.00	0.73		
24	2038	5.77E-05	2.28E-06	335	1.00	0.73		
25	2039	5.77E-05	2.28E-06	335	1.00	0.73		
26	2040	5.77E-05	2.28E-06	335	1.00	0.73		
27	2041	5.77E-05	2.28E-06	335	1.00	0.73		
28	2042	5.77E-05	2.28E-06	335	1.00	0.73		
29	2043	5.77E-05	2.28E-06	335	1.00	0.73		
30	2044	5.77E-05	2.28E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
27 Acute Reference Exposure Level (ug/m3)	
0.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	5.78E-02	1.52E-03	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	5.78E-02	1.52E-03	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017	5.78E-02	1.52E-03	745	4.75	0.72	0.01	No Significant?
4	2018	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	5.78E-02	1.52E-03	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
7	2021	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2022	5.78E-02	1.52E-03	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
10	2024	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.10 Cancer Risk (Child)
11	2025	5.78E-02	1.52E-03	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
13	2027	5.78E-02	1.52E-03	745	3.00	0.72	0.00	0.03 Cancer Risk (Adult)
14	2028	5.78E-02	1.52E-03	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	5.78E-02	1.52E-03	745	3.00	0.72	0.00	No Significant?
16	2030	5.78E-02	1.52E-03	745	3.00	0.72	0.00	
17	2031	5.78E-02	1.52E-03	335	1.70	0.73	0.00	
18	2032	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
19	2033	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
20	2034	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
21	2035	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
22	2036	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
23	2037	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
24	2038	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
25	2039	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
26	2040	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
27	2041	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
28	2042	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
29	2043	5.78E-02	1.52E-03	335	1.00	0.73	0.00	
30	2044	5.78E-02	1.52E-03	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)anthracene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		2.52E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		2.52E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		2.52E-06	745	4.75	0.72	0.00	No Significant?
4	2018		2.52E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		2.52E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		2.52E-06	745	3.00	0.72	0.00	No Significant?
7	2021		2.52E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		2.52E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		2.52E-06	745	3.00	0.72	0.00	No Significant?
10	2024		2.52E-06	745	3.00	0.72	0.00	
11	2025		2.52E-06	745	3.00	0.72	0.00	
12	2026		2.52E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2027		2.52E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2028		2.52E-06	745	3.00	0.72	0.00	No Significant?
15	2029		2.52E-06	745	3.00	0.72	0.00	
16	2030		2.52E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2031		2.52E-06	335	1.70	0.73	0.00	100 Significance Threshold
18	2032		2.52E-06	335	1.00	0.73	0.00	No Significant?
19	2033		2.52E-06	335	1.00	0.73	0.00	
20	2034		2.52E-06	335	1.00	0.73	0.00	
21	2035		2.52E-06	335	1.00	0.73	0.00	
22	2036		2.52E-06	335	1.00	0.73	0.00	
23	2037		2.52E-06	335	1.00	0.73	0.00	
24	2038		2.52E-06	335	1.00	0.73	0.00	
25	2039		2.52E-06	335	1.00	0.73	0.00	
26	2040		2.52E-06	335	1.00	0.73	0.00	
27	2041		2.52E-06	335	1.00	0.73	0.00	
28	2042		2.52E-06	335	1.00	0.73	0.00	
29	2043		2.52E-06	335	1.00	0.73	0.00	
30	2044		2.52E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
3.9 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)pyrene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		0.00	1,090	10.0	0.85	1.37	0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant? Chronic Hazard Impact 10 Significance Threshold No Significant? Acute Hazard Impact 10 Significance Threshold No Significant? 6.73 Cancer Risk (Child) 100 Significance Threshold No Significant? 1.84 Cancer Risk (Adult) 100 Significance Threshold No Significant?
2	2016		0.00	1,090	10.0	0.85	1.37	
3	2017		0.00	745	4.75	0.72	0.38	
4	2018		0.00	745	3.00	0.72	0.24	
5	2019		0.00	745	3.00	0.72	0.24	
6	2020		0.00	745	3.00	0.72	0.24	
7	2021		0.00	745	3.00	0.72	0.24	
8	2022		0.00	745	3.00	0.72	0.24	
9	2023		0.00	745	3.00	0.72	0.24	
10	2024		0.00	745	3.00	0.72	0.24	
11	2025		0.00	745	3.00	0.72	0.24	
12	2026		0.00	745	3.00	0.72	0.24	
13	2027		0.00	745	3.00	0.72	0.24	
14	2028		0.00	745	3.00	0.72	0.24	
15	2029		0.00	745	3.00	0.72	0.24	
16	2030		0.00	745	3.00	0.72	0.24	
17	2031		0.00	335	1.70	0.73	0.06	
18	2032		0.00	335	1.00	0.73	0.04	
19	2033		0.00	335	1.00	0.73	0.04	
20	2034		0.00	335	1.00	0.73	0.04	
21	2035		0.00	335	1.00	0.73	0.04	
22	2036		0.00	335	1.00	0.73	0.04	
23	2037		0.00	335	1.00	0.73	0.04	
24	2038		0.00	335	1.00	0.73	0.04	
25	2039		0.00	335	1.00	0.73	0.04	
26	2040		0.00	335	1.00	0.73	0.04	
27	2041		0.00	335	1.00	0.73	0.04	
28	2042		0.00	335	1.00	0.73	0.04	
29	2043		0.00	335	1.00	0.73	0.04	
30	2044		0.00	335	1.00	0.73	0.04	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(b)fluoranthene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		8.62E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		8.62E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		8.62E-08	745	4.75	0.72	0.00	No Significant?
4	2018		8.62E-08	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		8.62E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		8.62E-08	745	3.00	0.72	0.00	No Significant?
7	2021		8.62E-08	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		8.62E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		8.62E-08	745	3.00	0.72	0.00	No Significant?
10	2024		8.62E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		8.62E-08	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		8.62E-08	745	3.00	0.72	0.00	No Significant?
13	2027		8.62E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		8.62E-08	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		8.62E-08	745	3.00	0.72	0.00	No Significant?
16	2030		8.62E-08	745	3.00	0.72	0.00	
17	2031		8.62E-08	335	1.70	0.73	0.00	
18	2032		8.62E-08	335	1.00	0.73	0.00	
19	2033		8.62E-08	335	1.00	0.73	0.00	
20	2034		8.62E-08	335	1.00	0.73	0.00	
21	2035		8.62E-08	335	1.00	0.73	0.00	
22	2036		8.62E-08	335	1.00	0.73	0.00	
23	2037		8.62E-08	335	1.00	0.73	0.00	
24	2038		8.62E-08	335	1.00	0.73	0.00	
25	2039		8.62E-08	335	1.00	0.73	0.00	
26	2040		8.62E-08	335	1.00	0.73	0.00	
27	2041		8.62E-08	335	1.00	0.73	0.00	
28	2042		8.62E-08	335	1.00	0.73	0.00	
29	2043		8.62E-08	335	1.00	0.73	0.00	
30	2044		8.62E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0084 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: bis(2-ethylhexy)phthalate
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		9.69E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		9.69E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		9.69E-04	745	4.75	0.72	0.00	No Significant?
4	2018		9.69E-04	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		9.69E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		9.69E-04	745	3.00	0.72	0.00	No Significant?
7	2021		9.69E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		9.69E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		9.69E-04	745	3.00	0.72	0.00	No Significant?
10	2024		9.69E-04	745	3.00	0.72	0.00	
11	2025		9.69E-04	745	3.00	0.72	0.00	
12	2026		9.69E-04	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2027		9.69E-04	745	3.00	0.72	0.00	100 Significance Threshold
14	2028		9.69E-04	745	3.00	0.72	0.00	No Significant?
15	2029		9.69E-04	745	3.00	0.72	0.00	
16	2030		9.69E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2031		9.69E-04	335	1.70	0.73	0.00	100 Significance Threshold
18	2032		9.69E-04	335	1.00	0.73	0.00	No Significant?
19	2033		9.69E-04	335	1.00	0.73	0.00	
20	2034		9.69E-04	335	1.00	0.73	0.00	
21	2035		9.69E-04	335	1.00	0.73	0.00	
22	2036		9.69E-04	335	1.00	0.73	0.00	
23	2037		9.69E-04	335	1.00	0.73	0.00	
24	2038		9.69E-04	335	1.00	0.73	0.00	
25	2039		9.69E-04	335	1.00	0.73	0.00	
26	2040		9.69E-04	335	1.00	0.73	0.00	
27	2041		9.69E-04	335	1.00	0.73	0.00	
28	2042		9.69E-04	335	1.00	0.73	0.00	
29	2043		9.69E-04	335	1.00	0.73	0.00	
30	2044		9.69E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

800 Chronic Reference Exposure Level (ug/m3)	
6200 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Carbon Disulfide
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	5.28E-04	2.08E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	5.28E-04	2.08E-05	1,090	10.0	0.85		
3	2017	5.28E-04	2.08E-05	745	4.75	0.72		
4	2018	5.28E-04	2.08E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	5.28E-04	2.08E-05	745	3.00	0.72		
6	2020	5.28E-04	2.08E-05	745	3.00	0.72		
7	2021	5.28E-04	2.08E-05	745	3.00	0.72		
8	2022	5.28E-04	2.08E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	5.28E-04	2.08E-05	745	3.00	0.72		
10	2024	5.28E-04	2.08E-05	745	3.00	0.72		
11	2025	5.28E-04	2.08E-05	745	3.00	0.72		
12	2026	5.28E-04	2.08E-05	745	3.00	0.72		
13	2027	5.28E-04	2.08E-05	745	3.00	0.72		
14	2028	5.28E-04	2.08E-05	745	3.00	0.72		
15	2029	5.28E-04	2.08E-05	745	3.00	0.72		
16	2030	5.28E-04	2.08E-05	745	3.00	0.72		
17	2031	5.28E-04	2.08E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	5.28E-04	2.08E-05	335	1.00	0.73		
19	2033	5.28E-04	2.08E-05	335	1.00	0.73		
20	2034	5.28E-04	2.08E-05	335	1.00	0.73		
21	2035	5.28E-04	2.08E-05	335	1.00	0.73		
22	2036	5.28E-04	2.08E-05	335	1.00	0.73		
23	2037	5.28E-04	2.08E-05	335	1.00	0.73		
24	2038	5.28E-04	2.08E-05	335	1.00	0.73		
25	2039	5.28E-04	2.08E-05	335	1.00	0.73		
26	2040	5.28E-04	2.08E-05	335	1.00	0.73		
27	2041	5.28E-04	2.08E-05	335	1.00	0.73		
28	2042	5.28E-04	2.08E-05	335	1.00	0.73		
29	2043	5.28E-04	2.08E-05	335	1.00	0.73		
30	2044	5.28E-04	2.08E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

0.2 Chronic Reference Exposure Level (ug/m3)	
210 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Chlorine
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.02	6.30E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.02	6.30E-04	1,090	10.0	0.85		
3	2017	0.02	6.30E-04	745	4.75	0.72		
4	2018	0.02	6.30E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	0.02	6.30E-04	745	3.00	0.72		
6	2020	0.02	6.30E-04	745	3.00	0.72		
7	2021	0.02	6.30E-04	745	3.00	0.72		
8	2022	0.02	6.30E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	0.02	6.30E-04	745	3.00	0.72		
10	2024	0.02	6.30E-04	745	3.00	0.72		
11	2025	0.02	6.30E-04	745	3.00	0.72		
12	2026	0.02	6.30E-04	745	3.00	0.72		
13	2027	0.02	6.30E-04	745	3.00	0.72		
14	2028	0.02	6.30E-04	745	3.00	0.72		
15	2029	0.02	6.30E-04	745	3.00	0.72		
16	2030	0.02	6.30E-04	745	3.00	0.72		
17	2031	0.02	6.30E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	0.02	6.30E-04	335	1.00	0.73		
19	2033	0.02	6.30E-04	335	1.00	0.73		
20	2034	0.02	6.30E-04	335	1.00	0.73		
21	2035	0.02	6.30E-04	335	1.00	0.73		
22	2036	0.02	6.30E-04	335	1.00	0.73		
23	2037	0.02	6.30E-04	335	1.00	0.73		
24	2038	0.02	6.30E-04	335	1.00	0.73		
25	2039	0.02	6.30E-04	335	1.00	0.73		
26	2040	0.02	6.30E-04	335	1.00	0.73		
27	2041	0.02	6.30E-04	335	1.00	0.73		
28	2042	0.02	6.30E-04	335	1.00	0.73		
29	2043	0.02	6.30E-04	335	1.00	0.73		
30	2044	0.02	6.30E-04	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

30000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Chloroethane
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.37E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.37E-06	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		1.37E-06	745	4.75	0.72		No Significant?
4	2018		1.37E-06	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		1.37E-06	745	3.00	0.72		10 Significance Threshold
6	2020		1.37E-06	745	3.00	0.72		No Significant?
7	2021		1.37E-06	745	3.00	0.72		Acute Hazard Impact
8	2022		1.37E-06	745	3.00	0.72		10 Significance Threshold
9	2023		1.37E-06	745	3.00	0.72		No Significant?
10	2024		1.37E-06	745	3.00	0.72		Acute Hazard Impact
11	2025		1.37E-06	745	3.00	0.72		10 Significance Threshold
12	2026		1.37E-06	745	3.00	0.72		No Significant?
13	2027		1.37E-06	745	3.00	0.72		Acute Hazard Impact
14	2028		1.37E-06	745	3.00	0.72		10 Significance Threshold
15	2029		1.37E-06	745	3.00	0.72		No Significant?
16	2030		1.37E-06	745	3.00	0.72		Acute Hazard Impact
17	2031		1.37E-06	335	1.70	0.73		10 Significance Threshold
18	2032		1.37E-06	335	1.00	0.73		No Significant?
19	2033		1.37E-06	335	1.00	0.73		Acute Hazard Impact
20	2034		1.37E-06	335	1.00	0.73		10 Significance Threshold
21	2035		1.37E-06	335	1.00	0.73		No Significant?
22	2036		1.37E-06	335	1.00	0.73		Acute Hazard Impact
23	2037		1.37E-06	335	1.00	0.73		10 Significance Threshold
24	2038		1.37E-06	335	1.00	0.73		No Significant?
25	2039		1.37E-06	335	1.00	0.73		Acute Hazard Impact
26	2040		1.37E-06	335	1.00	0.73		10 Significance Threshold
27	2041		1.37E-06	335	1.00	0.73		No Significant?
28	2042		1.37E-06	335	1.00	0.73		Acute Hazard Impact
29	2043		1.37E-06	335	1.00	0.73		10 Significance Threshold
30	2044		1.37E-06	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0039 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Chrysene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		9.59E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		9.59E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		9.59E-06	745	4.75	0.72	0.00	No Significant?
4	2018		9.59E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		9.59E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		9.59E-06	745	3.00	0.72	0.00	No Significant?
7	2021		9.59E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		9.59E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		9.59E-06	745	3.00	0.72	0.00	No Significant?
10	2024		9.59E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		9.59E-06	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		9.59E-06	745	3.00	0.72	0.00	No Significant?
13	2027		9.59E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		9.59E-06	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		9.59E-06	745	3.00	0.72	0.00	No Significant?
16	2030		9.59E-06	745	3.00	0.72	0.00	
17	2031		9.59E-06	335	1.70	0.73	0.00	
18	2032		9.59E-06	335	1.00	0.73	0.00	
19	2033		9.59E-06	335	1.00	0.73	0.00	
20	2034		9.59E-06	335	1.00	0.73	0.00	
21	2035		9.59E-06	335	1.00	0.73	0.00	
22	2036		9.59E-06	335	1.00	0.73	0.00	
23	2037		9.59E-06	335	1.00	0.73	0.00	
24	2038		9.59E-06	335	1.00	0.73	0.00	
25	2039		9.59E-06	335	1.00	0.73	0.00	
26	2040		9.59E-06	335	1.00	0.73	0.00	
27	2041		9.59E-06	335	1.00	0.73	0.00	
28	2042		9.59E-06	335	1.00	0.73	0.00	
29	2043		9.59E-06	335	1.00	0.73	0.00	
30	2044		9.59E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

2000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0087 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Ethylbenzene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		2.47E-04	1,090	10.0	0.85	0.00	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		2.47E-04	1,090	10.0	0.85	0.00	0.8 Significance Threshold (ug/m3)
3	2017		2.47E-04	745	4.75	0.72	0.00	No Significant?
4	2018		2.47E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		2.47E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		2.47E-04	745	3.00	0.72	0.00	No Significant?
7	2021		2.47E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		2.47E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		2.47E-04	745	3.00	0.72	0.00	No Significant?
10	2024		2.47E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		2.47E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		2.47E-04	745	3.00	0.72	0.00	No Significant?
13	2027		2.47E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		2.47E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		2.47E-04	745	3.00	0.72	0.00	No Significant?
16	2030		2.47E-04	745	3.00	0.72	0.00	
17	2031		2.47E-04	335	1.70	0.73	0.00	
18	2032		2.47E-04	335	1.00	0.73	0.00	
19	2033		2.47E-04	335	1.00	0.73	0.00	
20	2034		2.47E-04	335	1.00	0.73	0.00	
21	2035		2.47E-04	335	1.00	0.73	0.00	
22	2036		2.47E-04	335	1.00	0.73	0.00	
23	2037		2.47E-04	335	1.00	0.73	0.00	
24	2038		2.47E-04	335	1.00	0.73	0.00	
25	2039		2.47E-04	335	1.00	0.73	0.00	
26	2040		2.47E-04	335	1.00	0.73	0.00	
27	2041		2.47E-04	335	1.00	0.73	0.00	
28	2042		2.47E-04	335	1.00	0.73	0.00	
29	2043		2.47E-04	335	1.00	0.73	0.00	
30	2044		2.47E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
55 Acute Reference Exposure Level (ug/m3)	
0.021 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Formaldehyde
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.22	0.00	1,090	10.0	0.85	0.01	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.22	0.00	1,090	10.0	0.85	0.01	0.8 Significance Threshold (ug/m3)
3	2017	0.22	0.00	745	4.75	0.72	0.00	No Significant?
4	2018	0.22	0.00	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	0.22	0.00	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	0.22	0.00	745	3.00	0.72	0.00	No Significant?
7	2021	0.22	0.00	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2022	0.22	0.00	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	0.22	0.00	745	3.00	0.72	0.00	No Significant?
10	2024	0.22	0.00	745	3.00	0.72	0.00	0.04 Cancer Risk (Child)
11	2025	0.22	0.00	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	0.22	0.00	745	3.00	0.72	0.00	No Significant?
13	2027	0.22	0.00	745	3.00	0.72	0.00	0.01 Cancer Risk (Adult)
14	2028	0.22	0.00	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	0.22	0.00	745	3.00	0.72	0.00	No Significant?
16	2030	0.22	0.00	745	3.00	0.72	0.00	
17	2031	0.22	0.00	335	1.70	0.73	0.00	
18	2032	0.22	0.00	335	1.00	0.73	0.00	
19	2033	0.22	0.00	335	1.00	0.73	0.00	
20	2034	0.22	0.00	335	1.00	0.73	0.00	
21	2035	0.22	0.00	335	1.00	0.73	0.00	
22	2036	0.22	0.00	335	1.00	0.73	0.00	
23	2037	0.22	0.00	335	1.00	0.73	0.00	
24	2038	0.22	0.00	335	1.00	0.73	0.00	
25	2039	0.22	0.00	335	1.00	0.73	0.00	
26	2040	0.22	0.00	335	1.00	0.73	0.00	
27	2041	0.22	0.00	335	1.00	0.73	0.00	
28	2042	0.22	0.00	335	1.00	0.73	0.00	
29	2043	0.22	0.00	335	1.00	0.73	0.00	
30	2044	0.22	0.00	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

7000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Hexane
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		7.98E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		7.98E-04	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		7.98E-04	745	4.75	0.72		No Significant?
4	2018		7.98E-04	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		7.98E-04	745	3.00	0.72		10 Significance Threshold
6	2020		7.98E-04	745	3.00	0.72		No Significant?
7	2021		7.98E-04	745	3.00	0.72		Acute Hazard Impact
8	2022		7.98E-04	745	3.00	0.72		10 Significance Threshold
9	2023		7.98E-04	745	3.00	0.72		No Significant?
10	2024		7.98E-04	745	3.00	0.72		Acute Hazard Impact
11	2025		7.98E-04	745	3.00	0.72		10 Significance Threshold
12	2026		7.98E-04	745	3.00	0.72		No Significant?
13	2027		7.98E-04	745	3.00	0.72		Acute Hazard Impact
14	2028		7.98E-04	745	3.00	0.72		10 Significance Threshold
15	2029		7.98E-04	745	3.00	0.72		No Significant?
16	2030		7.98E-04	745	3.00	0.72		Acute Hazard Impact
17	2031		7.98E-04	335	1.70	0.73		10 Significance Threshold
18	2032		7.98E-04	335	1.00	0.73		No Significant?
19	2033		7.98E-04	335	1.00	0.73		Acute Hazard Impact
20	2034		7.98E-04	335	1.00	0.73		10 Significance Threshold
21	2035		7.98E-04	335	1.00	0.73		No Significant?
22	2036		7.98E-04	335	1.00	0.73		Acute Hazard Impact
23	2037		7.98E-04	335	1.00	0.73		10 Significance Threshold
24	2038		7.98E-04	335	1.00	0.73		No Significant?
25	2039		7.98E-04	335	1.00	0.73		Acute Hazard Impact
26	2040		7.98E-04	335	1.00	0.73		10 Significance Threshold
27	2041		7.98E-04	335	1.00	0.73		No Significant?
28	2042		7.98E-04	335	1.00	0.73		Acute Hazard Impact
29	2043		7.98E-04	335	1.00	0.73		10 Significance Threshold
30	2044		7.98E-04	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Inden(123-cd)opyrene
 Meteorological: MBP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.70E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.70E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.70E-08	745	4.75	0.72	0.00	No Significant?
4	2018		1.70E-08	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		1.70E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.70E-08	745	3.00	0.72	0.00	No Significant?
7	2021		1.70E-08	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.70E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.70E-08	745	3.00	0.72	0.00	No Significant?
10	2024		1.70E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		1.70E-08	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		1.70E-08	745	3.00	0.72	0.00	No Significant?
13	2027		1.70E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		1.70E-08	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		1.70E-08	745	3.00	0.72	0.00	No Significant?
16	2030		1.70E-08	745	3.00	0.72	0.00	
17	2031		1.70E-08	335	1.70	0.73	0.00	
18	2032		1.70E-08	335	1.00	0.73	0.00	
19	2033		1.70E-08	335	1.00	0.73	0.00	
20	2034		1.70E-08	335	1.00	0.73	0.00	
21	2035		1.70E-08	335	1.00	0.73	0.00	
22	2036		1.70E-08	335	1.00	0.73	0.00	
23	2037		1.70E-08	335	1.00	0.73	0.00	
24	2038		1.70E-08	335	1.00	0.73	0.00	
25	2039		1.70E-08	335	1.00	0.73	0.00	
26	2040		1.70E-08	335	1.00	0.73	0.00	
27	2041		1.70E-08	335	1.00	0.73	0.00	
28	2042		1.70E-08	335	1.00	0.73	0.00	
29	2043		1.70E-08	335	1.00	0.73	0.00	
30	2044		1.70E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Methyl Chloroform
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	3.06E-03	3.90E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	3.06E-03	3.90E-05	1,090	10.0	0.85		
3	2017	3.06E-03	3.90E-05	745	4.75	0.72		
4	2018	3.06E-03	3.90E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	3.06E-03	3.90E-05	745	3.00	0.72		
6	2020	3.06E-03	3.90E-05	745	3.00	0.72		
7	2021	3.06E-03	3.90E-05	745	3.00	0.72		
8	2022	3.06E-03	3.90E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	3.06E-03	3.90E-05	745	3.00	0.72		
10	2024	3.06E-03	3.90E-05	745	3.00	0.72		
11	2025	3.06E-03	3.90E-05	745	3.00	0.72		
12	2026	3.06E-03	3.90E-05	745	3.00	0.72		
13	2027	3.06E-03	3.90E-05	745	3.00	0.72		
14	2028	3.06E-03	3.90E-05	745	3.00	0.72		
15	2029	3.06E-03	3.90E-05	745	3.00	0.72		
16	2030	3.06E-03	3.90E-05	745	3.00	0.72		
17	2031	3.06E-03	3.90E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	3.06E-03	3.90E-05	335	1.00	0.73		
19	2033	3.06E-03	3.90E-05	335	1.00	0.73		
20	2034	3.06E-03	3.90E-05	335	1.00	0.73		
21	2035	3.06E-03	3.90E-05	335	1.00	0.73		
22	2036	3.06E-03	3.90E-05	335	1.00	0.73		
23	2037	3.06E-03	3.90E-05	335	1.00	0.73		
24	2038	3.06E-03	3.90E-05	335	1.00	0.73		
25	2039	3.06E-03	3.90E-05	335	1.00	0.73		
26	2040	3.06E-03	3.90E-05	335	1.00	0.73		
27	2041	3.06E-03	3.90E-05	335	1.00	0.73		
28	2042	3.06E-03	3.90E-05	335	1.00	0.73		
29	2043	3.06E-03	3.90E-05	335	1.00	0.73		
30	2044	3.06E-03	3.90E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

400 Chronic Reference Exposure Level (ug/m3)	
14000 Acute Reference Exposure Level (ug/m3)	
0.0035 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Methylene Chloride
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	2.09E-05	9.10E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	2.09E-05	9.10E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017	2.09E-05	9.10E-08	745	4.75	0.72	0.00	No Significant?
4	2018	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	2.09E-05	9.10E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	2.09E-05	9.10E-08	745	3.00	0.72	0.00	No Significant?
7	2021	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2022	2.09E-05	9.10E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	2.09E-05	9.10E-08	745	3.00	0.72	0.00	No Significant?
10	2024	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025	2.09E-05	9.10E-08	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	2.09E-05	9.10E-08	745	3.00	0.72	0.00	No Significant?
13	2027	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028	2.09E-05	9.10E-08	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	2.09E-05	9.10E-08	745	3.00	0.72	0.00	No Significant?
16	2030	2.09E-05	9.10E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2031	2.09E-05	9.10E-08	335	1.70	0.73	0.00	100 Significance Threshold
18	2032	2.09E-05	9.10E-08	335	1.00	0.73	0.00	No Significant?
19	2033	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
20	2034	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
21	2035	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
22	2036	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
23	2037	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
24	2038	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
25	2039	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
26	2040	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
27	2041	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
28	2042	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
29	2043	2.09E-05	9.10E-08	335	1.00	0.73	0.00	
30	2044	2.09E-05	9.10E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Naphthalene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.75E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.75E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.75E-04	745	4.75	0.72	0.00	No Significant?
4	2018		1.75E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		1.75E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.75E-04	745	3.00	0.72	0.00	No Significant?
7	2021		1.75E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.75E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.75E-04	745	3.00	0.72	0.00	No Significant?
10	2024		1.75E-04	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
11	2025		1.75E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		1.75E-04	745	3.00	0.72	0.00	No Significant?
13	2027		1.75E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		1.75E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		1.75E-04	745	3.00	0.72	0.00	No Significant?
16	2030		1.75E-04	745	3.00	0.72	0.00	
17	2031		1.75E-04	335	1.70	0.73	0.00	
18	2032		1.75E-04	335	1.00	0.73	0.00	
19	2033		1.75E-04	335	1.00	0.73	0.00	
20	2034		1.75E-04	335	1.00	0.73	0.00	
21	2035		1.75E-04	335	1.00	0.73	0.00	
22	2036		1.75E-04	335	1.00	0.73	0.00	
23	2037		1.75E-04	335	1.00	0.73	0.00	
24	2038		1.75E-04	335	1.00	0.73	0.00	
25	2039		1.75E-04	335	1.00	0.73	0.00	
26	2040		1.75E-04	335	1.00	0.73	0.00	
27	2041		1.75E-04	335	1.00	0.73	0.00	
28	2042		1.75E-04	335	1.00	0.73	0.00	
29	2043		1.75E-04	335	1.00	0.73	0.00	
30	2044		1.75E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

200 Chronic Reference Exposure Level (ug/m3)	
5800 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Phenol
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	7.05E-03	4.65E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	7.05E-03	4.65E-05	1,090	10.0	0.85		
3	2017	7.05E-03	4.65E-05	745	4.75	0.72		
4	2018	7.05E-03	4.65E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	7.05E-03	4.65E-05	745	3.00	0.72		
6	2020	7.05E-03	4.65E-05	745	3.00	0.72		
7	2021	7.05E-03	4.65E-05	745	3.00	0.72		
8	2022	7.05E-03	4.65E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	7.05E-03	4.65E-05	745	3.00	0.72		
10	2024	7.05E-03	4.65E-05	745	3.00	0.72		
11	2025	7.05E-03	4.65E-05	745	3.00	0.72		
12	2026	7.05E-03	4.65E-05	745	3.00	0.72		
13	2027	7.05E-03	4.65E-05	745	3.00	0.72		
14	2028	7.05E-03	4.65E-05	745	3.00	0.72		
15	2029	7.05E-03	4.65E-05	745	3.00	0.72		
16	2030	7.05E-03	4.65E-05	745	3.00	0.72		
17	2031	7.05E-03	4.65E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	7.05E-03	4.65E-05	335	1.00	0.73		
19	2033	7.05E-03	4.65E-05	335	1.00	0.73		
20	2034	7.05E-03	4.65E-05	335	1.00	0.73		
21	2035	7.05E-03	4.65E-05	335	1.00	0.73		
22	2036	7.05E-03	4.65E-05	335	1.00	0.73		
23	2037	7.05E-03	4.65E-05	335	1.00	0.73		
24	2038	7.05E-03	4.65E-05	335	1.00	0.73		
25	2039	7.05E-03	4.65E-05	335	1.00	0.73		
26	2040	7.05E-03	4.65E-05	335	1.00	0.73		
27	2041	7.05E-03	4.65E-05	335	1.00	0.73		
28	2042	7.05E-03	4.65E-05	335	1.00	0.73		
29	2043	7.05E-03	4.65E-05	335	1.00	0.73		
30	2044	7.05E-03	4.65E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

900 Chronic Reference Exposure Level (ug/m3)	
21000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Styrene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	7.37E-04	1.01E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	7.37E-04	1.01E-05	1,090	10.0	0.85		
3	2017	7.37E-04	1.01E-05	745	4.75	0.72		
4	2018	7.37E-04	1.01E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	7.37E-04	1.01E-05	745	3.00	0.72		
6	2020	7.37E-04	1.01E-05	745	3.00	0.72		
7	2021	7.37E-04	1.01E-05	745	3.00	0.72		
8	2022	7.37E-04	1.01E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	7.37E-04	1.01E-05	745	3.00	0.72		
10	2024	7.37E-04	1.01E-05	745	3.00	0.72		
11	2025	7.37E-04	1.01E-05	745	3.00	0.72		
12	2026	7.37E-04	1.01E-05	745	3.00	0.72		
13	2027	7.37E-04	1.01E-05	745	3.00	0.72		
14	2028	7.37E-04	1.01E-05	745	3.00	0.72		
15	2029	7.37E-04	1.01E-05	745	3.00	0.72		
16	2030	7.37E-04	1.01E-05	745	3.00	0.72		
17	2031	7.37E-04	1.01E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	7.37E-04	1.01E-05	335	1.00	0.73		
19	2033	7.37E-04	1.01E-05	335	1.00	0.73		
20	2034	7.37E-04	1.01E-05	335	1.00	0.73		
21	2035	7.37E-04	1.01E-05	335	1.00	0.73		
22	2036	7.37E-04	1.01E-05	335	1.00	0.73		
23	2037	7.37E-04	1.01E-05	335	1.00	0.73		
24	2038	7.37E-04	1.01E-05	335	1.00	0.73		
25	2039	7.37E-04	1.01E-05	335	1.00	0.73		
26	2040	7.37E-04	1.01E-05	335	1.00	0.73		
27	2041	7.37E-04	1.01E-05	335	1.00	0.73		
28	2042	7.37E-04	1.01E-05	335	1.00	0.73		
29	2043	7.37E-04	1.01E-05	335	1.00	0.73		
30	2044	7.37E-04	1.01E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

420 Chronic Reference Exposure Level (ug/m3)	
5,000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Toluene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.02	1.93E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.02	1.93E-04	1,090	10.0	0.85		
3	2017	0.02	1.93E-04	745	4.75	0.72		
4	2018	0.02	1.93E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	0.02	1.93E-04	745	3.00	0.72		
6	2020	0.02	1.93E-04	745	3.00	0.72		
7	2021	0.02	1.93E-04	745	3.00	0.72		
8	2022	0.02	1.93E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	0.02	1.93E-04	745	3.00	0.72		
10	2024	0.02	1.93E-04	745	3.00	0.72		
11	2025	0.02	1.93E-04	745	3.00	0.72		
12	2026	0.02	1.93E-04	745	3.00	0.72		
13	2027	0.02	1.93E-04	745	3.00	0.72		
14	2028	0.02	1.93E-04	745	3.00	0.72		
15	2029	0.02	1.93E-04	745	3.00	0.72		
16	2030	0.02	1.93E-04	745	3.00	0.72		
17	2031	0.02	1.93E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	0.02	1.93E-04	335	1.00	0.73		
19	2033	0.02	1.93E-04	335	1.00	0.73		
20	2034	0.02	1.93E-04	335	1.00	0.73		
21	2035	0.02	1.93E-04	335	1.00	0.73		
22	2036	0.02	1.93E-04	335	1.00	0.73		
23	2037	0.02	1.93E-04	335	1.00	0.73		
24	2038	0.02	1.93E-04	335	1.00	0.73		
25	2039	0.02	1.93E-04	335	1.00	0.73		
26	2040	0.02	1.93E-04	335	1.00	0.73		
27	2041	0.02	1.93E-04	335	1.00	0.73		
28	2042	0.02	1.93E-04	335	1.00	0.73		
29	2043	0.02	1.93E-04	335	1.00	0.73		
30	2044	0.02	1.93E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

700 Chronic Reference Exposure Level (ug/m3)	
22000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Xylene
 Meteorological: MBP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.03	2.88E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.03	2.88E-04	1,090	10.0	0.85		
3	2017	0.03	2.88E-04	745	4.75	0.72		
4	2018	0.03	2.88E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	0.03	2.88E-04	745	3.00	0.72		
6	2020	0.03	2.88E-04	745	3.00	0.72		
7	2021	0.03	2.88E-04	745	3.00	0.72		
8	2022	0.03	2.88E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	0.03	2.88E-04	745	3.00	0.72		
10	2024	0.03	2.88E-04	745	3.00	0.72		
11	2025	0.03	2.88E-04	745	3.00	0.72		
12	2026	0.03	2.88E-04	745	3.00	0.72		
13	2027	0.03	2.88E-04	745	3.00	0.72		
14	2028	0.03	2.88E-04	745	3.00	0.72		
15	2029	0.03	2.88E-04	745	3.00	0.72		
16	2030	0.03	2.88E-04	745	3.00	0.72		
17	2031	0.03	2.88E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	0.03	2.88E-04	335	1.00	0.73		
19	2033	0.03	2.88E-04	335	1.00	0.73		
20	2034	0.03	2.88E-04	335	1.00	0.73		
21	2035	0.03	2.88E-04	335	1.00	0.73		
22	2036	0.03	2.88E-04	335	1.00	0.73		
23	2037	0.03	2.88E-04	335	1.00	0.73		
24	2038	0.03	2.88E-04	335	1.00	0.73		
25	2039	0.03	2.88E-04	335	1.00	0.73		
26	2040	0.03	2.88E-04	335	1.00	0.73		
27	2041	0.03	2.88E-04	335	1.00	0.73		
28	2042	0.03	2.88E-04	335	1.00	0.73		
29	2043	0.03	2.88E-04	335	1.00	0.73		
30	2044	0.03	2.88E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

5 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
1.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: DPM
 Meteorological: VMP

Exposure Year	Calendar Year	Annual PM2.5 Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.06	1,090	10.0	0.85	8.62	0.06 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.06	1,090	10.0	0.85	8.14	0.8 Significance Threshold (ug/m3)
3	2023	0.06	745	4.75	0.72	2.19	No Significant?
4	2024	0.06	745	3.00	0.72	1.38	0.01 Chronic Hazard Impact
5	2025	0.06	745	3.00	0.72	1.38	10 Significance Threshold
6	2026	0.06	745	3.00	0.72	1.38	No Significant?
7	2027	0.06	745	3.00	0.72	1.38	Acute Hazard Impact
8	2028	0.06	745	3.00	0.72	1.38	10 Significance Threshold
9	2029	0.06	745	3.00	0.72	1.38	No Significant?
10	2030	0.06	745	3.00	0.72	1.38	
11	2031	0.06	745	3.00	0.72	1.38	
12	2032	0.06	745	3.00	0.72	1.38	38.7 Cancer Risk (Child)
13	2033	0.06	745	3.00	0.72	1.38	100 Significance Threshold
14	2034	0.06	745	3.00	0.72	1.38	No Significant?
15	2035	0.06	745	3.00	0.72	1.38	
16	2036	0.06	745	3.00	0.72	1.38	8.6 Cancer Risk (Adult)
17	2037	0.06	335	1.70	0.73	0.36	100 Significance Threshold
18	2038	0.06	335	1.00	0.73	0.21	No Significant?
19	2039	0.06	335	1.00	0.73	0.21	
20	2040	0.06	335	1.00	0.73	0.21	
21	2041	0.06	335	1.00	0.73	0.21	
22	2042	0.06	335	1.00	0.73	0.21	
23	2043	0.06	335	1.00	0.73	0.21	
24	2044	0.06	335	1.00	0.73	0.21	

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Crystalline Silica
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		0.25	1,090	10.0	0.85		0.25 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		0.25	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023		0.25	745	4.75	0.72		No Significant?
4	2024		0.25	745	3.00	0.72		0.08 Chronic Hazard Impact
5	2025		0.25	745	3.00	0.72		10 Significance Threshold
6	2026		0.25	745	3.00	0.72		No Significant?
7	2027		0.25	745	3.00	0.72		Acute Hazard Impact
8	2028		0.25	745	3.00	0.72		10 Significance Threshold
9	2029		0.25	745	3.00	0.72		No Significant?
10	2030		0.25	745	3.00	0.72		Acute Hazard Impact
11	2031		0.25	745	3.00	0.72		10 Significance Threshold
12	2032		0.25	745	3.00	0.72		No Significant?
13	2033		0.25	745	3.00	0.72		Cancer Risk (Child)
14	2034		0.25	745	3.00	0.72		100 Significance Threshold
15	2035		0.25	745	3.00	0.72		No Significant?
16	2036		0.25	745	3.00	0.72		Cancer Risk (Adult)
17	2037		0.25	335	1.70	0.73		100 Significance Threshold
18	2038		0.25	335	1.00	0.73		No Significant?
19	2039		0.25	335	1.00	0.73		
20	2040		0.25	335	1.00	0.73		
21	2041		0.25	335	1.00	0.73		
22	2042		0.25	335	1.00	0.73		
23	2043		0.25	335	1.00	0.73		
24	2044		0.25	335	1.00	0.73		

Health Risk Assessment Assumptions

14 Chronic Reference Exposure Level (ug/m3)	
240 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Fluoride
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk
1	2021	3.07	0.12	1,090	10.0	0.85	0.8
2	2022	3.07	0.12	1,090	10.0	0.85	
3	2023	3.07	0.12	745	4.75	0.72	
4	2024	3.07	0.12	745	3.00	0.72	
5	2025	3.07	0.12	745	3.00	0.72	0.01 Chronic Hazard Impact 10 Significance Threshold No Significant?
6	2026	3.07	0.12	745	3.00	0.72	
7	2027	3.07	0.12	745	3.00	0.72	
8	2028	3.07	0.12	745	3.00	0.72	0.01 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	3.07	0.12	745	3.00	0.72	
10	2030	3.07	0.12	745	3.00	0.72	
11	2031	3.07	0.12	745	3.00	0.72	
12	2032	3.07	0.12	745	3.00	0.72	Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	3.07	0.12	745	3.00	0.72	
14	2034	3.07	0.12	745	3.00	0.72	
15	2035	3.07	0.12	745	3.00	0.72	
16	2036	3.07	0.12	745	3.00	0.72	Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	3.07	0.12	335	1.70	0.73	
18	2038	3.07	0.12	335	1.00	0.73	
19	2039	3.07	0.12	335	1.00	0.73	
20	2040	3.07	0.12	335	1.00	0.73	
21	2041	3.07	0.12	335	1.00	0.73	
22	2042	3.07	0.12	335	1.00	0.73	
23	2043	3.07	0.12	335	1.00	0.73	
24	2044	3.07	0.12	335	1.00	0.73	

Health Risk Assessment Assumptions

10 Chronic Reference Exposure Level (ug/m3)	
42 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Sulfide
 Meteorological: VMP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	4.22	0.04	1,090	10.0	0.85		0.04 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	4.22	0.04	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	4.22	0.04	745	4.75	0.72		No Significant?
4	2024	4.22	0.04	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025	4.22	0.04	745	3.00	0.72		10 Significance Threshold
6	2026	4.22	0.04	745	3.00	0.72		No Significant?
7	2027	4.22	0.04	745	3.00	0.72		0.10 Acute Hazard Impact
8	2028	4.22	0.04	745	3.00	0.72		10 Significance Threshold
9	2029	4.22	0.04	745	3.00	0.72		No Significant?
10	2030	4.22	0.04	745	3.00	0.72		
11	2031	4.22	0.04	745	3.00	0.72		
12	2032	4.22	0.04	745	3.00	0.72		Cancer Risk (Child)
13	2033	4.22	0.04	745	3.00	0.72		100 Significance Threshold
14	2034	4.22	0.04	745	3.00	0.72		No Significant?
15	2035	4.22	0.04	745	3.00	0.72		
16	2036	4.22	0.04	745	3.00	0.72		Cancer Risk (Adult)
17	2037	4.22	0.04	335	1.70	0.73		100 Significance Threshold
18	2038	4.22	0.04	335	1.00	0.73		No Significant?
19	2039	4.22	0.04	335	1.00	0.73		
20	2040	4.22	0.04	335	1.00	0.73		
21	2041	4.22	0.04	335	1.00	0.73		
22	2042	4.22	0.04	335	1.00	0.73		
23	2043	4.22	0.04	335	1.00	0.73		
24	2044	4.22	0.04	335	1.00	0.73		

Health Risk Assessment Assumptions

0.015 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Arsenic
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	1.02E-03	1.86E-05	1,090	10.0	0.85	0.03	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	1.02E-03	1.86E-05	1,090	10.0	0.85	0.03	0.8 Significance Threshold (ug/m3)
3	2023	1.02E-03	1.86E-05	745	4.75	0.72	0.01	No Significant?
4	2024	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	1.02E-03	1.86E-05	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	1.02E-03	1.86E-05	745	3.00	0.72	0.00	No Significant?
7	2027	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.01 Acute Hazard Impact
8	2028	1.02E-03	1.86E-05	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	1.02E-03	1.86E-05	745	3.00	0.72	0.00	No Significant?
10	2030	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.13 Cancer Risk (Child)
11	2031	1.02E-03	1.86E-05	745	3.00	0.72	0.00	100 Significance Threshold
12	2032	1.02E-03	1.86E-05	745	3.00	0.72	0.00	No Significant?
13	2033	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.03 Cancer Risk (Adult)
14	2034	1.02E-03	1.86E-05	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	1.02E-03	1.86E-05	745	3.00	0.72	0.00	No Significant?
16	2036	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
17	2037	1.02E-03	1.86E-05	335	1.70	0.73	0.00	
18	2038	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
19	2039	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
20	2040	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
21	2041	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
22	2042	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
23	2043	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
24	2044	1.02E-03	1.86E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.007 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
8.4 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Beryllium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.18E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.18E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.18E-06	745	4.75	0.72	0.00	No Significant?
4	2024		1.18E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		1.18E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.18E-06	745	3.00	0.72	0.00	No Significant?
7	2027		1.18E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.18E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.18E-06	745	3.00	0.72	0.00	No Significant?
10	2030		1.18E-06	745	3.00	0.72	0.00	
11	2031		1.18E-06	745	3.00	0.72	0.00	
12	2032		1.18E-06	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2033		1.18E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.18E-06	745	3.00	0.72	0.00	No Significant?
15	2035		1.18E-06	745	3.00	0.72	0.00	
16	2036		1.18E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		1.18E-06	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		1.18E-06	335	1.00	0.73	0.00	No Significant?
19	2039		1.18E-06	335	1.00	0.73	0.00	
20	2040		1.18E-06	335	1.00	0.73	0.00	
21	2041		1.18E-06	335	1.00	0.73	0.00	
22	2042		1.18E-06	335	1.00	0.73	0.00	
23	2043		1.18E-06	335	1.00	0.73	0.00	
24	2044		1.18E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.02 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
15 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Cadmium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		7.87E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		7.87E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		7.87E-06	745	4.75	0.72	0.00	No Significant?
4	2024		7.87E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		7.87E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		7.87E-06	745	3.00	0.72	0.00	No Significant?
7	2027		7.87E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		7.87E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		7.87E-06	745	3.00	0.72	0.00	No Significant?
10	2030		7.87E-06	745	3.00	0.72	0.00	
11	2031		7.87E-06	745	3.00	0.72	0.00	
12	2032		7.87E-06	745	3.00	0.72	0.00	0.07 Cancer Risk (Child)
13	2033		7.87E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		7.87E-06	745	3.00	0.72	0.00	No Significant?
15	2035		7.87E-06	745	3.00	0.72	0.00	
16	2036		7.87E-06	745	3.00	0.72	0.00	
17	2037		7.87E-06	335	1.70	0.73	0.00	0.02 Cancer Risk (Adult)
18	2038		7.87E-06	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		7.87E-06	335	1.00	0.73	0.00	No Significant?
20	2040		7.87E-06	335	1.00	0.73	0.00	
21	2041		7.87E-06	335	1.00	0.73	0.00	
22	2042		7.87E-06	335	1.00	0.73	0.00	
23	2043		7.87E-06	335	1.00	0.73	0.00	
24	2044		7.87E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
100 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Copper
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.01		1,090	10.0	0.85		- Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.01		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	0.01		745	4.75	0.72		No Significant?
4	2024	0.01		745	3.00	0.72		Chronic Hazard Impact
5	2025	0.01		745	3.00	0.72		10 Significance Threshold
6	2026	0.01		745	3.00	0.72		No Significant?
7	2027	0.01		745	3.00	0.72		
8	2028	0.01		745	3.00	0.72		0.00 Acute Hazard Impact
9	2029	0.01		745	3.00	0.72		10 Significance Threshold
10	2030	0.01		745	3.00	0.72		No Significant?
11	2031	0.01		745	3.00	0.72		
12	2032	0.01		745	3.00	0.72		Cancer Risk (Child)
13	2033	0.01		745	3.00	0.72		100 Significance Threshold
14	2034	0.01		745	3.00	0.72		No Significant?
15	2035	0.01		745	3.00	0.72		
16	2036	0.01		745	3.00	0.72		Cancer Risk (Adult)
17	2037	0.01		335	1.70	0.73		100 Significance Threshold
18	2038	0.01		335	1.00	0.73		No Significant?
19	2039	0.01		335	1.00	0.73		
20	2040	0.01		335	1.00	0.73		
21	2041	0.01		335	1.00	0.73		
22	2042	0.01		335	1.00	0.73		
23	2043	0.01		335	1.00	0.73		
24	2044	0.01		335	1.00	0.73		

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.042 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Lead
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		8.67E-05	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		8.67E-05	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		8.67E-05	745	4.75	0.72	0.00	No Significant?
4	2024		8.67E-05	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		8.67E-05	745	3.00	0.72	0.00	No Significant?
7	2027		8.67E-05	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		8.67E-05	745	3.00	0.72	0.00	No Significant?
10	2030		8.67E-05	745	3.00	0.72	0.00	
11	2031		8.67E-05	745	3.00	0.72	0.00	
12	2032		8.67E-05	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		8.67E-05	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		8.67E-05	745	3.00	0.72	0.00	No Significant?
15	2035		8.67E-05	745	3.00	0.72	0.00	
16	2036		8.67E-05	745	3.00	0.72	0.00	
17	2037		8.67E-05	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		8.67E-05	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		8.67E-05	335	1.00	0.73	0.00	No Significant?
20	2040		8.67E-05	335	1.00	0.73	0.00	
21	2041		8.67E-05	335	1.00	0.73	0.00	
22	2042		8.67E-05	335	1.00	0.73	0.00	
23	2043		8.67E-05	335	1.00	0.73	0.00	
24	2044		8.67E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.09 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Manganese
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.61E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.61E-05	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023		1.61E-05	745	4.75	0.72		No Significant?
4	2024		1.61E-05	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025		1.61E-05	745	3.00	0.72		10 Significance Threshold
6	2026		1.61E-05	745	3.00	0.72		No Significant?
7	2027		1.61E-05	745	3.00	0.72		Acute Hazard Impact
8	2028		1.61E-05	745	3.00	0.72		10 Significance Threshold
9	2029		1.61E-05	745	3.00	0.72		No Significant?
10	2030		1.61E-05	745	3.00	0.72		Acute Hazard Impact
11	2031		1.61E-05	745	3.00	0.72		10 Significance Threshold
12	2032		1.61E-05	745	3.00	0.72		No Significant?
13	2033		1.61E-05	745	3.00	0.72		Cancer Risk (Child)
14	2034		1.61E-05	745	3.00	0.72		100 Significance Threshold
15	2035		1.61E-05	745	3.00	0.72		No Significant?
16	2036		1.61E-05	745	3.00	0.72		Cancer Risk (Adult)
17	2037		1.61E-05	335	1.70	0.73		100 Significance Threshold
18	2038		1.61E-05	335	1.00	0.73		No Significant?
19	2039		1.61E-05	335	1.00	0.73		
20	2040		1.61E-05	335	1.00	0.73		
21	2041		1.61E-05	335	1.00	0.73		
22	2042		1.61E-05	335	1.00	0.73		
23	2043		1.61E-05	335	1.00	0.73		
24	2044		1.61E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

0.03 Chronic Reference Exposure Level (ug/m3)	
0.6 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Mercury
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	4.96E-04	6.30E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	4.96E-04	6.30E-06	1,090	10.0	0.85		
3	2023	4.96E-04	6.30E-06	745	4.75	0.72		
4	2024	4.96E-04	6.30E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	4.96E-04	6.30E-06	745	3.00	0.72		
6	2026	4.96E-04	6.30E-06	745	3.00	0.72		
7	2027	4.96E-04	6.30E-06	745	3.00	0.72		
8	2028	4.96E-04	6.30E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	4.96E-04	6.30E-06	745	3.00	0.72		
10	2030	4.96E-04	6.30E-06	745	3.00	0.72		
11	2031	4.96E-04	6.30E-06	745	3.00	0.72		
12	2032	4.96E-04	6.30E-06	745	3.00	0.72		
13	2033	4.96E-04	6.30E-06	745	3.00	0.72		
14	2034	4.96E-04	6.30E-06	745	3.00	0.72		
15	2035	4.96E-04	6.30E-06	745	3.00	0.72		
16	2036	4.96E-04	6.30E-06	745	3.00	0.72		
17	2037	4.96E-04	6.30E-06	335	1.70	0.73		
18	2038	4.96E-04	6.30E-06	335	1.00	0.73		
19	2039	4.96E-04	6.30E-06	335	1.00	0.73		
20	2040	4.96E-04	6.30E-06	335	1.00	0.73		
21	2041	4.96E-04	6.30E-06	335	1.00	0.73		
22	2042	4.96E-04	6.30E-06	335	1.00	0.73		
23	2043	4.96E-04	6.30E-06	335	1.00	0.73		
24	2044	4.96E-04	6.30E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

0.14 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
0.91 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Nickel
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.01	1.33E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.01	1.33E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023	0.01	1.33E-04	745	4.75	0.72	0.00	No Significant?
4	2024	0.01	1.33E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	0.01	1.33E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
7	2027	0.01	1.33E-04	745	3.00	0.72	0.00	0.03 Acute Hazard Impact
8	2028	0.01	1.33E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
10	2030	0.01	1.33E-04	745	3.00	0.72	0.00	0.07 Cancer Risk (Child)
11	2031	0.01	1.33E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2032	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
13	2033	0.01	1.33E-04	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
14	2034	0.01	1.33E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
16	2036	0.01	1.33E-04	745	3.00	0.72	0.00	
17	2037	0.01	1.33E-04	335	1.70	0.73	0.00	
18	2038	0.01	1.33E-04	335	1.00	0.73	0.00	
19	2039	0.01	1.33E-04	335	1.00	0.73	0.00	
20	2040	0.01	1.33E-04	335	1.00	0.73	0.00	
21	2041	0.01	1.33E-04	335	1.00	0.73	0.00	
22	2042	0.01	1.33E-04	335	1.00	0.73	0.00	
23	2043	0.01	1.33E-04	335	1.00	0.73	0.00	
24	2044	0.01	1.33E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

20 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Selenium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		5.33E-07	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		5.33E-07	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023		5.33E-07	745	4.75	0.72		No Significant?
4	2024		5.33E-07	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025		5.33E-07	745	3.00	0.72		10 Significance Threshold
6	2026		5.33E-07	745	3.00	0.72		No Significant?
7	2027		5.33E-07	745	3.00	0.72		Acute Hazard Impact
8	2028		5.33E-07	745	3.00	0.72		10 Significance Threshold
9	2029		5.33E-07	745	3.00	0.72		No Significant?
10	2030		5.33E-07	745	3.00	0.72		Acute Hazard Impact
11	2031		5.33E-07	745	3.00	0.72		10 Significance Threshold
12	2032		5.33E-07	745	3.00	0.72		No Significant?
13	2033		5.33E-07	745	3.00	0.72		Cancer Risk (Child)
14	2034		5.33E-07	745	3.00	0.72		100 Significance Threshold
15	2035		5.33E-07	745	3.00	0.72		No Significant?
16	2036		5.33E-07	745	3.00	0.72		Cancer Risk (Adult)
17	2037		5.33E-07	335	1.70	0.73		100 Significance Threshold
18	2038		5.33E-07	335	1.00	0.73		No Significant?
19	2039		5.33E-07	335	1.00	0.73		
20	2040		5.33E-07	335	1.00	0.73		
21	2041		5.33E-07	335	1.00	0.73		
22	2042		5.33E-07	335	1.00	0.73		
23	2043		5.33E-07	335	1.00	0.73		
24	2044		5.33E-07	335	1.00	0.73		

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
30 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Vanadium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.00		1,090	10.0	0.85		- Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.00		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	0.00		745	4.75	0.72		No Significant?
4	2024	0.00		745	3.00	0.72		Chronic Hazard Impact
5	2025	0.00		745	3.00	0.72		10 Significance Threshold
6	2026	0.00		745	3.00	0.72		No Significant?
7	2027	0.00		745	3.00	0.72		
8	2028	0.00		745	3.00	0.72		0.00 Acute Hazard Impact
9	2029	0.00		745	3.00	0.72		10 Significance Threshold
10	2030	0.00		745	3.00	0.72		No Significant?
11	2031	0.00		745	3.00	0.72		
12	2032	0.00		745	3.00	0.72		Cancer Risk (Child)
13	2033	0.00		745	3.00	0.72		100 Significance Threshold
14	2034	0.00		745	3.00	0.72		No Significant?
15	2035	0.00		745	3.00	0.72		
16	2036	0.00		745	3.00	0.72		Cancer Risk (Adult)
17	2037	0.00		335	1.70	0.73		100 Significance Threshold
18	2038	0.00		335	1.00	0.73		No Significant?
19	2039	0.00		335	1.00	0.73		
20	2040	0.00		335	1.00	0.73		
21	2041	0.00		335	1.00	0.73		
22	2042	0.00		335	1.00	0.73		
23	2043	0.00		335	1.00	0.73		
24	2044	0.00		335	1.00	0.73		

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: 1,1,1-trichloroethane
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	6.26E-05	2.44E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	6.26E-05	2.44E-06	1,090	10.0	0.85		
3	2023	6.26E-05	2.44E-06	745	4.75	0.72		
4	2024	6.26E-05	2.44E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	6.26E-05	2.44E-06	745	3.00	0.72		
6	2026	6.26E-05	2.44E-06	745	3.00	0.72		
7	2027	6.26E-05	2.44E-06	745	3.00	0.72		
8	2028	6.26E-05	2.44E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	6.26E-05	2.44E-06	745	3.00	0.72		
10	2030	6.26E-05	2.44E-06	745	3.00	0.72		
11	2031	6.26E-05	2.44E-06	745	3.00	0.72		
12	2032	6.26E-05	2.44E-06	745	3.00	0.72		
13	2033	6.26E-05	2.44E-06	745	3.00	0.72		
14	2034	6.26E-05	2.44E-06	745	3.00	0.72		
15	2035	6.26E-05	2.44E-06	745	3.00	0.72		
16	2036	6.26E-05	2.44E-06	745	3.00	0.72		
17	2037	6.26E-05	2.44E-06	335	1.70	0.73		
18	2038	6.26E-05	2.44E-06	335	1.00	0.73		
19	2039	6.26E-05	2.44E-06	335	1.00	0.73		
20	2040	6.26E-05	2.44E-06	335	1.00	0.73		
21	2041	6.26E-05	2.44E-06	335	1.00	0.73		
22	2042	6.26E-05	2.44E-06	335	1.00	0.73		
23	2043	6.26E-05	2.44E-06	335	1.00	0.73		
24	2044	6.26E-05	2.44E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
27 Acute Reference Exposure Level (ug/m3)	
0.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	5.99E-02	1.60E-03	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	5.99E-02	1.60E-03	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023	5.99E-02	1.60E-03	745	4.75	0.72	0.01	No Significant?
4	2024	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	5.99E-02	1.60E-03	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
7	2027	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2028	5.99E-02	1.60E-03	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
10	2030	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
11	2031	5.99E-02	1.60E-03	745	3.00	0.72	0.00	10 Significance Threshold
12	2032	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
13	2033	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.10 Cancer Risk (Child)
14	2034	5.99E-02	1.60E-03	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
16	2036	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
17	2037	5.99E-02	1.60E-03	335	1.70	0.73	0.00	100 Significance Threshold
18	2038	5.99E-02	1.60E-03	335	1.00	0.73	0.00	No Significant?
19	2039	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
20	2040	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
21	2041	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
22	2042	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
23	2043	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
24	2044	5.99E-02	1.60E-03	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)anthracene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		2.11E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		2.11E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		2.11E-06	745	4.75	0.72	0.00	No Significant?
4	2024		2.11E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		2.11E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		2.11E-06	745	3.00	0.72	0.00	No Significant?
7	2027		2.11E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		2.11E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		2.11E-06	745	3.00	0.72	0.00	No Significant?
10	2030		2.11E-06	745	3.00	0.72	0.00	
11	2031		2.11E-06	745	3.00	0.72	0.00	
12	2032		2.11E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		2.11E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		2.11E-06	745	3.00	0.72	0.00	No Significant?
15	2035		2.11E-06	745	3.00	0.72	0.00	
16	2036		2.11E-06	745	3.00	0.72	0.00	
17	2037		2.11E-06	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		2.11E-06	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		2.11E-06	335	1.00	0.73	0.00	No Significant?
20	2040		2.11E-06	335	1.00	0.73	0.00	
21	2041		2.11E-06	335	1.00	0.73	0.00	
22	2042		2.11E-06	335	1.00	0.73	0.00	
23	2043		2.11E-06	335	1.00	0.73	0.00	
24	2044		2.11E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
3.9 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)pyrene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		0.00	1,090	10.0	0.85	2.35	0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022		0.00	1,090	10.0	0.85	2.35	
3	2023		0.00	745	4.75	0.72	0.65	Chronic Hazard Impact 10 Significance Threshold No Significant?
4	2024		0.00	745	3.00	0.72	0.41	
5	2025		0.00	745	3.00	0.72	0.41	Acute Hazard Impact 10 Significance Threshold No Significant?
6	2026		0.00	745	3.00	0.72	0.41	
7	2027		0.00	745	3.00	0.72	0.41	11.2 Cancer Risk (Child) 100 Significance Threshold No Significant?
8	2028		0.00	745	3.00	0.72	0.41	
9	2029		0.00	745	3.00	0.72	0.41	2.53 Cancer Risk (Adult) 100 Significance Threshold No Significant?
10	2030		0.00	745	3.00	0.72	0.41	
11	2031		0.00	745	3.00	0.72	0.41	
12	2032		0.00	745	3.00	0.72	0.41	
13	2033		0.00	745	3.00	0.72	0.41	
14	2034		0.00	745	3.00	0.72	0.41	
15	2035		0.00	745	3.00	0.72	0.41	
16	2036		0.00	745	3.00	0.72	0.41	
17	2037		0.00	335	1.70	0.73	0.11	
18	2038		0.00	335	1.00	0.73	0.06	
19	2039		0.00	335	1.00	0.73	0.06	
20	2040		0.00	335	1.00	0.73	0.06	
21	2041		0.00	335	1.00	0.73	0.06	
22	2042		0.00	335	1.00	0.73	0.06	
23	2043		0.00	335	1.00	0.73	0.06	
24	2044		0.00	335	1.00	0.73	0.06	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(b)fluoranthene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.01E-07	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.01E-07	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.01E-07	745	4.75	0.72	0.00	No Significant?
4	2024		1.01E-07	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		1.01E-07	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.01E-07	745	3.00	0.72	0.00	No Significant?
7	2027		1.01E-07	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.01E-07	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.01E-07	745	3.00	0.72	0.00	No Significant?
10	2030		1.01E-07	745	3.00	0.72	0.00	
11	2031		1.01E-07	745	3.00	0.72	0.00	
12	2032		1.01E-07	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		1.01E-07	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.01E-07	745	3.00	0.72	0.00	No Significant?
15	2035		1.01E-07	745	3.00	0.72	0.00	
16	2036		1.01E-07	745	3.00	0.72	0.00	
17	2037		1.01E-07	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		1.01E-07	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		1.01E-07	335	1.00	0.73	0.00	No Significant?
20	2040		1.01E-07	335	1.00	0.73	0.00	
21	2041		1.01E-07	335	1.00	0.73	0.00	
22	2042		1.01E-07	335	1.00	0.73	0.00	
23	2043		1.01E-07	335	1.00	0.73	0.00	
24	2044		1.01E-07	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0084 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: bis(2-ethylhexy)phthalate
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.04E-03	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.04E-03	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.04E-03	745	4.75	0.72	0.00	No Significant?
4	2024		1.04E-03	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		1.04E-03	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.04E-03	745	3.00	0.72	0.00	No Significant?
7	2027		1.04E-03	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.04E-03	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.04E-03	745	3.00	0.72	0.00	No Significant?
10	2030		1.04E-03	745	3.00	0.72	0.00	
11	2031		1.04E-03	745	3.00	0.72	0.00	
12	2032		1.04E-03	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2033		1.04E-03	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.04E-03	745	3.00	0.72	0.00	No Significant?
15	2035		1.04E-03	745	3.00	0.72	0.00	
16	2036		1.04E-03	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		1.04E-03	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		1.04E-03	335	1.00	0.73	0.00	No Significant?
19	2039		1.04E-03	335	1.00	0.73	0.00	
20	2040		1.04E-03	335	1.00	0.73	0.00	
21	2041		1.04E-03	335	1.00	0.73	0.00	
22	2042		1.04E-03	335	1.00	0.73	0.00	
23	2043		1.04E-03	335	1.00	0.73	0.00	
24	2044		1.04E-03	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

800 Chronic Reference Exposure Level (ug/m3)	
6200 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Carbon Disulfide
 Meteorological: VMP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	5.73E-04	2.23E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	5.73E-04	2.23E-05	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2023	5.73E-04	2.23E-05	745	4.75	0.72		No Significant?
4	2024	5.73E-04	2.23E-05	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2025	5.73E-04	2.23E-05	745	3.00	0.72		10 Significance Threshold
6	2026	5.73E-04	2.23E-05	745	3.00	0.72		No Significant?
7	2027	5.73E-04	2.23E-05	745	3.00	0.72		0.00 Acute Hazard Impact
8	2028	5.73E-04	2.23E-05	745	3.00	0.72		10 Significance Threshold
9	2029	5.73E-04	2.23E-05	745	3.00	0.72		No Significant?
10	2030	5.73E-04	2.23E-05	745	3.00	0.72		
11	2031	5.73E-04	2.23E-05	745	3.00	0.72		
12	2032	5.73E-04	2.23E-05	745	3.00	0.72		Cancer Risk (Child)
13	2033	5.73E-04	2.23E-05	745	3.00	0.72		100 Significance Threshold
14	2034	5.73E-04	2.23E-05	745	3.00	0.72		No Significant?
15	2035	5.73E-04	2.23E-05	745	3.00	0.72		
16	2036	5.73E-04	2.23E-05	745	3.00	0.72		Cancer Risk (Adult)
17	2037	5.73E-04	2.23E-05	335	1.70	0.73		100 Significance Threshold
18	2038	5.73E-04	2.23E-05	335	1.00	0.73		No Significant?
19	2039	5.73E-04	2.23E-05	335	1.00	0.73		
20	2040	5.73E-04	2.23E-05	335	1.00	0.73		
21	2041	5.73E-04	2.23E-05	335	1.00	0.73		
22	2042	5.73E-04	2.23E-05	335	1.00	0.73		
23	2043	5.73E-04	2.23E-05	335	1.00	0.73		
24	2044	5.73E-04	2.23E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

0.2 Chronic Reference Exposure Level (ug/m3)	
210 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Chlorine
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.02	6.74E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.02	6.74E-04	1,090	10.0	0.85		
3	2023	0.02	6.74E-04	745	4.75	0.72		
4	2024	0.02	6.74E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.02	6.74E-04	745	3.00	0.72		
6	2026	0.02	6.74E-04	745	3.00	0.72		
7	2027	0.02	6.74E-04	745	3.00	0.72		
8	2028	0.02	6.74E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.02	6.74E-04	745	3.00	0.72		
10	2030	0.02	6.74E-04	745	3.00	0.72		
11	2031	0.02	6.74E-04	745	3.00	0.72		
12	2032	0.02	6.74E-04	745	3.00	0.72		
13	2033	0.02	6.74E-04	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
14	2034	0.02	6.74E-04	745	3.00	0.72		
15	2035	0.02	6.74E-04	745	3.00	0.72		
16	2036	0.02	6.74E-04	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	0.02	6.74E-04	335	1.70	0.73		
18	2038	0.02	6.74E-04	335	1.00	0.73		
19	2039	0.02	6.74E-04	335	1.00	0.73		
20	2040	0.02	6.74E-04	335	1.00	0.73		
21	2041	0.02	6.74E-04	335	1.00	0.73		
22	2042	0.02	6.74E-04	335	1.00	0.73		
23	2043	0.02	6.74E-04	335	1.00	0.73		
24	2044	0.02	6.74E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

30000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Chloroethane
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.05E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022		1.05E-06	1,090	10.0	0.85		
3	2023		1.05E-06	745	4.75	0.72		
4	2024		1.05E-06	745	3.00	0.72		
5	2025		1.05E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
6	2026		1.05E-06	745	3.00	0.72		
7	2027		1.05E-06	745	3.00	0.72		
8	2028		1.05E-06	745	3.00	0.72		Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029		1.05E-06	745	3.00	0.72		
10	2030		1.05E-06	745	3.00	0.72		
11	2031		1.05E-06	745	3.00	0.72		
12	2032		1.05E-06	745	3.00	0.72		
13	2033		1.05E-06	745	3.00	0.72		
14	2034		1.05E-06	745	3.00	0.72		
15	2035		1.05E-06	745	3.00	0.72		
16	2036		1.05E-06	745	3.00	0.72		
17	2037		1.05E-06	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038		1.05E-06	335	1.00	0.73		
19	2039		1.05E-06	335	1.00	0.73		
20	2040		1.05E-06	335	1.00	0.73		
21	2041		1.05E-06	335	1.00	0.73		
22	2042		1.05E-06	335	1.00	0.73		
23	2043		1.05E-06	335	1.00	0.73		
24	2044		1.05E-06	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0039 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Chrysene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		7.34E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		7.34E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		7.34E-06	745	4.75	0.72	0.00	No Significant?
4	2024		7.34E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		7.34E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		7.34E-06	745	3.00	0.72	0.00	No Significant?
7	2027		7.34E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		7.34E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		7.34E-06	745	3.00	0.72	0.00	No Significant?
10	2030		7.34E-06	745	3.00	0.72	0.00	
11	2031		7.34E-06	745	3.00	0.72	0.00	
12	2032		7.34E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		7.34E-06	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		7.34E-06	745	3.00	0.72	0.00	No Significant?
15	2035		7.34E-06	745	3.00	0.72	0.00	
16	2036		7.34E-06	745	3.00	0.72	0.00	
17	2037		7.34E-06	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		7.34E-06	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		7.34E-06	335	1.00	0.73	0.00	No Significant?
20	2040		7.34E-06	335	1.00	0.73	0.00	
21	2041		7.34E-06	335	1.00	0.73	0.00	
22	2042		7.34E-06	335	1.00	0.73	0.00	
23	2043		7.34E-06	335	1.00	0.73	0.00	
24	2044		7.34E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

2000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0087 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Ethylbenzene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		3.99E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		3.99E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		3.99E-04	745	4.75	0.72	0.00	No Significant?
4	2024		3.99E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		3.99E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		3.99E-04	745	3.00	0.72	0.00	No Significant?
7	2027		3.99E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		3.99E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		3.99E-04	745	3.00	0.72	0.00	No Significant?
10	2030		3.99E-04	745	3.00	0.72	0.00	
11	2031		3.99E-04	745	3.00	0.72	0.00	
12	2032		3.99E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		3.99E-04	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		3.99E-04	745	3.00	0.72	0.00	No Significant?
15	2035		3.99E-04	745	3.00	0.72	0.00	
16	2036		3.99E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		3.99E-04	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		3.99E-04	335	1.00	0.73	0.00	No Significant?
19	2039		3.99E-04	335	1.00	0.73	0.00	
20	2040		3.99E-04	335	1.00	0.73	0.00	
21	2041		3.99E-04	335	1.00	0.73	0.00	
22	2042		3.99E-04	335	1.00	0.73	0.00	
23	2043		3.99E-04	335	1.00	0.73	0.00	
24	2044		3.99E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
55 Acute Reference Exposure Level (ug/m3)	
0.021 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Formaldehyde
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.21	0.00	1,090	10.0	0.85	0.01	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	0.21	0.00	1,090	10.0	0.85	0.01	0.8 Significance Threshold (ug/m3)
3	2023	0.21	0.00	745	4.75	0.72	0.00	No Significant?
4	2024	0.21	0.00	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	0.21	0.00	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	0.21	0.00	745	3.00	0.72	0.00	No Significant?
7	2027	0.21	0.00	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2028	0.21	0.00	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	0.21	0.00	745	3.00	0.72	0.00	No Significant?
10	2030	0.21	0.00	745	3.00	0.72	0.00	0.06 Cancer Risk (Child)
11	2031	0.21	0.00	745	3.00	0.72	0.00	100 Significance Threshold
12	2032	0.21	0.00	745	3.00	0.72	0.00	No Significant?
13	2033	0.21	0.00	745	3.00	0.72	0.00	0.01 Cancer Risk (Adult)
14	2034	0.21	0.00	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	0.21	0.00	745	3.00	0.72	0.00	No Significant?
16	2036	0.21	0.00	745	3.00	0.72	0.00	
17	2037	0.21	0.00	335	1.70	0.73	0.00	
18	2038	0.21	0.00	335	1.00	0.73	0.00	
19	2039	0.21	0.00	335	1.00	0.73	0.00	
20	2040	0.21	0.00	335	1.00	0.73	0.00	
21	2041	0.21	0.00	335	1.00	0.73	0.00	
22	2042	0.21	0.00	335	1.00	0.73	0.00	
23	2043	0.21	0.00	335	1.00	0.73	0.00	
24	2044	0.21	0.00	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

7000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Hexane
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.39E-03	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022		1.39E-03	1,090	10.0	0.85		
3	2023		1.39E-03	745	4.75	0.72		
4	2024		1.39E-03	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025		1.39E-03	745	3.00	0.72		
6	2026		1.39E-03	745	3.00	0.72		
7	2027		1.39E-03	745	3.00	0.72		
8	2028		1.39E-03	745	3.00	0.72		Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029		1.39E-03	745	3.00	0.72		
10	2030		1.39E-03	745	3.00	0.72		
11	2031		1.39E-03	745	3.00	0.72		
12	2032		1.39E-03	745	3.00	0.72		
13	2033		1.39E-03	745	3.00	0.72		
14	2034		1.39E-03	745	3.00	0.72		
15	2035		1.39E-03	745	3.00	0.72		
16	2036		1.39E-03	745	3.00	0.72		
17	2037		1.39E-03	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038		1.39E-03	335	1.00	0.73		
19	2039		1.39E-03	335	1.00	0.73		
20	2040		1.39E-03	335	1.00	0.73		
21	2041		1.39E-03	335	1.00	0.73		
22	2042		1.39E-03	335	1.00	0.73		
23	2043		1.39E-03	335	1.00	0.73		
24	2044		1.39E-03	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Inden(123-cd)opyrene
 Meteorological: VMP

Exposure Year	Calender Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		1.90E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		1.90E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		1.90E-08	745	4.75	0.72	0.00	No Significant?
4	2024		1.90E-08	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2025		1.90E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		1.90E-08	745	3.00	0.72	0.00	No Significant?
7	2027		1.90E-08	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		1.90E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		1.90E-08	745	3.00	0.72	0.00	No Significant?
10	2030		1.90E-08	745	3.00	0.72	0.00	
11	2031		1.90E-08	745	3.00	0.72	0.00	
12	2032		1.90E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
13	2033		1.90E-08	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		1.90E-08	745	3.00	0.72	0.00	No Significant?
15	2035		1.90E-08	745	3.00	0.72	0.00	
16	2036		1.90E-08	745	3.00	0.72	0.00	
17	2037		1.90E-08	335	1.70	0.73	0.00	0.00 Cancer Risk (Adult)
18	2038		1.90E-08	335	1.00	0.73	0.00	100 Significance Threshold
19	2039		1.90E-08	335	1.00	0.73	0.00	No Significant?
20	2040		1.90E-08	335	1.00	0.73	0.00	
21	2041		1.90E-08	335	1.00	0.73	0.00	
22	2042		1.90E-08	335	1.00	0.73	0.00	
23	2043		1.90E-08	335	1.00	0.73	0.00	
24	2044		1.90E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Methyl Chloroform
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	3.04E-03	7.07E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	3.04E-03	7.07E-05	1,090	10.0	0.85		
3	2023	3.04E-03	7.07E-05	745	4.75	0.72		
4	2024	3.04E-03	7.07E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	3.04E-03	7.07E-05	745	3.00	0.72		
6	2026	3.04E-03	7.07E-05	745	3.00	0.72		
7	2027	3.04E-03	7.07E-05	745	3.00	0.72		
8	2028	3.04E-03	7.07E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	3.04E-03	7.07E-05	745	3.00	0.72		
10	2030	3.04E-03	7.07E-05	745	3.00	0.72		
11	2031	3.04E-03	7.07E-05	745	3.00	0.72		
12	2032	3.04E-03	7.07E-05	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	3.04E-03	7.07E-05	745	3.00	0.72		
14	2034	3.04E-03	7.07E-05	745	3.00	0.72		
15	2035	3.04E-03	7.07E-05	745	3.00	0.72		
16	2036	3.04E-03	7.07E-05	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	3.04E-03	7.07E-05	335	1.70	0.73		
18	2038	3.04E-03	7.07E-05	335	1.00	0.73		
19	2039	3.04E-03	7.07E-05	335	1.00	0.73		
20	2040	3.04E-03	7.07E-05	335	1.00	0.73		
21	2041	3.04E-03	7.07E-05	335	1.00	0.73		
22	2042	3.04E-03	7.07E-05	335	1.00	0.73		
23	2043	3.04E-03	7.07E-05	335	1.00	0.73		
24	2044	3.04E-03	7.07E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

400 Chronic Reference Exposure Level (ug/m3)	
14000 Acute Reference Exposure Level (ug/m3)	
0.0035 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Methylene Chloride
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	9.15E-06	6.97E-08	1,090	10.0	0.85	0.00	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022	9.15E-06	6.97E-08	1,090	10.0	0.85	0.00	0.8 Significance Threshold (ug/m3)
3	2023	9.15E-06	6.97E-08	745	4.75	0.72	0.00	No Significant?
4	2024	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025	9.15E-06	6.97E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2026	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
7	2027	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2028	9.15E-06	6.97E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2029	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
10	2030	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2031	9.15E-06	6.97E-08	745	3.00	0.72	0.00	100 Significance Threshold
12	2032	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
13	2033	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2034	9.15E-06	6.97E-08	745	3.00	0.72	0.00	100 Significance Threshold
15	2035	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
16	2036	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037	9.15E-06	6.97E-08	335	1.70	0.73	0.00	100 Significance Threshold
18	2038	9.15E-06	6.97E-08	335	1.00	0.73	0.00	No Significant?
19	2039	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
20	2040	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
21	2041	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
22	2042	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
23	2043	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
24	2044	9.15E-06	6.97E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Naphthalene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021		2.20E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2022		2.20E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2023		2.20E-04	745	4.75	0.72	0.00	No Significant?
4	2024		2.20E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2025		2.20E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2026		2.20E-04	745	3.00	0.72	0.00	No Significant?
7	2027		2.20E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2028		2.20E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2029		2.20E-04	745	3.00	0.72	0.00	No Significant?
10	2030		2.20E-04	745	3.00	0.72	0.00	
11	2031		2.20E-04	745	3.00	0.72	0.00	
12	2032		2.20E-04	745	3.00	0.72	0.00	0.02 Cancer Risk (Child)
13	2033		2.20E-04	745	3.00	0.72	0.00	100 Significance Threshold
14	2034		2.20E-04	745	3.00	0.72	0.00	No Significant?
15	2035		2.20E-04	745	3.00	0.72	0.00	
16	2036		2.20E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2037		2.20E-04	335	1.70	0.73	0.00	100 Significance Threshold
18	2038		2.20E-04	335	1.00	0.73	0.00	No Significant?
19	2039		2.20E-04	335	1.00	0.73	0.00	
20	2040		2.20E-04	335	1.00	0.73	0.00	
21	2041		2.20E-04	335	1.00	0.73	0.00	
22	2042		2.20E-04	335	1.00	0.73	0.00	
23	2043		2.20E-04	335	1.00	0.73	0.00	
24	2044		2.20E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

200 Chronic Reference Exposure Level (ug/m3)	
5800 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Phenol
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	3.96E-03	4.90E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	3.96E-03	4.90E-05	1,090	10.0	0.85		
3	2023	3.96E-03	4.90E-05	745	4.75	0.72		
4	2024	3.96E-03	4.90E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	3.96E-03	4.90E-05	745	3.00	0.72		
6	2026	3.96E-03	4.90E-05	745	3.00	0.72		
7	2027	3.96E-03	4.90E-05	745	3.00	0.72		
8	2028	3.96E-03	4.90E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	3.96E-03	4.90E-05	745	3.00	0.72		
10	2030	3.96E-03	4.90E-05	745	3.00	0.72		
11	2031	3.96E-03	4.90E-05	745	3.00	0.72		
12	2032	3.96E-03	4.90E-05	745	3.00	0.72		
13	2033	3.96E-03	4.90E-05	745	3.00	0.72		
14	2034	3.96E-03	4.90E-05	745	3.00	0.72		
15	2035	3.96E-03	4.90E-05	745	3.00	0.72		
16	2036	3.96E-03	4.90E-05	745	3.00	0.72		
17	2037	3.96E-03	4.90E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038	3.96E-03	4.90E-05	335	1.00	0.73		
19	2039	3.96E-03	4.90E-05	335	1.00	0.73		
20	2040	3.96E-03	4.90E-05	335	1.00	0.73		
21	2041	3.96E-03	4.90E-05	335	1.00	0.73		
22	2042	3.96E-03	4.90E-05	335	1.00	0.73		
23	2043	3.96E-03	4.90E-05	335	1.00	0.73		
24	2044	3.96E-03	4.90E-05	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

900 Chronic Reference Exposure Level (ug/m3)	
21000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Styrene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	5.24E-04	1.08E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	5.24E-04	1.08E-05	1,090	10.0	0.85		
3	2023	5.24E-04	1.08E-05	745	4.75	0.72		
4	2024	5.24E-04	1.08E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	5.24E-04	1.08E-05	745	3.00	0.72		
6	2026	5.24E-04	1.08E-05	745	3.00	0.72		
7	2027	5.24E-04	1.08E-05	745	3.00	0.72		
8	2028	5.24E-04	1.08E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	5.24E-04	1.08E-05	745	3.00	0.72		
10	2030	5.24E-04	1.08E-05	745	3.00	0.72		
11	2031	5.24E-04	1.08E-05	745	3.00	0.72		
12	2032	5.24E-04	1.08E-05	745	3.00	0.72		Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2033	5.24E-04	1.08E-05	745	3.00	0.72		
14	2034	5.24E-04	1.08E-05	745	3.00	0.72		
15	2035	5.24E-04	1.08E-05	745	3.00	0.72		
16	2036	5.24E-04	1.08E-05	745	3.00	0.72		Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2037	5.24E-04	1.08E-05	335	1.70	0.73		
18	2038	5.24E-04	1.08E-05	335	1.00	0.73		
19	2039	5.24E-04	1.08E-05	335	1.00	0.73		
20	2040	5.24E-04	1.08E-05	335	1.00	0.73		
21	2041	5.24E-04	1.08E-05	335	1.00	0.73		
22	2042	5.24E-04	1.08E-05	335	1.00	0.73		
23	2043	5.24E-04	1.08E-05	335	1.00	0.73		
24	2044	5.24E-04	1.08E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

420 Chronic Reference Exposure Level (ug/m3)	
5,000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Toluene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.01	2.97E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.01	2.97E-04	1,090	10.0	0.85		
3	2023	0.01	2.97E-04	745	4.75	0.72		
4	2024	0.01	2.97E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.01	2.97E-04	745	3.00	0.72		
6	2026	0.01	2.97E-04	745	3.00	0.72		
7	2027	0.01	2.97E-04	745	3.00	0.72		
8	2028	0.01	2.97E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.01	2.97E-04	745	3.00	0.72		
10	2030	0.01	2.97E-04	745	3.00	0.72		
11	2031	0.01	2.97E-04	745	3.00	0.72		
12	2032	0.01	2.97E-04	745	3.00	0.72		
13	2033	0.01	2.97E-04	745	3.00	0.72		
14	2034	0.01	2.97E-04	745	3.00	0.72		
15	2035	0.01	2.97E-04	745	3.00	0.72		
16	2036	0.01	2.97E-04	745	3.00	0.72		
17	2037	0.01	2.97E-04	335	1.70	0.73		
18	2038	0.01	2.97E-04	335	1.00	0.73		
19	2039	0.01	2.97E-04	335	1.00	0.73		
20	2040	0.01	2.97E-04	335	1.00	0.73		
21	2041	0.01	2.97E-04	335	1.00	0.73		
22	2042	0.01	2.97E-04	335	1.00	0.73		
23	2043	0.01	2.97E-04	335	1.00	0.73		
24	2044	0.01	2.97E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

700 Chronic Reference Exposure Level (ug/m3)	
22000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2021-2044)
 Receptor: Existing Residence
 Pollutant: Xylene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2021	0.02	4.00E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2022	0.02	4.00E-04	1,090	10.0	0.85		
3	2023	0.02	4.00E-04	745	4.75	0.72		
4	2024	0.02	4.00E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2025	0.02	4.00E-04	745	3.00	0.72		
6	2026	0.02	4.00E-04	745	3.00	0.72		
7	2027	0.02	4.00E-04	745	3.00	0.72		
8	2028	0.02	4.00E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2029	0.02	4.00E-04	745	3.00	0.72		
10	2030	0.02	4.00E-04	745	3.00	0.72		
11	2031	0.02	4.00E-04	745	3.00	0.72		
12	2032	0.02	4.00E-04	745	3.00	0.72		
13	2033	0.02	4.00E-04	745	3.00	0.72		
14	2034	0.02	4.00E-04	745	3.00	0.72		
15	2035	0.02	4.00E-04	745	3.00	0.72		
16	2036	0.02	4.00E-04	745	3.00	0.72		
17	2037	0.02	4.00E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2038	0.02	4.00E-04	335	1.00	0.73		
19	2039	0.02	4.00E-04	335	1.00	0.73		
20	2040	0.02	4.00E-04	335	1.00	0.73		
21	2041	0.02	4.00E-04	335	1.00	0.73		
22	2042	0.02	4.00E-04	335	1.00	0.73		
23	2043	0.02	4.00E-04	335	1.00	0.73		
24	2044	0.02	4.00E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

5 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
1.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: DPM
 Meteorological: VMP

Exposure Year	Calendar Year	Annual PM2.5 Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.03	1,090	10.0	0.85	4.84	0.06 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.02	1,090	10.0	0.85	3.15	0.8 Significance Threshold (ug/m3)
3	2017	0.02	745	4.75	0.72	0.74	No Significant?
4	2018	0.02	745	3.00	0.72	0.40	0.01 Chronic Hazard Impact
5	2019	0.01	745	3.00	0.72	0.36	10 Significance Threshold
6	2020	0.01	745	3.00	0.72	0.26	No Significant?
7	2021	0.06	745	3.00	0.72	1.50	Acute Hazard Impact
8	2022	0.06	745	3.00	0.72	1.41	10 Significance Threshold
9	2023	0.06	745	3.00	0.72	1.38	No Significant?
10	2024	0.06	745	3.00	0.72	1.38	26.8 Cancer Risk (Child)
11	2025	0.06	745	3.00	0.72	1.38	100 Significance Threshold
12	2026	0.06	745	3.00	0.72	1.38	No Significant?
13	2027	0.06	745	3.00	0.72	1.38	9.3 Cancer Risk (Adult)
14	2028	0.06	745	3.00	0.72	1.38	100 Significance Threshold
15	2029	0.06	745	3.00	0.72	1.38	No Significant?
16	2030	0.06	745	3.00	0.72	1.38	
17	2031	0.06	335	1.70	0.73	0.36	
18	2032	0.06	335	1.00	0.73	0.21	
19	2033	0.06	335	1.00	0.73	0.21	
20	2034	0.06	335	1.00	0.73	0.21	
21	2035	0.06	335	1.00	0.73	0.21	
22	2036	0.06	335	1.00	0.73	0.21	
23	2037	0.06	335	1.00	0.73	0.21	
24	2038	0.06	335	1.00	0.73	0.21	
25	2039	0.06	335	1.00	0.73	0.21	
26	2040	0.06	335	1.00	0.73	0.21	
27	2041	0.06	335	1.00	0.73	0.21	
28	2042	0.06	335	1.00	0.73	0.21	
29	2043	0.06	335	1.00	0.73	0.21	
30	2044	0.06	335	1.00	0.73	0.21	

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Crystalline Silica
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		0.25	1,090	10.0	0.85		0.25 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		0.25	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		0.25	745	4.75	0.72		No Significant?
4	2018		0.25	745	3.00	0.72		0.08 Chronic Hazard Impact
5	2019		0.25	745	3.00	0.72		10 Significance Threshold
6	2020		0.25	745	3.00	0.72		No Significant?
7	2021		0.25	745	3.00	0.72		Acute Hazard Impact
8	2022		0.25	745	3.00	0.72		10 Significance Threshold
9	2023		0.25	745	3.00	0.72		No Significant?
10	2024		0.25	745	3.00	0.72		Acute Hazard Impact
11	2025		0.25	745	3.00	0.72		10 Significance Threshold
12	2026		0.25	745	3.00	0.72		No Significant?
13	2027		0.25	745	3.00	0.72		Cancer Risk (Child)
14	2028		0.25	745	3.00	0.72		100 Significance Threshold
15	2029		0.25	745	3.00	0.72		No Significant?
16	2030		0.25	745	3.00	0.72		Cancer Risk (Adult)
17	2031		0.25	335	1.70	0.73		100 Significance Threshold
18	2032		0.25	335	1.00	0.73		No Significant?
19	2033		0.25	335	1.00	0.73		
20	2034		0.25	335	1.00	0.73		
21	2035		0.25	335	1.00	0.73		
22	2036		0.25	335	1.00	0.73		
23	2037		0.25	335	1.00	0.73		
24	2038		0.25	335	1.00	0.73		
25	2039		0.25	335	1.00	0.73		
26	2040		0.25	335	1.00	0.73		
27	2041		0.25	335	1.00	0.73		
28	2042		0.25	335	1.00	0.73		
29	2043		0.25	335	1.00	0.73		
30	2044		0.25	335	1.00	0.73		

Health Risk Assessment Assumptions

14 Chronic Reference Exposure Level (ug/m3)	
240 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Fluoride
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk
1	2015	3.07	0.12	1,090	10.0	0.85	0.8
2	2016	3.07	0.12	1,090	10.0	0.85	
3	2017	3.07	0.12	745	4.75	0.72	
4	2018	3.07	0.12	745	3.00	0.72	
5	2019	3.07	0.12	745	3.00	0.72	0.01 Chronic Hazard Impact 10 Significance Threshold No Significant?
6	2020	3.07	0.12	745	3.00	0.72	
7	2021	3.07	0.12	745	3.00	0.72	
8	2022	3.07	0.12	745	3.00	0.72	0.01 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	3.07	0.12	745	3.00	0.72	
10	2024	3.07	0.12	745	3.00	0.72	
11	2025	3.07	0.12	745	3.00	0.72	
12	2026	3.07	0.12	745	3.00	0.72	Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2027	3.07	0.12	745	3.00	0.72	
14	2028	3.07	0.12	745	3.00	0.72	
15	2029	3.07	0.12	745	3.00	0.72	
16	2030	3.07	0.12	745	3.00	0.72	Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2031	3.07	0.12	335	1.70	0.73	
18	2032	3.07	0.12	335	1.00	0.73	
19	2033	3.07	0.12	335	1.00	0.73	
20	2034	3.07	0.12	335	1.00	0.73	
21	2035	3.07	0.12	335	1.00	0.73	
22	2036	3.07	0.12	335	1.00	0.73	
23	2037	3.07	0.12	335	1.00	0.73	
24	2038	3.07	0.12	335	1.00	0.73	
25	2039	3.07	0.12	335	1.00	0.73	
26	2040	3.07	0.12	335	1.00	0.73	
27	2041	3.07	0.12	335	1.00	0.73	
28	2042	3.07	0.12	335	1.00	0.73	
29	2043	3.07	0.12	335	1.00	0.73	
30	2044	3.07	0.12	335	1.00	0.73	

Health Risk Assessment Assumptions

10 Chronic Reference Exposure Level (ug/m3)	
42 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Hydrogen Sulfide
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	4.22	0.04	1,090	10.0	0.85		0.04 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	4.22	0.04	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017	4.22	0.04	745	4.75	0.72		No Significant?
4	2018	4.22	0.04	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019	4.22	0.04	745	3.00	0.72		10 Significance Threshold
6	2020	4.22	0.04	745	3.00	0.72		No Significant?
7	2021	4.22	0.04	745	3.00	0.72		0.10 Acute Hazard Impact
8	2022	4.22	0.04	745	3.00	0.72		10 Significance Threshold
9	2023	4.22	0.04	745	3.00	0.72		No Significant?
10	2024	4.22	0.04	745	3.00	0.72		Cancer Risk (Child)
11	2025	4.22	0.04	745	3.00	0.72		100 Significance Threshold
12	2026	4.22	0.04	745	3.00	0.72		No Significant?
13	2027	4.22	0.04	745	3.00	0.72		Cancer Risk (Adult)
14	2028	4.22	0.04	745	3.00	0.72		100 Significance Threshold
15	2029	4.22	0.04	745	3.00	0.72		No Significant?
16	2030	4.22	0.04	745	3.00	0.72		Cancer Risk (Adult)
17	2031	4.22	0.04	335	1.70	0.73		100 Significance Threshold
18	2032	4.22	0.04	335	1.00	0.73		No Significant?
19	2033	4.22	0.04	335	1.00	0.73		
20	2034	4.22	0.04	335	1.00	0.73		
21	2035	4.22	0.04	335	1.00	0.73		
22	2036	4.22	0.04	335	1.00	0.73		
23	2037	4.22	0.04	335	1.00	0.73		
24	2038	4.22	0.04	335	1.00	0.73		
25	2039	4.22	0.04	335	1.00	0.73		
26	2040	4.22	0.04	335	1.00	0.73		
27	2041	4.22	0.04	335	1.00	0.73		
28	2042	4.22	0.04	335	1.00	0.73		
29	2043	4.22	0.04	335	1.00	0.73		
30	2044	4.22	0.04	335	1.00	0.73		

Health Risk Assessment Assumptions

0.015 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Arsenic
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	1.02E-03	1.86E-05	1,090	10.0	0.85	0.03	0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	1.02E-03	1.86E-05	1,090	10.0	0.85	0.03	
3	2017	1.02E-03	1.86E-05	745	4.75	0.72	0.01	
4	2018	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
6	2020	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
7	2021	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
8	2022	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.01 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
10	2024	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
11	2025	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
12	2026	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.14 Cancer Risk (Child) 100 Significance Threshold No Significant?
13	2027	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
14	2028	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
15	2029	1.02E-03	1.86E-05	745	3.00	0.72	0.00	
16	2030	1.02E-03	1.86E-05	745	3.00	0.72	0.00	0.04 Cancer Risk (Adult) 100 Significance Threshold No Significant?
17	2031	1.02E-03	1.86E-05	335	1.70	0.73	0.00	
18	2032	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
19	2033	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
20	2034	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
21	2035	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
22	2036	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
23	2037	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
24	2038	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
25	2039	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
26	2040	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
27	2041	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
28	2042	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
29	2043	1.02E-03	1.86E-05	335	1.00	0.73	0.00	
30	2044	1.02E-03	1.86E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.007 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
8.4 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Beryllium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.18E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.18E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.18E-06	745	4.75	0.72	0.00	No Significant?
4	2018		1.18E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		1.18E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.18E-06	745	3.00	0.72	0.00	No Significant?
7	2021		1.18E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.18E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.18E-06	745	3.00	0.72	0.00	No Significant?
10	2024		1.18E-06	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
11	2025		1.18E-06	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		1.18E-06	745	3.00	0.72	0.00	No Significant?
13	2027		1.18E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		1.18E-06	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		1.18E-06	745	3.00	0.72	0.00	No Significant?
16	2030		1.18E-06	745	3.00	0.72	0.00	
17	2031		1.18E-06	335	1.70	0.73	0.00	
18	2032		1.18E-06	335	1.00	0.73	0.00	
19	2033		1.18E-06	335	1.00	0.73	0.00	
20	2034		1.18E-06	335	1.00	0.73	0.00	
21	2035		1.18E-06	335	1.00	0.73	0.00	
22	2036		1.18E-06	335	1.00	0.73	0.00	
23	2037		1.18E-06	335	1.00	0.73	0.00	
24	2038		1.18E-06	335	1.00	0.73	0.00	
25	2039		1.18E-06	335	1.00	0.73	0.00	
26	2040		1.18E-06	335	1.00	0.73	0.00	
27	2041		1.18E-06	335	1.00	0.73	0.00	
28	2042		1.18E-06	335	1.00	0.73	0.00	
29	2043		1.18E-06	335	1.00	0.73	0.00	
30	2044		1.18E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.02 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
15 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Cadmium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		7.87E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		7.87E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		7.87E-06	745	4.75	0.72	0.00	No Significant?
4	2018		7.87E-06	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		7.87E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		7.87E-06	745	3.00	0.72	0.00	No Significant?
7	2021		7.87E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		7.87E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		7.87E-06	745	3.00	0.72	0.00	No Significant?
10	2024		7.87E-06	745	3.00	0.72	0.00	0.07 Cancer Risk (Child)
11	2025		7.87E-06	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		7.87E-06	745	3.00	0.72	0.00	No Significant?
13	2027		7.87E-06	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
14	2028		7.87E-06	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		7.87E-06	745	3.00	0.72	0.00	No Significant?
16	2030		7.87E-06	745	3.00	0.72	0.00	
17	2031		7.87E-06	335	1.70	0.73	0.00	
18	2032		7.87E-06	335	1.00	0.73	0.00	
19	2033		7.87E-06	335	1.00	0.73	0.00	
20	2034		7.87E-06	335	1.00	0.73	0.00	
21	2035		7.87E-06	335	1.00	0.73	0.00	
22	2036		7.87E-06	335	1.00	0.73	0.00	
23	2037		7.87E-06	335	1.00	0.73	0.00	
24	2038		7.87E-06	335	1.00	0.73	0.00	
25	2039		7.87E-06	335	1.00	0.73	0.00	
26	2040		7.87E-06	335	1.00	0.73	0.00	
27	2041		7.87E-06	335	1.00	0.73	0.00	
28	2042		7.87E-06	335	1.00	0.73	0.00	
29	2043		7.87E-06	335	1.00	0.73	0.00	
30	2044		7.87E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
100 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Copper
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.01		1,090	10.0	0.85		- Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.01		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017	0.01		745	4.75	0.72		No Significant?
4	2018	0.01		745	3.00	0.72		Chronic Hazard Impact
5	2019	0.01		745	3.00	0.72		10 Significance Threshold
6	2020	0.01		745	3.00	0.72		No Significant?
7	2021	0.01		745	3.00	0.72		
8	2022	0.01		745	3.00	0.72		0.00 Acute Hazard Impact
9	2023	0.01		745	3.00	0.72		10 Significance Threshold
10	2024	0.01		745	3.00	0.72		No Significant?
11	2025	0.01		745	3.00	0.72		
12	2026	0.01		745	3.00	0.72		Cancer Risk (Child)
13	2027	0.01		745	3.00	0.72		100 Significance Threshold
14	2028	0.01		745	3.00	0.72		No Significant?
15	2029	0.01		745	3.00	0.72		
16	2030	0.01		745	3.00	0.72		Cancer Risk (Adult)
17	2031	0.01		335	1.70	0.73		100 Significance Threshold
18	2032	0.01		335	1.00	0.73		No Significant?
19	2033	0.01		335	1.00	0.73		
20	2034	0.01		335	1.00	0.73		
21	2035	0.01		335	1.00	0.73		
22	2036	0.01		335	1.00	0.73		
23	2037	0.01		335	1.00	0.73		
24	2038	0.01		335	1.00	0.73		
25	2039	0.01		335	1.00	0.73		
26	2040	0.01		335	1.00	0.73		
27	2041	0.01		335	1.00	0.73		
28	2042	0.01		335	1.00	0.73		
29	2043	0.01		335	1.00	0.73		
30	2044	0.01		335	1.00	0.73		

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.042 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Lead
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		8.67E-05	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		8.67E-05	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		8.67E-05	745	4.75	0.72	0.00	No Significant?
4	2018		8.67E-05	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		8.67E-05	745	3.00	0.72	0.00	No Significant?
7	2021		8.67E-05	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		8.67E-05	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		8.67E-05	745	3.00	0.72	0.00	No Significant?
10	2024		8.67E-05	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		8.67E-05	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		8.67E-05	745	3.00	0.72	0.00	No Significant?
13	2027		8.67E-05	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		8.67E-05	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		8.67E-05	745	3.00	0.72	0.00	No Significant?
16	2030		8.67E-05	745	3.00	0.72	0.00	
17	2031		8.67E-05	335	1.70	0.73	0.00	
18	2032		8.67E-05	335	1.00	0.73	0.00	
19	2033		8.67E-05	335	1.00	0.73	0.00	
20	2034		8.67E-05	335	1.00	0.73	0.00	
21	2035		8.67E-05	335	1.00	0.73	0.00	
22	2036		8.67E-05	335	1.00	0.73	0.00	
23	2037		8.67E-05	335	1.00	0.73	0.00	
24	2038		8.67E-05	335	1.00	0.73	0.00	
25	2039		8.67E-05	335	1.00	0.73	0.00	
26	2040		8.67E-05	335	1.00	0.73	0.00	
27	2041		8.67E-05	335	1.00	0.73	0.00	
28	2042		8.67E-05	335	1.00	0.73	0.00	
29	2043		8.67E-05	335	1.00	0.73	0.00	
30	2044		8.67E-05	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

0.09 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Manganese
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.61E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.61E-05	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		1.61E-05	745	4.75	0.72		No Significant?
4	2018		1.61E-05	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		1.61E-05	745	3.00	0.72		10 Significance Threshold
6	2020		1.61E-05	745	3.00	0.72		No Significant?
7	2021		1.61E-05	745	3.00	0.72		Acute Hazard Impact
8	2022		1.61E-05	745	3.00	0.72		10 Significance Threshold
9	2023		1.61E-05	745	3.00	0.72		No Significant?
10	2024		1.61E-05	745	3.00	0.72		Acute Hazard Impact
11	2025		1.61E-05	745	3.00	0.72		10 Significance Threshold
12	2026		1.61E-05	745	3.00	0.72		No Significant?
13	2027		1.61E-05	745	3.00	0.72		Acute Hazard Impact
14	2028		1.61E-05	745	3.00	0.72		10 Significance Threshold
15	2029		1.61E-05	745	3.00	0.72		No Significant?
16	2030		1.61E-05	745	3.00	0.72		Acute Hazard Impact
17	2031		1.61E-05	335	1.70	0.73		10 Significance Threshold
18	2032		1.61E-05	335	1.00	0.73		No Significant?
19	2033		1.61E-05	335	1.00	0.73		Acute Hazard Impact
20	2034		1.61E-05	335	1.00	0.73		10 Significance Threshold
21	2035		1.61E-05	335	1.00	0.73		No Significant?
22	2036		1.61E-05	335	1.00	0.73		Acute Hazard Impact
23	2037		1.61E-05	335	1.00	0.73		10 Significance Threshold
24	2038		1.61E-05	335	1.00	0.73		No Significant?
25	2039		1.61E-05	335	1.00	0.73		Acute Hazard Impact
26	2040		1.61E-05	335	1.00	0.73		10 Significance Threshold
27	2041		1.61E-05	335	1.00	0.73		No Significant?
28	2042		1.61E-05	335	1.00	0.73		Acute Hazard Impact
29	2043		1.61E-05	335	1.00	0.73		10 Significance Threshold
30	2044		1.61E-05	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

0.03 Chronic Reference Exposure Level (ug/m3)	
0.6 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Mercury
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	4.96E-04	6.30E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	4.96E-04	6.30E-06	1,090	10.0	0.85		
3	2017	4.96E-04	6.30E-06	745	4.75	0.72		
4	2018	4.96E-04	6.30E-06	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	4.96E-04	6.30E-06	745	3.00	0.72		
6	2020	4.96E-04	6.30E-06	745	3.00	0.72		
7	2021	4.96E-04	6.30E-06	745	3.00	0.72		
8	2022	4.96E-04	6.30E-06	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	4.96E-04	6.30E-06	745	3.00	0.72		
10	2024	4.96E-04	6.30E-06	745	3.00	0.72		
11	2025	4.96E-04	6.30E-06	745	3.00	0.72		
12	2026	4.96E-04	6.30E-06	745	3.00	0.72		
13	2027	4.96E-04	6.30E-06	745	3.00	0.72		
14	2028	4.96E-04	6.30E-06	745	3.00	0.72		
15	2029	4.96E-04	6.30E-06	745	3.00	0.72		
16	2030	4.96E-04	6.30E-06	745	3.00	0.72		
17	2031	4.96E-04	6.30E-06	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	4.96E-04	6.30E-06	335	1.00	0.73		
19	2033	4.96E-04	6.30E-06	335	1.00	0.73		
20	2034	4.96E-04	6.30E-06	335	1.00	0.73		
21	2035	4.96E-04	6.30E-06	335	1.00	0.73		
22	2036	4.96E-04	6.30E-06	335	1.00	0.73		
23	2037	4.96E-04	6.30E-06	335	1.00	0.73		
24	2038	4.96E-04	6.30E-06	335	1.00	0.73		
25	2039	4.96E-04	6.30E-06	335	1.00	0.73		
26	2040	4.96E-04	6.30E-06	335	1.00	0.73		
27	2041	4.96E-04	6.30E-06	335	1.00	0.73		
28	2042	4.96E-04	6.30E-06	335	1.00	0.73		
29	2043	4.96E-04	6.30E-06	335	1.00	0.73		
30	2044	4.96E-04	6.30E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

0.14 Chronic Reference Exposure Level (ug/m3)	
0.2 Acute Reference Exposure Level (ug/m3)	
0.91 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Nickel
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.01	1.33E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.01	1.33E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017	0.01	1.33E-04	745	4.75	0.72	0.00	No Significant?
4	2018	0.01	1.33E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	0.01	1.33E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
7	2021	0.01	1.33E-04	745	3.00	0.72	0.00	0.03 Acute Hazard Impact
8	2022	0.01	1.33E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
10	2024	0.01	1.33E-04	745	3.00	0.72	0.00	0.08 Cancer Risk (Child)
11	2025	0.01	1.33E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
13	2027	0.01	1.33E-04	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
14	2028	0.01	1.33E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	0.01	1.33E-04	745	3.00	0.72	0.00	No Significant?
16	2030	0.01	1.33E-04	745	3.00	0.72	0.00	
17	2031	0.01	1.33E-04	335	1.70	0.73	0.00	
18	2032	0.01	1.33E-04	335	1.00	0.73	0.00	
19	2033	0.01	1.33E-04	335	1.00	0.73	0.00	
20	2034	0.01	1.33E-04	335	1.00	0.73	0.00	
21	2035	0.01	1.33E-04	335	1.00	0.73	0.00	
22	2036	0.01	1.33E-04	335	1.00	0.73	0.00	
23	2037	0.01	1.33E-04	335	1.00	0.73	0.00	
24	2038	0.01	1.33E-04	335	1.00	0.73	0.00	
25	2039	0.01	1.33E-04	335	1.00	0.73	0.00	
26	2040	0.01	1.33E-04	335	1.00	0.73	0.00	
27	2041	0.01	1.33E-04	335	1.00	0.73	0.00	
28	2042	0.01	1.33E-04	335	1.00	0.73	0.00	
29	2043	0.01	1.33E-04	335	1.00	0.73	0.00	
30	2044	0.01	1.33E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

20 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Selenium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		5.33E-07	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		5.33E-07	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		5.33E-07	745	4.75	0.72		No Significant?
4	2018		5.33E-07	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		5.33E-07	745	3.00	0.72		10 Significance Threshold
6	2020		5.33E-07	745	3.00	0.72		No Significant?
7	2021		5.33E-07	745	3.00	0.72		Acute Hazard Impact
8	2022		5.33E-07	745	3.00	0.72		10 Significance Threshold
9	2023		5.33E-07	745	3.00	0.72		No Significant?
10	2024		5.33E-07	745	3.00	0.72		Acute Hazard Impact
11	2025		5.33E-07	745	3.00	0.72		10 Significance Threshold
12	2026		5.33E-07	745	3.00	0.72		No Significant?
13	2027		5.33E-07	745	3.00	0.72		Acute Hazard Impact
14	2028		5.33E-07	745	3.00	0.72		10 Significance Threshold
15	2029		5.33E-07	745	3.00	0.72		No Significant?
16	2030		5.33E-07	745	3.00	0.72		Acute Hazard Impact
17	2031		5.33E-07	335	1.70	0.73		10 Significance Threshold
18	2032		5.33E-07	335	1.00	0.73		No Significant?
19	2033		5.33E-07	335	1.00	0.73		Acute Hazard Impact
20	2034		5.33E-07	335	1.00	0.73		10 Significance Threshold
21	2035		5.33E-07	335	1.00	0.73		No Significant?
22	2036		5.33E-07	335	1.00	0.73		Acute Hazard Impact
23	2037		5.33E-07	335	1.00	0.73		10 Significance Threshold
24	2038		5.33E-07	335	1.00	0.73		No Significant?
25	2039		5.33E-07	335	1.00	0.73		Acute Hazard Impact
26	2040		5.33E-07	335	1.00	0.73		10 Significance Threshold
27	2041		5.33E-07	335	1.00	0.73		No Significant?
28	2042		5.33E-07	335	1.00	0.73		Acute Hazard Impact
29	2043		5.33E-07	335	1.00	0.73		10 Significance Threshold
30	2044		5.33E-07	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
30 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Vanadium
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.00		1,090	10.0	0.85		- Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.00		1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017	0.00		745	4.75	0.72		No Significant?
4	2018	0.00		745	3.00	0.72		Chronic Hazard Impact
5	2019	0.00		745	3.00	0.72		10 Significance Threshold
6	2020	0.00		745	3.00	0.72		No Significant?
7	2021	0.00		745	3.00	0.72		
8	2022	0.00		745	3.00	0.72		0.00 Acute Hazard Impact
9	2023	0.00		745	3.00	0.72		10 Significance Threshold
10	2024	0.00		745	3.00	0.72		No Significant?
11	2025	0.00		745	3.00	0.72		
12	2026	0.00		745	3.00	0.72		Cancer Risk (Child)
13	2027	0.00		745	3.00	0.72		100 Significance Threshold
14	2028	0.00		745	3.00	0.72		No Significant?
15	2029	0.00		745	3.00	0.72		
16	2030	0.00		745	3.00	0.72		Cancer Risk (Adult)
17	2031	0.00		335	1.70	0.73		100 Significance Threshold
18	2032	0.00		335	1.00	0.73		No Significant?
19	2033	0.00		335	1.00	0.73		
20	2034	0.00		335	1.00	0.73		
21	2035	0.00		335	1.00	0.73		
22	2036	0.00		335	1.00	0.73		
23	2037	0.00		335	1.00	0.73		
24	2038	0.00		335	1.00	0.73		
25	2039	0.00		335	1.00	0.73		
26	2040	0.00		335	1.00	0.73		
27	2041	0.00		335	1.00	0.73		
28	2042	0.00		335	1.00	0.73		
29	2043	0.00		335	1.00	0.73		
30	2044	0.00		335	1.00	0.73		

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: 1,1,1-trichloroethane
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	6.26E-05	2.44E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	6.26E-05	2.44E-06	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017	6.26E-05	2.44E-06	745	4.75	0.72		No Significant?
4	2018	6.26E-05	2.44E-06	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019	6.26E-05	2.44E-06	745	3.00	0.72		10 Significance Threshold
6	2020	6.26E-05	2.44E-06	745	3.00	0.72		No Significant?
7	2021	6.26E-05	2.44E-06	745	3.00	0.72		0.00 Acute Hazard Impact
8	2022	6.26E-05	2.44E-06	745	3.00	0.72		10 Significance Threshold
9	2023	6.26E-05	2.44E-06	745	3.00	0.72		No Significant?
10	2024	6.26E-05	2.44E-06	745	3.00	0.72		Cancer Risk (Child)
11	2025	6.26E-05	2.44E-06	745	3.00	0.72		100 Significance Threshold
12	2026	6.26E-05	2.44E-06	745	3.00	0.72		No Significant?
13	2027	6.26E-05	2.44E-06	745	3.00	0.72		Cancer Risk (Adult)
14	2028	6.26E-05	2.44E-06	745	3.00	0.72		100 Significance Threshold
15	2029	6.26E-05	2.44E-06	745	3.00	0.72		No Significant?
16	2030	6.26E-05	2.44E-06	745	3.00	0.72		Cancer Risk (Adult)
17	2031	6.26E-05	2.44E-06	335	1.70	0.73		100 Significance Threshold
18	2032	6.26E-05	2.44E-06	335	1.00	0.73		No Significant?
19	2033	6.26E-05	2.44E-06	335	1.00	0.73		
20	2034	6.26E-05	2.44E-06	335	1.00	0.73		
21	2035	6.26E-05	2.44E-06	335	1.00	0.73		
22	2036	6.26E-05	2.44E-06	335	1.00	0.73		
23	2037	6.26E-05	2.44E-06	335	1.00	0.73		
24	2038	6.26E-05	2.44E-06	335	1.00	0.73		
25	2039	6.26E-05	2.44E-06	335	1.00	0.73		
26	2040	6.26E-05	2.44E-06	335	1.00	0.73		
27	2041	6.26E-05	2.44E-06	335	1.00	0.73		
28	2042	6.26E-05	2.44E-06	335	1.00	0.73		
29	2043	6.26E-05	2.44E-06	335	1.00	0.73		
30	2044	6.26E-05	2.44E-06	335	1.00	0.73		

Health Risk Assessment Assumptions

3 Chronic Reference Exposure Level (ug/m3)	
27 Acute Reference Exposure Level (ug/m3)	
0.1 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	5.99E-02	1.60E-03	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	5.99E-02	1.60E-03	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017	5.99E-02	1.60E-03	745	4.75	0.72	0.01	No Significant?
4	2018	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	5.99E-02	1.60E-03	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
7	2021	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2022	5.99E-02	1.60E-03	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
10	2024	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.10 Cancer Risk (Child)
11	2025	5.99E-02	1.60E-03	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
13	2027	5.99E-02	1.60E-03	745	3.00	0.72	0.00	0.03 Cancer Risk (Adult)
14	2028	5.99E-02	1.60E-03	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	5.99E-02	1.60E-03	745	3.00	0.72	0.00	No Significant?
16	2030	5.99E-02	1.60E-03	745	3.00	0.72	0.00	
17	2031	5.99E-02	1.60E-03	335	1.70	0.73	0.00	
18	2032	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
19	2033	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
20	2034	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
21	2035	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
22	2036	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
23	2037	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
24	2038	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
25	2039	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
26	2040	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
27	2041	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
28	2042	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
29	2043	5.99E-02	1.60E-03	335	1.00	0.73	0.00	
30	2044	5.99E-02	1.60E-03	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)anthracene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		2.11E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		2.11E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		2.11E-06	745	4.75	0.72	0.00	No Significant?
4	2018		2.11E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		2.11E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		2.11E-06	745	3.00	0.72	0.00	No Significant?
7	2021		2.11E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		2.11E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		2.11E-06	745	3.00	0.72	0.00	No Significant?
10	2024		2.11E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		2.11E-06	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		2.11E-06	745	3.00	0.72	0.00	No Significant?
13	2027		2.11E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		2.11E-06	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		2.11E-06	745	3.00	0.72	0.00	No Significant?
16	2030		2.11E-06	745	3.00	0.72	0.00	
17	2031		2.11E-06	335	1.70	0.73	0.00	
18	2032		2.11E-06	335	1.00	0.73	0.00	
19	2033		2.11E-06	335	1.00	0.73	0.00	
20	2034		2.11E-06	335	1.00	0.73	0.00	
21	2035		2.11E-06	335	1.00	0.73	0.00	
22	2036		2.11E-06	335	1.00	0.73	0.00	
23	2037		2.11E-06	335	1.00	0.73	0.00	
24	2038		2.11E-06	335	1.00	0.73	0.00	
25	2039		2.11E-06	335	1.00	0.73	0.00	
26	2040		2.11E-06	335	1.00	0.73	0.00	
27	2041		2.11E-06	335	1.00	0.73	0.00	
28	2042		2.11E-06	335	1.00	0.73	0.00	
29	2043		2.11E-06	335	1.00	0.73	0.00	
30	2044		2.11E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
3.9 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(a)pyrene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		0.00	1,090	10.0	0.85	2.35	0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016		0.00	1,090	10.0	0.85	2.35	
3	2017		0.00	745	4.75	0.72	0.65	
4	2018		0.00	745	3.00	0.72	0.41	Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019		0.00	745	3.00	0.72	0.41	
6	2020		0.00	745	3.00	0.72	0.41	
7	2021		0.00	745	3.00	0.72	0.41	Acute Hazard Impact 10 Significance Threshold No Significant?
8	2022		0.00	745	3.00	0.72	0.41	
9	2023		0.00	745	3.00	0.72	0.41	
10	2024		0.00	745	3.00	0.72	0.41	11.6 Cancer Risk (Child) 100 Significance Threshold No Significant?
11	2025		0.00	745	3.00	0.72	0.41	
12	2026		0.00	745	3.00	0.72	0.41	
13	2027		0.00	745	3.00	0.72	0.41	3.17 Cancer Risk (Adult) 100 Significance Threshold No Significant?
14	2028		0.00	745	3.00	0.72	0.41	
15	2029		0.00	745	3.00	0.72	0.41	
16	2030		0.00	745	3.00	0.72	0.41	
17	2031		0.00	335	1.70	0.73	0.11	
18	2032		0.00	335	1.00	0.73	0.06	
19	2033		0.00	335	1.00	0.73	0.06	
20	2034		0.00	335	1.00	0.73	0.06	
21	2035		0.00	335	1.00	0.73	0.06	
22	2036		0.00	335	1.00	0.73	0.06	
23	2037		0.00	335	1.00	0.73	0.06	
24	2038		0.00	335	1.00	0.73	0.06	
25	2039		0.00	335	1.00	0.73	0.06	
26	2040		0.00	335	1.00	0.73	0.06	
27	2041		0.00	335	1.00	0.73	0.06	
28	2042		0.00	335	1.00	0.73	0.06	
29	2043		0.00	335	1.00	0.73	0.06	
30	2044		0.00	335	1.00	0.73	0.06	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Benzo(b)fluoranthene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.01E-07	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.01E-07	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.01E-07	745	4.75	0.72	0.00	No Significant?
4	2018		1.01E-07	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		1.01E-07	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.01E-07	745	3.00	0.72	0.00	No Significant?
7	2021		1.01E-07	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.01E-07	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.01E-07	745	3.00	0.72	0.00	No Significant?
10	2024		1.01E-07	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		1.01E-07	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		1.01E-07	745	3.00	0.72	0.00	No Significant?
13	2027		1.01E-07	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		1.01E-07	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		1.01E-07	745	3.00	0.72	0.00	No Significant?
16	2030		1.01E-07	745	3.00	0.72	0.00	
17	2031		1.01E-07	335	1.70	0.73	0.00	
18	2032		1.01E-07	335	1.00	0.73	0.00	
19	2033		1.01E-07	335	1.00	0.73	0.00	
20	2034		1.01E-07	335	1.00	0.73	0.00	
21	2035		1.01E-07	335	1.00	0.73	0.00	
22	2036		1.01E-07	335	1.00	0.73	0.00	
23	2037		1.01E-07	335	1.00	0.73	0.00	
24	2038		1.01E-07	335	1.00	0.73	0.00	
25	2039		1.01E-07	335	1.00	0.73	0.00	
26	2040		1.01E-07	335	1.00	0.73	0.00	
27	2041		1.01E-07	335	1.00	0.73	0.00	
28	2042		1.01E-07	335	1.00	0.73	0.00	
29	2043		1.01E-07	335	1.00	0.73	0.00	
30	2044		1.01E-07	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0084 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: bis(2-ethylhexyl)phthalate
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.04E-03	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.04E-03	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.04E-03	745	4.75	0.72	0.00	No Significant?
4	2018		1.04E-03	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		1.04E-03	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.04E-03	745	3.00	0.72	0.00	No Significant?
7	2021		1.04E-03	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.04E-03	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.04E-03	745	3.00	0.72	0.00	No Significant?
10	2024		1.04E-03	745	3.00	0.72	0.00	
11	2025		1.04E-03	745	3.00	0.72	0.00	
12	2026		1.04E-03	745	3.00	0.72	0.00	0.01 Cancer Risk (Child)
13	2027		1.04E-03	745	3.00	0.72	0.00	100 Significance Threshold
14	2028		1.04E-03	745	3.00	0.72	0.00	No Significant?
15	2029		1.04E-03	745	3.00	0.72	0.00	
16	2030		1.04E-03	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2031		1.04E-03	335	1.70	0.73	0.00	100 Significance Threshold
18	2032		1.04E-03	335	1.00	0.73	0.00	No Significant?
19	2033		1.04E-03	335	1.00	0.73	0.00	
20	2034		1.04E-03	335	1.00	0.73	0.00	
21	2035		1.04E-03	335	1.00	0.73	0.00	
22	2036		1.04E-03	335	1.00	0.73	0.00	
23	2037		1.04E-03	335	1.00	0.73	0.00	
24	2038		1.04E-03	335	1.00	0.73	0.00	
25	2039		1.04E-03	335	1.00	0.73	0.00	
26	2040		1.04E-03	335	1.00	0.73	0.00	
27	2041		1.04E-03	335	1.00	0.73	0.00	
28	2042		1.04E-03	335	1.00	0.73	0.00	
29	2043		1.04E-03	335	1.00	0.73	0.00	
30	2044		1.04E-03	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

800 Chronic Reference Exposure Level (ug/m3)	
6200 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Carbon Disulfide
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	5.73E-04	2.23E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	5.73E-04	2.23E-05	1,090	10.0	0.85		
3	2017	5.73E-04	2.23E-05	745	4.75	0.72		
4	2018	5.73E-04	2.23E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	5.73E-04	2.23E-05	745	3.00	0.72		
6	2020	5.73E-04	2.23E-05	745	3.00	0.72		
7	2021	5.73E-04	2.23E-05	745	3.00	0.72		
8	2022	5.73E-04	2.23E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	5.73E-04	2.23E-05	745	3.00	0.72		
10	2024	5.73E-04	2.23E-05	745	3.00	0.72		
11	2025	5.73E-04	2.23E-05	745	3.00	0.72		
12	2026	5.73E-04	2.23E-05	745	3.00	0.72		
13	2027	5.73E-04	2.23E-05	745	3.00	0.72		
14	2028	5.73E-04	2.23E-05	745	3.00	0.72		
15	2029	5.73E-04	2.23E-05	745	3.00	0.72		
16	2030	5.73E-04	2.23E-05	745	3.00	0.72		
17	2031	5.73E-04	2.23E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	5.73E-04	2.23E-05	335	1.00	0.73		
19	2033	5.73E-04	2.23E-05	335	1.00	0.73		
20	2034	5.73E-04	2.23E-05	335	1.00	0.73		
21	2035	5.73E-04	2.23E-05	335	1.00	0.73		
22	2036	5.73E-04	2.23E-05	335	1.00	0.73		
23	2037	5.73E-04	2.23E-05	335	1.00	0.73		
24	2038	5.73E-04	2.23E-05	335	1.00	0.73		
25	2039	5.73E-04	2.23E-05	335	1.00	0.73		
26	2040	5.73E-04	2.23E-05	335	1.00	0.73		
27	2041	5.73E-04	2.23E-05	335	1.00	0.73		
28	2042	5.73E-04	2.23E-05	335	1.00	0.73		
29	2043	5.73E-04	2.23E-05	335	1.00	0.73		
30	2044	5.73E-04	2.23E-05	335	1.00	0.73		Cancer Risk (Adult) 100 Significance Threshold No Significant?

Health Risk Assessment Assumptions

0.2 Chronic Reference Exposure Level (ug/m3)	
210 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Chlorine
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.02	6.74E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.02	6.74E-04	1,090	10.0	0.85		
3	2017	0.02	6.74E-04	745	4.75	0.72		
4	2018	0.02	6.74E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	0.02	6.74E-04	745	3.00	0.72		
6	2020	0.02	6.74E-04	745	3.00	0.72		
7	2021	0.02	6.74E-04	745	3.00	0.72		
8	2022	0.02	6.74E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	0.02	6.74E-04	745	3.00	0.72		
10	2024	0.02	6.74E-04	745	3.00	0.72		
11	2025	0.02	6.74E-04	745	3.00	0.72		
12	2026	0.02	6.74E-04	745	3.00	0.72		
13	2027	0.02	6.74E-04	745	3.00	0.72		
14	2028	0.02	6.74E-04	745	3.00	0.72		
15	2029	0.02	6.74E-04	745	3.00	0.72		
16	2030	0.02	6.74E-04	745	3.00	0.72		
17	2031	0.02	6.74E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	0.02	6.74E-04	335	1.00	0.73		
19	2033	0.02	6.74E-04	335	1.00	0.73		
20	2034	0.02	6.74E-04	335	1.00	0.73		
21	2035	0.02	6.74E-04	335	1.00	0.73		
22	2036	0.02	6.74E-04	335	1.00	0.73		
23	2037	0.02	6.74E-04	335	1.00	0.73		
24	2038	0.02	6.74E-04	335	1.00	0.73		
25	2039	0.02	6.74E-04	335	1.00	0.73		
26	2040	0.02	6.74E-04	335	1.00	0.73		
27	2041	0.02	6.74E-04	335	1.00	0.73		
28	2042	0.02	6.74E-04	335	1.00	0.73		
29	2043	0.02	6.74E-04	335	1.00	0.73		
30	2044	0.02	6.74E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

30000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Chloroethane
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.05E-06	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.05E-06	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		1.05E-06	745	4.75	0.72		No Significant?
4	2018		1.05E-06	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		1.05E-06	745	3.00	0.72		10 Significance Threshold
6	2020		1.05E-06	745	3.00	0.72		No Significant?
7	2021		1.05E-06	745	3.00	0.72		Acute Hazard Impact
8	2022		1.05E-06	745	3.00	0.72		10 Significance Threshold
9	2023		1.05E-06	745	3.00	0.72		No Significant?
10	2024		1.05E-06	745	3.00	0.72		Acute Hazard Impact
11	2025		1.05E-06	745	3.00	0.72		10 Significance Threshold
12	2026		1.05E-06	745	3.00	0.72		No Significant?
13	2027		1.05E-06	745	3.00	0.72		Acute Hazard Impact
14	2028		1.05E-06	745	3.00	0.72		10 Significance Threshold
15	2029		1.05E-06	745	3.00	0.72		No Significant?
16	2030		1.05E-06	745	3.00	0.72		Acute Hazard Impact
17	2031		1.05E-06	335	1.70	0.73		10 Significance Threshold
18	2032		1.05E-06	335	1.00	0.73		No Significant?
19	2033		1.05E-06	335	1.00	0.73		Acute Hazard Impact
20	2034		1.05E-06	335	1.00	0.73		10 Significance Threshold
21	2035		1.05E-06	335	1.00	0.73		No Significant?
22	2036		1.05E-06	335	1.00	0.73		Acute Hazard Impact
23	2037		1.05E-06	335	1.00	0.73		10 Significance Threshold
24	2038		1.05E-06	335	1.00	0.73		No Significant?
25	2039		1.05E-06	335	1.00	0.73		Acute Hazard Impact
26	2040		1.05E-06	335	1.00	0.73		10 Significance Threshold
27	2041		1.05E-06	335	1.00	0.73		No Significant?
28	2042		1.05E-06	335	1.00	0.73		Acute Hazard Impact
29	2043		1.05E-06	335	1.00	0.73		10 Significance Threshold
30	2044		1.05E-06	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0039 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Chrysene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		7.34E-06	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		7.34E-06	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		7.34E-06	745	4.75	0.72	0.00	No Significant?
4	2018		7.34E-06	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		7.34E-06	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		7.34E-06	745	3.00	0.72	0.00	No Significant?
7	2021		7.34E-06	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		7.34E-06	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		7.34E-06	745	3.00	0.72	0.00	No Significant?
10	2024		7.34E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		7.34E-06	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		7.34E-06	745	3.00	0.72	0.00	No Significant?
13	2027		7.34E-06	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		7.34E-06	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		7.34E-06	745	3.00	0.72	0.00	No Significant?
16	2030		7.34E-06	745	3.00	0.72	0.00	
17	2031		7.34E-06	335	1.70	0.73	0.00	
18	2032		7.34E-06	335	1.00	0.73	0.00	
19	2033		7.34E-06	335	1.00	0.73	0.00	
20	2034		7.34E-06	335	1.00	0.73	0.00	
21	2035		7.34E-06	335	1.00	0.73	0.00	
22	2036		7.34E-06	335	1.00	0.73	0.00	
23	2037		7.34E-06	335	1.00	0.73	0.00	
24	2038		7.34E-06	335	1.00	0.73	0.00	
25	2039		7.34E-06	335	1.00	0.73	0.00	
26	2040		7.34E-06	335	1.00	0.73	0.00	
27	2041		7.34E-06	335	1.00	0.73	0.00	
28	2042		7.34E-06	335	1.00	0.73	0.00	
29	2043		7.34E-06	335	1.00	0.73	0.00	
30	2044		7.34E-06	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

2000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.0087 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Ethylbenzene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		3.99E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		3.99E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		3.99E-04	745	4.75	0.72	0.00	No Significant?
4	2018		3.99E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		3.99E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		3.99E-04	745	3.00	0.72	0.00	No Significant?
7	2021		3.99E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		3.99E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		3.99E-04	745	3.00	0.72	0.00	No Significant?
10	2024		3.99E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		3.99E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		3.99E-04	745	3.00	0.72	0.00	No Significant?
13	2027		3.99E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		3.99E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		3.99E-04	745	3.00	0.72	0.00	No Significant?
16	2030		3.99E-04	745	3.00	0.72	0.00	
17	2031		3.99E-04	335	1.70	0.73	0.00	
18	2032		3.99E-04	335	1.00	0.73	0.00	
19	2033		3.99E-04	335	1.00	0.73	0.00	
20	2034		3.99E-04	335	1.00	0.73	0.00	
21	2035		3.99E-04	335	1.00	0.73	0.00	
22	2036		3.99E-04	335	1.00	0.73	0.00	
23	2037		3.99E-04	335	1.00	0.73	0.00	
24	2038		3.99E-04	335	1.00	0.73	0.00	
25	2039		3.99E-04	335	1.00	0.73	0.00	
26	2040		3.99E-04	335	1.00	0.73	0.00	
27	2041		3.99E-04	335	1.00	0.73	0.00	
28	2042		3.99E-04	335	1.00	0.73	0.00	
29	2043		3.99E-04	335	1.00	0.73	0.00	
30	2044		3.99E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
55 Acute Reference Exposure Level (ug/m3)	
0.021 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Formaldehyde
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.21	0.00	1,090	10.0	0.85	0.01	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	0.21	0.00	1,090	10.0	0.85	0.01	0.8 Significance Threshold (ug/m3)
3	2017	0.21	0.00	745	4.75	0.72	0.00	No Significant?
4	2018	0.21	0.00	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	0.21	0.00	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	0.21	0.00	745	3.00	0.72	0.00	No Significant?
7	2021	0.21	0.00	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2022	0.21	0.00	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	0.21	0.00	745	3.00	0.72	0.00	No Significant?
10	2024	0.21	0.00	745	3.00	0.72	0.00	0.06 Cancer Risk (Child)
11	2025	0.21	0.00	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	0.21	0.00	745	3.00	0.72	0.00	No Significant?
13	2027	0.21	0.00	745	3.00	0.72	0.00	0.02 Cancer Risk (Adult)
14	2028	0.21	0.00	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	0.21	0.00	745	3.00	0.72	0.00	No Significant?
16	2030	0.21	0.00	745	3.00	0.72	0.00	
17	2031	0.21	0.00	335	1.70	0.73	0.00	
18	2032	0.21	0.00	335	1.00	0.73	0.00	
19	2033	0.21	0.00	335	1.00	0.73	0.00	
20	2034	0.21	0.00	335	1.00	0.73	0.00	
21	2035	0.21	0.00	335	1.00	0.73	0.00	
22	2036	0.21	0.00	335	1.00	0.73	0.00	
23	2037	0.21	0.00	335	1.00	0.73	0.00	
24	2038	0.21	0.00	335	1.00	0.73	0.00	
25	2039	0.21	0.00	335	1.00	0.73	0.00	
26	2040	0.21	0.00	335	1.00	0.73	0.00	
27	2041	0.21	0.00	335	1.00	0.73	0.00	
28	2042	0.21	0.00	335	1.00	0.73	0.00	
29	2043	0.21	0.00	335	1.00	0.73	0.00	
30	2044	0.21	0.00	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

7000 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Hexane
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.39E-03	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.39E-03	1,090	10.0	0.85		0.8 Significance Threshold (ug/m3)
3	2017		1.39E-03	745	4.75	0.72		No Significant?
4	2018		1.39E-03	745	3.00	0.72		0.00 Chronic Hazard Impact
5	2019		1.39E-03	745	3.00	0.72		10 Significance Threshold
6	2020		1.39E-03	745	3.00	0.72		No Significant?
7	2021		1.39E-03	745	3.00	0.72		Acute Hazard Impact
8	2022		1.39E-03	745	3.00	0.72		10 Significance Threshold
9	2023		1.39E-03	745	3.00	0.72		No Significant?
10	2024		1.39E-03	745	3.00	0.72		Acute Hazard Impact
11	2025		1.39E-03	745	3.00	0.72		10 Significance Threshold
12	2026		1.39E-03	745	3.00	0.72		No Significant?
13	2027		1.39E-03	745	3.00	0.72		Acute Hazard Impact
14	2028		1.39E-03	745	3.00	0.72		10 Significance Threshold
15	2029		1.39E-03	745	3.00	0.72		No Significant?
16	2030		1.39E-03	745	3.00	0.72		Acute Hazard Impact
17	2031		1.39E-03	335	1.70	0.73		10 Significance Threshold
18	2032		1.39E-03	335	1.00	0.73		No Significant?
19	2033		1.39E-03	335	1.00	0.73		Acute Hazard Impact
20	2034		1.39E-03	335	1.00	0.73		10 Significance Threshold
21	2035		1.39E-03	335	1.00	0.73		No Significant?
22	2036		1.39E-03	335	1.00	0.73		Acute Hazard Impact
23	2037		1.39E-03	335	1.00	0.73		10 Significance Threshold
24	2038		1.39E-03	335	1.00	0.73		No Significant?
25	2039		1.39E-03	335	1.00	0.73		Acute Hazard Impact
26	2040		1.39E-03	335	1.00	0.73		10 Significance Threshold
27	2041		1.39E-03	335	1.00	0.73		No Significant?
28	2042		1.39E-03	335	1.00	0.73		Acute Hazard Impact
29	2043		1.39E-03	335	1.00	0.73		10 Significance Threshold
30	2044		1.39E-03	335	1.00	0.73		No Significant?

Health Risk Assessment Assumptions

Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.39 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Inden(123-cd)opyrene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		1.90E-08	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		1.90E-08	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		1.90E-08	745	4.75	0.72	0.00	No Significant?
4	2018		1.90E-08	745	3.00	0.72	0.00	Chronic Hazard Impact
5	2019		1.90E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		1.90E-08	745	3.00	0.72	0.00	No Significant?
7	2021		1.90E-08	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		1.90E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		1.90E-08	745	3.00	0.72	0.00	No Significant?
10	2024		1.90E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025		1.90E-08	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		1.90E-08	745	3.00	0.72	0.00	No Significant?
13	2027		1.90E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		1.90E-08	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		1.90E-08	745	3.00	0.72	0.00	No Significant?
16	2030		1.90E-08	745	3.00	0.72	0.00	
17	2031		1.90E-08	335	1.70	0.73	0.00	
18	2032		1.90E-08	335	1.00	0.73	0.00	
19	2033		1.90E-08	335	1.00	0.73	0.00	
20	2034		1.90E-08	335	1.00	0.73	0.00	
21	2035		1.90E-08	335	1.00	0.73	0.00	
22	2036		1.90E-08	335	1.00	0.73	0.00	
23	2037		1.90E-08	335	1.00	0.73	0.00	
24	2038		1.90E-08	335	1.00	0.73	0.00	
25	2039		1.90E-08	335	1.00	0.73	0.00	
26	2040		1.90E-08	335	1.00	0.73	0.00	
27	2041		1.90E-08	335	1.00	0.73	0.00	
28	2042		1.90E-08	335	1.00	0.73	0.00	
29	2043		1.90E-08	335	1.00	0.73	0.00	
30	2044		1.90E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

1000 Chronic Reference Exposure Level (ug/m3)	
68000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Methyl Chloroform
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	3.04E-03	7.07E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	3.04E-03	7.07E-05	1,090	10.0	0.85		
3	2017	3.04E-03	7.07E-05	745	4.75	0.72		
4	2018	3.04E-03	7.07E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	3.04E-03	7.07E-05	745	3.00	0.72		
6	2020	3.04E-03	7.07E-05	745	3.00	0.72		
7	2021	3.04E-03	7.07E-05	745	3.00	0.72		
8	2022	3.04E-03	7.07E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	3.04E-03	7.07E-05	745	3.00	0.72		
10	2024	3.04E-03	7.07E-05	745	3.00	0.72		
11	2025	3.04E-03	7.07E-05	745	3.00	0.72		
12	2026	3.04E-03	7.07E-05	745	3.00	0.72		
13	2027	3.04E-03	7.07E-05	745	3.00	0.72		
14	2028	3.04E-03	7.07E-05	745	3.00	0.72		
15	2029	3.04E-03	7.07E-05	745	3.00	0.72		
16	2030	3.04E-03	7.07E-05	745	3.00	0.72		
17	2031	3.04E-03	7.07E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	3.04E-03	7.07E-05	335	1.00	0.73		
19	2033	3.04E-03	7.07E-05	335	1.00	0.73		
20	2034	3.04E-03	7.07E-05	335	1.00	0.73		
21	2035	3.04E-03	7.07E-05	335	1.00	0.73		
22	2036	3.04E-03	7.07E-05	335	1.00	0.73		
23	2037	3.04E-03	7.07E-05	335	1.00	0.73		
24	2038	3.04E-03	7.07E-05	335	1.00	0.73		
25	2039	3.04E-03	7.07E-05	335	1.00	0.73		
26	2040	3.04E-03	7.07E-05	335	1.00	0.73		
27	2041	3.04E-03	7.07E-05	335	1.00	0.73		
28	2042	3.04E-03	7.07E-05	335	1.00	0.73		
29	2043	3.04E-03	7.07E-05	335	1.00	0.73		
30	2044	3.04E-03	7.07E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

400 Chronic Reference Exposure Level (ug/m3)	
14000 Acute Reference Exposure Level (ug/m3)	
0.0035 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Methylene Chloride
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	9.15E-06	6.97E-08	1,090	10.0	0.85	0.00	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016	9.15E-06	6.97E-08	1,090	10.0	0.85	0.00	0.8 Significance Threshold (ug/m3)
3	2017	9.15E-06	6.97E-08	745	4.75	0.72	0.00	No Significant?
4	2018	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019	9.15E-06	6.97E-08	745	3.00	0.72	0.00	10 Significance Threshold
6	2020	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
7	2021	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Acute Hazard Impact
8	2022	9.15E-06	6.97E-08	745	3.00	0.72	0.00	10 Significance Threshold
9	2023	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
10	2024	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Child)
11	2025	9.15E-06	6.97E-08	745	3.00	0.72	0.00	100 Significance Threshold
12	2026	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
13	2027	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028	9.15E-06	6.97E-08	745	3.00	0.72	0.00	100 Significance Threshold
15	2029	9.15E-06	6.97E-08	745	3.00	0.72	0.00	No Significant?
16	2030	9.15E-06	6.97E-08	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
17	2031	9.15E-06	6.97E-08	335	1.70	0.73	0.00	100 Significance Threshold
18	2032	9.15E-06	6.97E-08	335	1.00	0.73	0.00	No Significant?
19	2033	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
20	2034	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
21	2035	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
22	2036	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
23	2037	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
24	2038	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
25	2039	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
26	2040	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
27	2041	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
28	2042	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
29	2043	9.15E-06	6.97E-08	335	1.00	0.73	0.00	
30	2044	9.15E-06	6.97E-08	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

9 Chronic Reference Exposure Level (ug/m3)	
Acute Reference Exposure Level (ug/m3)	
0.12 Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Naphthalene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015		2.20E-04	1,090	10.0	0.85	0.0	0.00 Maximum Annual PM2.5 Concentration (ug/m3)
2	2016		2.20E-04	1,090	10.0	0.85	0.0	0.8 Significance Threshold (ug/m3)
3	2017		2.20E-04	745	4.75	0.72	0.00	No Significant?
4	2018		2.20E-04	745	3.00	0.72	0.00	0.00 Chronic Hazard Impact
5	2019		2.20E-04	745	3.00	0.72	0.00	10 Significance Threshold
6	2020		2.20E-04	745	3.00	0.72	0.00	No Significant?
7	2021		2.20E-04	745	3.00	0.72	0.00	Acute Hazard Impact
8	2022		2.20E-04	745	3.00	0.72	0.00	10 Significance Threshold
9	2023		2.20E-04	745	3.00	0.72	0.00	No Significant?
10	2024		2.20E-04	745	3.00	0.72	0.00	0.02 Cancer Risk (Child)
11	2025		2.20E-04	745	3.00	0.72	0.00	100 Significance Threshold
12	2026		2.20E-04	745	3.00	0.72	0.00	No Significant?
13	2027		2.20E-04	745	3.00	0.72	0.00	0.00 Cancer Risk (Adult)
14	2028		2.20E-04	745	3.00	0.72	0.00	100 Significance Threshold
15	2029		2.20E-04	745	3.00	0.72	0.00	No Significant?
16	2030		2.20E-04	745	3.00	0.72	0.00	
17	2031		2.20E-04	335	1.70	0.73	0.00	
18	2032		2.20E-04	335	1.00	0.73	0.00	
19	2033		2.20E-04	335	1.00	0.73	0.00	
20	2034		2.20E-04	335	1.00	0.73	0.00	
21	2035		2.20E-04	335	1.00	0.73	0.00	
22	2036		2.20E-04	335	1.00	0.73	0.00	
23	2037		2.20E-04	335	1.00	0.73	0.00	
24	2038		2.20E-04	335	1.00	0.73	0.00	
25	2039		2.20E-04	335	1.00	0.73	0.00	
26	2040		2.20E-04	335	1.00	0.73	0.00	
27	2041		2.20E-04	335	1.00	0.73	0.00	
28	2042		2.20E-04	335	1.00	0.73	0.00	
29	2043		2.20E-04	335	1.00	0.73	0.00	
30	2044		2.20E-04	335	1.00	0.73	0.00	

Health Risk Assessment Assumptions

200 Chronic Reference Exposure Level (ug/m3)	
5800 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Phenol
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	3.96E-03	4.90E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	3.96E-03	4.90E-05	1,090	10.0	0.85		
3	2017	3.96E-03	4.90E-05	745	4.75	0.72		
4	2018	3.96E-03	4.90E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	3.96E-03	4.90E-05	745	3.00	0.72		
6	2020	3.96E-03	4.90E-05	745	3.00	0.72		
7	2021	3.96E-03	4.90E-05	745	3.00	0.72		
8	2022	3.96E-03	4.90E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	3.96E-03	4.90E-05	745	3.00	0.72		
10	2024	3.96E-03	4.90E-05	745	3.00	0.72		
11	2025	3.96E-03	4.90E-05	745	3.00	0.72		
12	2026	3.96E-03	4.90E-05	745	3.00	0.72		
13	2027	3.96E-03	4.90E-05	745	3.00	0.72		
14	2028	3.96E-03	4.90E-05	745	3.00	0.72		
15	2029	3.96E-03	4.90E-05	745	3.00	0.72		
16	2030	3.96E-03	4.90E-05	745	3.00	0.72		
17	2031	3.96E-03	4.90E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	3.96E-03	4.90E-05	335	1.00	0.73		
19	2033	3.96E-03	4.90E-05	335	1.00	0.73		
20	2034	3.96E-03	4.90E-05	335	1.00	0.73		
21	2035	3.96E-03	4.90E-05	335	1.00	0.73		
22	2036	3.96E-03	4.90E-05	335	1.00	0.73		
23	2037	3.96E-03	4.90E-05	335	1.00	0.73		
24	2038	3.96E-03	4.90E-05	335	1.00	0.73		
25	2039	3.96E-03	4.90E-05	335	1.00	0.73		
26	2040	3.96E-03	4.90E-05	335	1.00	0.73		
27	2041	3.96E-03	4.90E-05	335	1.00	0.73		
28	2042	3.96E-03	4.90E-05	335	1.00	0.73		
29	2043	3.96E-03	4.90E-05	335	1.00	0.73		
30	2044	3.96E-03	4.90E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

900 Chronic Reference Exposure Level (ug/m3)	
21000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Styrene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	5.24E-04	1.08E-05	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	5.24E-04	1.08E-05	1,090	10.0	0.85		
3	2017	5.24E-04	1.08E-05	745	4.75	0.72		
4	2018	5.24E-04	1.08E-05	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	5.24E-04	1.08E-05	745	3.00	0.72		
6	2020	5.24E-04	1.08E-05	745	3.00	0.72		
7	2021	5.24E-04	1.08E-05	745	3.00	0.72		
8	2022	5.24E-04	1.08E-05	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	5.24E-04	1.08E-05	745	3.00	0.72		
10	2024	5.24E-04	1.08E-05	745	3.00	0.72		
11	2025	5.24E-04	1.08E-05	745	3.00	0.72		
12	2026	5.24E-04	1.08E-05	745	3.00	0.72		
13	2027	5.24E-04	1.08E-05	745	3.00	0.72		
14	2028	5.24E-04	1.08E-05	745	3.00	0.72		
15	2029	5.24E-04	1.08E-05	745	3.00	0.72		
16	2030	5.24E-04	1.08E-05	745	3.00	0.72		
17	2031	5.24E-04	1.08E-05	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	5.24E-04	1.08E-05	335	1.00	0.73		
19	2033	5.24E-04	1.08E-05	335	1.00	0.73		
20	2034	5.24E-04	1.08E-05	335	1.00	0.73		
21	2035	5.24E-04	1.08E-05	335	1.00	0.73		
22	2036	5.24E-04	1.08E-05	335	1.00	0.73		
23	2037	5.24E-04	1.08E-05	335	1.00	0.73		
24	2038	5.24E-04	1.08E-05	335	1.00	0.73		
25	2039	5.24E-04	1.08E-05	335	1.00	0.73		
26	2040	5.24E-04	1.08E-05	335	1.00	0.73		
27	2041	5.24E-04	1.08E-05	335	1.00	0.73		
28	2042	5.24E-04	1.08E-05	335	1.00	0.73		
29	2043	5.24E-04	1.08E-05	335	1.00	0.73		
30	2044	5.24E-04	1.08E-05	335	1.00	0.73		

Health Risk Assessment Assumptions

420 Chronic Reference Exposure Level (ug/m3)	
5,000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Toluene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.01	2.97E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.01	2.97E-04	1,090	10.0	0.85		
3	2017	0.01	2.97E-04	745	4.75	0.72		
4	2018	0.01	2.97E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	0.01	2.97E-04	745	3.00	0.72		
6	2020	0.01	2.97E-04	745	3.00	0.72		
7	2021	0.01	2.97E-04	745	3.00	0.72		
8	2022	0.01	2.97E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	0.01	2.97E-04	745	3.00	0.72		
10	2024	0.01	2.97E-04	745	3.00	0.72		
11	2025	0.01	2.97E-04	745	3.00	0.72		
12	2026	0.01	2.97E-04	745	3.00	0.72		
13	2027	0.01	2.97E-04	745	3.00	0.72		
14	2028	0.01	2.97E-04	745	3.00	0.72		
15	2029	0.01	2.97E-04	745	3.00	0.72		
16	2030	0.01	2.97E-04	745	3.00	0.72		
17	2031	0.01	2.97E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	0.01	2.97E-04	335	1.00	0.73		
19	2033	0.01	2.97E-04	335	1.00	0.73		
20	2034	0.01	2.97E-04	335	1.00	0.73		
21	2035	0.01	2.97E-04	335	1.00	0.73		
22	2036	0.01	2.97E-04	335	1.00	0.73		
23	2037	0.01	2.97E-04	335	1.00	0.73		
24	2038	0.01	2.97E-04	335	1.00	0.73		
25	2039	0.01	2.97E-04	335	1.00	0.73		
26	2040	0.01	2.97E-04	335	1.00	0.73		
27	2041	0.01	2.97E-04	335	1.00	0.73		
28	2042	0.01	2.97E-04	335	1.00	0.73		
29	2043	0.01	2.97E-04	335	1.00	0.73		
30	2044	0.01	2.97E-04	335	1.00	0.73		

Health Risk Assessment Assumptions

700 Chronic Reference Exposure Level (ug/m3)	
22000 Acute Reference Exposure Level (ug/m3)	
Cancer Potency Slope Factor (cancer risk per mg/kg-day)	
350 days per year	
25,550 days per lifetime	
1,090 95th Percentile Daily Breathing Rates (L/kg-day)	0<2 Years
861 95th Percentile Daily Breathing Rates (L/kg-day)	2<9 Years
745 95th Percentile Daily Breathing Rates (L/kg-day)	2<16 Years
335 95th Percentile Daily Breathing Rates (L/kg-day)	16<30 Years
290 95th Percentile Daily Breathing Rates (L/kg-day)	30<70 Years
0.85 fraction of time at home	0<2 Years
0.72 fraction of time at home	2<16 Years
0.73 fraction of time at home	16<70 Years

Project: SRRQ Extension Application
 Date: December 4, 2020
 Condition: Operations (2015-2044)
 Receptor: Existing Residence
 Pollutant: Xylene
 Meteorological: VMP

Exposure Year	Calendar Year	Maximum 1-Hour Concentration (ug/m3)	Annual Concentration (ug/m3)	Daily Breathing Rates (L/kg-day)	Exposure Factor	fraction of time at home	Cancer Risk	
1	2015	0.02	4.00E-04	1,090	10.0	0.85		0.00 Maximum Annual PM2.5 Concentration (ug/m3) 0.8 Significance Threshold (ug/m3) No Significant?
2	2016	0.02	4.00E-04	1,090	10.0	0.85		
3	2017	0.02	4.00E-04	745	4.75	0.72		
4	2018	0.02	4.00E-04	745	3.00	0.72		0.00 Chronic Hazard Impact 10 Significance Threshold No Significant?
5	2019	0.02	4.00E-04	745	3.00	0.72		
6	2020	0.02	4.00E-04	745	3.00	0.72		
7	2021	0.02	4.00E-04	745	3.00	0.72		
8	2022	0.02	4.00E-04	745	3.00	0.72		0.00 Acute Hazard Impact 10 Significance Threshold No Significant?
9	2023	0.02	4.00E-04	745	3.00	0.72		
10	2024	0.02	4.00E-04	745	3.00	0.72		
11	2025	0.02	4.00E-04	745	3.00	0.72		
12	2026	0.02	4.00E-04	745	3.00	0.72		
13	2027	0.02	4.00E-04	745	3.00	0.72		
14	2028	0.02	4.00E-04	745	3.00	0.72		
15	2029	0.02	4.00E-04	745	3.00	0.72		
16	2030	0.02	4.00E-04	745	3.00	0.72		
17	2031	0.02	4.00E-04	335	1.70	0.73		Cancer Risk (Child) 100 Significance Threshold No Significant?
18	2032	0.02	4.00E-04	335	1.00	0.73		
19	2033	0.02	4.00E-04	335	1.00	0.73		
20	2034	0.02	4.00E-04	335	1.00	0.73		
21	2035	0.02	4.00E-04	335	1.00	0.73		
22	2036	0.02	4.00E-04	335	1.00	0.73		
23	2037	0.02	4.00E-04	335	1.00	0.73		
24	2038	0.02	4.00E-04	335	1.00	0.73		
25	2039	0.02	4.00E-04	335	1.00	0.73		
26	2040	0.02	4.00E-04	335	1.00	0.73		
27	2041	0.02	4.00E-04	335	1.00	0.73		
28	2042	0.02	4.00E-04	335	1.00	0.73		
29	2043	0.02	4.00E-04	335	1.00	0.73		
30	2044	0.02	4.00E-04	335	1.00	0.73		

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APPENDIX D

Noise Technical Report

San Rafael Rock Quarry CARP 10 Amendment Project

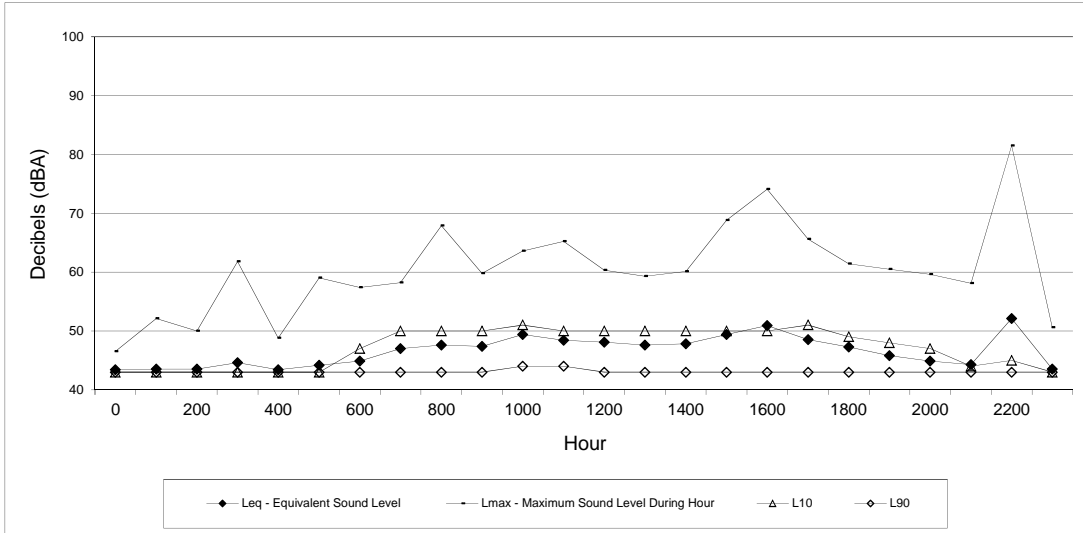
Noise Appendix

Updated Long Term Noise Measurement Graphs - Conducted September 2020

Previous Long Term Noise Measurement Graphs - Conducted October 2006
(From 2009 FEIR)

24-Hour Ldn dB Estimates (For Impact 4.7-3 and Brow Berm Noise Impacts)



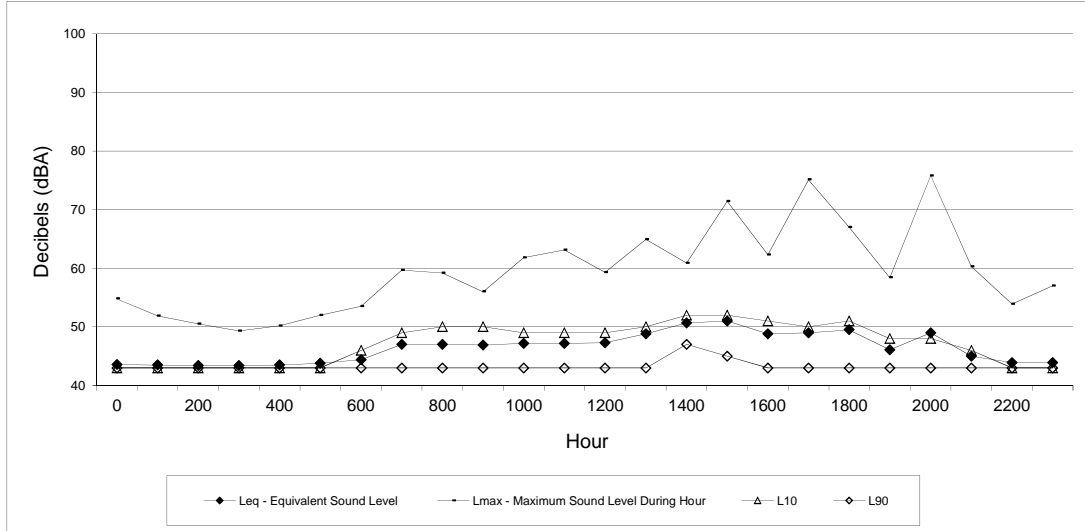


Site 1: On a Tree in Marin Bay Park Court - North of the SRRQ
 Tuesday September 15, 2020

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	43	47	43	43
100	44	52	43	43
200	44	50	43	43
300	45	62	43	43
400	43	49	43	43
500	44	59	43	43
600	45	57	47	43
700	47	58	50	43
800	48	68	50	43
900	47	60	50	43
1000	49	64	51	44
1100	48	65	50	44
1200	48	60	50	43
1300	48	59	50	43
1400	48	60	50	43
1500	49	69	50	43
1600	51	74	50	43
1700	49	66	51	43
1800	47	61	49	43
1900	46	61	48	43
2000	45	60	47	43
2100	44	58	44	43
2200	52	82	45	43
2300	44	51	43	43

CNEL 53

LDN 53

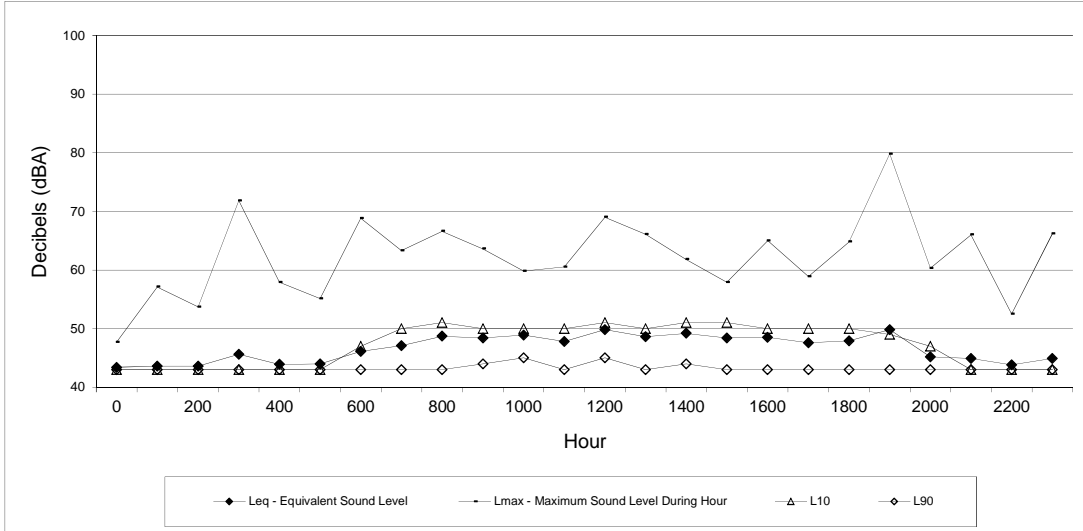


Site 1: On a Tree in Marin Bay Park Court - North of the SRRQ
Wednesday September 16, 2020

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During	L10	L90
0	44	55	43	43
100	44	52	43	43
200	43	51	43	43
300	43	49	43	43
400	44	50	43	43
500	44	52	43	43
600	44	54	46	43
700	47	60	49	43
800	47	59	50	43
900	47	56	50	43
1000	47	62	49	43
1100	47	63	49	43
1200	47	59	49	43
1300	49	65	50	43
1400	51	61	52	47
1500	51	71	52	45
1600	49	62	51	43
1700	49	75	50	43
1800	50	67	51	43
1900	46	58	48	43
2000	49	76	48	43
2100	45	60	46	43
2200	44	54	43	43
2300	44	57	43	43

CNEL: 52

LDN 51

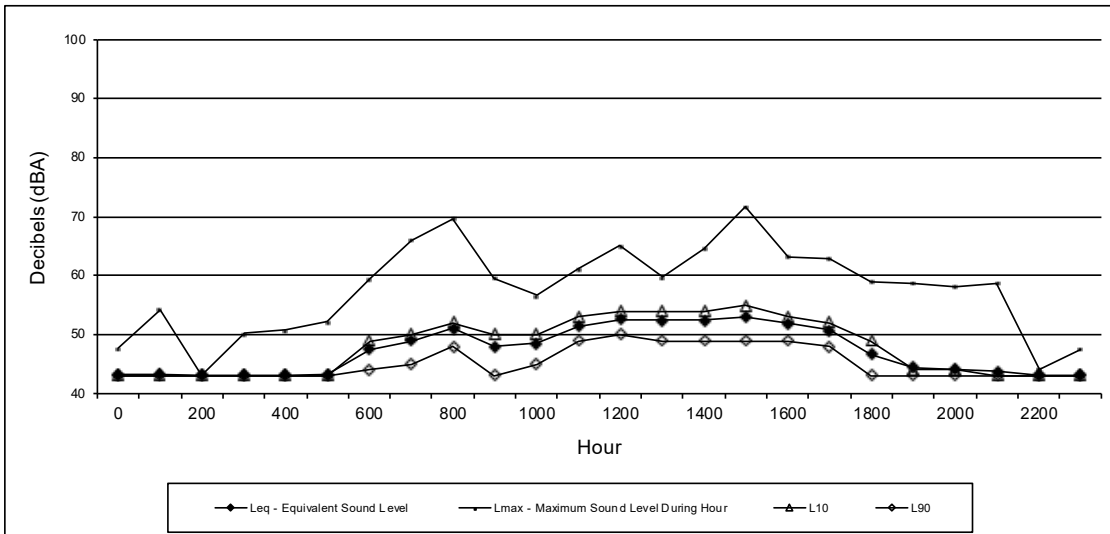


Site 1: On a Tree in Marin Bay Park Court - North of the SRRQ
Thursday September 17, 2020

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	43	48	43	43
100	44	57	43	43
200	44	54	43	43
300	46	72	43	43
400	44	58	43	43
500	44	55	43	43
600	46	69	47	43
700	47	63	50	43
800	49	67	51	43
900	48	64	50	44
1000	49	60	50	45
1100	48	61	50	43
1200	50	69	51	45
1300	49	66	50	43
1400	49	62	51	44
1500	48	58	51	43
1600	49	65	50	43
1700	48	59	50	43
1800	48	65	50	43
1900	50	80	49	43
2000	45	60	47	43
2100	45	66	43	43
2200	44	53	43	43
2300	45	66	43	43

CNEL: 52

LDN 52

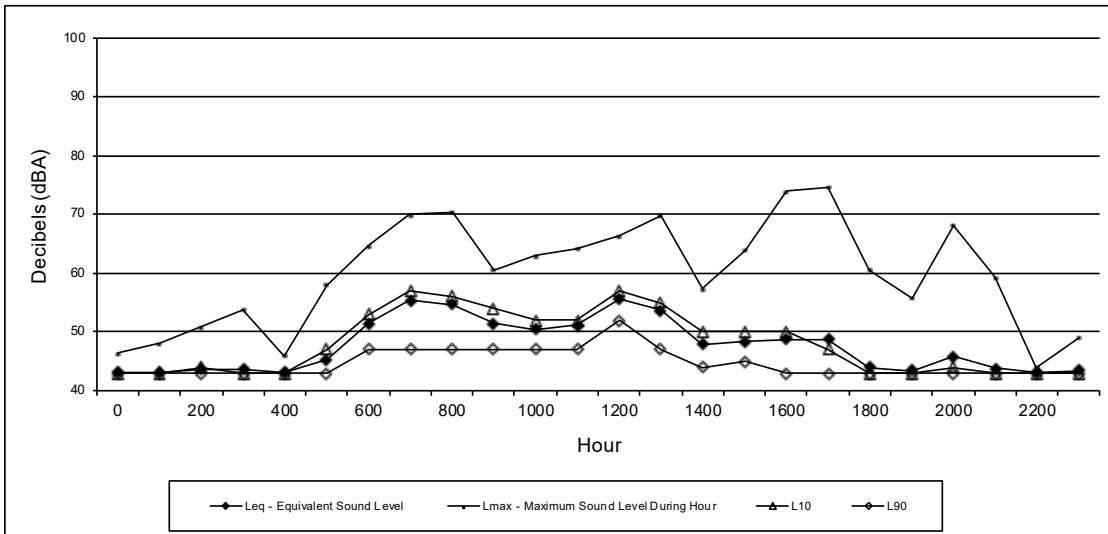


LT 1: 28 Marin Bay Park Court
Monday October 2, 2006

Hour	Leq - Equivalent Sound Level	Hour	L10	L90
0	43	48	43	43
100	43	54	43	43
200	43	43	43	43
300	43	50	43	43
400	43	51	43	43
500	43	52	43	43
600	48	59	49	44
700	49	66	50	45
800	51	70	52	48
900	48	60	50	43
1000	49	57	50	45
1100	52	61	53	49
1200	53	65	54	50
1300	52	60	54	49
1400	52	65	54	49
1500	53	72	55	49
1600	52	63	53	49
1700	51	63	52	48
1800	47	59	49	43
1900	45	59	44	43
2000	44	58	44	43
2100	44	59	43	43
2200	43	44	43	43
2300	43	48	43	43

CNEL 52

LDN: 52

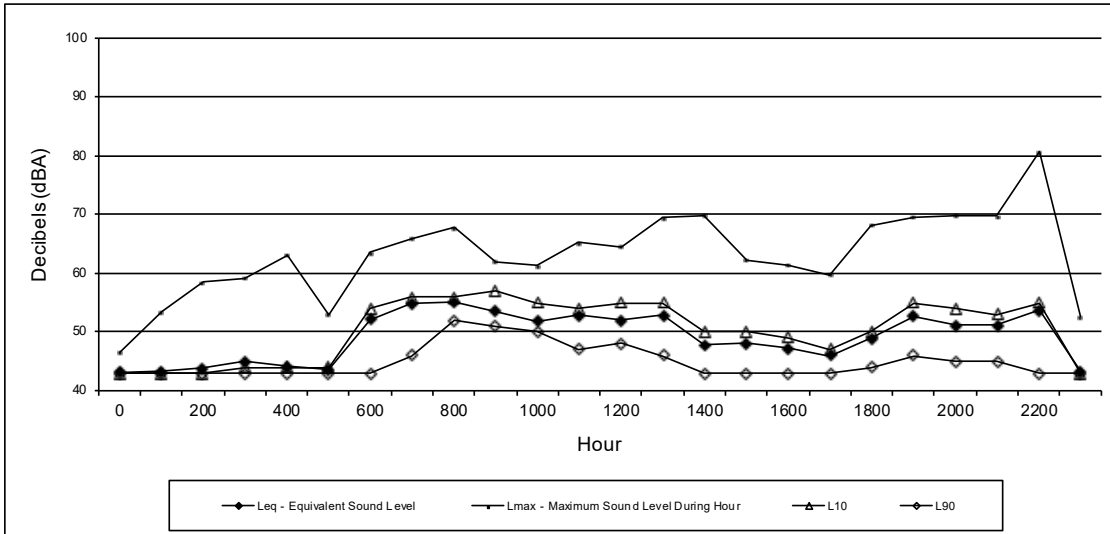


LT 1: 28 Marin Bay Park Court
Tuesday October 3, 2006

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	43	46	43	43
100	43	48	43	43
200	44	51	44	43
300	44	54	43	43
400	43	46	43	43
500	45	58	47	43
600	51	65	53	47
700	55	70	57	47
800	55	70	56	47
900	51	61	54	47
1000	51	63	52	47
1100	51	64	52	47
1200	56	66	57	52
1300	54	70	55	47
1400	48	57	50	44
1500	48	64	50	45
1600	49	74	50	43
1700	49	75	47	43
1800	44	61	43	43
1900	43	56	43	43
2000	46	68	44	43
2100	44	59	43	43
2200	43	44	43	43
2300	43	49	43	43

CNEL: 54

LDN: 53



LT 1: 28 Marin Bay Park Court
 Wednesday October 4, 2006

Hour	Leq - Equivalent Sound Level	Lmax - Maximum Sound Level During Hour	L10	L90
0	43	47	43	43
100	43	53	43	43
200	44	58	43	43
300	45	59	44	43
400	44	63	44	43
500	44	53	44	43
600	52	64	54	43
700	55	66	56	46
800	55	68	56	52
900	54	62	57	51
1000	52	61	55	50
1100	53	65	54	47
1200	52	65	55	48
1300	53	69	55	46
1400	48	70	50	43
1500	48	62	50	43
1600	47	61	49	43
1700	46	60	47	43
1800	49	68	50	44
1900	53	70	55	46
2000	51	70	54	45
2100	51	70	53	45
2200	54	81	55	43
2300	43	53	43	43

CNEL: 56

LDN: 55

24-Hour Ldn Modeling dB Estimates - Impact R4.7-3

	TIME	dB	Numbers...	More Numbers...			
Midnight	0 / 24	43.4	21878	218776	69183	Leq Morning Peak Hour 7:00-10:00 a.m.	
am	1:00	100	43.5	22387	223872	70795	59 dBA
	2:00	200	43.5	22387	223872	70795	
	3:00	300	44.6	28840	288403	91201	Leq Evening Peak Hour 4:00-8:00 p.m.
	4:00	400	43.4	21878	218776	69183	58 dBA
	5:00	500	44.2	26303	263027	83176	
	6:00	600	44.9	30903	309030	97724	Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
	7:00	700	47	50119	501187	158489	46 dBA
	8:00	800	61	1258925	12589254	3981072	
	9:00	900	61	1258925	12589254	3981072	Leq Daytime 7:00 am-10:00 p.m.
	10:00:AM	1000	61	1258925	12589254	3981072	59 dBA
	11:00:AM	1100	61	1258925	12589254	3981072	
	12:00:PM	1200	61	1258925	12589254	3981072	Leq 24-Hour
pm	1:00	1300	61	1258925	12589254	3981072	57 dBA
	2:00	1400	61	1258925	12589254	3981072	
	3:00	1500	61	1258925	12589254	3981072	Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
	4:00	1600	61	1258925	12589254	3981072	58 dBA
	5:00	1700	61	1258925	12589254	3981072	
	6:00	1800	47.3	53703	537032	169824	CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
	7:00	1900	45.8	38019	380189	120226	58 dBA and 10 dBA penalty for noise between
	8:00	2000	44.9	30903	309030	97724	10:00 p.m. and 7:00 a.m.
	9:00	2100	44.3	26915	269153	85114	
	10:00:PM	2200	52.1	162181	1621810	512861	
pm	11:00:PM	2300	43.5	22387	223872	70795	CNEL - Ldn = 0.05459767
							Low 43.4
							High 61

Note: At 400 feet from Marin Bay Park Court estimated noise levels from construction equipment from mixing of pond fines is 61 dB Lmax. The calculation above shows the 24-hour Ldn would be 58 dB if noise levels at 61 dB Lmax where to last from 8 a.m. – 5 p.m. (10 hours maximum per day).

24-Hour Ldn Modeling Estimates – Brow Berm Noise Impacts

	TIME	dB	Numbers...	More Numbers...			
Midnight	0 / 24	43.4	21878	218776	69183	Leq Morning Peak Hour 7:00-10:00 a.m.	
am	1:00	100	43.5	22387	223872	70795	56 dBA
	2:00	200	43.5	22387	223872	70795	
	3:00	300	44.6	28840	288403	91201	Leq Evening Peak Hour 4:00-8:00 p.m.
	4:00	400	43.4	21878	218776	69183	55 dBA
	5:00	500	44.2	26303	263027	83176	
	6:00	600	44.9	30903	309030	97724	Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
	7:00	700	47	50119	501187	158489	46 dBA
	8:00	800	58	630957	6309573	1995262	
	9:00	900	58	630957	6309573	1995262	Leq Daytime 7:00 am-10:00 p.m.
	10:00:AM	1000	58	630957	6309573	1995262	56 dBA
	11:00:AM	1100	58	630957	6309573	1995262	
	12:00:PM	1200	58	630957	6309573	1995262	Leq 24-Hour
pm	1:00	1300	58	630957	6309573	1995262	55 dBA
	2:00	1400	58	630957	6309573	1995262	
	3:00	1500	58	630957	6309573	1995262	Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
	4:00	1600	58	630957	6309573	1995262	56 dBA
	5:00	1700	58	630957	6309573	1995262	
	6:00	1800	47.3	53703	537032	169824	CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
	7:00	1900	45.8	38019	380189	120226	56 dBA and 10 dBA penalty for noise between
	8:00	2000	44.9	30903	309030	97724	10:00 p.m. and 7:00 a.m.
	9:00	2100	44.3	26915	269153	85114	
	10:00:PM	2200	52.1	162181	1621810	512861	
pm	11:00:PM	2300	43.5	22387	223872	70795	CNEL - Ldn = 0.08819876
							Low 43.4
							High 58

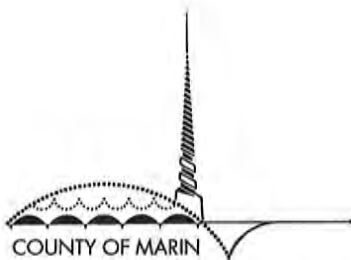
Note: At 1,000 feet from Marin Bay Park Court estimated noise levels from construction equipment from rolling over the brow berm is 58 dB Lmax. The calculation above shows the 24-hour Ldn would be 56 dB if noise levels at 58 dB Lmax where to last from 8 a.m. – 5 p.m. (10 hours maximum per day).

APPENDIX E

Tribal Consultation

San Rafael Rock Quarry Supplemental Environmental Review
Tribal Consultation pursuant to AB 52
Record of Native American Contacts

Native American Tribe	Native American Contact	Date of Contact	Type of Contact	Comments
lone Band of Miwok Indians	Sara D. Setshwaelo Cultural Committee Chair	12/22/2020	letter and cover email	Offer to consult. No response from the Tribe within 60 days.
Federated Indians of Graton Rancheria (FIGR)	Buffy McQuillen Tribal Heritage Preservation Officer (THPO)	12/22/2020	letter and cover email	Offer to consult. No response from the Tribe within 60 days.
FIGR	Buffy McQuillen, THPO	3/2/2021	email	Follow-up offer to consult
FIGR	Buffy McQuillen, THPO	3/9/2021	email	Response from Tribe requesting information on Project
FIGR	Buffy McQuillen, THPO	3/9/2021	email	Re-sent project-related written reports originally sent 12/22/20 with offer to consult
FIGR	Buffy McQuillen, THPO	3/30/2021	letter attached to email	Formal request to consult on the Project
FIGR	Buffy McQuillen, THPO; Gene Buvelot, Tribal Representative; Maureen Geary, Legal Counsel to the Tribe	5/6/2021	video conference	Consultation between Tribal representatives and legal counsel and County staff, consultants, and County Counsel. Tribe requested additional information on the Project
FIGR	Buffy McQuillen, THPO	5/6/2021	email	County re-sent Project information previously sent 12/22/2020 and 3/9/2021
FIGR	Buffy McQuillen, THPO	6/3/2021	email	County sent additional information requested by the Tribe in the consultation conference. County requested that the Tribe respond within two weeks (by 6/17/2021)
FIGR	n.a.	6/18/2021	n.a.	No further communications having been received from the Tribe, the County considered the consultation closed.



COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

December 22, 2020

Sara D. Setshwaelo
Cultural Committee Chair
P.O. Box 699
9252 Bush Street, Suite 2
Plymouth, CA 95669

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).


Dear Ms. Setshwaelo,

In accordance with Public Resources Code Section 21080.3.1 and the request from the Lone Band of Miwok Indians in the letter dated July 1, 2015, this is to notify you of a project proposed within the Unincorporated County of Marin for which the County will serve as the lead agency under the California Environmental Quality Act (CEQA). This notice has been sent via certified U.S. Mail.

Attached please find a description of the proposed project, a map showing the project location, and the name of the project point of contact. Please note that in accordance with Public Resources Code Section 21080.3.1, subd. (b), Lone Band of Miwok Indians has 30 days from receipt of this notice to request consultation.

Please feel free to contact me at (415) 473-7873 should you have any questions or if you would like to schedule a meeting. If you are interested in scheduling a meeting to discuss this project, following receipt of your response, we will send you a list of potential meeting dates and times.

Sincerely,

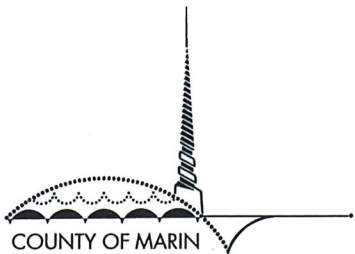

Tammy Taylor
Planner

cc: Berenice Davidson, Principal Civil Engineer
Alicia Stamps, Associate Civil Engineer

Attachment: Point of contact and project description including site maps

Point of Contact for the project:

Berenice Davidson
Principal Civil Engineer
County of Marin, Community Development Agency
3501 Civic Center Drive, Suite 304, San Rafael, CA 94903
Phone Number: (415) 473-3770
Email Address: bdavidson@marincounty.org



COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

December 22, 2020

Buffy McQuillen
Tribal Heritage Preservation Officer (THPO)
Native American Graves Protection and Repatriation Act (NAGPRA)
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Ms. McQuillen,

In accordance with Public Resources Code Section 21080.3.1 and the request from the Federated Indians of Graton Rancheria (FIGR) in the letter dated July 1, 2015, this is to notify you of a project proposed within the Unincorporated County of Marin for which the County will serve as the lead agency under the California Environmental Quality Act (CEQA). This notice has been sent via certified U.S. Mail.

Attached please find a description of the proposed project, a map showing the project location, and the name of the project point of contact. Please note that in accordance with Public Resources Code Section 21080.3.1, subd. (b) FIGR has 60 days from receipt of this notice to request consultation.

Please feel free to contact me at (415) 473-7873 should you have any questions or if you would like to schedule a meeting. If you are interested in scheduling a meeting to discuss this project, following receipt of your response, we will send you a list of potential meeting dates and times.

Sincerely,


Tammy Taylor
Planner

cc: Berenice Davidson, Principal Civil Engineer
Alicia Stamps, Associate Civil Engineer

Point of Contact for the project:

Berenice Davidson
Principal Civil Engineer
County of Marin, Community Development Agency
3501 Civic Center Drive, Suite 304, San Rafael, CA 94903
Phone Number: (415) 473-3770
Email Address: bdavidson@marincounty.org

Attachment:

1. Project Description including site maps
2. Cultural Resources Report dated 12/14/2020
3. Three Geotechnical Reports from 2013, 2018 and 2020



FEDERATED INDIANS OF
GRATON
R A N C H E R I A

Submitted via electronic e-mail: ttaylor@marincounty.org

March 30, 2021

RE: Formal Request for Tribal Consultation Pursuant to the California Environmental Quality Act (CEQA), Public Resources Code section 21080.3.1, subs. (b), (d) and (e) for the *San Rafael Rock Quarry Project in Marin County, CA*.

Dear Agency Representative:

This letter constitutes a formal request for tribal consultation under the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code section 21080.3.1 subdivisions (b), (d) and (e) for the mitigation of potential project impacts to tribal cultural resources for a project within the Federated Indians of Graton Rancheria's ancestral lands.

Receiving this letter sets forth the Tribe's formal request for consultation on the following topics checked below, which shall be included in consultation if requested (Public Resources Code section 21080.3.2, subd. (a)):

- Alternatives to the project
- Recommended mitigation measures
- Significant effects of the project

The Tribe also requests consultation on the following discretionary topics checked below (Public Resources Code section 21080.3.2, subd. (a)):

- Type of environmental review necessary
- Significance of tribal cultural resources, including any regulations, policies or standards used by your agency to determine significance of tribal cultural resources
- Significance of the project's impacts on tribal cultural resources
- Project alternatives and/or appropriate measures for preservation or mitigation that we may recommend, including, but not limited to:

- (1) Avoidance and preservation of the resources in place, pursuant to Public Resources Code section 21084.3, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks or other open space, to incorporate the resources with culturally appropriate protection and management criteria;
- (2) Treating the resources with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resources, including but not limited to the following:
 - a. Protecting the cultural character and integrity of the resource;



FEDERATED INDIANS OF
GRATON
RANCHERIA

- b. Protection the traditional use of the resource; and
 - c. Protecting the confidentiality of the resource.
- (3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- (4) Protecting the resource.

Additionally, the Tribe would like to receive any cultural resources assessments or other assessments that have been completed on all or part of the project's potential "area of project effect" (APE), including, but not limited to:

- (1) The results of any record search(es) conducted at an archaeological information center of the California Historical Resources Information System (CHRIS), including, but not limited to:
- (a) Any known cultural resources that have already been recorded on or adjacent to the potential APE;
 - (b) Whether the probability is low, moderate or high that cultural resources are located in the potential APE; and
 - (c) If a survey is required to determine whether previously unrecorded cultural resources are present in the potential APE.
- (2) The results of any archaeological inventory survey that was conducted of all or part of the potential APE, including, but not limited to:
- (a) Any report that may contain site forms, site significance, and suggested mitigation measures.
- (3) The results of any Sacred Lands File searches conducted through the Native American Heritage Commission for all or part of the potential APE;
- (4) Any ethnographic studies conducted for any area including all or part of the potential APE;
- (5) Any geotechnical reports regarding all or part of the potential APE; and
- (6) The administrative drafts of all environmental documents.

We would like to remind your agency that CEQA Guidelines section 15126.4, subdivision (b)(3) states that preservation in place is the preferred manner of mitigating impacts to archaeological sites. Section 15126.4, subd. (b)(3) of the CEQA Guidelines has been interpreted by the California Court of Appeal to mean that "feasible preservation in place must be adopted to mitigate impacts to historical resources of an archaeological nature unless the lead agency determines that another form of mitigation is available and provides superior mitigation of impacts." *Madera Oversight Coalition v. County of Madera* (2011) 199 Cal.App.4th 48,



FEDERATED INDIANS OF
GRATON
RANCHERIA

disapproved on other grounds, *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439.

The Tribe would like to begin consultation within 30 days of your receipt of this letter. Please contact my office at (707) 566-2288 or by email at bmcquillen@gratonrancheria.com as the person who will serve as the lead contact on behalf of the Tribe.

Sincerely,

Buffy McQuillen, THPO/NAGPRA
Federated Indians of Graton Rancheria

email Correspondence with FIGR

From: Reid, Rachel <rreid@marincounty.org>
Sent: Thursday, June 3, 2021 1:21 PM
To: Buffy McQuillen <BMcQuillen@gratonrancheria.com>; Maureen Geary <mgeary@jmandmplaw.com>
Cc: Taylor, Tammy <TTaylor@marincounty.org>; Brady, Jenna <JBrady@marincounty.org>
Subject: Re: Follow up: San Rafael Rock Quarry AB52 consultation

Hello Buffy and Maureen,

I'm following up on our AB 52 consultation that we had with you on May 6. (Please see prior email below for summary background, along with titles and dates of previously provided project documentation). As you requested at our May 6 consultation, I'm now sending you (attached) the administrative draft environmental checklist for the Addendum to the 2009 Final EIR for the San Rafael Rock Quarry Projects, which our EIR consultant just completed. Please note that this is an administrative draft and not intended for public viewing.

Given that we do not want to further delay our environmental review process, we appreciate your timely review and consideration. To conclude the AB 52 consultation, please provide us any written comments within two weeks, by June 17, 2021. If you would like us to resend any of the project documentation noted in my earlier email, please let Tammy Taylor (copied here) know. Tammy originally emailed you those documents along with the AB 52 notification letter back in December 2020.

Regards,
Rachel

Rachel Reid (formerly Warner)

ENVIRONMENTAL PLANNING MANAGER

County of Marin
Community Development Agency
3501 Civic Center Drive, Suite 308
San Rafael, CA 94903
415 473 6863 T
415 473 7880 F
CRS Dial 711
rreid@marincounty.org

From: Reid, Rachel <rreid@marincounty.org>
Sent: Thursday, May 6, 2021 1:17 PM
To: Buffy McQuillen <BMcQuillen@gratonrancheria.com>; Maureen Geary <mgeary@jmandmplaw.com>;

GBuvelot@gratonrancheria.com <GBuvelot@gratonrancheria.com>

Cc: Taylor, Tammy <TTaylor@marincounty.org>; Davidson, Berenice <BDavidson@marincounty.org>; Stamps, Alicia <astamps@marincounty.org>; Brady, Jenna <JBrady@marincounty.org>; Dan Sicular <dan@sicularconsulting.com>; Brenna Wheelis <bwheelis@paleowest.com>; aestes@paleowest.com <aestes@paleowest.com>

Subject: Follow up: San Rafael Rock Quarry AB52 consultation

Hello Buffy, Gene and Maureen,

Thank you for meeting with us today on the AB 52 consultation for the San Rafael Rock Quarry Project. I will be coordinating with Jenna (County Counsel) regarding further draft CEQA documentation that we'll be able to provide you with. Meanwhile, since you expressed interest in learning more about the project, I wanted to resend you the initial AB 52 notification email from Tammy to you (Dec. 22, 2020, along with our iterative outreach attempts), that contained these key attachments, pursuant to the requirements of AB 52:

- Marin County's formal AB 52 notification letter (Dec. 22, 2020),
- Paleowest's Cultural Resource Assessment (Dec. 14, 2020), and
- The 31-page San Rafael Rock Quarry Project Description chapter from the current draft environmental checklist

Additionally, as part of that Dec 2020 email below, Tammy also sent you three more recent geotech reports, as well as a link to our Marin County Department of Public Works webpage on the San Rafael Rock Quarry, which provides a large number of background documents, including the 2009 Final EIR, which we discussed today. I will resend those geotech reports, in a separate email.

Collectively, all of this project documentation previously provided was meant to inform our AB 52 notification today. I assume that you will find it quite helpful for your review and consideration.

Again, I will be in touch.

Best,
Rachel

Rachel Reid (formerly Warner)

ENVIRONMENTAL PLANNING MANAGER

County of Marin
Community Development Agency
3501 Civic Center Drive, Suite 308
San Rafael, CA 94903
415 473 6863 T
415 473 7880 F
CRS Dial 711
rreid@marincounty.org

From: Taylor, Tammy
Sent: Tuesday, March 9, 2021 2:57 PM
To: Buffy McQuillen <BMcQuillen@gratonrancheria.com>
Cc: THPO@gratonrancheria.com
Subject: RE: San Rafael Rock Quarry AB52 invitation to consult

Hi Buffy,

I just re-sent the emails that I sent you in December, just in case. If you are interested in consulting on this project, please let me know.

Thank you,

Tammy

From: THPO@gratonrancheria.com <THPO@gratonrancheria.com>
Sent: Tuesday, March 09, 2021 12:29 PM
To: Taylor, Tammy <TTaylor@marincounty.org>; THPO@gratonrancheria.com
Subject: RE: San Rafael Rock Quarry AB52 invitation to consult

Hi Tammy, I'm not familiar with the project. I would need to review it and research the project.

Buffy

Sincerely,
Buffy McQuillen, Tribal Heritage Preservation Officer (THPO)
Native American Graves Protection and Repatriation Representative (NAGPRA)
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928
Mobile – (707) 318-0485
Office – (707) 566-2288

Federated Indians of Graton Rancheria: Proprietary and Confidentiality Notice: This transmittal is a confidential communication or may otherwise be privileged. If you are not the intended recipient you are hereby notified that you have received this transmittal in error and that any review, dissemination, distribution or copying of this transmittal is strictly prohibited. If you have received this communication in error, please notify this office and immediately delete this message and all its attachments if any.

From: Taylor, Tammy <TTaylor@marincounty.org>
Sent: Tuesday, March 2, 2021 3:40 PM
To: THPO@gratonrancheria.com; Buffy McQuillen <BMcQuillen@gratonrancheria.com>
Subject: RE: San Rafael Rock Quarry AB52 invitation to consult

Hi Buffy,

I just wanted to follow up to ask if the Federated Indians of Graton Rancheria would like to consult with the County on the San Rafael Rock Quarry environmental review? I sent you the notification letter in December 2020. If you do wish to consult, please let me know by this Friday, March 5th, 2021. If I do not hear from you, I will assume that the AB52 notification and consultation is closed. I appreciate your response.

Thank you,

Tammy Taylor
PLANNER

County of Marin
Community Development Agency

3501 Civic Center Drive, Suite 308
San Rafael, CA 94903
415 473 7873 T
415 473 7880 F
CRS Dial 711
ttaylor@marincounty.org

From: Taylor, Tammy
Sent: Tuesday, December 22, 2020 2:57 PM
To: THPO@gratonrancheria.com; 'Buffy McQuillen' <BMcQuillen@gratonrancheria.com>
Subject: San Rafael Rock Quarry AB52 invitation to consult

Hi Buffy,

Please review the attached letter and accompanying project information for the San Rafael Rock Quarry project, which is undergoing environmental review, possibly leading to an addendum to a previous environmental impact report. The previous environmental impact report predates AB52. Thus, if you'd like to review the previous environmental documents, they are available on the Public Works webpage for the project:

<https://www.marincounty.org/depts/pw/divisions/projects/land-use/quarry>

Moreover, to save time, I am also preemptively sending you the archaeological report and three of the more recent geotechnical reports for the site (due to the file size limitations, I will send a subsequent email with the geotechnical reports). If you would like to set up a consultation with County staff and potentially the environmental consulting team who will be assessing the archaeological/cultural resources for the project, I would be happy to do so. Please let me know of your interest and I will coordinate a meeting in the new year.

Thank you,

Tammy Taylor
PLANNER

County of Marin
Community Development Agency
3501 Civic Center Drive, Suite 308
San Rafael, CA 94903
415 473 7873 T
415 473 7880 F
CRS Dial 711
ttaylor@marincounty.org

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>

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