APPENDIX A

TABLE 2.4 SUMMARY OF ENVIRONMENTAL COMMITMENTS

Summary of Environmental Commitments (Mitigation Measures, etc.) for the American River Watershed, California Folsom Dam Raise Project. These are incorporated from the 2007 EIS/EIR (Table 2-2, page 2-37) and the 2017 SEIS/EIR (Table ES-2, page E-17) with revisions to include updated regulations, information, and designs therefore, these Mitigation Measures supersede previous versions (2022 Final SEIS/EIR, Appendix A).

ID #	DESCRIPTION
	RECREATION
R-1	Public outreach will be conducted through mailings, posting conspicuous signs, coordination with interested groups, and meetings, if necessary, in order to provide information regarding changes to recreational access in and around Folsom Lake. The detours, traffic control measures, access restrictions, increased signage, increased education, and public outreach will help mitigate effects to recreational users of the FLSRA.
R-2	The Project will require to: (1) Utilization of traffic control measures, security fencing and/or temporary alternate public access detours for pedestrian, equestrian, bicycle and vehicular traffic; (2) Posting of warning and restricted access signs before and during construction as necessary.
R-3	Prior to concrete floodwall construction at Dikes 4, 5, and 6, a temporary detour trail will be established to help mitigate the temporary loss of the existing trail/roadway that runs along the crest of the dikes. This detour trail will largely make use of an existing trail that will be repaired/modified, as necessary, prior to its usage as the detour route.
R-4	A permanent road will be built to serve as the entry to the Granite Bay Main Beach parking lot prior to closing the existing entry road for Project construction purposes.
R-5	The raising of the access road to the Granite Bay Horse Assembly Area will be prioritized for rapid completion to minimize the time this access road must be closed for Project construction
R-6	Prior to the construction of the Dike 5 access, a temporary detour trail will be established west of the currently existing trail.
R-7	To help prevent large rocks or similar objects from possibly rolling into the Beal's Point RV Campground during the raising of Dike 6, concrete Jersey barriers (K-rails) will be installed adjacent to the east side of this campground. These barriers will be removed once the dike raise has been completed.
R-8	Haul trucks and other large construction equipment frequency will be reduced for the Douglas Blvd. and Folsom Point Road entrances during times of the year and times of day when recreational usage is at a maximum. Project construction traffic will not use the main public entrance to the Beal's Point recreation area except for special circumstances (ex. emergency access, hauling equipment that cannot access the Project sites by the main construction access roads, etc.). Any use of the main public entrances cited will be coordinated with State Parks Folsom Sector Superintendent.
R-9	Existing FLSRA recreation facilities that are adversely altered or damaged because of Project construction work will be returned to their pre-construction condition near the end of construction.
R-10	Paved roads and parking areas damaged during Project construction will be appropriately repaired; however, such repairs will be limited to damages that can be documented as being a direct result of Project construction activities rather than damages caused by other sources.
R-11	For water pumped from Folsom Lake for construction, buoys will be required to prevent the public from being within 20 feet of the pump intakes and will secure pumps using minimum 6-foot-high chain-link fencing.

ID #	DESCRIPTION
	VEGETATION AND WILDLIFE
VW-1	To minimize dust impacts to vegetation, wetlands, and wildlife, dust control measures consistent with SMAQMD fugitive dust control measures will be implemented.
VW-2	The vehicles and equipment are required to be thoroughly cleaned before first entering the Project site to prevent importation of invasive plants and animals.
VW-3	For each phase of the Project, the USACE will prepare final construction plans that will include drawings identifying habitat areas, including wetlands, that must be protected and specifying the methods of protection (e.g., installation of fencing or similar physical barriers, posting of signs, etc.). These plans will also illustrate and/or describe those areas/lands near the Project features that are outside the limits of construction (and thus are protected from direct construction impacts). The final construction plans will be accompanied by written Project specifications further detailing the habitat protection requirements, as well as general requirements concerning the protection of vegetation and wildlife.
VW-4	Native trees and shrubs having a DBH of 2 inches or greater located within the limits of construction of a particular Project phase will be preserved to the extent practicable. Protective buffers (e.g., temporary fencing) will be required around the driplines of those trees and shrubs to be preserved that are located within the limits of construction. Native trees and shrubs located outside the limits of construction will be preserved. Protective buffers will also be erected along the limits of construction where these limits are near the adjacent trees and shrubs to be preserved. Any required trimming of native trees or shrubs will be conducted by, or under the direct supervision of a certified arborist
VW-5	USACE has determined that approximately 9 acres of oak woodland habitat will be eliminated as a result of construction activities. The minimum ratio of the acres of each type to be restored or created per acre of each type lost will be 1.2:1. The mitigation ratio for oak plantings at MIAD West will be 1:1. The mitigation goal will be to create or restore habitat where the density of canopy tree species and midstory woody species is approximately the same as the average density of canopy tree species and midstory woody species found in the impacted habitats. The ground cover stratum will be restored through the planting of various native grasses and forbs, while the species composition of the midstory and canopy strata will strive to mimic that of the affected habitats. The restored areas will be managed and monitored for 5 years, although this period could be reduced to 4 years if success criteria are achieved by that time. The mitigation site(s) and overall mitigation plan will be selected in coordination with USFWS, DWR, SAFCA, Reclamation, and State Parks.
VW-7	All construction personnel will undergo environmental protection training to be aware of all required environmental protections (bird, wildlife, and vegetation/habitat protection) per the final construction plans and specifications, as well as those required by applicable federal and state laws.
VW-8	Food-related wastes must be placed in self-closing trash containers to keep wildlife away from construction areas.

ID #	DESCRIPTION
VW-9	After completing construction activities within a given phase of the Project, disturbed portions of the staging areas used for the Project phase will be restored. One exception to this generalization will be in cases where a particular staging area is also going to be used for a subsequent Project phase. In such cases, the shared staging area will not be restored until the final Project phase to use the staging area is completed. Another exception will be for staging areas, or portions thereof, that encompass permanent man-made features. Such areas will not be restored. Restoration of staging areas will first involve restoring pre-construction topography to the degree practicable. Next, a mixture of native grass and forb seeds will be planted throughout disturbed portions of staging areas to establish a permanent vegetative groundcover. The planted areas will be periodically monitored until the average ground cover accounted for by native grasses and forbs reaches approximately 75 percent.
VW-10	Revegetated areas will be monitored for invasive plant species during the construction contract warranty period of a given Project phase. The term invasive plant species refers to those plants listed in the California Invasive Plant Inventory database generated by the California Invasive Plant Council and having an invasive rating of "high" or "moderate". If it is determined invasive plants are becoming established, such plants will be eradicated through directed herbicide applications, physical removal, or both. The goal will be to control invasive plant species such that they account for 5 percent or less of the average total plant cover.
VW-11	Prior to initiating construction of a given Project phase, the Project will assess drainage depressions, channels, and ditches present at the Project site to determine whether any such features provide water to wetlands. The Project will also delineate the approximate limits of jurisdictional wetlands located within or immediately adjacent to the Project's limits of construction. USACE will be required to maintain flows in those drainage features that are found to provide water to wetlands.
VW-12	Once the Park Road detour road segment (an element of the Project phase that includes Dikes 1, 2, and 3) is no longer needed for the Project, this road segment will be removed. Topography altered by construction of the road will be restored to approximately match pre-construction topography and natural areas disturbed by road construction will be planted with native grasses and forbs.
VW-13	Minimize or avoid the effects of nighttime lighting on wildlife species by implementing the following actions: 1) Avoiding construction activities at night, to the maximum extent practicable. 2) Using the minimal amount of lighting necessary to safely and effectively illuminate the work areas. 3) Shielding and focusing lights on work areas and away from the water surface of Folsom Lake and the American River to the maximum extent practicable. 4) Temporary and permanent lighting will have correlated color temperatures and under 3000K to minimize disturbance to wildlife at night. 5) A qualified biologist will monitor the work area at appropriate intervals to assure that all avoidance and minimization measures are implemented.
SPECIAL STATUS SPECIES (LISTED SPECIES)	
LS-1	As Project design plans are developed and refined, to the degree practicable, the limits of construction will be adjusted to avoid removal of existing native trees and large shrubs (with a DBH of 1 inch or greater) and elderberry shrubs (having one or more stems measuring 1 inch or greater in diameter at ground level).

ID #	DESCRIPTION
LS-2	Prior to starting construction activities for the Project, a qualified biologist will survey areas within approximately 1,000 feet of the areas slated for construction in the given phase to determine whether any bald eagle nests are present. The typical maximum buffer distance between a bald eagle nest and construction activities is 660 feet (USFWS, 2007). If any bald eagle nests are discovered during the field surveys, regardless of whether a nest is classified as active, inactive/alternate, or abandoned, the Project will coordinate with USFWS Migratory Bird Office staff and CDFW staff to determine measures necessary to avoid, minimize, or mitigate potential adverse construction impacts to bald eagles. Any such measures necessary will be implemented. Such measures could include not conducting Project construction work within 660 feet of an active bald eagle nest or monitoring behavior of eagles tending an active or alternate nest for signs of stress and potential nest abandonment during the nesting season.
LS-3	Prior to beginning construction for the Project, qualified biologists will survey within 1,000 feet of the areas slated for construction in the given phase for loggerhead shrikes, white-tailed kites, and peregrine falcon to determine if the species is present. If any active nests (typically March 1 through August 31) are discovered during the field surveys the Project will coordinate with CDFW staff to determine measures necessary to avoid, minimize, or mitigate potential adverse construction impacts. A qualified biologist would also survey areas within a 0.5-mile radius (2,640-foot radius) of construction areas to determine if Swainson's hawk nests are present. Swainson's hawk surveys will be completed in compliance with the CDFW survey guidance (Swainson's hawk Technical Advisory Committee, 2000). Implementation of the CDFW survey guidance is inclusive of the avoidance of Swainson's hawk under MBTA. Other migratory bird nest surveys can be conducted concurrent with the Swainson's hawk surveys, with at least one survey conducted no more than 48 hours from the initiation of Project construction activities to confirm the absence of nesting. If the area surveyed does not contain any active nests, construction activities will commence without any further mitigation. If these surveys find there are active nests present within the defined areas, CDFW will be contacted to determine the proper course of action. If necessary, buffers will be established around active nests with no construction allowed within the buffer zones until fledglings have left the nests. An alternative approach might involve monitoring active nests near Project construction areas for signs of stress exhibited by the adult birds, which could lead to nest abandonment.

ID #	DESCRIPTION
LS-4	Prior to initiating construction activities for the Proposed Project, qualified biologists will conduct surveys for migratory bird nests situated within the limits of construction as well as such nests located within approximately 250 feet of these limits. If the initial surveys do not take place during the migratory bird nesting season (typically March 1 through August 31), then qualified biologists will again conduct surveys for migratory bird nests at the beginning of the nesting season in a manner similar to that discussed above. If inactive nests are found (e.g., nests that do not contain eggs or chicks), these will be removed to help prevent birds from re-using the nests. If active nests are found, the protocol described below will be followed: (1) If active migratory bird nests are discovered within the Project limits of constructions, buffer areas will typically be established around each nest and construction activities within the buffer(s) will be prohibited until the young occupying the nests have fledged. The Project will coordinate with USFWS staff and CDFW staff to determine the appropriate size of such nest buffer zones. Similarly, if active migratory bird nests are documented within approximately 250 feet of the Project's limits of construction, buffer areas will also be established around these nests as well; (2) If it is not practicable for Project construction activities to avoid direct impacts to active migratory bird nests. The Project will obtain a Special Purpose Permit (Migratory Bird Permit) from USFWS in such cases prior to impacting the active nests. This permit will authorize live-trapping and relocation of the affected active nests and the eggs or chicks occupying the nests. Chicks and/or viable eggs collected by qualified biologists pursuant to the permit will typically be taken to a wildlife care/rehabilitation facility.
LS-5	The construction contractor will be required to report any active or inactive migratory bird nests to the USACE within 24 hours of discovery of such nests.
LS-6	Prior to construction of a particular Project phase, the Project will perform field surveys to locate elderberry shrubs having one or more stems measuring 1.0 inch or greater in diameter at ground level that are within or near the Project phase's limits of construction.
LS-7	Construction personnel will receive USFWS-approved worker environmental awareness training to ensure that workers recognize elderberry shrubs and the VELB. The training will include: the protected status of VELBs and their host plants, elderberry shrubs; the need to avoid adversely affecting elderberry shrubs; elderberry shrub avoidance areas (protective buffers/exclusion zones); measures to be taken by workers during construction to protect elderberry shrubs; possible penalties that could be imposed for not complying with requirements established for the protection of elderberry shrubs and the VELB; and key USACE contacts and key contacts with the construction contractor pertaining to environmental issues.

ID #	DESCRIPTION
LS-8	Where practicable, a minimum setback (buffer) of 100 feet from the dripline of all elderberry shrubs containing stems measuring 1.0 inch or greater in diameter at ground level will be established. There may be instances where a 100-foot buffer is not practicable due to various constraints. In such cases, a buffer of at least 20 feet from the dripline of such elderberry shrubs will be established if feasible. The USACE will consult with USFWS prior to establishing any elderberry shrub buffer zones (setbacks) that extend less than 100 feet from the dripline of a particular shrub. Such buffer zones will not be established without first obtaining approval from USFWS. Prior to Project construction, for activities near elderberry shrubs that will be preserved as part of the Project, protective barriers will be installed along the limits (boundaries) of approved elderberry shrub buffer zones (exclusion areas). These barriers will typically be orange-mesh fencing but could also include other barriers such as wooden fencing, staked ropes with flagging, or K-rails (Jersey barriers). The protective barriers will be maintained throughout the duration of Project construction and/or restoration activities. No construction activities or similar disturbances will be allowed within the elderberry shrub buffer zones unless approved in advance by the USACE and USFWS. In situations where elderberry shrubs to be preserved are located more than 100 feet from the project's limits of construction, protective barriers may not be installed if existing landscape conditions are such that inadvertent damage to the shrubs during construction is unlikely. Signs will be placed approximately every 50 feet along the edge of the fenced elderberry shrub buffer zones (i.e., along the protective barriers discussed above). The signs will include the text: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs will be readable from 20 feet and will be maintained during Project construction.
LS-9	Any damage done within elderberry shrub buffer zones during Project construction will be remediated shortly following the discovery of such damage. Remediation work may include installing erosion control measures, seeding disturbed areas with appropriate native plant seeds, etc.
LS-10	No insecticides, herbicides, fertilizers, or other chemicals that might harm the VELB or its host plant will be used in elderberry shrub buffer zones, or within 100 feet of any elderberry shrub with one or more stems measuring 1.0 inch or greater in diameter at ground level.
LS-11	If mowing of vegetation is deemed necessary to reduce fire hazard, such mowing may be performed within elderberry shrub buffer zones but only during the period from August through February when adults are not active. No mowing will be allowed within 5 feet of elderberry shrub stems, and all mowing will be done in a manner that avoids damaging elderberry plants.

ID #	DESCRIPTION
LS-12	If direct construction impacts to elderberry shrubs (limited to those having at least 1 stem with a diameter of at least 1 inch as measured at ground level) are unavoidable, USACE will purchase an appropriate number of credits from a USFWS-approved conservation bank within the service area. The determination of the number of conservation credits required will be based on methodologies prescribed in the USFWS conservation guidelines for VELB (USFWS, 1999) and direct coordination with USFWS staff. USACE will also contract with the same conservation bank from which the conservation credits are purchased to transplant the affected elderberry shrub(s) from the Project site to the conservation bank. The affected shrubs will be transplanted when the plants are dormant (roughly November through the first 2 weeks in February) if feasible. The transplanting will be required to follow the procedure set forth in the VELB Guidelines and USACE staff will monitor the removal of the shrubs from the Project site.
LS-13	The process for evaluating the potential impacts to VELB in a given Project phase will be as follows: (1) Designate elderberry shrubs that will be preserved and the protective buffers associated with each of those shrubs; (2) Designate shrubs that will have to be removed/transplanted, and determine the number of conservation credits that will have to be purchased to compensate for those shrubs that must be transplanted; (3) Submit a request for reinitation of Endangered Species Act Section 7 consultation to USFWS that contains seeks concurrence with the USACE effects determination and the USACE proposed avoidance, minimization, and compensatory mitigation measures, (4) Proceed with construction following receipt of the USFWS's Biological Opinion (e.g. amendment to Service File 08ESMF00-2017-F-0043).
LS-14	During Project construction and/or restoration activities that involve earthwork, measures will be employed to suppress generation of dust. Such measures will include frequent watering of Project haul roads, earthen stockpile areas, and similar exposed soil surfaces.

ID #	DESCRIPTION
LS-15	Wherever feasible, construction activities will be conducted outside of the pupping season for bats (generally April 1 to August 31). If removal of trees must occur during the bat pupping season, within 30 days of tree removal activities, all trees to be removed will be surveyed by a biological monitor for the presence of features that may function as special status bat maternity roosting habitat. Trees that do not contain potential special status maternity roosting habitat may be removed. For trees that contain suitable special status bat maternity roosting habitat, surveys for active maternity roosts shall be conducted by a qualified biologist in trees designated for removal. The surveys shall be conducted from dusk until dark. If a special-status bat maternity roost is located, appropriate buffers around the roost sites shall be determined by a qualified biologist and implemented to avoid destruction or abandonment of the roost resulting from tree removal or other Project activities. The buffer area must be a minimum of 100 feet from the tree containing the maternity roost. No Project activity shall commence within the buffer areas until the end of the pupping season (September 1) or until a qualified biologist confirms the maternity roost is no longer active. If construction activities must occur within the buffer, a qualified biologist will monitor activities either continuously or periodically during the work, as determined by the qualified biologist. The qualified biologist will be empowered to stop activities that, in the biologist's opinion, threaten to cause unanticipated adverse effects on specials status bats. If construction activities are stopped, CDFW will be consulted to determine appropriate measures to implement to avoid adverse effects. For trees containing cavities, cracks, crevices, or deep bark fissures that are planned for removal or trimming (irrespective of time of year), such trees must be trimmed and/or removed in a two-phase removal system conducted over two consecutive days. The first day (in the afternoon), limbs and branches will be removed, using chainsaws only. Removal activities must avoid limbs with cavities, cracks, crevices, or deep bark fissures, and remove only branches and limbs without those features. On the second day, the entire tree will be removed. A qualified biologist will monitor removal of these trees. If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features should be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree and left undisturbed for the next 48 hours. If the vegetation cannot be left for 48 hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48 hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal). Standing dead trees or snags with habitat features should be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag should be left undisturbed on the site for the next 48 hours. Removal and trimming of trees with potential roosting habitat, irrespective of time of year, shall be conducted in the presence of a biological monitor. If trimming results in the removal of vegetation that contains potential bat habitat, vegetation should be gently lowered to the ground and left near the tree for 48 hours prior to removal, if feasible. If the vegetation cannot be left for 48 hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48 hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal).
AIR QUALITY	

ID #	DESCRIPTION
AQ-1	The Project construction will be required to adhere to these requirements when a given Project phase will involve the disturbance of lands that may harbor NOA. Submit an Asbestos Dust Mitigation Plan that conforms to requirements set forth in the State of California's Asbestos Airborne Toxic Control Measures (Asbestos ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations to the AQMD of Sacramento, Placer, and El Dorado Counties with required fees. The Plan will specify dust mitigation practices sufficient to ensure that no equipment or operation emits dust that is visible crossing the Project boundary line. Construction will not commence until the Asbestos Dust Mitigation Plan is approved. The Project will then implement the approved ADMP in areas where Project construction will involve disturbing lands that may harbor naturally occurring asbestos. The Project will conduct cleanup of carryout and track-out by the following methods: (1) Remove any visible track-out from a paved public road wherever vehicles exit the work site with a wet sweeper, or a HEPA filter equipped vacuum device at least one time per day; or flush with water, if curbs or gutters are not present, and where the use of water will not result in a source of track out material or result in adverse impacts on storm water drainage systems or violate any NPDES permit program. Use of blower devices, or dry rotary brushes or brooms for removal of carryout and track out on public roads will be prohibited. (2) Install one or more of the following track-out prevention measures: A gravel pad designed using good engineering practices to clean the tires of exiting vehicles; A tire shaker; A wheel wash system; Pavement extending for not less than fifty consecutive feet from the intersection with the paved public road; or any other measure as effective as the measures listed above. Keep active storage piles adequately wetted or covered with tarps. Control for disturbed surface areas and storage piles that will remain inactive for more than seven days, which will include one or more of the following: (1) Keep the surface adequately wetted; (2) Establish and maintain surface crusting; (3) Apply non-toxic, biodegradable dust suppressants or stabilizers according to the manufacturer's recommendations; (4) Cover with tarp or vegetative cover; (5) Install wind barriers of fifty percent porosity around three sides of a storage pile; (6) Install wind barriers across open areas; or (7) Take other measures as effective as the measures listed above. Control for traffic on on-site roads, parking lots, and staging areas which will include: (1) A maximum vehicle speed limit of 15 miles per hour or less; and (2) One or more of the following: Watering every two hours of active operations or sufficiently often to keep the area adequately wetted; Apply non-toxic, biodegradable dust suppressants consistent with manufacturer's directions; Maintain a gravel cover with a silt content that is less than 5 percent and asbestos content that is less than 0.25 percent, as determined using an approved asbestos bulk test method, to a depth of 3 inches on the surface being used for travel; or Any other measure as effective as the measures listed above. Control for earthmoving activities that will include one or more of the following: (1) Pre-wetting the ground to the depth of anticipated cuts; (2) Suspension of grading operation when wind speeds are high enough to result in dust emissions crossing the property lines, despite the application of dust mitigation measures; (3) Application of water prior to any lands clearing; or (4) Any other measure as effective as the measures listed above. Control for off-site transport. No truck will be allowed to transport excavated material off-site unless: (1) Trucks are maintained such that no spillage will occur from holes or other opening sin cargo compartments; and (2) Loads are adequately wetted and either (3) Covered with tarps; or (4) Loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than six inches from the top and that no point of the load extends above the top of the cargo compartment. Post construction stabilization of disturbed areas. Upon completion of the Project, disturbed surfaces will be stabilized using one or more of the following methods; (1) Establishment of a vegetative cover; (2) Placement of at least one foot of non-asbestos-containing material; (3) Paving; (4) Any other measure deemed sufficient to prevent wind speeds of ten miles per hour or greater from causing visible dust emissions.

ID #	DESCRIPTION
AQ-2	The Project will be required to implement the fugitive dust mitigation measures listed below (in addition to the asbestos mitigation measures previously mentioned): Limit vehicle speeds on unpaved roads to 15 miles per hour. Water at least every 2 hours of active construction activities or sufficiently often to keep disturbed areas adequately wet. Remove all visible track-out from a paved public road at any location where vehicles exit the work site. This will typically be accomplished using wet sweeping by a HEPA filter-equipped vacuum device on a daily basis. Install one or more of the following track-out prevention measures: (1) A gravel pad to clean the tires of exiting vehicles. (2) A tire shaker. (3) A wheel wash system (4) Pavement extending at least 50 feet from the intersection with the paved public road, or (5) Any other measure(s) as effect as the measures listed above. Pre-wet the ground to the depth of anticipated cuts. Suspend any excavation operations when wind speeds are high enough to result in dust emissions across the property line, despite the application of other dust mitigation measures.
AQ-3	The Project will also be required to implement the following enhanced fugitive PM dust control practices as specified by SMAQMD in Sacramento County, which includes LWD, Dike 7, and MIAD: For Soil Disturbance Areas: (1) Water exposed soil with adequate frequency for continued moist soil, but do not overwater to the extent that sediment flows off the Project site. (2) Suspend excavation, grading, and/or demolition activity when wind speeds exceed 20 mph. (3) Install wind breaks (ex. solid fencing) on the windward side(s) of construction areas. (4) Plant vegetative ground cover in disturbed areas as soon as possible. Water appropriately until vegetation is established. For Unpaved Roads: (1) Install wheel washers for all exiting trucks or wash off all trucks and equipment leaving the site. (2) Treat site access to 100 feet from the paved road with a 6 to 12-inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads. (3) Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours of receiving a complaint. The phone number of the AQMDs of Sacramento, Placer, and El Dorado will also be provided on the sign depending on jurisdiction to help ensure compliance.
AQ-4	The Project will be required to implement the following basic emissions control practices: (1) Minimize idling time of equipment not in use to 5 minutes and post clear signage of this requirement for workers at site entrances; (2) Maintain all construction equipment in proper working condition and have equipment checked before operation by a certified mechanic; (3) Water exposed surfaces twice per day; (4) Cover or maintain at least 2 feet of free board space on trucks transporting soil, sand or other loose material onsite and all haul trucks slated for travel along freeways or major roadways must be covered; (5) Limit vehicle speeds on unpaved roads to 15 mph; (6) Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads when necessary; (7) Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation.

ID #	DESCRIPTION
AQ-5	Submit to the USACE and appropriate AQMD(s) a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 hp, that will be used an aggregate of 40 or more hours during any portion of the construction Project. The inventory will include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The inventory will be updated and submitted monthly throughout the duration of the Project, except that an inventory will not be required for any 30-day period in which no construction activity occurs. At least 4 business days prior to the use of subject heavy-duty off-road equipment, the Project will provide the jurisdictional AQMD(s) with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The SMAQMD's Model Equipment List can be used to submit this information.
AQ-6	The construction will be required to comply with the following additional air quality mitigation measures: (1) Model year 2010 (MY2010) or newer haul trucks will typically be used for the duration of the Project. Use of these trucks will provide the best available emission controls for NO_x and PM emissions. Occasions could arise when the availability of MY2010 or newer haul trucks is limited, thereby forcing the need to use older trucks to meet construction schedule goals. In such a situation, the construction contractor will first be required to demonstrate that MY2010 or newer trucks are not available in the general Project region before the use of older trucks is approved by the USACE. (2) All off-road diesel-powered construction equipment greater than 50 horsepower will meet Tier-4 off road emission standards (reference 40 CFR Part 1039), where available. In addition, if not already supplied with a factory-equipped diesel particulate filter, all construction equipment will be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions control device used for construction will achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. In the event that a certain tier engine is not available for any off-road equipment less than 50 hp, that equipment will be equipped with the next lower tier engine (e.g., if Tier 3 is not available use Tier 2), or an engine that is equipped with retrofit controls to reduce exhaust emissions of NO_x and diesel PM to no more than the next available tier, unless certified by engine manufacturers that the use of such devices is not practical for specific engine types. If the construction contractor proposes to use off-road diesel-powered construction equipment greater than 50 hp that does not meet Tier-4 off road emissions standards, such usage will first have to be approved by the USACE. (3) Construction equipment will incorporate emissions-reducing technology such as specific fuel economy standards. Idling will be restricted to a maximum of 5 minutes, except as provided in the CARB 13CCR, Section 2485 exceptions.

ID #	DESCRIPTION
AQ-7	The construction will be required to comply with the following additional air quality mitigation measures: (1) The Project will provide the USACE and the applicable local AQMDs with updated and revised air quality emissions estimates prior to beginning Project construction activities on a given Project phase. If these estimates indicate the applicable PM_{10} threshold and/or the applicable $PM_{2.5}$ threshold will be exceeded despite the use of the mitigation measures and BMPs addressed previously, the Project will coordinate with AQMDs to determine the level of mitigation fees (including administrative fees), if any, that must be paid.; (2) The Project will provide monthly estimates of actual PM_{10} and $PM_{2.5}$ emissions to the USACE and the applicable AQMDs once construction activities begin. When a monthly report indicates PM emissions exceeded the applicable local AQMD threshold, payment of the appropriate mitigation fee and any associated administrative fee are required. These compensatory mitigation fees will be paid to the applicable local AQMD; (3) Provide monthly reports of estimated actual NOx emissions and if NOx thresholds are exceeded, the contractor will pay the appropriate mitigation fee and associated administrative fee to the local AQMD in which the excess emissions occurred.
CLIMATE CHANGE	
CC-1	The construction will be required to submit monthly estimates of actual construction emissions to the USACE and applicable local AQMDs. If these monthly reports show that emissions may eventually exceed either of the two applicable CO_2e thresholds (i.e. PCAPCD, or SMAQMD thresholds), the Project will be required to prepare a GHG emissions reduction plan for approval by the USACE, then implement the approved plan. Elements of such a plan could include one or more of the following: (1) Minimize the idling time of construction equipment to no more than 3 minutes or shut equipment off when not in use. (2) Encourage carpools, shuttle vans, and/or alternative modes of transportation for construction worker commutes. (3) Use of CARB-approved low carbon fuel. (4) Use of equipment with new technologies (repowered engines, electric drive trains).
CC-2	If actual CO_2e emissions during construction of a given Project phase do exceed any of the AQMD thresholds, then compensatory mitigation will be provided in the form of purchasing sufficient carbon credits to mitigate for the excess CO_2e. Carbon offset credits would be purchased from a carbon registry that is acceptable to the applicable local AQMD and USACE. Note that the provision of compensatory mitigation would only be required under the following scenarios: (1) Project construction emissions that occur within Placer County exceed the PCAPCD threshold of 10,000 MT CO_2e per year, or; (2) Project construction emissions that occur within Sacramento County exceed the SMAQMD recommended threshold of 1,100 MT CO_2e per year.
AESTHETICS & VISUAL RESOURCES	
AV-1	The Project will: (1) Existing native trees will be preserved to the extent practicable. (2) Staging areas will be located on previously disturbed lands where feasible. (3) Anti-graffiti coatings will be used on the concrete floodwalls. (4) Staging areas will be restored following construction by restoring pre-construction topography to the degree practicable and hydroseeding the areas with native grasses and forbs. Exceptions to this mitigation measure will include the staging areas situated on existing urban/disturbed lands, with the exception of the Dike 7 Office Complex staging area, will not be restored, but instead returned to conditions present prior to the Project (examples include staging areas for LWD improvements and for the main dam improvements).

ID #	DESCRIPTION
	TRAFFIC & CIRCULATION
TC-1	Prior to starting construction, construction will be required to prepare and implement a traffic management plan approval by USACE. This plan will outline proposed travel and haul routes along with proposed traffic management/maintenance/safety measures.
TC-2	High collision intersections will be identified by USACE and avoided by project construction vehicles and equipment as feasible.
TC-3	Construction vehicle and haul truck drivers will be informed and trained on the various types of access and haul routes, as well as areas that are more sensitive to traffic increases.
TC-4	The Project will develop and use signs to inform the public of the construction access routes and haul routes, route changes, detours, and planned road closures to minimize traffic congestion and help ensure public safety.
TC-5	Traffic along Park Road will be detoured west of the Dike 1 work zone via a temporary signalized one-way lane on top of the existing Dike 1.
TC-6	Prior to beginning construction of the proposed new temporary access off Auburn-Folsom Road across from Bell Drive (e.g. primary ingress/egress route when raising Dikes 4 through 6), the Project will be required to obtain an encroachment permit from Placer County Department of Public Works and Facilities. The application must include a detailed paving plan, traffic control, and signage plan, along with any other information Placer County requires for permit issuance.
	NOISE
N-1	Construction noise will be limited in accordance with timeframes and requirements in the City of Folsom, Sacramento County, and Placer County Noise Ordinance exemption for construction. If construction must occur outside of the exempted timeframe in the vicinity of sensitive receptors, the construction will be required to meet the City of Folsom exterior noise thresholds. Construction noise is exempt from these standards during the periods of 7:00 a.m. to 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on weekends. Any work outside of these hours, including nighttime or weekend work, will need to be approved by USACE.
N-2	Construction activities at Dike 6 will be limited to the construction noise exemption times specified by the City of Folsom Noise Ordinance (e.g. 7am to 6pm on weekdays, and 8am to 5 pm on weekends). In addition, no construction activities will be allowed at Dike 6 on weekends (Saturdays and Sundays). There could be limited exceptions to these requirements. Examples of potential exceptions include things such as emergency actions, corrective actions to ensure safety, transporting special equipment, etc. The construction will first have to obtain USACE approval before performing construction work outside of the timeframes specified above
N-3	Construction equipment noise will be minimized during Project construction by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications), and by shrouding or shielding impact tools.
N-4	All equipment, haul trucks, and worker vehicles will be turned off when not in use for more than 5 minutes.
N-5	Equipment warm up areas, water tanks, and equipment storage areas will be located as far from existing residences as is feasible.

ID #	DESCRIPTION
N-6	Written notice of impending construction work will be provided to potentially affected residences (typically those located with approximately 2,000 feet of proposed construction activities) at least 2 weeks prior to mobilization of a given Project phase. These notices will identify the type, duration, and frequency of construction activities. Notification materials will also identify a mechanism to register complaints if construction noise levels are overly intrusive, including the hotline phone number, detailed in Mitigation Measure N-8.
N-7	The Project will measure surface velocity waves caused by equipment and monitor vibration up to a threshold value established and approved in writing by the USACE. There will be no vibration exceeding 0.2 inch per second. Such measurements will only be taken near residences and occupied buildings that could be adversely affected by excessive ground vibrations.
N-8	A 24-hour telephone hotline for noise complaints will be established and notices will be conspicuously displayed at the construction site. Any complaint calls not answered at the time of the call will be returned within approximately 24 hours of their receipt, as long as the message left includes a call-back phone number.
N-9	Public meetings will be scheduled prior to construction of a given Project phase to help ensure residents that may be affected by construction noise are informed of the Project schedule and its potential effects.
WATER QUALITY & WATERS OF THE UNITED STATES	
WW-1	The Project will be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Central Valley Regional Water Quality Control Board (CVRWQCB). As part of the permit (a Construction General Permit), the Project will be required to prepare a SWPPP and a SPCP prior to initiating construction activities, identifying BMPs to be used for avoidance or minimization of any adverse effects during construction to surface waters. Pollution prevention measures should be incorporated into all final design and construction plans. The pollution prevention measures will include erosion and sediment control measures, and measures for non-stormwater discharges (i.e., construction dewatering and appropriate spill prevention and containment measures). Measures will be implemented to avoid accidental spills and sediment dispersal during barging of borrow materials. The SWPPP will describe the proposed construction activities and pollution prevention measures that should be implemented to prevent discharge of pollutants. The SWPPP will also include a description of inspection and monitoring activities that must be conducted. Construction and post-construction monitoring should be conducted to ensure that all pollution prevention efforts are performed as described in the SWPPP. The SWPPP should be amended in the event modifications to the pollution prevention measures become necessary.
WW-2	Appropriate erosion control measures will be incorporated into the SWPPP in order to prevent sediment from entering wetlands, waterways, and waterbodies, and to minimize temporary turbidity impacts. Examples include but are not limited to: straw bales/wattles, erosion blankets, silt fencing, silt curtains, mulching, revegetation, and temporary covers. Sediment and erosion control measures will be always maintained during construction. Control measures will be inspected, particularly during and after significant rain events.
WW-4	A fuels spill management plan will be developed for the Project and will be implemented.
WW-5	Construction equipment and vehicles will be fueled and maintained in specified staging areas only, which will be designed to capture potential spills and not release them into any ditch, stream, river, or other body of water or feature that may convey water to a nearby body of water or wetland.

ID #	DESCRIPTION
WW-6	Fuels and hazardous materials will not be stored on site, unless otherwise approved by USACE and such substances are stored in areas designed to contain leaks and spills. Any spills of hazardous material will be cleaned up immediately.
WW-7	Construction vehicles and equipment will be inspected frequently and appropriately maintained to help prevent dripping of oil, lubricants, or any other fluids.
WW-8	Construction activities involving removal (excavation) of material from the dikes, RWD, LWD, or MIAD as well as placement of material on these same features will be scheduled to avoid as much of the wet season as practicable in cases where these activities may occur below the ordinary high water elevation of Folsom Lake.
WW-9	Construction personnel will be trained in stormwater pollution prevention practices.
WW-10	In areas proposed for revegetation, initiation and completion of revegetation work will be done in a timely manner to control erosion.
WW-11	If any portion of the Project impacts wetlands, the Project will obtain a Clean Water Act Section 401 Water Quality Certification (WQC) from CVRWQCB prior to starting such construction activities.
WW-13	The Project will be required to properly dispose of oil and similar potential pollutants, including hazardous wastes, off-site in a duly licensed facility.
WW-14	The Project will be required to abide by the following restrictions pertaining to the use of construction staging areas that extend into Folsom Lake: (1) Use must first be approved in writing by the USACE; (2) Use is strictly prohibited when the area is inundated by standing water or the water table underlying the staging area is within 6 inches of the soil surface; (3) Topographic alterations, including grading, excavation, or deposition of fill materials, are prohibited; (4) Clearing or removal of existing vegetation is prohibited; (5) Stockpiling of construction materials or wastes is prohibited; (6) Fueling of construction equipment or vehicles is prohibited; (7) Storage of fuel, hazardous wastes, or other potential pollutants is prohibited.
WW-15	The Project will conduct new jurisdictional determinations (e.g. field mapping and classification of jurisdictional WOUS) prior to finalizing design plans for a particular Project phase. The design plans will then be refined, if necessary, to ensure construction of the Project phase will not necessitate direct impacts (e.g. placement of fill, excavation, land clearing) to any jurisdictional wetlands or watercourses.
WW-16	During construction of the Tainter gates refinements phase of the Project, the Project will be required to abide by the following requirements in accordance with 29 CFR 1926.62 “Lead”, and 8 CCR 1532.1 “Lead”: (1) Lead dust on surfaces, especially in eating areas, must be controlled by HEPA vacuuming, wet cleanup, or other effective methods; (2) Workers must have washing facilities with soap and clean water; (3) Workers must receive training on lead hazards and how to protect themselves; (4) Develop a written compliance program, approved by the USACE, to assure control of hazardous lead exposures; (5) Assess the amounts of lead breathed by workers and provide workers with appropriate respirators (if warranted based on air sampling results and medical monitoring results).

ID #	DESCRIPTION
WW-17	To remove water via water intake pipes in Folsom Lake, the Project will use the following drafting operating guidelines: Do not exceed pumping rate of 350 gallons per minute; Terminate pumping when the tank is full; Encircle each pumping intake with a silt curtain or filtering barrier that does not have openings greater than 1/32 of an inch in size in to prevent entrainment of young fish (fry) and other aquatic organisms. Remove any fish present from within the encircled curtain or barrier before pumping begins. For each pumping operation, attach a functional fish screen on the intake pipe; The screen will be designed and used such that it can be submerged with at least one-screen-height-clearance above and below the screen; Retain a log on the truck containing the following information: Operator's Name, Date, Time, Pump Rate, Filling Time, Screen Cleaned (Y or N), Screen Condition, Comments; Include these guidelines as instructions in a logbook with serially numbered pages. The Project will be required to report the amount of water draw from Folsom Lake monthly to the Bureau of Reclamation Central California Area Office; If locations are chosen for pumping water from Folsom Lake other than those identified in this document, that will be coordinated with USACE and Reclamation for clearance and appropriate documentation before the sites could be used.
	CULTURAL RESOURCES
CR-1	In the event that previously unknown cultural resources are discovered during the project, all ground-disturbing activities will stop to determine the significance of the find and complete appropriate discovery procedures, as necessary, pursuant to 36 C.F.R. § 800.13(b) regarding post-review discoveries. Work shall not resume in the area surrounding the potential historic property until USACE re-authorizes project construction. In accordance with CEQA, if Tribal Cultural Resources or other potential historical resources are found during project implementation, procedures to reduce potentially significant impacts to those cultural resources to less than significant also would occur. More specifically, the Project would ensure that discovered resources are evaluated for CRHR eligibility through application of established eligibility criteria (CCR 15064.636), in consultation with interested Native American Tribes. Impacts to historical resources and/or Tribal Cultural Resources would be avoided or mitigated to less than significant levels in accordance with California PRC Section 21084.3. Such avoidance and Mitigation Measures include, but are not limited to, preservation and protection in place; safeguarding resource confidentiality; and treating the resource with appropriate dignity, taking into account Tribal cultural values. Because the project is located entirely on federal land, in the event that any Native American human remains are encountered during construction or related activities, work would stop and appropriate treatment measures implemented, pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA).
	MISCELLANEOUS
M-1	Upon or near completion of construction of the Project, a revised Surcharge Flood Operations diagram in the Water Control Manual (WCM) would need to be prepared that accounts for the added flood risk reduction capabilities the Folsom Dam Raise facilities (Main Dam Tainter Gate modifications, dikes, LWD, RWD, MIAD) provide. USACE, in coordination with DWR, SAFCA, and USBR, would prepare subsequent environmental documentation that would evaluate the potential effects of implementing the revised WCM. This document would be finalized and approved prior to implementation of the revised WCM.

APPENDIX B

CNDDB SPECIAL STATUS SPECIES LISTS

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Folsom (3812162) or Rocklin (3812172) or Clarksville (3812161))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S2	FP
Bisbee Peak rush-rose *Crocanthemum suffrutescens*	PDCIS020F0	None	None	G2Q	S2	3.2
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	IIHYM35030	None	None	G2	S2	
Boggs Lake hedge-hyssop *Gratiola heterosepala*	PDSCR0R060	None	Endangered	G2	S2	1B.2
Brandegee's clarkia *Clarkia biloba ssp. brandegeeae*	PDONA05053	None	None	G4G5T4	S4	4.2
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California red-legged frog *Rana draytonii*	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Cooper's hawk *Accipiter cooperii*	ABNKC12040	None	None	G5	S4	WL
double-crested cormorant *Phalacrocorax auritus*	ABNFD01020	None	None	G5	S4	WL
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
El Dorado bedstraw *Galium californicum ssp. sierrae*	PDRUB0N0E7	Endangered	Rare	G5T1	S1	1B.2
El Dorado County mule ears *Wyethia reticulata*	PDAST9X0D0	None	None	G2	S2	1B.2
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Layne's ragwort *Packera layneae*	PDAST8H1V0	Threatened	Rare	G2	S2	1B.2
merlin *Falco columbarius*	ABNKD06030	None	None	G5	S3S4	WL
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Northern Volcanic Mud Flow Vernal Pool *Northern Volcanic Mud Flow Vernal Pool*	CTT44132CA	None	None	G1	S1.1	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
pincushion navarretia *Navarretia myersii ssp. myersii*	PDPLM0C0X1	None	None	G1T1	S1	1B.1
Pine Hill ceanothus *Ceanothus roderickii*	PDRHA04190	Endangered	Rare	G1	S1	1B.2
Pine Hill flannelbush *Fremontodendron decumbens*	PDSTE03030	Endangered	Rare	G1	S1	1B.2
purple martin *Progne subis*	ABPAU01010	None	None	G5	S3	SSC
Red Hills soaproot *Chlorogalum grandiflorum*	PMLIL0G020	None	None	G3	S3	1B.2
Ricksecker's water scavenger beetle *Hydrochara ricksecker*i	IICOL5V010	None	None	G2?	S2?	
Sacramento Orcutt grass *Orcuttia viscida*	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1
Sanford's arrowhead *Sagittaria sanfordii*	PMALI040Q0	None	None	G3	S3	1B.2
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G5	S3S4	
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus*	AFCHA0209K	Threatened	None	G5T2Q	S2	
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Endangered	G2G3	S1S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2	S2	
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S2S3	
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western spadefoot *Spea hammondii*	AAABF02020	None	None	G3	S3	SSC
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP

Record Count: 41

APPENDIX C

AIR QUALITY EMISSIONS

American River Watershed, California Folsom Dam Raise Project: Updated Designs
Appendix C
Mitigated Annual Emissions per Phase (Tons)

Emission Estimates by Phase for -> Dikes 1 - 3 Raise 2023	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.10	0.02	0.77	0.16	0.00	0.00	0.77	0.16	0.00	22.60	0.00	0.00	20.94
Grading/Excavation	0.05	0.97	0.20	4.83	1.01	0.02	0.01	4.81	1.00	0.00	222.88	0.04	0.01	206.23
Drainage/Utilities/Sub-Grade	0.02	0.37	0.03	0.97	0.20	0.00	0.00	0.96	0.20	0.00	61.29	0.01	0.00	55.94
Paving	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.04	0.00	0.00	16.87
Maximum (tons/phase)	0.05	0.97	0.20	4.83	1.01	0.02	0.01	4.81	1.00	0.00	222.88	0.04	0.01	206.23
Total (tons/construction project)	**0.07**	**1.47**	**0.27**	**6.56**	**1.37**	**0.02**	**0.01**	**6.55**	**1.36**	**0.00**	**324.81**	**0.05**	**0.01**	**299.98**

Emission Estimates by Phase for -> Dikes 4 - 6 Raise 2023	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.09	0.03	1.07	0.22	0.00	0.00	1.07	0.22	0.00	25.99	0.00	0.00	24.20
Grading/Excavation	0.02	0.47	0.15	5.37	1.12	0.01	0.01	5.36	1.12	0.00	146.24	0.02	0.01	135.90
Drainage/Utilities/Sub-Grade	0.02	0.45	0.05	2.15	0.45	0.00	0.00	2.15	0.45	0.00	84.80	0.01	0.00	77.68
Paving	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.23	0.00	0.00	9.54
Maximum (tons/phase)	0.02	0.47	0.15	5.37	1.12	0.01	0.01	5.36	1.12	0.00	146.24	0.02	0.01	135.90
Total (tons/construction project)	**0.05**	**1.04**	**0.24**	**8.60**	**1.79**	**0.02**	**0.01**	**8.58**	**1.78**	**0.00**	**267.26**	**0.03**	**0.02**	**247.33**

Emission Estimates by Phase for -> Main Dam Gates	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	187.96
Total (tons/construction project)	**0.06**	**1.32**	**0.27**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**204.53**	**0.05**	**0.00**	**187.96**

Emission Estimates by Phase for -> MIAD Raise 2023	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.02	0.48	0.07	0.19	0.04	0.00	0.00	0.19	0.04	0.00	89.19	0.02	0.00	82.03
Grading/Excavation	0.09	1.77	0.48	1.39	0.30	0.03	0.02	1.36	0.28	0.00	482.64	0.08	0.03	448.19
Drainage/Utilities/Sub-Grade	0.01	0.16	0.01	0.27	0.06	0.00	0.00	0.27	0.06	0.00	30.29	0.01	0.00	27.74
Paving	0.07	1.79	0.21	0.01	0.01	0.01	0.00	0.00	0.00	0.00	277.61	0.03	0.00	253.69
Maximum (tons/phase)	0.09	1.79	0.48	1.39	0.30	0.03	0.02	1.36	0.28	0.00	482.64	0.08	0.03	448.19
Total (tons/construction project)	**0.20**	**4.19**	**0.78**	**1.86**	**0.41**	**0.04**	**0.03**	**1.82**	**0.38**	**0.01**	**879.72**	**0.13**	**0.04**	**811.66**

Emission Estimates by Phase for -> LWD Raise 2023	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.20	0.01	0.22	0.03	0.00	0.00	0.23	0.05	0.00	8.19	0.00	0.00	7.55
Grading/Excavation	0.01	0.12	0.03	0.44	0.07	0.00	0.00	0.46	0.10	0.00	31.10	0.00	0.00	28.40
Drainage/Utilities/Sub-Grade	0.01	0.01	0.02	0.22	0.03	0.00	0.00	0.23	0.05	0.00	26.50	0.00	0.00	24.19
Paving	0.00	0.03	0.01	0.04	0.54	0.04	0.00	0.00	0.00	0.00	10.81	0.00	0.00	9.89
Maximum (tons/phase)	0.01	0.03	0.03	0.44	0.07	0.04	0.00	0.46	0.10	0.00	31.10	0.01	0.00	28.40
Total (tons/construction project)	**0.01**	**0.33**	**0.07**	**0.92**	**0.19**	**0.04**	**0.00**	**0.92**	**0.19**	**0.00**	**76.61**	**0.01**	**0.00**	**70.03**

Emission Estimates by Phase for -> RWD Raise 2023	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.05	0.02	0.55	0.12	0.00	0.00	0.55	0.11	0.00	19.35	0.00	0.00	18.12
Grading/Excavation	0.01	0.29	0.07	1.10	0.23	0.00	0.00	1.10	0.23	0.00	73.64	0.01	0.00	68.16
Drainage/Utilities/Sub-Grade	0.02	0.36	0.05	0.55	0.12	0.00	0.00	0.55	0.11	0.00	63.26	0.02	0.00	58.07
Paving	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.51	0.00	0.00	23.75
Maximum (tons/phase)	0.02	0.36	0.07	1.10	0.23	0.00	0.00	1.10	0.23	0.00	73.64	0.02	0.00	68.16
Total (tons/construction project)	**0.04**	**0.78**	**0.17**	**2.21**	**0.46**	**0.01**	**0.01**	**2.20**	**0.46**	**0.00**	**181.76**	**0.03**	**0.01**	**168.10**

Total Emission Estimates for -> Dikes 1-6, Main Dam Gates, MIAD, LWD and RWD 2023	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Year (Tons for all except CO2e / tonnes for CO2e) Metric	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	N2O (tons/year)	CO2e (MT/year)
Project Totals	**0.43**	**9.12**	**1.79**	**20.18**	**4.24**	**0.14**	**0.06**	**20.08**	**4.17**	**0.02**	**1934.69**	**0.30**	**0.08**	**1785.06**
El Dorado County	0.03	0.61	0.11	0.27	0.06	0.01	0.00	0.26	0.05	0.00	127.56	0.02	0.01	117.69
Placer County	0.14	2.90	0.59	16.26	3.40	0.04	0.02	16.23	3.37	0.01	682.95	0.09	0.03	631.36
Sacramento County	0.26	5.62	1.09	3.64	0.78	0.09	0.04	3.58	0.75	0.01	1124.19	0.19	0.04	1036.01

2023	Pollutant (tons/year)						Exceedences PM_{10}		
	ROG	CO	NOx	PM10	PM2.5	SOx	Tons/Year	Mitigation Cost $/ton	Mitigatation Cost
SMAQMD Thresholds (tons/year)	N/A	N/A	N/A	14.6	15	N/A	N/A	N/A	N/A
PCAPCD Thresholds (tons/year)	14.9	N/A	14.9	14.9	N/A	N/A	1.36	$18,260	$24,907.58
EDCAQMD Thresholds (tons/year)	14.9	N/A	14.9	N/A	N/A	N/A	N/A	N/A	N/A
Federal Thresholds (tons/year)	25	100	25	100	100	0	N/A	N/A	N/A

American River Watershed, California Folsom Dam Raise Project: Updated Designs
Appendix C
Mitigated Annual Emissions per Phase (Tons)

Emission Estimates by Phase for -> Dikes 1 - 3 Raise 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.03	0.01	0.24	0.05	0.00	0.00	0.24	0.05	0.00	7.00	0.00	0.00	6.48
Grading/Excavation	0.02	0.34	0.07	1.69	0.35	0.00	0.00	1.68	0.35	0.00	77.12	0.01	0.00	71.34
Drainage/Utilities/Sub-Grade	0.00	0.09	0.01	0.24	0.05	0.00	0.00	0.24	0.05	0.00	15.25	0.00	0.00	13.91
Paving	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	4.15
Maximum (tons/phase)	0.02	0.34	0.07	1.69	0.35	0.00	0.00	1.68	0.35	0.00	77.12	0.01	0.00	71.34
Total (tons/construction project)	**0.02**	**0.47**	**0.09**	**2.17**	**0.45**	**0.01**	**0.00**	**2.17**	**0.45**	**0.00**	**103.79**	**0.02**	**0.00**	**95.89**

Emission Estimates by Phase for -> Dikes 4 - 6 Raise 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.02	0.01	0.27	0.06	0.00	0.00	0.27	0.06	0.00	6.50	0.00	0.00	6.05
Grading/Excavation	0.01	0.12	0.04	1.34	0.28	0.00	0.00	1.34	0.28	0.00	36.56	0.00	0.00	33.98
Drainage/Utilities/Sub-Grade	0.01	0.11	0.01	0.54	0.11	0.00	0.00	0.54	0.11	0.00	21.20	0.00	0.00	19.42
Paving	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	0.00	0.00	2.38
Maximum (tons/phase)	0.01	0.12	0.04	1.34	0.28	0.00	0.00	1.34	0.28	0.00	36.56	0.00	0.00	33.98
Total (tons/construction project)	**0.01**	**0.26**	**0.06**	**2.15**	**0.45**	**0.00**	**0.00**	**2.15**	**0.45**	**0.00**	**66.81**	**0.01**	**0.00**	**61.83**

Emission Estimates by Phase for -> Dike 7 Raise 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.03	0.01	0.05	0.01	0.00	0.00	0.04	0.01	0.00	8.67	0.00	0.00	8.03
Grading/Excavation	0.00	0.01	0.01	0.06	0.01	0.00	0.00	0.06	0.01	0.00	6.85	0.00	0.00	6.37
Drainage/Utilities/Sub-Grade	0.02	0.33	0.13	0.28	0.06	0.01	0.01	0.26	0.06	0.00	124.61	0.01	0.01	116.03
Paving	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.74	0.00	0.00	6.33
Maximum (tons/phase)	0.02	0.33	0.13	0.28	0.06	0.01	0.01	0.26	0.06	0.00	124.61	0.01	0.01	116.03
Total (tons/construction project)	**0.02**	**0.38**	**0.15**	**0.38**	**0.08**	**0.01**	**0.01**	**0.36**	**0.08**		**146.89**	**0.01**	**0.01**	**136.68**

Emission Estimates by Phase for -> Main Dam Gates 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	**0.06**	**1.32**	**0.27**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**205.22**	**0.05**	**0.00**	**187.96**

Emission Estimates by Phase for -> MIAD Raise 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.10	0.01	0.04	0.01	0.00	0.00	0.04	0.01	0.00	18.58	0.00	0.00	17.09
Grading/Excavation	0.02	0.37	0.10	0.29	0.06	0.01	0.00	0.28	0.06	0.00	100.56	0.02	0.01	93.39
Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.06	0.01	0.00	0.00	0.06	0.01	0.00	6.31	0.00	0.00	5.78
Paving	0.02	0.37	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	57.84	0.01	0.00	52.86
Maximum (tons/phase)	0.02	0.37	0.10	0.29	0.06	0.01	0.00	0.28	0.06	0.00	100.56	0.02	0.01	93.39
Total (tons/construction project)	**0.04**	**0.87**	**0.16**	**0.39**	**0.08**	**0.01**	**0.01**	**0.38**	**0.08**	**0.01**	**183.30**	**0.03**	**0.02**	**169.12**

Emission Estimates by Phase for -> LWD Raise 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.08	0.02	0.87	0.18	0.00	0.00	0.87	0.18	0.00	30.64	0.00	0.00	28.69
Grading/Excavation	0.02	0.46	0.11	1.75	0.37	0.01	0.00	1.74	0.36	0.00	116.61	0.01	0.01	107.92
Drainage/Utilities/Sub-Grade	0.03	0.57	0.08	0.88	0.19	0.01	0.00	0.87	0.18	0.00	100.17	0.02	0.00	91.95
Paving	0.01	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.39	0.00	0.00	37.61
Maximum (tons/phase)	0.03	0.57	0.11	1.75	0.37	0.01	0.00	1.74	0.36	0.00	116.61	0.02	0.01	107.92
Total (tons/construction project)	**0.06**	**1.23**	**0.26**	**3.50**	**0.74**	**0.02**	**0.01**	**3.48**	**0.72**	**0.00**	**287.80**	**0.02**	**0.02**	**266.17**

Total Emission Estimates for -> Dikes 1-7, Main Dam Gates, MIAD, and RWD 2024	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Year (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	N2O (tons/year)	CO2e (MT/year)
Project Totals														
El Dorado County														
Placer County														
Sacramento County														

2024	Pollutant (tons/year)						Exceedences PM_{10}		
	ROG	CO	NOx	PM10	PM2.5	SOx	Tons/Year	Mitigation Cost $/ton	Mitigatation Cost
SMAQMD Thresholds (tons/year)	N/A	N/A	N/A	14.6	15	N/A	N/A	N/A	N/A
PCAPCD Thresholds (tons/year)	14.9	N/A	14.9	14.9	N/A	N/A	N/A	N/A	N/A
EDCAQMD Thresholds (tons/year)	14.9	N/A	14.9	N/A	N/A	N/A	N/A	N/A	N/A
Federal Thresholds (tons/year)	25	100	25	100	100	0	N/A	N/A	N/A

American River Watershed, California Folsom Dam Raise Project: Updated Designs
Appendix C
Mitigated Annual Emissions per Phase (Tons)

Emission Estimates by Phase for -> Main Dam Gates 2025	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Phases (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	**0.06**	**1.32**	**0.27**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**205.22**	**0.05**	**0.00**	**187.96**

Total Emission Estimates for -> Main Dam Gates 2025	Total					Exhaust		Fugitive Dust		Greenhouse Gas (GHG) Emissions				
Project Year (Tons for all except CO2e / Metric tonnes for CO2e)	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	N2O (tons/year)	CO2e (MT/year)
Project Totals	**0.06**	**1.32**	**0.27**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**205.22**	**0.05**	**0.00**	**187.96**
El Dorado County	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Placer County	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sacramento County	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96

2025	Pollutant (tons/year)						Exceedences PM_{10}		
	ROG	CO	NOx	PM10	PM2.5	SOx	Tons/Year	Mitigation Cost $/ton	Mitigatation Cost
SMAQMD Thresholds (tons/year)	N/A	N/A	N/A	14.6	15	N/A	N/A	N/A	N/A
PCAPCD Thresholds (tons/year)	14.9	N/A	14.9	14.9	N/A	N/A	N/A	N/A	N/A
EDCAQMD Thresholds (tons/year)	14.9	N/A	14.9	N/A	N/A	N/A	N/A	N/A	N/A
Federal Thresholds (tons/year)	25	100	25	100	100	0	N/A	N/A	N/A

Summary Table for NOx, PM10, and PM2.5 Estimates for Folsom Dam Raise by Year and County (tons/year)

Project Area	Source	2023			2024			2025		
		NOx	PM10	PM2.5	NOx	PM10	PM2.5	NOx	PM10	PM2.5
Dikes 1-3	**Total**	**0.27**	**6.56**	**1.37**	**0.09**	**2.17**	**0.45**	**0.00**	**0.00**	**0.00**
	El Dorado County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Placer County	0.27	6.56	1.37	0.09	2.17	0.45	0.00	0.00	0.00
	Sacramento County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dikes 4-6	**Total**	**0.24**	**8.60**	**1.79**	**0.06**	**2.15**	**0.45**	**0.00**	**0.00**	**0.00**
	El Dorado County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Placer County	0.24	8.60	1.79	0.06	2.15	0.45	0.00	0.00	0.00
	Sacramento County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dike 7	**Total**	**0.00**	**0.00**	**0.00**	**0.15**	**0.38**	**0.08**	**0.00**	**0.00**	**0.00**
	El Dorado County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Placer County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sacramento County	0.00	0.00	0.00	0.15	0.38	0.08	0.00	0.00	0.00
Main Dam	**Total**	**0.27**	**0.02**	**0.01**	**0.27**	**0.02**	**0.01**	**0.27**	**0.02**	**0.01**
	El Dorado County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Placer County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sacramento County	0.27	0.02	0.01	0.27	0.02	0.01	0.27	0.02	0.01
MIAD	**Total**	**0.78**	**1.86**	**0.41**	**0.16**	**0.39**	**0.08**	**0.00**	**0.00**	**0.00**
	El Dorado County	0.11	0.27	0.06	0.02	0.06	0.01	0.00	0.00	0.00
	Placer County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sacramento County	0.67	1.59	0.35	0.14	0.33	0.07	0.00	0.00	0.00
LWD	**Total**	**0.07**	**0.92**	**0.19**	**0.26**	**3.50**	**0.74**	**0.00**	**0.00**	**0.00**
	El Dorado County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Placer County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sacramento County	0.07	0.92	0.19	0.26	3.50	0.74	0.00	0.00	0.00
RWD	**Total**	**0.17**	**2.21**	**0.46**	**0.17**	**2.21**	**0.46**	**0.00**	**0.00**	0.00
	El Dorado County	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Placer County	0.09	1.11	0.23	0.09	1.11	0.23	0.00	0.00	0.00
	Sacramento County	0.09	1.11	0.23	0.09	1.11	0.23	0.00	0.00	0.00
Project Total	**Total**	**1.80**	**20.17**	**4.23**	**1.16**	**10.82**	**2.27**	**0.27**	**0.02**	**0.01**
	El Dorado County	0.11	0.27	0.02	0.02	0.06	0.00	0.00	0.00	0.00
	Placer County	0.60	16.26	3.39	0.24	5.43	1.13	0.00	0.00	0.00
	Sacramento County	1.09	3.64	0.78	0.90	5.34	1.13	0.27	0.02	0.01

2023	Pollutant (tons/year)			Exceedences PM_{10}		
Emission	NOx	PM10	PM2.5	Tons/Year	Mitigation Cost $/ton	Mitigatation Cost
SMAQMD Thresholds (tons/year)	N/A	14.6	15	N/A	N/A	N/A
PCAPCD Thresholds (tons/year)	14.9	14.9	N/A	1.36	$18,260	$24,907.58
EDCAQMD Thresholds (tons/year)	14.9	N/A	N/A	N/A	N/A	N/A
Federal Thresholds (tons/year)	25	100	100	N/A	N/A	N/A

Air Quality Comments for NEPA/CEQA

The project lies primarily within two local air districts, Placer County Air Pollution Control District and Sacramento Metropolitan Air Quality Management District. The districts set thresholds for each pollutant and the project is designed to minimize impacts to the air quality in the area by implementing Mitigation Measures AQ-1 through AQ-7. The project emissions would be reduced below local thresholds for nitrous oxides (NOx) and PM2.5, however the project would exceed threshold for one year on PM10 within Placer County. Thus, a mitigated purchase of air credits would be needed to avoid significant cumulative effect on air quality. Tables and the project would not make a considerable contribution to a significant cumulative effect.

Table X provides a summary of air quality impacts for both Placer and Sacramento counties for NOx, PM10, and PM2.5 by project component.

[Note that Table X is pulled from the revised air emission table for each year of the project by component and phase using the Linear Transportation Model (Road Construction Emissions Model Version 9.0.0). The estimated PM10 for calendar year 2023 exceeds the Placer County threshold in 2023. The estimated need for 1.36 tons of PM10 credits and the estimated cost of purchasing those credits noted at the bottom of the table.]

The air districts require mitigation for operations of off-road construction vehicles, such as Tier 3 and Tier 4 engines, and for dust abatement. Thus, under NEPA, the full development of mitigated data is required but since the project would not be constructed with unmitigated equipment, unmitigated data that was useful for comparing alternatives in the Draft EIS/EIR, but not necessary for the Final EIS. However, to provide substantive support for the preferred alternative under CEQA, the following describes how the mitigated and unmitigated data was developed.

The mitigated data was largely developed for the Draft EIS/EIR and was questioned for some apparent anomalies by the US EPA in their comments to that document. The initial calculations showed higher levels of some contaminants in the mitigated versus the unmitigated tables. The mitigated tables were quality control checked and the tables were subsequently adjusted accordingly. Since the preferred alternative does not include the use of unmitigated equipment in the construction of any part of the Folsom Dam Raise, no subsequent quality control was exercised on the unmitigated numbers.

The air quality tables were adjusted using the quality-checked numbers from the Draft EIS/EIR as adjusted and each phase of each project was recalculated according to the revised scheduling for the project as of April 2022. The construction schedule for 2023 to 2025 divides the air impacts by county with the bulk of work and thus, air contaminants to occur in Placer and Sacramento counties, with a small area in El Dorado County. The location of Dikes 1 through 6, and one-half of Right Wing Dam and lie within Placer County. Thus, the table calculation assigns these projects to Placer subtotals. The Main Dam Gates, Left Wing Dam, Dike 7, and 85.5% of MIAD lie within Sacramento County and the table assigns contaminants to construct these projects to Sacramento County. Finally, only 14.5% of MIAD lies within El Dorado County and only this proportion is assigned to El Dorado County in the table.

Since the unmitigated table was not reformed through a quality check, the unmitigated estimates used in Table 3-8 to compare to the mitigated summary Table 3.9 was constructed by estimated the effectiveness of the mitigation based. For example: NOx emission for Tier 3 equipment is a weighted average of 4.807 times less than using Tier 0 equipment. If no mitigated equipment were used on this

project (circa 1980s), the output of NOx would be roughly 4.8 times greater. The following table shows the effectiveness factor of mitigation for each contaminant. Since the use of low-sulfur diesel is required by law in California it is not practicable to calculate a completely unmitigated number for SOx; thus the factor is 1.0. The mitigation for PM10 and PM2.5 is primarily related to minimizing fugitive dust with a negligible quantity generated by the vehicles themselves. Thus the 50% reduction of fugitive dust is assumed, and the factor is 2.0.

Table X. Summary of air quality impacts for Placer and Sacramento Counties

Air Contaminant	ROG	CO	NOx	PM10	PM2.5	SOx
Effectiveness Factor	3.176	1.628	4.807	2	2	1

Total Emission Estimates by Phase for ->	Dikes 1-3 Raise 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**				
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.006175087	0.129068901	0.026986789	0.963984085	0.001484085	0.9625	0.201099307	0.000899307	0.2002	0.000283377	28.24590075	0.005533568	0.001562545	26.17243801
Grading/Excavation	0.068687854	1.357797875	0.275912704	6.756425667	0.018925667	6.7375	1.412113442	0.010713442	1.4014	0.003127421	312.031629	0.056580167	0.016159479	288.725082
Drainage/Utilities/Sub-Grade	0.016511982	0.365841365	0.032141801	0.965255075	0.002755075	0.9625	0.202075873	0.001875873	0.2002	0.000637745	61.29472898	0.006845749	0.000660739	55.94010074
Paving	0.002441861	0.044491947	0.022709261	0.001215035	0.001215035	0	0.000599461	0.000599461	0	0.000176011	18.03966012	0.001686143	0.001721535	16.86912022
Maximum (tons/phase)	0.068687854	1.357797875	0.275912704	6.756425667	0.018925667	6.7375	1.412113442	0.010713442	1.4014	0.003127421	312.031629	0.056580167	0.016159479	288.725082
Total (tons/construction project)	0.093816783	1.897200088	0.357750556	8.686879862	0.024379862	8.6625	1.815888083	0.014088083	1.8018	0.004224553	419.6119189	0.070645627	0.020104299	387.706741
	0.07	1.48	0.27	6.56	0.02	6.55	1.37	0.01	1.36	0	324.81	0.05	0.02	299.98

Total Emission Estimates by Phase for ->	Dikes 4-6 Raise 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**				
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.004577939	0.09279209	0.029702587	1.074033699	0.001533699	1.0725	0.223920312	0.000840312	0.22308	0.000259877	26.31691939	0.003816709	0.002047982	24.51477428
Grading/Excavation	0.02564182	0.478294833	0.150323118	5.373681523	0.011181523	5.3625	1.120902593	0.005502593	1.1154	0.001468213	148.8018883	0.016453092	0.010874147	138.3050997
Drainage/Utilities/Sub-Grade	0.021304624	0.456452436	0.051927668	2.149759099	0.004759099	2.145	0.4490115	0.0028515	0.44616	0.000878763	85.55838685	0.009709077	0.002049078	78.39221529
Paving	0.00152899	0.029942174	0.01205789	0.000809314	0.000809314	0	0.000383156	0.000383156	0	0.000102105	10.42816776	0.000864756	0.000898984	9.723018921
Maximum (tons/phase)	0.02564182	0.478294833	0.150323118	5.373681523	0.011181523	5.3625	1.120902593	0.005502593	1.1154	0.001468213	148.8018883	0.016453092	0.010874147	138.3050997
Total (tons/construction project)	0.053053374	1.057481534	0.244011262	8.598283635	0.018283635	8.58	1.794217561	0.009577561	1.78464	0.002708958	271.1053623	0.030843635	0.01587019	250.9351082
	0.05	1.06	0.24	8.6	0.02	8.58	1.79	0.01	1.78	0	271.11	0.03	0.02	250.94

Total Emission Estimates by Phase for ->	Main Dam Gates 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**				
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grading/Excavation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Drainage/Utilities/Sub-Grade	0.063058772	1.316808168	0.267290189	0.021585988	0.008985988	0.0126	0.009326623	0.006705823	0.0026208	0.002170545	205.2168644	0.052545005	0.002219611	187.963289
Paving	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum (tons/phase)	0.063058772	1.316808168	0.267290189	0.021585988	0.008985988	0.0126	0.009326623	0.006705823	0.0026208	0.002170545	205.2168644	0.052545005	0.002219611	187.963289
Total (tons/construction project)	0.063058772	1.316808168	0.267290189	0.021585988	0.008985988	0.0126	0.009326623	0.006705823	0.0026208	0.002170545	205.2168644	0.052545005	0.002219611	187.963289

Total Emission Estimates by Phase for ->	MIAD Raise 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**				
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.013712349	0.290585602	0.043484801	0.117746705	0.002246705	0.1155	0.025691336	0.001667336	0.024024	0.000557552	54.21138442	0.009715031	0.001704476	49.86137527
Grading/Excavation	0.055983698	1.073531196	0.294745031	0.842431338	0.017431338	0.825	0.181280854	0.009680854	0.1716	0.002921302	293.3612555	0.046969776	0.019316189	272.4228651
Drainage/Utilities/Sub-Grade	0.004870149	0.095656235	0.008403674	0.16660279	0.00160279	0.165	0.035135766	0.000815766	0.03432	0.000186525	18.41070582	0.003238085	0.000311641	16.85977231
Paving	0.044887161	1.088245754	0.128221812	0.005900234	0.005900234	0	0.004962011	0.004962011	0	0.0017665	168.7383642	0.018330709	0.002624887	154.2037996
Maximum (tons/phase)	0.055983698	1.088245754	0.294745031	0.842431338	0.017431338	0.825	0.181280854	0.009680854	0.1716	0.002921302	293.3612555	0.046969776	0.019316189	272.4228651
Total (tons/construction project)	0.119453356	2.548018788	0.474855318	1.132681066	0.027181066	1.1055	0.247069968	0.017125968	0.229944	0.005431878	534.72171	0.078253601	0.023957193	493.3478123

this is from 2023

Total Emission Estimates by Phase for ->	LWD Raise 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**				
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.002029243	0.03904008	0.02459839	0.111278489	0.001278489	0.11	0.023485519	0.000605519	0.02288	0.000177273	18.29990028	0.001223604	0.001975265	17.16331256
Grading/Excavation	0.011628793	0.221878127	0.070724151	0.269295076	0.005295076	0.264	0.057486954	0.002574954	0.054912	0.000682613	69.29208399	0.007200763	0.005200267	64.43053853
Drainage/Utilities/Sub-Grade	0.029289017	0.58778756	0.076973165	0.11500648	0.00500648	0.11	0.026722526	0.003842526	0.02288	0.001044789	100.8858506	0.022731306	0.001545563	92.45641929
Paving	0.00670445	0.12255675	0.030863378	0.076335344	0.076335344	0	0.0370192	0.0370192	0	0.000312624	31.27320473	0.005599309	0.001730544	28.9656987
Maximum (tons/phase)	0.029289017	0.58778756	0.076973165	0.269295076	0.076335344	0.264	0.057486954	0.0370192	0.054912	0.001044789	100.8858506	0.022731306	0.005200267	92.45641929
Total (tons/construction project)	0.049651503	0.971262518	0.203159085	0.571915389	0.087915389	0.484	0.144714199	0.044042199	0.100672	0.002217299	219.7510396	0.036754983	0.01045164	203.0159691

Total Emission Estimates by Phase for ->	RWD Raise 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust						
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**					
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**	
Grubbing/Land Clearing	0.002465696	0.049391276	0.025472461	0.551322192	0.001322192	0.55	0.115045727	0.000645727	0.1144	0.000191412	19.67337265	0.001667824	0.001987718	18.42275979	
Grading/Excavation	0.014357294	0.296908553	0.06828252	1.104879849	0.004879849	1.1	0.231375698	0.002575698	0.2288	0.000746676	74.66433009	0.007974663	0.004466699	69.12344455	
Drainage/Utilities/Sub-Grade	0.018282022	0.363826536	0.048846833	0.553556345	0.003556345	0.55	0.116908402	0.002508402	0.1144	0.000653411	63.61210354	0.015770185	0.001236417	58.40044481	
Paving	0.004129739	0.075968343	0.028376723	0.08888439	0.08888439	0	0.181032324	0.181032324	0	0.00025486	25.95391989	0.002625697	0.002085123	24.16849228	
Maximum (tons/phase)	0.018282022	0.363826536	0.06828252	1.104879849	0.08888439	1.1	0.231375698	0.181032324	0.2288	0.000746676	74.66433009	0.015770185	0.004466699	69.12344455	
Total (tons/construction project)	0.039234751	0.786094708	0.170978537	2.298642777	0.098642777	2.2	0.644362151	0.186762151	0.4576	0.001846359	183.9037262	0.02803837	0.009775956	170.1151414	85.05757
				2.21			0.46	0.01							

Total Emission Estimates by Phase for ->	Dike 7 2022			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases				**PM10**	**PM10**	**PM10**	**PM2.5**	**PM2.5**	**PM2.5**	**SOx**				
(Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**(tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.005746873	0.119124606	0.020539067	0.067141531	0.001141531	0.066	0.014469115	0.000741115	0.013728	0.000237088	23.16523795	0.003647051	0.000752443	21.30149882
Grading/Excavation	0.003335569	0.05535304	0.013719305	0.087704045	0.001904045	0.0858	0.01868745	0.00084105	0.0178464	0.000180496	18.30264395	0.000946423	0.001041015	16.90694625
Drainage/Utilities/Sub-Grade	0.075763786	1.357885919	0.2878946	0.415275866	0.019275866	0.396	0.093612569	0.011244569	0.082368	0.003344349	332.8210941	0.064354367	0.016170962	307.7645831
Paving	0.002926842	0.051606331	0.020481627	0.001158827	0.001158827	0	0.000600069	0.000600069	0	0.000177327	18.00584408	0.002222057	0.00146987	16.78256079
Maximum (tons/phase)	0.075763786	1.357885919	0.2878946	0.415275866	0.019275866	0.396	0.093612569	0.011244569	0.082368	0.003344349	332.8210941	0.064354367	0.016170962	307.7645831
Total (tons/construction project)	0.08777307	1.583969895	0.342634599	0.571280269	0.023480269	0.5478	0.127369203	0.013426803	0.1139424	0.00393926	392.2948201	0.071169898	0.019434289	362.755589	
	0.02	0.38	0.15	0.38	0.01	0.36	0.08	0.01	0.08	0	146.89	0.01	0.01	136.68	

Total Emission Estimates by Phase for ->	Dikes 1-7, Main Dam Gates, MIAD, and LRWD 2022 Totals													
Project Year				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
(Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	PM10 (tons/year)	PM10 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM2.5 (tons/year)	PM2.5 (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	N2O (tons/year)	CO2e (MT/year)
	0.386588253	7.61281691	1.585824227	20.74858792	0.265388717	20.4869	4.53587782	0.278301784	4.3772768	0.017106974	1834.310621	0.29708122	0.082378888	1562.491838
	0.294998399	5.991646927	1.305439072	18.43042779	0.265388717	18.1866	4.042620534	0.101962072	3.9150368	0.00894316	1739.508702	0.276435594	0.082274589	1248.689508
Placer County	0.166487532	3.347728976	0.687251086	18.43448489	0.091984886	18.3425	3.93228672	0.11704672	3.81524	0.007856691	782.6691442	0.115508446	0.040862467	723.6994199
	0.142670749	2.930528888	0.59950053	16.26328363	0.091984886	16.23	3.394217561	0.028665644	3.37344	0.007856691	687.8672253	0.094862819	0.040862467	635.9726789
Sacramento County	0.289902574	4.265087934	0.898573141	2.314103034	0.1968841	2.1444	0.6035911	0.174681868	0.6759792	0.009250283	1443.936297	0.252742673	0.06095071	838.7924178
	0.222129504	4.63787431	0.977634775	2.639267054	0.095488443	1.9566	0.556221897	0.08287399	0.6420368	0.009250283	1198.531477	0.113319173	0.051516421	612.7168288
													1100 is the threshold	

2022	Pollutant (tons/year)						~~261.2075822~~	~~$7,836,227~~	~~CO2e~~	~~Sac County~~
Emission	ROG	NOx	CO	PM_{10}	$PM_{2.5}$	SO_x				
SMAQMD Thresholds (tons/year) http://www.airquality.org/businesses/ceqa-land-use-planning/mitigation	N/A	N/A	N/A	14.6	15	N/A	1.663283635	30371.55917		Sac county is 30,000 for mitigation
PCAPCD Thresholds (tons/year) https://www.placer.ca.gov/1806/District-Off-Site-Mitigation-Fee-Program	14.9	14.9	N/A	14.9	N/A	N/A	3.834484886	$70,018	New Estimate	
EDCAQMD Thresholds (tons/year)	14.9	14.9	N/A	N/A	N/A	N/A	2022 Total	$70,018	$30,371.56	
Federal Thresholds (tons/year)	25	25	100	100	100	0	2023 Total	$62,860	$24,286.00	
							Project Total	**$132,878**	**$54,657.56**	Updated numbers

Total Emission Estimates by Phase for ->	Dikes 1-3 Raise 2023			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases	ROG	CO (tons/phase)	NOx (tons/phase)	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)	(tons/phase)			(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)					
Grubbing/Land Clearing	0.01	0.13	0.03	0.96	0.00	0.96	0.20	0.00	0.20	0.00	27.99	0.01	0.00	25.93
Grading/Excavation	0.07	1.34	0.27	6.76	0.02	6.74	1.41	0.01	1.40	0.00	308.46	0.06	0.02	285.38
Drainage/Utilities/Sub-Grade	0.02	0.36	0.03	0.97	0.00	0.96	0.20	0.00	0.20	0.00	60.98	0.01	0.00	55.64
Paving	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.75	0.00	0.00	16.59
Maximum (tons/phase)	0.07	1.34	0.27	6.76	0.02	6.74	1.41	0.01	1.40	0.00	308.46	0.06	0.02	285.38
Total (tons/construction project)	0.07	1.47	0.27	6.56	0.02	6.55	1.37	0.01	1.36	0.00	321.45	0.05	0.01	296.82

Total Emission Estimates by Phase for ->	Dikes 4-6 Raise 2023			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases	ROG	CO (tons/phase)	NOx (tons/phase)	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)	(tons/phase)			(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)					
Grubbing/Land Clearing	0.00	0.09	0.03	1.07	0.00	1.07	0.22	0.00	0.22	0.00	25.99	0.00	0.00	24.20
Grading/Excavation	0.02	0.47	0.15	5.37	0.01	5.36	1.12	0.01	1.12	0.00	146.24	0.02	0.01	135.90
Drainage/Utilities/Sub-Grade	0.02	0.45	0.05	2.15	0.00	2.15	0.45	0.00	0.45	0.00	84.80	0.01	0.00	77.68
Paving	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.23	0.00	0.00	9.54
Maximum (tons/phase)	0.02	0.47	0.15	5.37	0.01	5.36	1.12	0.01	1.12	0.00	146.24	0.02	0.01	135.90
Total (tons/construction project)	0.05	1.04	0.24	8.60	0.02	8.58	1.79	0.01	1.78	0.00	267.26	0.03	0.02	247.33

Total Emission Estimates by Phase for ->	Main Dam Gates 2023			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases	ROG	CO (tons/phase)	NOx (tons/phase)	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)	(tons/phase)			(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)					
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	187.96

Total Emission Estimates by Phase for ->	MIAD Raise 2023			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases	ROG	CO (tons/phase)	NOx (tons/phase)	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)	(tons/phase)			(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)					
Grubbing/Land Clearing	0.01	0.29	0.04	0.12	0.00	0.12	0.03	0.00	0.02	0.00	54.21	0.01	0.00	49.86
Grading/Excavation	0.06	1.07	0.29	0.84	0.02	0.83	0.18	0.01	0.17	0.00	293.36	0.05	0.02	272.42
Drainage/Utilities/Sub-Grade	0.00	0.10	0.01	0.17	0.00	0.17	0.04	0.00	0.03	0.00	18.41	0.00	0.00	16.86
Paving	0.04	1.09	0.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00	168.74	0.02	0.00	154.20
Maximum (tons/phase)	0.06	1.09	0.29	0.84	0.02	0.83	0.18	0.01	0.17	0.00	293.36	0.05	0.02	272.42
Total (tons/construction project)	0.12	2.55	0.47	1.13	0.03	1.11	0.25	0.02	0.23	0.01	534.72	0.08	0.02	493.35

Total Emission Estimates by Phase for ->	RWD Raise 2023			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases	ROG	CO (tons/phase)	NOx (tons/phase)	PM10	PM10	PM10	PM2.5	PM2.5	PM2.5	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)	(tons/phase)			(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)	(tons/phase)					
Grubbing/Land Clearing	0.00	0.05	0.02	0.55	0.00	0.55	0.12	0.00	0.11	0.00	19.35	0.00	0.00	18.12
Grading/Excavation	0.01	0.29	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	73.64	0.01	0.00	68.16
Drainage/Utilities/Sub-Grade	0.02	0.36	0.05	0.55	0.00	0.55	0.12	0.00	0.11	0.00	63.26	0.02	0.00	58.07
Paving	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.51	0.00	0.00	23.75
Maximum (tons/phase)	0.02	0.36	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	73.64	0.02	0.00	68.16
Total (tons/construction project)	0.04	0.78	0.17	2.21	0.01	2.20	0.46	0.01	0.46	0.00	181.76	0.03	0.01	168.10

Dikes 1-6, Main Dam Gates, MIAD, and RWD 2023 Totals

Project Year	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	PM10 (tons/year)	PM10 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM2.5 (tons/year)	PM2.5 (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	N2O (tons/year)	CO2e (MT/year)
(Tons for all except CO2e. Metric tonnes for CO2e)														
	0.342242586	**7.148635418**	**1.41674541**	**18.52414282**	**0.08604282**	**18.4481**	**3.884797345**	**0.049992545**	**3.8348048**	**0.016282202**	**1509.719619**	**0.239119462**	**0.061185148**	**1393.561036**
	0.272242586	**5.678635418**	**1.14674541**	**11.96414282**	**0.06604282**	**11.8981**	**2.514797345**	**0.039992545**	**2.4748048**	**0.012100684**	**983.739619**	**0.189119462**	**0.051185148**	**1096.741036**
Placer County	0.140572583	2.895984709	0.591007301	16.26405168	0.044051678	16.23	3.396282623	0.022842623	3.37344	0.007766537	679.587709	0.094387695	0.030237778	628.198263
	0.070572583	1.425984709	0.321007301	9.704051678	0.024051678	9.68	2.026282623							
Sacramento County	0.201670003	4.252650708	0.825738108	2.260091142	0.041991142	2.2181	0.488514723	0.027149923	0.4613648	0.008515665	830.13191	0.144731767	0.03094737	765.3627731

1100 is the threshold

2023	Pollutant (tons/year)					
Emission	**ROG**	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**
SMAQMD Thresholds (tons/year)	N/A	N/A	N/A	14.6	15	N/A
PCAPCD Thresholds (tons/year)	14.9	14.9	N/A	14.9	N/A	N/A
EDCAQMD Thresholds (tons/year)	14.9	14.9	N/A	N/A	N/A	N/A
Federal Thresholds (tons/year)	25	25	100	100	100	0

1.33 **$24,286** PM10 Placer County

-5.22 **-$95,317**

Updated numbers

Total Emission Estimates by Phase for Dikes 1-3 Raise 2024

Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.03	0.01	0.24	0.00	0.24	0.05	0.00	0.05	0.00	7.00	0.00	0.00	6.48
Grading/Excavation	0.02	0.34	0.07	1.69	0.00	1.68	0.35	0.00	0.35	0.00	77.12	0.01	0.00	71.34
Drainage/Utilities/Sub-Grade	0.00	0.09	0.01	0.24	0.00	0.24	0.05	0.00	0.05	0.00	15.25	0.00	0.00	13.91
Paving	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.44	0.00	0.00	4.15
Maximum (tons/phase)	0.02	0.34	0.07	1.69	0.00	1.68	0.35	0.00	0.35	0.00	77.12	0.01	0.00	71.34
Total (tons/construction project)	0.02	0.47	0.09	2.17	0.01	2.17	0.45	0.00	0.45	0.00	103.79	0.02	0.00	95.89

Total Emission Estimates by Phase for Dikes 4-6 Raise 2024

Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.02	0.01	0.27	0.00	0.27	0.06	0.00	0.06	0.00	6.50	0.00	0.00	6.05
Grading/Excavation	0.01	0.12	0.04	1.34	0.00	1.34	0.28	0.00	0.28	0.00	36.56	0.00	0.00	33.98
Drainage/Utilities/Sub-Grade	0.01	0.11	0.01	0.54	0.00	0.54	0.11	0.00	0.11	0.00	21.20	0.00	0.00	19.42
Paving	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	0.00	0.00	2.38
Maximum (tons/phase)	0.01	0.12	0.04	1.34	0.00	1.34	0.28	0.00	0.28	0.00	36.56	0.00	0.00	33.98
Total (tons/construction project)	0.01	0.26	0.06	2.15	0.00	2.15	0.45	0.00	0.45	0.00	66.81	0.01	0.00	61.83

Total Emission Estimates by Phase for Main Dam Gates 2024 (only emission estimates located in this table was valuated.)

Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96

Total Emission Estimates by Phase for MIAD Raise 2024 (only emission estimates located in this table was valuated.)

Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.29	0.04	0.12	0.00	0.12	0.03	0.00	0.02	0.00	54.21	0.01	0.00	49.86
Grading/Excavation	0.06	1.07	0.29	0.84	0.02	0.83	0.18	0.01	0.17	0.00	293.36	0.05	0.02	272.42
Drainage/Utilities/Sub-Grade	0.00	0.10	0.01	0.17	0.00	0.17	0.04	0.00	0.03	0.00	18.41	0.00	0.00	16.86
Paving	0.04	1.09	0.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00	168.74	0.02	0.00	154.20
Maximum (tons/phase)	0.06	1.09	0.29	0.84	0.02	0.83	0.18	0.01	0.17	0.00	293.36	0.05	0.02	272.42
Total (tons/construction project)	0.12	2.55	0.47	1.13	0.03	1.11	0.25	0.02	0.23	0.01	534.72	0.08	0.02	493.35

Total Emission Estimates by Phase for RWD Raise 2024

Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.05	0.02	0.55	0.00	0.55	0.12	0.00	0.11	0.00	19.35	0.00	0.00	18.12
Grading/Excavation	0.01	0.29	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	73.64	0.01	0.00	68.16
Drainage/Utilities/Sub-Grade	0.02	0.36	0.05	0.55	0.00	0.55	0.12	0.00	0.11	0.00	63.26	0.02	0.00	58.07
Paving	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.51	0.00	0.00	23.75
Maximum (tons/phase)	0.02	0.36	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	73.64	0.02	0.00	68.16
Total (tons/construction project)	0.04	0.78	0.17	2.21	0.01	2.20	0.46	0.01	0.46	0.00	181.76	0.03	0.01	168.10

Dikes 1-6, Main Dam Gates, MIAD, and	ROG (tons/year)	CO (tons/year)	NOx (tons/year)	PM10 (tons/year)	PM10 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	PM2.5 (tons/year)	PM2.5 (tons/year)	SOx (tons/year)	CO2 (tons/year)	CH4 (tons/year)	N2O (tons/year)	CO2e (MT/year)
Total	**0.26**	**5.37**	**1.06**	**7.69**	**0.06**	**7.63**	**1.62**	**0.04**	**1.59**	**0.01**	**1092.31**	**0.18**	**0.04**	**1007.13**
Placer County	0.05	1.12	0.23	5.43	0.02	5.41	1.13	0.01	1.13	0.00	261.49	0.04	0.01	241.77
Sac. County	0.20	4.25	0.83	2.26	0.04	2.22	0.49	0.03	0.46	0.01	830.82	0.14	0.03	765.36
													1100 is the threshold	

2024	Pollutant (tons/year)					
Emission	**ROG**	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**
SMAQMD Thresholds (tons/year)	N/A	N/A	N/A	14.6	15	N/A
PCAPCD Thresholds (tons/year)	14.9	14.9	N/A	14.9	N/A	N/A
EDCAQMD Thresholds (tons/year)	14.9	14.9	N/A	N/A	N/A	N/A
Federal Thresholds (tons/year)	25	25	100	100	100	0

All units measured in tons, except for CO_2 which is measured in metric tons.

: error is less than one ton off

: error is more than one ton off

Total Emission Estimates by Phase for Main Dam Gates 2025

				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
	ROG (tons/phase)	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	**0.06**	**1.32**	**0.27**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**205.22**	**0.05**	**0.00**	**187.96**

1100 is the threshold

All units measured in tons, except for CO2 which is measured in metric tons.

Incorrect values are labelled as such:

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dike 7 Floodwall 2022 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.14	2.38	0.79	6.06	0.06	6.00	1.28	0.03	1.25	0.01	816.07	0.09	0.06	835.40
Grading/Excavation	0.25	4.16	1.00	6.14	0.14	6.00	1.31	0.06	1.25	0.01	1,316.46	0.09	0.07	1,340.61
Drainage/Utilities/Sub-Grade	0.43	7.19	2.93	6.22	0.22	6.00	1.35	0.10	1.25	0.03	2,774.09	0.22	0.22	2,846.51
Paving	0.09	1.29	1.50	0.09	0.09	0.00	0.04	0.04	0.00	0.01	1,065.49	0.02	0.13	1,104.20
Maximum (pounds/day)	0.43	7.19	2.93	6.22	0.22	6.00	1.35	0.10	1.25	0.03	2,774.09	0.22	0.22	2,846.51
Total (tons/construction project)	0.02	0.38	0.15	0.38	0.01	0.36	0.08	0.01	0.08	0.00	146.89	0.01	0.01	150.66

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	13
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	80
Grading/Excavation	52	0	4	0	1,040	80
Drainage/Utilities/Sub-Grade	24	0	243	0	1,160	80
Paving	39	0	120	0	360	80

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dike 7 Floodwall 2022 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.01	0.00	0.03	0.00	0.03	0.01	0.00	0.01	0.00	4.49	0.00	0.00	4.17
Grading/Excavation	0.00	0.05	0.01	0.07	0.00	0.07	0.01	0.00	0.01	0.00	14.48	0.00	0.00	13.38
Drainage/Utilities/Sub-Grade	0.02	0.32	0.13	0.27	0.01	0.26	0.06	0.00	0.05	0.00	122.06	0.01	0.01	113.62
Paving	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.86	0.00	0.00	5.51
Maximum (tons/phase)	0.02	0.32	0.13	0.27	0.01	0.26	0.06	0.00	0.05	0.00	122.06	0.01	0.01	113.62
Total (tons/construction project)	0.02	0.38	0.15	0.38	0.01	0.36	0.08	0.01	0.08	0.00	146.89	0.01	0.01	136.68

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 1-3 Raise 2022 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.56	11.73	2.45	87.63	0.13	87.50	18.28	0.08	18.20	0.03	2,567.81	0.50	0.14	2,622.72
Grading/Excavation	0.89	17.63	3.58	87.75	0.25	87.50	18.34	0.14	18.20	0.04	4,052.36	0.73	0.21	4,133.27
Drainage/Utilities/Sub-Grade	1.50	33.26	2.92	87.75	0.25	87.50	18.37	0.17	18.20	0.06	5,572.25	0.62	0.06	5,605.71
Paving	0.22	4.04	2.06	0.11	0.11	0.00	0.05	0.05	0.00	0.02	1,639.97	0.15	0.16	1,690.44
Maximum (pounds/day)	1.50	33.26	3.58	87.75	0.25	87.50	18.37	0.17	18.20	0.06	5,572.25	0.73	0.21	5,605.71
Total (tons/construction project)	0.07	1.48	0.27	6.56	0.02	6.55	1.37	0.01	1.36	0.00	324.81	0.05	0.02	330.67

Notes:

Project Start Year ->	2022
Project Length (months) ->	8
Total Project Area (acres) ->	35
Maximum Area Disturbed/Day (acres) ->	9
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	405	0	120	0	360	80
Grading/Excavation	300	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	0	57	120	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 1-3 Raise 2022 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.10	0.02	0.77	0.00	0.77	0.16	0.00	0.16	0.00	22.60	0.00	0.00	20.94
Grading/Excavation	0.05	0.97	0.20	4.83	0.01	4.81	1.01	0.01	1.00	0.00	222.88	0.04	0.01	206.23
Drainage/Utilities/Sub-Grade	0.02	0.37	0.03	0.97	0.00	0.96	0.20	0.00	0.20	0.00	61.29	0.01	0.00	55.94
Paving	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.04	0.00	0.00	16.87
Maximum (tons/phase)	0.05	0.97	0.20	4.83	0.01	4.81	1.01	0.01	1.00	0.00	222.88	0.04	0.01	206.23
Total (tons/construction project)	0.07	1.48	0.27	6.56	0.02	6.55	1.37	0.01	1.36	0.00	324.81	0.05	0.02	299.98

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 1-3 Raise 2023 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.55	11.65	2.41	87.63	0.13	87.50	18.28	0.08	18.20	0.03	2,544.25	0.50	0.14	2,598.26
Grading/Excavation	0.87	17.41	3.50	87.75	0.25	87.50	18.34	0.14	18.20	0.04	4,005.98	0.73	0.20	4,085.34
Drainage/Utilities/Sub-Grade	1.49	33.02	2.89	87.75	0.25	87.50	18.37	0.17	18.20	0.06	5,543.72	0.60	0.06	5,576.09
Paving	0.21	3.96	2.01	0.11	0.11	0.00	0.05	0.05	0.00	0.02	1,613.43	0.15	0.15	1,662.87
Maximum (pounds/day)	1.49	33.02	3.50	87.75	0.25	87.50	18.37	0.17	18.20	0.06	5,543.72	0.73	0.20	5,576.09
Total (tons/construction project)	0.07	1.47	0.27	6.56	0.02	6.55	1.37	0.01	1.36	0.00	321.45	0.05	0.01	327.19

Notes:

Project Start Year ->	2023
Project Length (months) ->	8
Total Project Area (acres) ->	35
Maximum Area Disturbed/Day (acres) ->	9
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	405	0	120	0	360	80
Grading/Excavation	300	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	0	57	120	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 1-3 Raise 2023 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.10	0.02	0.77	0.00	0.77	0.16	0.00	0.16	0.00	22.39	0.00	0.00	20.74
Grading/Excavation	0.05	0.96	0.19	4.83	0.01	4.81	1.01	0.01	1.00	0.00	220.33	0.04	0.01	203.84
Drainage/Utilities/Sub-Grade	0.02	0.36	0.03	0.97	0.00	0.96	0.20	0.00	0.20	0.00	60.98	0.01	0.00	55.64
Paving	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.75	0.00	0.00	16.59
Maximum (tons/phase)	0.05	0.96	0.19	4.83	0.01	4.81	1.01	0.01	1.00	0.00	220.33	0.04	0.01	203.84
Total (tons/construction project)	0.07	1.47	0.27	6.56	0.02	6.55	1.37	0.01	1.36	0.00	321.45	0.05	0.01	296.82

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 4-6 Raise 2022 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.42	8.44	2.70	97.64	0.14	97.50	20.36	0.08	20.28	0.02	2,392.45	0.35	0.19	2,456.60
Grading/Excavation	0.47	8.70	2.73	97.70	0.20	97.50	20.38	0.10	20.28	0.03	2,705.49	0.30	0.20	2,771.89
Drainage/Utilities/Sub-Grade	0.97	20.75	2.36	97.72	0.22	97.50	20.41	0.13	20.28	0.04	3,889.02	0.44	0.09	3,927.81
Paving	0.14	2.72	1.10	0.07	0.07	0.00	0.03	0.03	0.00	0.01	948.02	0.08	0.08	974.33
Maximum (pounds/day)	0.97	20.75	2.73	97.72	0.22	97.50	20.41	0.13	20.28	0.04	3,889.02	0.44	0.20	3,927.81
Total (tons/construction project)	0.05	1.06	0.24	8.60	0.02	8.58	1.79	0.01	1.78	0.00	271.11	0.03	0.02	276.61

Notes:

Project Start Year ->	2022
Project Length (months) ->	9
Total Project Area (acres) ->	39
Maximum Area Disturbed/Day (acres) ->	10
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	6	0	120	0	360	160
Grading/Excavation	31	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	23	0	0	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 4-6 Raise 2022 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.09	0.03	1.07	0.00	1.07	0.22	0.00	0.22	0.00	26.32	0.00	0.00	24.51
Grading/Excavation	0.03	0.48	0.15	5.37	0.01	5.36	1.12	0.01	1.12	0.00	148.80	0.02	0.01	138.31
Drainage/Utilities/Sub-Grade	0.02	0.46	0.05	2.15	0.00	2.15	0.45	0.00	0.45	0.00	85.56	0.01	0.00	78.39
Paving	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.43	0.00	0.00	9.72
Maximum (tons/phase)	0.03	0.48	0.15	5.37	0.01	5.36	1.12	0.01	1.12	0.00	148.80	0.02	0.01	138.31
Total (tons/construction project)	0.05	1.06	0.24	8.60	0.02	8.58	1.79	0.01	1.78	0.00	271.11	0.03	0.02	250.94

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 4-6 Raise 2023 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.40	8.35	2.64	97.64	0.14	97.50	20.36	0.08	20.28	0.02	2,362.52	0.35	0.18	2,425.50
Grading/Excavation	0.45	8.47	2.65	97.70	0.20	97.50	20.38	0.10	20.28	0.03	2,658.93	0.30	0.19	2,723.78
Drainage/Utilities/Sub-Grade	0.95	20.51	2.31	97.72	0.22	97.50	20.41	0.13	20.28	0.04	3,854.36	0.43	0.09	3,892.01
Paving	0.13	2.64	1.07	0.07	0.07	0.00	0.03	0.03	0.00	0.01	930.25	0.08	0.08	955.95
Maximum (pounds/day)	0.95	20.51	2.65	97.72	0.22	97.50	20.41	0.13	20.28	0.04	3,854.36	0.43	0.19	3,892.01
Total (tons/construction project)	0.05	1.04	0.24	8.60	0.02	8.58	1.79	0.01	1.78	0.00	267.26	0.03	0.02	272.63

Notes:

Project Start Year ->	2023
Project Length (months) ->	9
Total Project Area (acres) ->	39
Maximum Area Disturbed/Day (acres) ->	10
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	6	0	120	0	360	160
Grading/Excavation	31	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	23	0	0	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 4-6 Raise 2023 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.09	0.03	1.07	0.00	1.07	0.22	0.00	0.22	0.00	25.99	0.00	0.00	24.20
Grading/Excavation	0.02	0.47	0.15	5.37	0.01	5.36	1.12	0.01	1.12	0.00	146.24	0.02	0.01	135.90
Drainage/Utilities/Sub-Grade	0.02	0.45	0.05	2.15	0.00	2.15	0.45	0.00	0.45	0.00	84.80	0.01	0.00	77.68
Paving	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.23	0.00	0.00	9.54
Maximum (tons/phase)	0.02	0.47	0.15	5.37	0.01	5.36	1.12	0.01	1.12	0.00	146.24	0.02	0.01	135.90
Total (tons/construction project)	0.05	1.04	0.24	8.60	0.02	8.58	1.79	0.01	1.78	0.00	267.26	0.03	0.02	247.33

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> LWD Raise 2022 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.18	3.55	2.24	10.12	0.12	10.00	2.14	0.06	2.08	0.02	1,663.63	0.11	0.18	1,719.92
Grading/Excavation	0.44	8.40	2.68	10.20	0.20	10.00	2.18	0.10	2.08	0.03	2,624.70	0.27	0.20	2,690.22
Drainage/Utilities/Sub-Grade	2.66	53.44	7.00	10.46	0.46	10.00	2.43	0.35	2.08	0.09	9,171.44	2.07	0.14	9,264.97
Paving	0.34	6.19	1.56	3.86	3.86	0.00	1.87	1.87	0.00	0.02	1,579.45	0.28	0.09	1,612.57
Maximum (pounds/day)	2.66	53.44	7.00	10.46	3.86	10.00	2.43	1.87	2.08	0.09	9,171.44	2.07	0.20	9,264.97
Total (tons/construction project)	0.05	0.97	0.20	0.57	0.09	0.48	0.14	0.04	0.10	0.00	219.75	0.04	0.01	223.78

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	22
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	5	0	120	0	360	160
Grading/Excavation	37	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	161	0	120	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> LWD Raise 2022 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.04	0.02	0.11	0.00	0.11	0.02	0.00	0.02	0.00	18.30	0.00	0.00	17.16
Grading/Excavation	0.01	0.22	0.07	0.27	0.01	0.26	0.06	0.00	0.05	0.00	69.29	0.01	0.01	64.43
Drainage/Utilities/Sub-Grade	0.03	0.59	0.08	0.12	0.01	0.11	0.03	0.00	0.02	0.00	100.89	0.02	0.00	92.46
Paving	0.01	0.12	0.03	0.08	0.08	0.00	0.04	0.04	0.00	0.00	31.27	0.01	0.00	28.97
Maximum (tons/phase)	0.03	0.59	0.08	0.27	0.08	0.26	0.06	0.04	0.05	0.00	100.89	0.02	0.01	92.46
Total (tons/construction project)	0.05	0.97	0.20	0.57	0.09	0.48	0.14	0.04	0.10	0.00	219.75	0.04	0.01	203.02

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2022 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.00	20.90	4.24	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,257.41	0.83	0.04	3,288.76
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	1.00	20.90	4.24	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,257.41	0.83	0.04	3,288.76
Total (tons/construction project)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	207.19

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2022 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	0.06	1.32	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	205.22	0.05	0.00	187.96

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2023 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.00	20.80	4.23	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,246.58	0.83	0.03	3,277.55
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	1.00	20.80	4.23	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,246.58	0.83	0.03	3,277.55
Total (tons/construction project)	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	206.49

Notes:

Project Start Year ->	2023
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2023 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	187.32
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	187.32
Total (tons/construction project)	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	204.53	0.05	0.00	187.32

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2024 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.99	20.72	4.22	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,235.78	0.82	0.03	3,266.45
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	0.99	20.72	4.22	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,235.78	0.82	0.03	3,266.45
Total (tons/construction project)	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.85	0.05	0.00	205.79

Notes:

Project Start Year ->	2024
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2024 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.85	0.05	0.00	186.69
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.85	0.05	0.00	186.69
Total (tons/construction project)	0.06	1.31	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.85	0.05	0.00	186.69

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2025 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.99	20.65	4.21	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,223.50	0.82	0.03	3,253.89
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	0.99	20.65	4.21	0.34	0.14	0.20	0.15	0.11	0.04	0.03	3,223.50	0.82	0.03	3,253.89
Total (tons/construction project)	0.06	1.30	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.08	0.05	0.00	205.00

Notes:

Project Start Year ->	2025
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2025 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.06	1.30	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.08	0.05	0.00	185.97
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.06	1.30	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.08	0.05	0.00	185.97
Total (tons/construction project)	0.06	1.30	0.27	0.02	0.01	0.01	0.01	0.01	0.00	0.00	203.08	0.05	0.00	185.97

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> MIAD Raise 2023 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	1.78	37.74	5.65	15.29	0.29	15.00	3.34	0.22	3.12	0.07	7,040.44	1.26	0.22	7,137.95
Grading/Excavation	1.02	19.52	5.36	15.32	0.32	15.00	3.30	0.18	3.12	0.05	5,333.84	0.85	0.35	5,459.85
Drainage/Utilities/Sub-Grade	0.44	8.70	0.76	15.15	0.15	15.00	3.19	0.07	3.12	0.02	1,673.70	0.29	0.03	1,689.50
Paving	4.08	98.93	11.66	0.54	0.54	0.00	0.45	0.45	0.00	0.16	15,339.85	1.67	0.24	15,452.62
Maximum (pounds/day)	4.08	98.93	11.66	15.32	0.54	15.00	3.34	0.45	3.12	0.16	15,339.85	1.67	0.35	15,452.62
Total (tons/construction project)	0.12	2.55	0.47	1.13	0.03	1.11	0.25	0.02	0.23	0.01	534.72	0.08	0.02	543.82

Notes:

Project Start Year ->	2023
Project Length (months) ->	8
Total Project Area (acres) ->	79
Maximum Area Disturbed/Day (acres) ->	2
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	131	0	200	0	360	80
Grading/Excavation	329	0	200	0	1,040	320
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	444	0	200	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> MIAD Raise 2023 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.01	0.29	0.04	0.12	0.00	0.12	0.03	0.00	0.02	0.00	54.21	0.01	0.00	49.86
Grading/Excavation	0.06	1.07	0.29	0.84	0.02	0.83	0.18	0.01	0.17	0.00	293.36	0.05	0.02	272.42
Drainage/Utilities/Sub-Grade	0.00	0.10	0.01	0.17	0.00	0.17	0.04	0.00	0.03	0.00	18.41	0.00	0.00	16.86
Paving	0.04	1.09	0.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00	168.74	0.02	0.00	154.20
Maximum (tons/phase)	0.06	1.09	0.29	0.84	0.02	0.83	0.18	0.01	0.17	0.00	293.36	0.05	0.02	272.42
Total (tons/construction project)	0.12	2.55	0.47	1.13	0.03	1.11	0.25	0.02	0.23	0.01	534.72	0.08	0.02	493.35

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> MIAD Raise 2024 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	1.78	37.68	5.66	15.29	0.29	15.00	3.34	0.22	3.12	0.07	7,021.29	1.25	0.22	7,117.85
Grading/Excavation	1.01	19.34	5.38	15.32	0.32	15.00	3.30	0.18	3.12	0.05	5,284.41	0.85	0.35	5,408.77
Drainage/Utilities/Sub-Grade	0.43	8.49	0.74	15.15	0.15	15.00	3.19	0.07	3.12	0.02	1,645.55	0.29	0.03	1,660.81
Paving	4.08	98.87	11.67	0.54	0.54	0.00	0.45	0.45	0.00	0.16	15,322.23	1.64	0.24	15,433.65
Maximum (pounds/day)	4.08	98.87	11.67	15.32	0.54	15.00	3.34	0.45	3.12	0.16	15,322.23	1.64	0.35	15,433.65
Total (tons/construction project)	0.12	2.53	0.48	1.13	0.03	1.11	0.25	0.02	0.23	0.01	531.35	0.08	0.02	540.33

Notes:

Project Start Year ->	2024
Project Length (months) ->	8
Total Project Area (acres) ->	79
Maximum Area Disturbed/Day (acres) ->	2
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	131	0	200	0	360	80
Grading/Excavation	329	0	200	0	1,040	320
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	444	0	200	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> MIAD Raise 2024 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.01	0.29	0.04	0.12	0.00	0.12	0.03	0.00	0.02	0.00	54.06	0.01	0.00	49.72
Grading/Excavation	0.06	1.06	0.30	0.84	0.02	0.83	0.18	0.01	0.17	0.00	290.64	0.05	0.02	269.87
Drainage/Utilities/Sub-Grade	0.00	0.09	0.01	0.17	0.00	0.17	0.04	0.00	0.03	0.00	18.10	0.00	0.00	16.57
Paving	0.04	1.09	0.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00	168.54	0.02	0.00	154.01
Maximum (tons/phase)	0.06	1.09	0.30	0.84	0.02	0.83	0.18	0.01	0.17	0.00	290.64	0.05	0.02	269.87
Total (tons/construction project)	0.12	2.53	0.48	1.13	0.03	1.11	0.25	0.02	0.23	0.01	531.35	0.08	0.02	490.18

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> RWD Raise 2022 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.22	4.49	2.32	50.12	0.12	50.00	10.46	0.06	10.40	0.02	1,788.49	0.15	0.18	1,846.13
Grading/Excavation	0.65	13.50	3.10	50.22	0.22	50.00	10.52	0.12	10.40	0.03	3,393.83	0.36	0.20	3,463.40
Drainage/Utilities/Sub-Grade	1.66	33.08	4.44	50.32	0.32	50.00	10.63	0.23	10.40	0.06	5,782.92	1.43	0.11	5,852.26
Paving	0.16	3.00	1.12	0.08	0.08	0.00	0.04	0.04	0.00	0.01	1,025.85	0.10	0.08	1,053.00
Maximum (pounds/day)	1.66	33.08	4.44	50.32	0.32	50.00	10.63	0.23	10.40	0.06	5,782.92	1.43	0.20	5,852.26
Total (tons/construction project)	0.04	0.79	0.17	2.21	0.01	2.20	0.46	0.01	0.46	0.00	183.90	0.03	0.01	187.52

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	77
Maximum Area Disturbed/Day (acres) ->	5
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	8	0	120	0	360	160
Grading/Excavation	51	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	216	0	120	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> RWD Raise 2022 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.05	0.03	0.55	0.00	0.55	0.12	0.00	0.11	0.00	19.67	0.00	0.00	18.42
Grading/Excavation	0.01	0.30	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	74.66	0.01	0.00	69.12
Drainage/Utilities/Sub-Grade	0.02	0.36	0.05	0.55	0.00	0.55	0.12	0.00	0.11	0.00	63.61	0.02	0.00	58.40
Paving	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.95	0.00	0.00	24.17
Maximum (tons/phase)	0.02	0.36	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	74.66	0.02	0.00	69.12
Total (tons/construction project)	0.04	0.79	0.17	2.21	0.01	2.20	0.46	0.01	0.46	0.00	183.90	0.03	0.01	170.12

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> RWD Raise 2023 Mitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.21	4.41	2.25	50.12	0.12	50.00	10.46	0.06	10.40	0.02	1,758.91	0.15	0.18	1,815.37
Grading/Excavation	0.63	13.27	3.02	50.22	0.22	50.00	10.52	0.12	10.40	0.03	3,347.42	0.36	0.20	3,415.36
Drainage/Utilities/Sub-Grade	1.65	32.84	4.40	50.32	0.32	50.00	10.63	0.23	10.40	0.06	5,750.98	1.43	0.11	5,819.40
Paving	0.16	2.92	1.09	0.08	0.08	0.00	0.04	0.04	0.00	0.01	1,008.24	0.10	0.08	1,034.78
Maximum (pounds/day)	1.65	32.84	4.40	50.32	0.32	50.00	10.63	0.23	10.40	0.06	5,750.98	1.43	0.20	5,819.40
Total (tons/construction project)	0.04	0.78	0.17	2.21	0.01	2.20	0.46	0.01	0.46	0.00	181.76	0.03	0.01	185.30

Notes:

Project Start Year ->	2023
Project Length (months) ->	6
Total Project Area (acres) ->	77
Maximum Area Disturbed/Day (acres) ->	5
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	8	0	120	0	360	160
Grading/Excavation	51	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	216	0	120	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> RWD Raise 2023 Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.05	0.02	0.55	0.00	0.55	0.12	0.00	0.11	0.00	19.35	0.00	0.00	18.12
Grading/Excavation	0.01	0.29	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	73.64	0.01	0.00	68.16
Drainage/Utilities/Sub-Grade	0.02	0.36	0.05	0.55	0.00	0.55	0.12	0.00	0.11	0.00	63.26	0.02	0.00	58.07
Paving	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.51	0.00	0.00	23.75
Maximum (tons/phase)	0.02	0.36	0.07	1.10	0.00	1.10	0.23	0.00	0.23	0.00	73.64	0.02	0.00	68.16
Total (tons/construction project)	0.04	0.78	0.17	2.21	0.01	2.20	0.46	0.01	0.46	0.00	181.76	0.03	0.01	168.10

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

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Daily Emission Estimates for -> Dike 7 Floodwall 2022 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.17	1.75	1.52	6.09	0.09	6.00	1.30	0.06	1.25	0.01	816.07	0.09	0.06	835.40
Grading/Excavation	0.28	3.65	1.72	6.16	0.16	6.00	1.34	0.09	1.25	0.01	1,316.46	0.09	0.07	1,340.61
Drainage/Utilities/Sub-Grade	0.51	5.57	4.89	6.29	0.29	6.00	1.42	0.17	1.25	0.03	2,774.09	0.22	0.22	2,846.51
Paving	0.09	1.22	1.60	0.09	0.09	0.00	0.04	0.04	0.00	0.01	1,065.49	0.02	0.13	1,104.20
Maximum (pounds/day)	0.51	5.57	4.89	6.29	0.29	6.00	1.42	0.17	1.25	0.03	2,774.09	0.22	0.22	2,846.51
Total (tons/construction project)	0.03	0.30	0.25	0.38	0.02	0.36	0.08	0.01	0.08	0.00	146.89	0.01	0.01	150.66

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	13
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	80
Grading/Excavation	52	0	4	0	1,040	80
Drainage/Utilities/Sub-Grade	24	0	243	0	1,160	80
Paving	39	0	120	0	360	80

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dike 7 Floodwall 2022 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.01	0.01	0.03	0.00	0.03	0.01	0.00	0.01	0.00	4.49	0.00	0.00	4.17
Grading/Excavation	0.00	0.04	0.02	0.07	0.00	0.07	0.01	0.00	0.01	0.00	14.48	0.00	0.00	13.38
Drainage/Utilities/Sub-Grade	0.02	0.25	0.22	0.28	0.01	0.26	0.06	0.01	0.05	0.00	122.06	0.01	0.01	113.62
Paving	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.86	0.00	0.00	5.51
Maximum (tons/phase)	0.02	0.25	0.22	0.28	0.01	0.26	0.06	0.01	0.05	0.00	122.06	0.01	0.01	113.62
Total (tons/construction project)	0.03	0.30	0.25	0.38	0.02	0.36	0.08	0.01	0.08	0.00	146.89	0.01	0.01	136.68

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 1-3 Raise 2022 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.84	9.17	9.12	87.92	0.42	87.50	18.55	0.35	18.20	0.03	2,567.81	0.50	0.14	2,622.72
Grading/Excavation	1.38	13.75	14.75	88.21	0.71	87.50	18.77	0.57	18.20	0.04	4,052.36	0.73	0.21	4,133.27
Drainage/Utilities/Sub-Grade	2.83	28.73	24.20	88.78	1.28	87.50	19.38	1.18	18.20	0.06	5,572.25	0.62	0.06	5,605.71
Paving	0.31	3.09	3.98	0.19	0.19	0.00	0.13	0.13	0.00	0.02	1,639.97	0.15	0.16	1,690.44
Maximum (pounds/day)	2.83	28.73	24.20	88.78	1.28	87.50	19.38	1.18	18.20	0.06	5,572.25	0.73	0.21	5,605.71
Total (tons/construction project)	0.12	1.19	1.20	6.60	0.06	6.55	1.41	0.05	1.36	0.00	324.81	0.05	0.02	330.67

Notes:

Project Start Year ->	2022
Project Length (months) ->	8
Total Project Area (acres) ->	35
Maximum Area Disturbed/Day (acres) ->	9
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	405	0	120	0	360	80
Grading/Excavation	300	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	0	57	120	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 1-3 Raise 2022 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.01	0.08	0.08	0.77	0.00	0.77	0.16	0.00	0.16	0.00	22.60	0.00	0.00	20.94
Grading/Excavation	0.08	0.76	0.81	4.85	0.04	4.81	1.03	0.03	1.00	0.00	222.88	0.04	0.01	206.23
Drainage/Utilities/Sub-Grade	0.03	0.32	0.27	0.98	0.01	0.96	0.21	0.01	0.20	0.00	61.29	0.01	0.00	55.94
Paving	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.04	0.00	0.00	16.87
Maximum (tons/phase)	0.08	0.76	0.81	4.85	0.04	4.81	1.03	0.03	1.00	0.00	222.88	0.04	0.01	206.23
Total (tons/construction project)	0.12	1.19	1.20	6.60	0.06	6.55	1.41	0.05	1.36	0.00	324.81	0.05	0.02	299.98

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 1-3 Raise 2023 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.77	9.04	8.11	87.88	0.38	87.50	18.51	0.31	18.20	0.03	2,544.25	0.50	0.14	2,598.26
Grading/Excavation	1.26	13.44	13.16	88.15	0.65	87.50	18.71	0.51	18.20	0.04	4,005.98	0.73	0.20	4,085.34
Drainage/Utilities/Sub-Grade	2.63	28.39	22.09	88.63	1.13	87.50	19.23	1.03	18.20	0.06	5,543.72	0.60	0.06	5,576.09
Paving	0.28	2.98	3.70	0.18	0.18	0.00	0.12	0.12	0.00	0.02	1,613.43	0.15	0.15	1,662.87
Maximum (pounds/day)	2.63	28.39	22.09	88.63	1.13	87.50	19.23	1.03	18.20	0.06	5,543.72	0.73	0.20	5,576.09
Total (tons/construction project)	0.11	1.16	1.08	6.60	0.05	6.55	1.40	0.04	1.36	0.00	321.45	0.05	0.01	327.19

Notes:

Project Start Year ->	2023
Project Length (months) ->	8
Total Project Area (acres) ->	35
Maximum Area Disturbed/Day (acres) ->	9
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	405	0	120	0	360	80
Grading/Excavation	300	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	0	57	120	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 1-3 Raise 2023 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.01	0.08	0.07	0.77	0.00	0.77	0.16	0.00	0.16	0.00	22.39	0.00	0.00	20.74
Grading/Excavation	0.07	0.74	0.72	4.85	0.04	4.81	1.03	0.03	1.00	0.00	220.33	0.04	0.01	203.84
Drainage/Utilities/Sub-Grade	0.03	0.31	0.24	0.97	0.01	0.96	0.21	0.01	0.20	0.00	60.98	0.01	0.00	55.64
Paving	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.75	0.00	0.00	16.59
Maximum (tons/phase)	0.07	0.74	0.72	4.85	0.04	4.81	1.03	0.03	1.00	0.00	220.33	0.04	0.01	203.84
Total (tons/construction project)	0.11	1.16	1.08	6.60	0.05	6.55	1.40	0.04	1.36	0.00	321.45	0.05	0.01	296.82

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Dikes 4-6 Raise 2022 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.71	6.74	8.92	97.92	0.42	97.50	20.61	0.33	20.28	0.02	2,392.45	0.35	0.19	2,456.60
Grading/Excavation	0.68	7.22	7.56	97.90	0.40	97.50	20.57	0.29	20.28	0.03	2,705.49	0.30	0.20	2,771.89
Drainage/Utilities/Sub-Grade	1.73	17.98	15.26	98.33	0.83	97.50	21.01	0.73	20.28	0.04	3,889.02	0.44	0.09	3,927.81
Paving	0.18	2.41	2.07	0.12	0.12	0.00	0.08	0.08	0.00	0.01	948.02	0.08	0.08	974.33
Maximum (pounds/day)	1.73	17.98	15.26	98.33	0.83	97.50	21.01	0.73	20.28	0.04	3,889.02	0.44	0.20	3,927.81
Total (tons/construction project)	0.09	0.89	0.87	8.63	0.05	8.58	1.82	0.04	1.78	0.00	271.11	0.03	0.02	276.61

Notes:

Project Start Year ->	2022
Project Length (months) ->	9
Total Project Area (acres) ->	39
Maximum Area Disturbed/Day (acres) ->	10
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	6	0	120	0	360	160
Grading/Excavation	31	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	23	0	0	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 4-6 Raise 2022 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.01	0.07	0.10	1.08	0.00	1.07	0.23	0.00	0.22	0.00	26.32	0.00	0.00	24.51
Grading/Excavation	0.04	0.40	0.42	5.38	0.02	5.36	1.13	0.02	1.12	0.00	148.80	0.02	0.01	138.31
Drainage/Utilities/Sub-Grade	0.04	0.40	0.34	2.16	0.02	2.15	0.46	0.02	0.45	0.00	85.56	0.01	0.00	78.39
Paving	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.43	0.00	0.00	9.72
Maximum (tons/phase)	0.04	0.40	0.42	5.38	0.02	5.36	1.13	0.02	1.12	0.00	148.80	0.02	0.01	138.31
Total (tons/construction project)	0.09	0.89	0.87	8.63	0.05	8.58	1.82	0.04	1.78	0.00	271.11	0.03	0.02	250.94

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

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Daily Emission Estimates for -> Dikes 4-6 Raise 2023 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.65	6.60	8.01	97.88	0.38	97.50	20.58	0.30	20.28	0.02	2,362.52	0.35	0.18	2,425.50
Grading/Excavation	0.62	6.96	6.82	97.88	0.38	97.50	20.54	0.26	20.28	0.03	2,658.93	0.30	0.19	2,723.78
Drainage/Utilities/Sub-Grade	1.60	17.67	13.83	98.24	0.74	97.50	20.92	0.64	20.28	0.04	3,854.36	0.43	0.09	3,892.01
Paving	0.16	2.34	1.95	0.12	0.12	0.00	0.07	0.07	0.00	0.01	930.25	0.08	0.08	955.95
Maximum (pounds/day)	1.60	17.67	13.83	98.24	0.74	97.50	20.92	0.64	20.28	0.04	3,854.36	0.43	0.19	3,892.01
Total (tons/construction project)	0.08	0.87	0.79	8.62	0.04	8.58	1.82	0.03	1.78	0.00	267.26	0.03	0.02	272.63

Notes:

Project Start Year ->	2023
Project Length (months) ->	9
Total Project Area (acres) ->	39
Maximum Area Disturbed/Day (acres) ->	10
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	6	0	120	0	360	160
Grading/Excavation	31	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	23	0	0	120	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Dikes 4-6 Raise 2023 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.01	0.07	0.09	1.08	0.00	1.07	0.23	0.00	0.22	0.00	25.99	0.00	0.00	24.20
Grading/Excavation	0.03	0.38	0.38	5.38	0.02	5.36	1.13	0.01	1.12	0.00	146.24	0.02	0.01	135.90
Drainage/Utilities/Sub-Grade	0.04	0.39	0.30	2.16	0.02	2.15	0.46	0.01	0.45	0.00	84.80	0.01	0.00	77.68
Paving	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.23	0.00	0.00	9.54
Maximum (tons/phase)	0.04	0.39	0.38	5.38	0.02	5.36	1.13	0.01	1.12	0.00	146.24	0.02	0.01	135.90
Total (tons/construction project)	0.08	0.87	0.79	8.62	0.04	8.58	1.82	0.03	1.78	0.00	267.26	0.03	0.02	247.33

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

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Daily Emission Estimates for -> LWD Raise 2022 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.25	3.13	3.76	10.19	0.19	10.00	2.20	0.12	2.08	0.02	1,663.63	0.11	0.18	1,719.92
Grading/Excavation	0.57	7.15	6.32	10.35	0.35	10.00	2.32	0.24	2.08	0.03	2,624.70	0.27	0.20	2,690.22
Drainage/Utilities/Sub-Grade	3.90	37.72	33.55	11.57	1.57	10.00	3.50	1.42	2.08	0.09	9,171.44	2.07	0.14	9,264.97
Paving	0.45	4.21	4.16	3.97	3.97	0.00	1.97	1.97	0.00	0.02	1,579.45	0.28	0.09	1,612.57
Maximum (pounds/day)	3.90	37.72	33.55	11.57	3.97	10.00	3.50	1.97	2.08	0.09	9,171.44	2.07	0.20	9,264.97
Total (tons/construction project)	0.07	0.72	0.66	0.59	0.11	0.48	0.16	0.06	0.10	0.00	219.75	0.04	0.01	223.78

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	22
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	5	0	120	0	360	160
Grading/Excavation	37	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	161	0	120	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> LWD Raise 2022 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.03	0.04	0.11	0.00	0.11	0.02	0.00	0.02	0.00	18.30	0.00	0.00	17.16
Grading/Excavation	0.02	0.19	0.17	0.27	0.01	0.26	0.06	0.01	0.05	0.00	69.29	0.01	0.01	64.43
Drainage/Utilities/Sub-Grade	0.04	0.41	0.37	0.13	0.02	0.11	0.04	0.02	0.02	0.00	100.89	0.02	0.00	92.46
Paving	0.01	0.08	0.08	0.08	0.08	0.00	0.04	0.04	0.00	0.00	31.27	0.01	0.00	28.97
Maximum (tons/phase)	0.04	0.41	0.37	0.27	0.08	0.26	0.06	0.04	0.05	0.00	100.89	0.02	0.01	92.46
Total (tons/construction project)	0.07	0.72	0.66	0.59	0.11	0.48	0.16	0.06	0.10	0.00	219.75	0.04	0.01	203.02

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

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Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2022 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.79	16.40	14.29	0.87	0.67	0.20	0.65	0.61	0.04	0.03	3,257.41	0.83	0.04	3,288.76
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	1.79	16.40	14.29	0.87	0.67	0.20	0.65	0.61	0.04	0.03	3,257.41	0.83	0.04	3,288.76
Total (tons/construction project)	0.11	1.03	0.90	0.06	0.04	0.01	0.04	0.04	0.00	0.00	205.22	0.05	0.00	207.19

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2022 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.11	1.03	0.90	0.06	0.04	0.01	0.04	0.04	0.00	0.00	205.22	0.05	0.00	187.96
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.11	1.03	0.90	0.06	0.04	0.01	0.04	0.04	0.00	0.00	205.22	0.05	0.00	187.96
Total (tons/construction project)	0.11	1.03	0.90	0.06	0.04	0.01	0.04	0.04	0.00	0.00	205.22	0.05	0.00	187.96

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2023 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.68	16.23	13.23	0.81	0.61	0.20	0.59	0.55	0.04	0.03	3,246.58	0.83	0.03	3,277.55
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	1.68	16.23	13.23	0.81	0.61	0.20	0.59	0.55	0.04	0.03	3,246.58	0.83	0.03	3,277.55
Total (tons/construction project)	0.11	1.02	0.83	0.05	0.04	0.01	0.04	0.03	0.00	0.00	204.53	0.05	0.00	206.49

Notes:

Project Start Year ->	2023
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2023 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.11	1.02	0.83	0.05	0.04	0.01	0.04	0.03	0.00	0.00	204.53	0.05	0.00	187.32
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.11	1.02	0.83	0.05	0.04	0.01	0.04	0.03	0.00	0.00	204.53	0.05	0.00	187.32
Total (tons/construction project)	0.11	1.02	0.83	0.05	0.04	0.01	0.04	0.03	0.00	0.00	204.53	0.05	0.00	187.32

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2024 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.60	16.10	12.42	0.76	0.56	0.20	0.54	0.50	0.04	0.03	3,235.78	0.82	0.03	3,266.45
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	1.60	16.10	12.42	0.76	0.56	0.20	0.54	0.50	0.04	0.03	3,235.78	0.82	0.03	3,266.45
Total (tons/construction project)	0.10	1.01	0.78	0.05	0.04	0.01	0.03	0.03	0.00	0.00	203.85	0.05	0.00	205.79

Notes:

Project Start Year ->	2024
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2024 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.10	1.01	0.78	0.05	0.04	0.01	0.03	0.03	0.00	0.00	203.85	0.05	0.00	186.69
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.10	1.01	0.78	0.05	0.04	0.01	0.03	0.03	0.00	0.00	203.85	0.05	0.00	186.69
Total (tons/construction project)	0.10	1.01	0.78	0.05	0.04	0.01	0.03	0.03	0.00	0.00	203.85	0.05	0.00	186.69

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Orange highlighted cells shows overlapped project phases, maximum daily emissions shown below have been adjusted to account for phase overlap

Daily Emission Estimates for -> Main Dam Gates 2025 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	1.48	15.88	11.19	0.70	0.50	0.20	0.49	0.44	0.04	0.03	3,223.50	0.82	0.03	3,253.89
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (pounds/day)	1.48	15.88	11.19	0.70	0.50	0.20	0.49	0.44	0.04	0.03	3,223.50	0.82	0.03	3,253.89
Total (tons/construction project)	0.09	1.00	0.71	0.04	0.03	0.01	0.03	0.03	0.00	0.00	203.08	0.05	0.00	205.00

Notes:

Project Start Year ->	2025
Project Length (months) ->	6
Total Project Area (acres) ->	5
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	0	0	0	0	360	0
Grading/Excavation	0	0	0	0	480	0
Drainage/Utilities/Sub-Grade	0	0	0	0	480	0
Paving	0	0	0	0	360	0

[1]. Total Material Imported/Exported Volume (yd^3/day)
[2]. Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The maximum pounds per day in summed over overlapping phases

Total Emission Estimates by Phase for -> Main Dam Gates 2025 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	0.09	1.00	0.71	0.04	0.03	0.01	0.03	0.03	0.00	0.00	203.08	0.05	0.00	185.97
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum (tons/phase)	0.09	1.00	0.71	0.04	0.03	0.01	0.03	0.03	0.00	0.00	203.08	0.05	0.00	185.97
Total (tons/construction project)	0.09	1.00	0.71	0.04	0.03	0.01	0.03	0.03	0.00	0.00	203.08	0.05	0.00	185.97

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.
The maximum tons per year is **not** summed over overlapping phases

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> MIAD Raise 2023 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	2.56	27.94	24.47	16.08	1.08	15.00	4.10	0.98	3.12	0.07	7,040.44	1.26	0.22	7,137.95
Grading/Excavation	1.67	14.53	20.13	15.90	0.90	15.00	3.84	0.72	3.12	0.05	5,333.84	0.85	0.35	5,459.85
Drainage/Utilities/Sub-Grade	0.58	7.39	4.22	15.30	0.30	15.00	3.34	0.22	3.12	0.02	1,673.70	0.29	0.03	1,689.50
Paving	7.00	87.80	62.95	2.96	2.96	0.00	2.86	2.86	0.00	0.16	15,339.85	1.67	0.24	15,452.62
Maximum (pounds/day)	7.00	87.80	62.95	16.08	2.96	15.00	4.10	2.86	3.12	0.16	15,339.85	1.67	0.35	15,452.62
Total (tons/construction project)	0.20	2.06	2.03	1.20	0.09	1.11	0.31	0.08	0.23	0.01	534.72	0.08	0.02	543.82

Notes:

Project Start Year ->	2023
Project Length (months) ->	8
Total Project Area (acres) ->	79
Maximum Area Disturbed/Day (acres) ->	2
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	131	0	200	0	360	80
Grading/Excavation	329	0	200	0	1,040	320
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	444	0	200	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> MIAD Raise 2023 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.02	0.22	0.19	0.12	0.01	0.12	0.03	0.01	0.02	0.00	54.21	0.01	0.00	49.86
Grading/Excavation	0.09	0.80	1.11	0.87	0.05	0.83	0.21	0.04	0.17	0.00	293.36	0.05	0.02	272.42
Drainage/Utilities/Sub-Grade	0.01	0.08	0.05	0.17	0.00	0.17	0.04	0.00	0.03	0.00	18.41	0.00	0.00	16.86
Paving	0.08	0.97	0.69	0.03	0.03	0.00	0.03	0.03	0.00	0.00	168.74	0.02	0.00	154.20
Maximum (tons/phase)	0.09	0.97	1.11	0.87	0.05	0.83	0.21	0.04	0.17	0.00	293.36	0.05	0.02	272.42
Total (tons/construction project)	0.20	2.06	2.03	1.20	0.09	1.11	0.31	0.08	0.23	0.01	534.72	0.08	0.02	493.35

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> MIAD Raise 2024 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	2.44	27.83	22.93	15.98	0.98	15.00	4.00	0.88	3.12	0.07	7,021.29	1.25	0.22	7,117.85
Grading/Excavation	1.58	14.27	18.86	15.84	0.84	15.00	3.78	0.66	3.12	0.05	5,284.41	0.85	0.35	5,408.77
Drainage/Utilities/Sub-Grade	0.55	7.17	3.86	15.28	0.28	15.00	3.32	0.20	3.12	0.02	1,645.55	0.29	0.03	1,660.81
Paving	6.54	87.61	58.50	2.59	2.59	0.00	2.50	2.50	0.00	0.16	15,322.23	1.64	0.24	15,433.65
Maximum (pounds/day)	6.54	87.61	58.50	15.98	2.59	15.00	4.00	2.50	3.12	0.16	15,322.23	1.64	0.35	15,433.65
Total (tons/construction project)	0.18	2.04	1.90	1.19	0.09	1.11	0.30	0.07	0.23	0.01	531.35	0.08	0.02	540.33

Notes:

Project Start Year ->	2023
Project Length (months) ->	8
Total Project Area (acres) ->	79
Maximum Area Disturbed/Day (acres) ->	2
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	131	0	200	0	360	80
Grading/Excavation	329	0	200	0	1,040	320
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	0
Paving	444	0	200	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> MIAD Raise 2024 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.02	0.21	0.18	0.12	0.01	0.12	0.03	0.01	0.02	0.00	54.06	0.01	0.00	49.72
Grading/Excavation	0.09	0.79	1.04	0.87	0.05	0.83	0.21	0.04	0.17	0.00	290.64	0.05	0.02	269.87
Drainage/Utilities/Sub-Grade	0.01	0.08	0.04	0.17	0.00	0.17	0.04	0.00	0.03	0.00	18.10	0.00	0.00	16.57
Paving	0.07	0.96	0.64	0.03	0.03	0.00	0.03	0.03	0.00	0.00	168.54	0.02	0.00	154.01
Maximum (tons/phase)	0.09	0.96	1.04	0.87	0.05	0.83	0.21	0.04	0.17	0.00	290.64	0.05	0.02	269.87
Total (tons/construction project)	0.18	2.04	1.90	1.19	0.09	1.11	0.30	0.07	0.23	0.01	531.35	0.08	0.02	490.18

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> RWD Raise 2022 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.32	3.91	4.47	50.22	0.22	50.00	10.55	0.15	10.40	0.02	1,788.49	0.15	0.18	1,846.13
Grading/Excavation	1.03	11.77	10.00	50.54	0.54	50.00	10.83	0.43	10.40	0.03	3,393.83	0.36	0.20	3,463.40
Drainage/Utilities/Sub-Grade	2.37	23.70	21.07	51.02	1.02	50.00	11.28	0.88	10.40	0.06	5,782.92	1.43	0.11	5,852.26
Paving	0.22	2.46	2.28	0.13	0.13	0.00	0.09	0.09	0.00	0.01	1,025.85	0.10	0.08	1,053.00
Maximum (pounds/day)	2.37	23.70	21.07	51.02	1.02	50.00	11.28	0.88	10.40	0.06	5,782.92	1.43	0.20	5,852.26
Total (tons/construction project)	0.06	0.62	0.56	2.23	0.03	2.20	0.48	0.02	0.46	0.00	183.90	0.03	0.01	187.52

Notes:

Project Start Year ->	2022
Project Length (months) ->	6
Total Project Area (acres) ->	77
Maximum Area Disturbed/Day (acres) ->	5
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	8	0	120	0	360	160
Grading/Excavation	51	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	216	0	120	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> RWD Raise 2022 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.04	0.05	0.55	0.00	0.55	0.12	0.00	0.11	0.00	19.67	0.00	0.00	18.42
Grading/Excavation	0.02	0.26	0.22	1.11	0.01	1.10	0.24	0.01	0.23	0.00	74.66	0.01	0.00	69.12
Drainage/Utilities/Sub-Grade	0.03	0.26	0.23	0.56	0.01	0.55	0.12	0.01	0.11	0.00	63.61	0.02	0.00	58.40
Paving	0.01	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.95	0.00	0.00	24.17
Maximum (tons/phase)	0.03	0.26	0.23	1.11	0.01	1.10	0.24	0.01	0.23	0.00	74.66	0.02	0.00	69.12
Total (tons/construction project)	0.06	0.62	0.56	2.23	0.03	2.20	0.48	0.02	0.46	0.00	183.90	0.03	0.01	170.12

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> RWD Raise 2023 Unmitigated

Project Phases (pounds/day)	ROG	CO	NOx	Total PM10	Exhaust PM10	Fugitive Dust M10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	Sox	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	0.29	3.81	4.13	50.21	0.21	50.00	10.54	0.14	10.40	0.02	1,758.91	0.15	0.18	1,815.37
Grading/Excavation	0.95	11.51	9.10	50.50	0.50	50.00	10.78	0.38	10.40	0.03	3,347.42	0.36	0.20	3,415.36
Drainage/Utilities/Sub-Grade	2.22	23.30	18.90	50.91	0.91	50.00	11.18	0.78	10.40	0.06	5,750.98	1.43	0.11	5,819.40
Paving	0.20	2.37	2.13	0.12	0.12	0.00	0.08	0.08	0.00	0.01	1,008.24	0.10	0.08	1,034.78
Maximum (pounds/day)	2.22	23.30	18.90	50.91	0.91	50.00	11.18	0.78	10.40	0.06	5,750.98	1.43	0.20	5,819.40
Total (tons/construction project)	0.05	0.61	0.51	2.23	0.03	2.20	0.48	0.02	0.46	0.00	181.76	0.03	0.01	185.30

Notes:

Project Start Year ->	2023
Project Length (months) ->	6
Total Project Area (acres) ->	77
Maximum Area Disturbed/Day (acres) ->	5
Water Truck Used? ->	Yes

Phase	Soil[1]	Asphalt[1]	Soil Hauling[2]	Asphalt Hauling[2]	Worker Commute[2]	Water Truck[2]
Grubbing/Land Clearing	8	0	120	0	360	160
Grading/Excavation	51	0	120	0	1,040	160
Drainage/Utilities/Sub-Grade	0	0	0	0	1,160	80
Paving	216	0	120	0	360	0

[1.] Total Material Imported/Exported Volume (yd^3/day)
[2.] Daily VMT (miles/day)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> RWD Raise 2023 Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG[3]	CO[3]	NOx[3]	Total PM10[3]	Exhaust PM10[3]	Fugitive Dust PM10[3]	Total PM2.5[3]	Exhaust PM2.5[3]	Fugitive Dust PM2. 5[3]	SOx[3]	CO2[3]	CH4[3]	N2O[3]	CO2e[4]
Grubbing/Land Clearing	0.00	0.04	0.05	0.55	0.00	0.55	0.12	0.00	0.11	0.00	19.35	0.00	0.00	18.12
Grading/Excavation	0.02	0.25	0.20	1.11	0.01	1.10	0.24	0.01	0.23	0.00	73.64	0.01	0.00	68.16
Drainage/Utilities/Sub-Grade	0.02	0.26	0.21	0.56	0.01	0.55	0.12	0.01	0.11	0.00	63.26	0.02	0.00	58.07
Paving	0.01	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.51	0.00	0.00	23.75
Maximum (tons/phase)	0.02	0.26	0.21	1.11	0.01	1.10	0.24	0.01	0.23	0.00	73.64	0.02	0.00	68.16
Total (tons/construction project)	0.05	0.61	0.51	2.23	0.03	2.20	0.48	0.02	0.46	0.00	181.76	0.03	0.01	168.10

[3]. Tons (tons/phase)
[4]. Metric tonnes (MT/phase)
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Dike 7 Floodwall 2022 Mitigated	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.20	miles
Total Project Area	12.50	acres
Maximum Area Disturbed/Day	0.60	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00		52.27
	Drainage/Utilities/Sub-Grade	20.00	24.08	
	Paving	10.00	39.36	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.50	0.60		1/1/2022
Grading/Excavation	1.00	2.70		1/17/2022
Drainage/Utilities/Sub-Grade	4.00	1.80		2/17/2022
Paving	0.50	0.90		6/19/2022
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation	1.00		4	3	4.00
Miles/round trip: Drainage/Utilities/Sub-Grade	60.80		4	2	243.20
Miles/round trip: Paving	30.00		4	4	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.06	0.00	0.00	0.00	15.42	0.00	0.00	16.14
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.18
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.23	1.69	0.06	0.03	0.01	937.52	0.00	0.15	981.46
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.07	0.00	0.00	0.00	41.25	0.00	0.01	43.18
Pounds per day - Paving	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.00	0.00	2.66
Total tons per construction project	0.00	0.01	0.08	0.00	0.00	0.00	43.96	0.00	0.01	46.03

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	1.46
Pounds per day - Grading/Excavation	0.17	2.62	0.23	0.11	0.04	0.01	761.78	0.02	0.02	768.27
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	8.38	0.00	0.00	8.45
Pounds per day - Drainage/Utilities/Sub-Grade	0.19	2.92	0.25	0.12	0.05	0.01	849.68	0.02	0.02	856.92
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.13	0.01	0.01	0.00	0.00	37.39	0.00	0.00	37.70
Pounds per day - Paving	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	1.46
Total tons per construction project	0.01	0.17	0.01	0.01	0.00	0.00	48.67	0.00	0.00	49.08

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1		1.00			80.00		80.00
Grading/Excavation - Exhaust	1		1.00			80.00		80.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving	1		1.00			80.00		80.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.00	1.78
Pounds per day - Grading/Excavation	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	3.39	0.00	0.00	3.55
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	13.57	0.00	0.00	14.21
Pounds per day - Paving	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.00	1.78
Total tons per construction project	0.00	0.00	0.04	0.00	0.00	0.00	20.35	0.00	0.00	21.31

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			6.00	0.03	1.25	0.01
Fugitive Dust - Grading/Excavation			6.00	0.07	1.25	0.01
Fugitive Dust - Drainage/Utilities/Subgrade			6.00	0.26	1.25	0.05

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Bore/Drill Rigs	0.00	0.01	0.00	0.00	0.00	0.00	1.14	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Cranes	0.00	0.02	0.00	0.00	0.00	0.00	4.19	0.00
1.00			Tier 4	Crawler Tractors	0.00	0.02	0.00	0.00	0.00	0.00	2.85	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Graders	0.00	0.01	0.00	0.00	0.00	0.00	1.60	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00			Tier 4	Off-Highway Trucks	0.07	1.14	0.13	0.01	0.01	0.00	207.84	0.07
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Rollers	0.00	0.08	0.01	0.00	0.00	0.00	10.16	0.00
4.00			Tier 4	Rough Terrain Forklifts	0.00	0.07	0.01	0.00	0.00	0.00	8.34	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.00	0.03	0.00	0.00	0.00	0.00	3.77	0.00
1.00			Tier 4	Trenchers	0.00	0.03	0.00	0.00	0.00	0.00	4.09	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.08	1.40	0.15	0.01	0.01	0.00	243.98	0.08
Grubbing/Land Clearing	tons per phase	0.00	0.01	0.00	0.00	0.00	0.00	1.34	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Crawler Tractors	0.00	0.02	0.00	0.00	0.00	0.00	2.85	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Excavators	0.01	0.25	0.02	0.00	0.00	0.00	32.50	0.01
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00				Tier 4	Off-Highway Trucks	0.05	0.80	0.09	0.00	0.00	0.00	145.48	0.05
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pavers	0.00	0.10	0.01	0.00	0.00	0.00	12.52	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Plate Compactors	0.00	0.01	0.01	0.00	0.00	0.00	0.91	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.01	0.16	0.01	0.00	0.00	0.00	20.33	0.01
6.00				Tier 4	Rough Terrain Forklifts	0.00	0.10	0.01	0.00	0.00	0.00	12.52	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Tractors/Loaders/Backhoes	0.00	0.03	0.00	0.00	0.00	0.00	3.77	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.07	1.46	0.15	0.01	0.01	0.00	230.87	0.07
Grading/Excavation	tons per phase	0.00	0.02	0.00	0.00	0.00	0.00	2.54	0.00

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Bore/Drill Rigs	0.00	0.02	0.00	0.00	0.00	0.00	3.43	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Cranes	0.00	0.04	0.00	0.00	0.00	0.00	6.99	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Excavators	0.01	0.19	0.02	0.00	0.00	0.00	24.38	0.01
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Generator Sets	0.01	0.15	0.01	0.00	0.00	0.00	23.36	0.00
1.00			Tier 4	Graders	0.00	0.01	0.00	0.00	0.00	0.00	1.60	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00			Tier 4	Off-Highway Trucks	0.16	2.85	0.33	0.02	0.02	0.01	519.59	0.17
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Pavers	0.00	0.05	0.00	0.00	0.00	0.00	6.26	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Plate Compactors	0.00	0.01	0.01	0.00	0.00	0.00	0.91	0.00
1.00			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00
1.00			Tier 4	Pumps	0.01	0.30	0.02	0.00	0.00	0.00	46.73	0.00
1.00			Tier 4	Rollers	0.00	0.04	0.00	0.00	0.00	0.00	5.08	0.00
10.00			Tier 4	Rough Terrain Forklifts	0.01	0.16	0.01	0.00	0.00	0.00	20.86	0.01
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Tractors/Loaders/Backhoes	0.01	0.15	0.01	0.00	0.00	0.00	18.83	0.01
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.21	3.97	0.43	0.02	0.02	0.01	678.49	0.20
Drainage/Utilities/Sub-Grade	tons per phase		0.01	0.17	0.02	0.00	0.00	0.00	29.85	0.01

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Off-Highway Trucks	0.01	0.11	0.01	0.00	0.00	0.00	20.78	0.01
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Pavers	0.00	0.05	0.00	0.00	0.00	0.00	6.26	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Tractors/Loaders/Backhoes	0.00	0.03	0.00	0.00	0.00	0.00	3.77	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.01	0.19	0.02	0.00	0.00	0.00	30.81	0.01
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00
Total Emissions all Phases (tons per construction period) =>		0.01	0.20	0.02	0.00	0.00	0.00	33.90	0.01

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	1.15
0.00	0.00
0.00	0.00
0.00	4.24
0.00	2.88
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.62
0.00	0.00
0.00	210.07
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	10.27
0.00	8.43
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	3.81
0.00	4.13
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	246.61
0.00	1.36

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	2.88
0.00	0.00
0.00	32.85
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	147.05
0.00	0.00
0.00	0.00
0.00	0.00
0.00	12.65
0.00	0.00
0.00	0.91
0.00	0.00
0.00	0.00
0.00	20.55
0.00	12.65
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	3.81
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	233.35
0.00	2.57

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	3.46
0.00	0.00
0.00	0.00
0.00	7.06
0.00	0.00
0.00	0.00
0.00	24.64
0.00	0.00
0.00	23.44
0.00	1.62
0.00	0.00
0.00	525.18
0.00	0.00
0.00	0.00
0.00	0.00
0.00	6.33
0.00	0.00
0.00	0.91
0.00	0.49
0.00	46.89
0.00	5.14
0.00	21.08
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	19.03
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	685.28
0.00	30.15

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	21.01
0.00	0.00
0.00	0.00
0.00	0.00
0.00	6.33
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	3.81
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.14
0.00	0.17
0.00	34.25

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221	0.01	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.02	8
Crawler Tractors		212	0.03	8
Crushing/Proc. Equipment		85		8
Excavators		158	0.13	8
Forklifts		89		8
Generator Sets		84	0.15	8
Graders		187	0.02	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.13	8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.11	8
Paving Equipment		132		8
Plate Compactors		8	0.21	8
Pressure Washers		13	0.10	8
Pumps		84	0.60	8
Rollers		80	0.16	8
Rough Terrain Forklifts		100	0.05	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.10	8
Trenchers		78	0.10	8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Dikes 1-3 Raise 2022 Mitigated	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	8.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.17	miles
Total Project Area	35.00	acres
Maximum Area Disturbed/Day	8.75	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		405.00
	Grading/Excavation	20.00	300.45	
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	57.09	

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.80		1/1/2022
Grading/Excavation	5.00	3.60		1/26/2022
Drainage/Utilities/Sub-Grade	1.00	2.40		6/28/2022
Paving	1.00	1.20		7/29/2022
Totals (Months)		8		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	21	120.00
Miles/round trip: Grading/Excavation	30.00		4	16	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade			4	0	0.00
Miles/round trip: Paving	30.00		4	0	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	4.07	0.00	0.00	4.26
Pounds per day - Grading/Excavation	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grading/Excavation	0.00	0.01	0.05	0.00	0.00	0.00	25.44	0.00	0.00	26.64
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	34.60	0.00	0.01	36.22

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving	30.00		4	3	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker			
User Input	Commute Default Values	Default Values		
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.32	0.00	0.00	2.34
Pounds per day - Grading/Excavation	0.17	2.62	0.23	0.11	0.04	0.01	761.78	0.02	0.02	768.27
Tons per const. Period - Grading/Excavation	0.01	0.14	0.01	0.01	0.00	0.00	41.90	0.00	0.00	42.26
Pounds per day - Drainage/Utilities/Sub-Grade	0.19	2.92	0.25	0.12	0.05	0.01	849.68	0.02	0.02	856.92
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	9.35	0.00	0.00	9.43
Pounds per day - Paving	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.90	0.00	0.00	2.93
Total tons per construction project	0.01	0.19	0.02	0.01	0.00	0.00	56.47	0.00	0.00	56.95

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust	1		1.00			80.00		80.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	2.71	0.00	0.00	2.84
Pounds per day - Grading/Excavation	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grading/Excavation	0.00	0.01	0.06	0.00	0.00	0.00	33.92	0.00	0.01	35.51
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.07	0.00	0.00	0.00	36.64	0.00	0.01	38.35

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			87.50	0.77	18.20	0.16
Fugitive Dust - Grading/Excavation			87.50	4.81	18.20	1.00
Fugitive Dust - Drainage/Utilities/Subgrade			87.50	0.96	18.20	0.20

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00
5.00			Tier 4	Crawler Tractors	0.12	2.04	0.24	0.01	0.01	0.00	370.79	0.12
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00			Tier 4	Excavators	0.21	5.17	0.42	0.02	0.02	0.01	659.26	0.21
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Off-Highway Trucks	0.07	1.15	0.13	0.01	0.01	0.00	210.77	0.07
2.00			Tier 4	Other Construction Equipment	0.03	0.68	0.05	0.00	0.00	0.00	85.78	0.03
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Tractors/Loaders/Backhoes	0.06	1.59	0.13	0.01	0.01	0.00	204.92	0.07
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.49	10.64	0.97	0.05	0.04	0.02	1,533.13	0.50
Grubbing/Land Clearing	tons per phase	0.00	0.09	0.01	0.00	0.00	0.00	13.49	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes		0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00
8.00			Tier 4	Crawler Tractors		0.19	3.27	0.38	0.02	0.02	0.01	593.27	0.19
			Tier 4	Crushing/Proc. Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00			Tier 4	Excavators		0.19	4.65	0.38	0.02	0.02	0.01	593.33	0.19
			Tier 4	Forklifts		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Graders		0.07	1.17	0.13	0.01	0.01	0.00	213.20	0.07
			Tier 4	Off-Highway Tractors		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Off-Highway Trucks		0.09	1.54	0.18	0.01	0.01	0.00	281.02	0.09
1.00			Tier 4	Other Construction Equipment		0.01	0.34	0.03	0.00	0.00	0.00	42.89	0.01
			Tier 4	Other General Industrial Equipm		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment		0.00	0.01	0.00	0.00	0.00	0.00	1.48	0.00
			Tier 4	Plate Compactors		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00			Tier 4	Rollers		0.04	0.95	0.08	0.00	0.00	0.00	121.84	0.04
			Tier 4	Rough Terrain Forklifts		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23.00			Tier 4	Tractors/Loaders/Backhoes		0.11	2.82	0.23	0.01	0.01	0.00	362.55	0.12
			Tier 4	Trenchers		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.70	14.75	1.40	0.07	0.06	0.02	2,211.19	0.72
Grading/Excavation	tons per phase	0.04	0.81	0.08	0.00	0.00	0.00	121.62	0.04

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00
4.00			Tier 4	Crawler Tractors	0.09	1.63	0.19	0.01	0.01	0.00	296.63	0.10
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Excavators	0.04	1.03	0.08	0.00	0.00	0.00	131.85	0.04
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Graders	0.08	1.46	0.17	0.01	0.01	0.00	266.50	0.09
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Off-Highway Trucks	0.11	1.92	0.22	0.01	0.01	0.00	351.28	0.11
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment	0.00	0.01	0.00	0.00	0.00	0.00	1.48	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Pumps	0.90	22.13	1.79	0.09	0.08	0.04	3,398.37	0.17
4.00			Tier 4	Rollers	0.02	0.42	0.03	0.00	0.00	0.00	54.15	0.02
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.00			Tier 4	Tractors/Loaders/Backhoes	0.07	1.72	0.14	0.01	0.01	0.00	220.68	0.07
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Drainage/Utilities/Sub-Grade	pounds per day	1.31	30.34	2.63	0.13	0.12	0.05	4,722.57	0.60
	Drainage/Utilities/Sub-Grade	tons per phase	0.01	0.33	0.03	0.00	0.00	0.00	51.95	0.01

Paving	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Graders	0.02	0.29	0.03	0.00	0.00	0.00	53.30	0.02
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Off-Highway Trucks	0.07	1.15	0.13	0.01	0.01	0.00	210.77	0.07
2.00			Tier 4	Other Construction Equipment	0.03	0.68	0.05	0.00	0.00	0.00	85.78	0.03
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Pavers	0.02	0.47	0.04	0.00	0.00	0.00	60.63	0.02
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Rollers	0.01	0.32	0.03	0.00	0.00	0.00	40.61	0.01
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.14	2.91	0.29	0.01	0.01	0.00	451.09	0.15
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	4.96	0.00
Total Emissions all Phases (tons per construction period) =>		0.06	1.27	0.12	0.01	0.01	0.00	192.02	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.63
0.00	374.79
0.00	0.00
0.01	666.36
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	213.04
0.00	86.70
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	207.12
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,549.65
0.00	13.64

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.63
0.01	599.67
0.00	0.00
0.01	599.73
0.00	0.00
0.00	0.00
0.00	215.50
0.00	0.00
0.00	284.05
0.00	43.35
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.50
0.00	0.00
0.00	0.00
0.00	0.00
0.00	123.15
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	366.45
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.02	2,235.02
0.00	122.93

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.63
0.00	299.83
0.00	0.00
0.00	133.27
0.00	0.00
0.00	0.00
0.00	269.37
0.00	0.00
0.00	355.06
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.50
0.00	0.00
0.00	0.00
0.03	3,410.32
0.00	54.73
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	223.06
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.04	4,748.79
0.00	52.24

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	53.87
0.00	0.00
0.00	213.04
0.00	86.70
0.00	0.00
0.00	0.00
0.00	61.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	41.05
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	455.95
0.00	5.02
0.00	193.82

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.02	8
Crawler Tractors		212	0.78	8
Crushing/Proc. Equipment		85		8
Excavators		158	1.05	8
Forklifts		89		8
Generator Sets		84		8
Graders		187	0.66	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.44	8
Other Construction Equipment		172	0.57	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.53	8
Paving Equipment		132	0.02	8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84	14.55	8
Rollers		80	0.43	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.42	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Dikes 4-6 Raise 2022 Mitigated	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	9.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.03	miles
Total Project Area	39.00	acres
Maximum Area Disturbed/Day	9.75	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		6.45
	Grading/Excavation	20.00		30.68
	Drainage/Utilities/Sub-Grade			
	Paving	10.00		22.73
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.90		1/1/2022
Grading/Excavation	5.00	4.05		2/1/2022
Drainage/Utilities/Sub-Grade	2.00	2.70		7/4/2022
Paving	1.00	1.35		9/3/2022
Totals (Months)		9		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	1	120.00
Miles/round trip: Grading/Excavation	30.00		4	2	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				3	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33
Pounds per day - Grading/Excavation	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grading/Excavation	0.00	0.01	0.05	0.00	0.00	0.00	25.44	0.00	0.00	26.64
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	30.53	0.00	0.00	31.96

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving	30.00		4	0	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip	20			
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.90	0.00	0.00	2.93
Pounds per day - Grading/Excavation	0.17	2.62	0.23	0.11	0.04	0.01	761.78	0.02	0.02	768.27
Tons per const. Period - Grading/Excavation	0.01	0.14	0.01	0.01	0.00	0.00	41.90	0.00	0.00	42.26
Pounds per day - Drainage/Utilities/Sub-Grade	0.19	2.92	0.25	0.12	0.05	0.01	849.68	0.02	0.02	856.92
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.01	0.00	0.00	0.00	18.69	0.00	0.00	18.85
Pounds per day - Paving	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.90	0.00	0.00	2.93
Total tons per construction project	0.01	0.23	0.02	0.01	0.00	0.00	66.39	0.00	0.00	66.96

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust	2		1.00			80.00		160.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	6.78	0.00	0.00	7.10
Pounds per day - Grading/Excavation	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grading/Excavation	0.00	0.01	0.06	0.00	0.00	0.00	33.92	0.00	0.01	35.51
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	6.78	0.00	0.00	7.10
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.08	0.00	0.00	0.00	47.49	0.00	0.01	49.72

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			97.50	1.07	20.28	0.22
Fugitive Dust - Grading/Excavation			97.50	5.36	20.28	1.12
Fugitive Dust - Drainage/Utilities/Subgrade			97.50	2.15	20.28	0.45

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.02	0.00	0.00	0.00	0.00	4.42	0.00
6.00			Tier 4	Crawler Tractors	0.13	2.26	0.26	0.01	0.01	0.00	410.71	0.13
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Excavators	0.04	1.01	0.08	0.00	0.00	0.00	128.70	0.04
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Other Construction Equipment	0.13	3.21	0.26	0.01	0.01	0.00	407.95	0.13
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Tractors/Loaders/Backhoes	0.03	0.76	0.06	0.00	0.00	0.00	97.59	0.03
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.33	7.27	0.67	0.03	0.03	0.01	1,049.37	0.34
Grubbing/Land Clearing	tons per phase	0.00	0.08	0.01	0.00	0.00	0.00	11.54	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Cranes	0.00	0.02	0.00	0.00	0.00	0.00	4.42	0.00
5.00				Tier 4	Crawler Tractors	0.11	1.88	0.22	0.01	0.01	0.00	342.26	0.11
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00				Tier 4	Excavators	0.05	1.18	0.10	0.00	0.00	0.00	150.15	0.05
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Graders	0.02	0.34	0.04	0.00	0.00	0.00	61.55	0.02
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Paving Equipment	0.04	1.04	0.08	0.00	0.00	0.00	132.66	0.04
1.00				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00				Tier 4	Rollers	0.01	0.30	0.02	0.00	0.00	0.00	37.84	0.01
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.00				Tier 4	Tractors/Loaders/Backhoes	0.04	1.05	0.09	0.00	0.00	0.00	135.13	0.04
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.27	5.82	0.55	0.03	0.03	0.01	864.32	0.28
Grading/Excavation	tons per phase	0.02	0.32	0.03	0.00	0.00	0.00	47.54	0.02

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Cranes	0.01	0.10	0.01	0.00	0.00	0.00	17.68	0.01
6.00			Tier 4	Crawler Tractors	0.13	2.26	0.26	0.01	0.01	0.00	410.71	0.13
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00			Tier 4	Excavators	0.07	1.68	0.14	0.01	0.01	0.00	214.50	0.07
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Graders	0.02	0.42	0.05	0.00	0.00	0.00	76.94	0.02
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Off-Highway Trucks	0.03	0.48	0.06	0.00	0.00	0.00	87.30	0.03
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Pumps	0.45	11.06	0.90	0.04	0.04	0.02	1,699.19	0.09
7.00			Tier 4	Rollers	0.01	0.34	0.03	0.00	0.00	0.00	44.14	0.01
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.00			Tier 4	Tractors/Loaders/Backhoes	0.06	1.40	0.11	0.01	0.01	0.00	180.17	0.06
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Drainage/Utilities/Sub-Grade	pounds per day	0.77	17.75	1.55	0.08	0.07	0.03	2,730.94	0.42
	Drainage/Utilities/Sub-Grade	tons per phase	0.02	0.39	0.03	0.00	0.00	0.00	60.08	0.01

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Graders	0.00	0.08	0.01	0.00	0.00	0.00	15.39	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pavers	0.01	0.33	0.03	0.00	0.00	0.00	42.15	0.01
2.00				Tier 4	Paving Equipment	0.04	1.04	0.08	0.00	0.00	0.00	132.66	0.04
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Rollers	0.01	0.25	0.02	0.00	0.00	0.00	31.53	0.01
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.07	1.70	0.14	0.01	0.01	0.00	221.73	0.07
Paving	tons per phase	0.00	0.02	0.00	0.00	0.00	0.00	2.44	0.00
Total Emissions all Phases (tons per construction period) =>		0.04	0.81	0.07	0.00	0.00	0.00	121.60	0.03

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	4.47
0.00	415.14
0.00	0.00
0.00	130.08
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	412.36
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	98.64
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,060.69
0.00	11.67

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	4.47
0.00	345.95
0.00	0.00
0.00	151.77
0.00	0.00
0.00	0.00
0.00	62.22
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	134.09
0.00	0.32
0.00	0.00
0.00	0.00
0.00	38.24
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	136.58
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	873.64
0.00	48.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	17.87
0.00	415.14
0.00	0.00
0.00	216.81
0.00	0.00
0.00	0.00
0.00	77.77
0.00	0.00
0.00	88.24
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.32
0.00	0.00
0.01	1,705.16
0.00	44.62
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	182.11
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.02	2,748.04
0.00	60.46

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	15.55
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	42.60
0.00	134.09
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.87
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	224.12
0.00	2.47
0.00	122.64

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.06	8
Crawler Tractors		212	0.72	8
Crushing/Proc. Equipment		85		8
Excavators		158	0.34	8
Forklifts		89		8
Generator Sets		84		8
Graders		187	0.19	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.27	8
Other Construction Equipment		172	2.73	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.37	8
Paving Equipment		132	1.35	8
Plate Compactors		8	0.07	8
Pressure Washers		13		8
Pumps		84	7.27	8
Rollers		80	0.20	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.20	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	LWD Raise 2022 Mitigated	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.42	miles
Total Project Area	22.00	acres
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		5.26
	Grading/Excavation	20.00		36.70
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	161.29	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.60		1/1/2022
Grading/Excavation	2.40	2.70		2/1/2022
Drainage/Utilities/Sub-Grade	1.00	1.80		4/15/2022
Paving	1.80	0.90		5/16/2022
Totals (Months)		6		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	1	120.00
Miles/round trip: Grading/Excavation	30.00		4	2	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade			4	0	0.00
Miles/round trip: Paving	30.00		4	9	120.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33
Pounds per day - Grading/Excavation	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	12.21	0.00	0.00	12.78
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	9.16	0.00	0.00	9.59
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	26.46	0.00	0.00	27.70

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving			4	0	0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.90	0.00	0.00	2.93
Pounds per day - Grading/Excavation	0.17	2.62	0.23	0.11	0.04	0.01	761.78	0.02	0.02	768.27
Tons per const. Period - Grading/Excavation	0.00	0.07	0.01	0.00	0.00	0.00	20.11	0.00	0.00	20.28
Pounds per day - Drainage/Utilities/Sub-Grade	0.19	2.92	0.25	0.12	0.05	0.01	849.68	0.02	0.02	856.92
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	9.35	0.00	0.00	9.43
Pounds per day - Paving	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Paving	0.00	0.02	0.00	0.00	0.00	0.00	5.22	0.00	0.00	5.27
Total tons per construction project	0.01	0.13	0.01	0.01	0.00	0.00	37.58	0.00	0.00	37.90

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	2		1.00			80.00		160.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	6.78	0.00	0.00	7.10
Pounds per day - Grading/Excavation	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	16.28	0.00	0.00	17.05
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	3.39	0.00	0.00	3.55
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	26.46	0.00	0.00	27.70

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			10.00	0.11	2.08	0.02
Fugitive Dust - Grading/Excavation			10.00	0.26	2.08	0.05
Fugitive Dust - Drainage/Utilities/Subgrade			10.00	0.11	2.08	0.02

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Crawler Tractors	0.02	0.31	0.04	0.00	0.00	0.00	56.18	0.02
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Excavators	0.04	0.94	0.08	0.00	0.00	0.00	120.48	0.04
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Other Construction Equipment	0.03	0.64	0.05	0.00	0.00	0.00	81.39	0.03
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.07	0.01	0.00	0.00	0.00	8.86	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Tractors/Loaders/Backhoes	0.02	0.42	0.03	0.00	0.00	0.00	53.64	0.02
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.10	2.38	0.20	0.01	0.01	0.00	320.55	0.10
Grubbing/Land Clearing	tons per phase	0.00	0.03	0.00	0.00	0.00	0.00	3.53	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Concrete/Industrial Saws	0.00	0.01	0.00	0.00	0.00	0.00	1.23	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Crawler Tractors	0.05	0.93	0.11	0.01	0.00	0.00	168.54	0.05
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Excavators	0.10	2.36	0.19	0.01	0.01	0.00	301.20	0.10
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Graders	0.02	0.29	0.03	0.00	0.00	0.00	52.99	0.02
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Pavers	0.01	0.21	0.02	0.00	0.00	0.00	27.12	0.01
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.02	0.40	0.03	0.00	0.00	0.00	50.90	0.02
10.00				Tier 4	Rough Terrain Forklifts	0.03	0.69	0.06	0.00	0.00	0.00	88.56	0.03
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Surfacing Equipment	0.01	0.22	0.03	0.00	0.00	0.00	39.34	0.01
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Tractors/Loaders/Backhoes	0.02	0.42	0.03	0.00	0.00	0.00	53.64	0.02
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.25	5.52	0.50	0.02	0.02	0.01	783.54	0.25
Grading/Excavation	tons per phase	0.01	0.15	0.01	0.00	0.00	0.00	20.69	0.01

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00			Tier 4	Bore/Drill Rigs	0.32	5.60	0.65	0.03	0.03	0.01	1,009.50	0.33
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Cranes	0.02	0.42	0.05	0.00	0.00	0.00	76.46	0.02
6.00			Tier 4	Crawler Tractors	0.11	1.86	0.21	0.01	0.01	0.00	337.08	0.11
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Excavators	0.25	6.14	0.50	0.02	0.02	0.01	783.12	0.25
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Generator Sets	0.33	8.11	0.66	0.03	0.03	0.01	1,246.07	0.06
1.00			Tier 4	Graders	0.00	0.07	0.01	0.00	0.00	0.00	13.25	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.00			Tier 4	Off-Highway Trucks	0.91	15.76	1.82	0.09	0.08	0.03	2,876.70	0.93
4.00			Tier 4	Other Construction Equipment	0.05	1.28	0.10	0.01	0.00	0.00	162.79	0.05
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Paving Equipment	0.01	0.23	0.02	0.00	0.00	0.00	28.64	0.01
8.00			Tier 4	Plate Compactors	0.04	0.71	0.63	0.04	0.03	0.00	67.71	0.01
2.00			Tier 4	Pressure Washers	0.04	0.67	0.73	0.04	0.04	0.00	78.18	0.01
1.00			Tier 4	Pumps	0.16	4.06	0.33	0.02	0.02	0.01	623.04	0.03
4.00			Tier 4	Rollers	0.02	0.40	0.03	0.00	0.00	0.00	50.90	0.02
10.00			Tier 4	Rough Terrain Forklifts	0.03	0.69	0.06	0.00	0.00	0.00	88.56	0.03
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21.00			Tier 4	Tractors/Loaders/Backhoes	0.18	4.38	0.36	0.02	0.02	0.01	563.23	0.18
2.00			Tier 4	Trenchers	0.00	0.06	0.01	0.00	0.00	0.00	8.14	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		2.47	50.44	6.16	0.32	0.29	0.08	8,013.37	2.05
Drainage/Utilities/Sub-Grade	tons per phase		0.03	0.55	0.07	0.00	0.00	0.00	88.15	0.02

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.00				Tier 4	Off-Highway Trucks	0.20	3.50	0.40	0.02	0.02	0.01	639.27	0.21
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Pavers	0.01	0.35	0.03	0.00	0.00	0.00	45.21	0.01
5.00				Tier 4	Paving Equipment	0.01	0.23	0.02	0.00	0.00	0.00	28.64	0.01
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.02	0.40	0.03	0.00	0.00	0.00	50.90	0.02
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Sweepers/Scrubbers	0.00	0.07	0.06	0.00	0.00	0.00	8.69	0.00
3.00				Tier 4	Tractors/Loaders/Backhoes	0.03	0.63	0.05	0.00	0.00	0.00	80.46	0.03
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00		N/A	Cement Batch Plant	0.00	0.00	0.00	3.76	1.82	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Paving	pounds per day		0.27	5.17	0.59	3.79	1.84	0.01	853.17	0.28
Paving	tons per phase		0.01	0.10	0.01	0.08	0.04	0.00	16.89	0.01
Total Emissions all Phases (tons per construction period) =>			0.04	0.83	0.09	0.08	0.04	0.00	129.25	0.04

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	56.79
0.00	0.00
0.00	121.78
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	82.27
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	8.95
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	54.22
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	324.01
0.00	3.56

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.24
0.00	0.00
0.00	170.36
0.00	0.00
0.00	304.45
0.00	0.00
0.00	0.00
0.00	53.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	27.42
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	51.45
0.00	89.52
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	39.77
0.00	0.00
0.00	54.22
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	791.97
0.00	20.91

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.01	1,020.40
0.00	0.00
0.00	0.00
0.00	77.28
0.00	340.71
0.00	0.00
0.01	791.56
0.00	0.00
0.01	1,250.34
0.00	13.39
0.00	0.00
0.03	2,907.68
0.00	164.54
0.00	0.00
0.00	0.00
0.00	0.00
0.00	28.95
0.00	68.06
0.00	78.57
0.00	625.23
0.00	51.45
0.00	89.52
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	569.29
0.00	8.23
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.07	8,085.20
0.00	88.94

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	646.15
0.00	0.00
0.00	0.00
0.00	0.00
0.00	45.69
0.00	28.95
0.00	0.00
0.00	0.00
0.00	0.00
0.00	51.45
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	8.78
0.00	81.33
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	862.36
0.00	17.07
0.00	130.48

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221	1.26	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81	0.02	8
Cranes		231	0.08	8
Crawler Tractors		212	0.59	8
Crushing/Proc. Equipment		85		8
Excavators		158	0.96	8
Forklifts		89		8
Generator Sets		84		8
Graders		187	0.17	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.50	8
Other Construction Equipment		172	0.54	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.16	8
Paving Equipment		132	0.12	8
Plate Compactors		8	1.96	8
Pressure Washers		13		8
Pumps		84		8
Rollers		80	0.40	8
Rough Terrain Forklifts		100	0.21	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263	0.24	8
Sweepers/Scrubbers		64	0.14	8
Tractors/Loaders/Backhoes		97	0.71	8
Trenchers		78	0.10	8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Main Dam Gates 2022 Mitigated	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	21.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.26	miles
Total Project Area	4.90	acres
Maximum Area Disturbed/Day	0.01	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.60		1/1/2022
Grading/Excavation	0.00	2.70		1/1/2022
Drainage/Utilities/Sub-Grade	6.00	1.80		1/1/2022
Paving	0.00	0.90		7/3/2022
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade			1	0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	12		24	480.00
No. of employees: Drainage/Utilities/Sub-Grade	12		24	480.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.08	1.21	0.11	0.05	0.02	0.00	351.59	0.01	0.01	354.59
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.08	0.01	0.00	0.00	0.00	22.15	0.00	0.00	22.34
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.08	0.01	0.00	0.00	0.00	22.15	0.00	0.00	22.34

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust								0.00
Grading/Excavation - Exhaust								0.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.20	0.01	0.04	0.00

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Tier 4	Aerial Lifts	0.00	0.02	0.02	0.00	0.00	0.00	2.73	0.00
2.00			Tier 4	Air Compressors	0.00	0.06	0.00	0.00	0.00	0.00	9.38	0.00
11.00			Tier 4	Bore/Drill Rigs	0.12	2.06	0.24	0.01	0.01	0.00	372.26	0.12
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Concrete/Industrial Saws	0.00	0.04	0.00	0.00	0.00	0.00	6.38	0.00
16.00			Tier 4	Cranes	0.14	2.36	0.27	0.01	0.01	0.00	430.06	0.14
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Generator Sets	0.01	0.20	0.02	0.00	0.00	0.00	31.15	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.00			Tier 4	Off-Highway Trucks	0.11	1.98	0.23	0.01	0.01	0.00	362.36	0.12
1.00			Tier 4	Other Construction Equipment	0.01	0.15	0.01	0.00	0.00	0.00	19.45	0.01
			Tier 4	Other General Industrial Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Paving Equipment	0.38	9.30	0.75	0.04	0.03	0.01	1,183.41	0.38
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Pumps	0.01	0.30	0.02	0.00	0.00	0.00	46.73	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.05	0.00	0.00	0.00	0.00	5.84	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00			Tier 4	Welders	0.14	3.14	2.55	0.02	0.01	0.01	435.70	0.05

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.92	19.69	4.13	0.09	0.09	0.03	2,905.82	0.83
Drainage/Utilities/Sub-Grade	tons per phase		0.06	1.24	0.26	0.01	0.01	0.00	183.07	0.05

Paving	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipme	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving		pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving		tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>				0.06	1.24	0.26	0.01	0.01	0.00	183.07	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
0.00	2.76
0.00	9.42
0.00	376.28
0.00	0.00
0.00	6.40
0.00	434.70
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.26
0.00	0.00
0.00	0.00
0.00	366.26
0.00	19.66
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,196.18
0.00	0.00
0.00	0.00
0.00	46.89
0.00	0.00
0.00	5.90
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.38
0.00	0.00
0.00	438.09

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.03	2,934.17
0.00	184.85

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	0.00
0.00	0.00

0.00	184.85

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	0.13	8
Air Compressors		78	0.10	8
Bore/Drill Rigs		221	0.30	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81	0.09	8
Cranes		231	0.38	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84	0.40	8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.09	8
Other Construction Equipment		172	0.26	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.03	8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84	0.60	8
Rollers		80		8
Rough Terrain Forklifts		100	0.14	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.01	8
Trenchers		78		8
Welders		46	1.12	8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	RWD Raise 2022 Mitigated	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.34	miles
Total Project Area	77.00	acres
Maximum Area Disturbed/Day	5.00	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		8.40
	Grading/Excavation	20.00		51.06
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	216.44	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.60		1/1/2022
Grading/Excavation	2.00	2.70		2/1/2022
Drainage/Utilities/Sub-Grade	1.00	1.80		4/3/2022
Paving	2.30	0.90		5/4/2022
Totals (Months)		6		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	1	120.00
Miles/round trip: Grading/Excavation	30.00		4	3	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade			4	0	0.00
Miles/round trip: Paving	30.00		4	11	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	5.09	0.00	0.00	5.33
Pounds per day - Grading/Excavation	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	10.18	0.00	0.00	10.65
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.85	0.03	0.01	0.00	462.59	0.00	0.07	484.27
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	11.70	0.00	0.00	12.25
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	26.97	0.00	0.00	28.23

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Paving (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Paving (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.90	0.00	0.00	2.93
Pounds per day - Grading/Excavation	0.17	2.62	0.23	0.11	0.04	0.01	761.78	0.02	0.02	768.27
Tons per const. Period - Grading/Excavation	0.00	0.06	0.01	0.00	0.00	0.00	16.76	0.00	0.00	16.90
Pounds per day - Drainage/Utilities/Sub-Grade	0.19	2.92	0.25	0.12	0.05	0.01	849.68	0.02	0.02	856.92
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	9.35	0.00	0.00	9.43
Pounds per day - Paving	0.06	0.91	0.08	0.04	0.02	0.00	263.69	0.01	0.01	265.94
Tons per const. Period - Paving	0.00	0.02	0.00	0.00	0.00	0.00	6.67	0.00	0.00	6.73
Total tons per construction project	0.01	0.12	0.01	0.00	0.00	0.00	35.68	0.00	0.00	35.98

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	2		1.00			80.00		160.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	6.78	0.00	0.00	7.10
Pounds per day - Grading/Excavation	0.01	0.15	1.10	0.04	0.02	0.01	616.79	0.00	0.10	645.70
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	13.57	0.00	0.00	14.21
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.55	0.02	0.01	0.00	308.40	0.00	0.05	322.85
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	3.39	0.00	0.00	3.55
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.04	0.00	0.00	0.00	23.75	0.00	0.00	24.86

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			50.00	0.55	10.40	0.11
Fugitive Dust - Grading/Excavation			50.00	1.10	10.40	0.23
Fugitive Dust - Drainage/Utilities/Subgrade			50.00	0.55	10.40	0.11

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Crawler Tractors	0.02	0.40	0.05	0.00	0.00	0.00	72.92	0.02
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Excavators	0.05	1.23	0.10	0.00	0.00	0.00	156.54	0.05
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Other Construction Equipment	0.04	1.10	0.09	0.00	0.00	0.00	140.11	0.05
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.05	0.00	0.00	0.00	0.00	6.54	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Tractors/Loaders/Backhoes	0.02	0.54	0.04	0.00	0.00	0.00	69.30	0.02
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.14	3.32	0.28	0.01	0.01	0.00	445.41	0.14
Grubbing/Land Clearing	tons per phase	0.00	0.04	0.00	0.00	0.00	0.00	4.90	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Concrete/Industrial Saws	0.16	3.86	0.31	0.02	0.01	0.01	592.67	0.03
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Crawler Tractors	0.07	1.20	0.14	0.01	0.01	0.00	218.75	0.07
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Excavators	0.12	3.07	0.25	0.01	0.01	0.00	391.36	0.13
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Graders	0.01	0.23	0.03	0.00	0.00	0.00	42.71	0.01
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Off-Highway Trucks	0.02	0.28	0.03	0.00	0.00	0.00	50.71	0.02
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Pavers	0.01	0.28	0.02	0.00	0.00	0.00	35.79	0.01
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.02	0.57	0.05	0.00	0.00	0.00	73.51	0.02
10.00				Tier 4	Rough Terrain Forklifts	0.02	0.51	0.04	0.00	0.00	0.00	65.38	0.02
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Surfacing Equipment	0.00	0.07	0.01	0.00	0.00	0.00	12.49	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Tractors/Loaders/Backhoes	0.02	0.54	0.04	0.00	0.00	0.00	69.30	0.02
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.46	10.62	0.92	0.05	0.04	0.02	1,552.67	0.34
Grading/Excavation	tons per phase	0.01	0.23	0.02	0.00	0.00	0.00	34.16	0.01

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00			Tier 4	Bore/Drill Rigs	0.16	2.85	0.33	0.02	0.02	0.01	513.40	0.17
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Cranes	0.01	0.23	0.03	0.00	0.00	0.00	41.28	0.01
6.00			Tier 4	Crawler Tractors	0.14	2.41	0.28	0.01	0.01	0.00	437.51	0.14
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00			Tier 4	Excavators	0.22	5.52	0.45	0.02	0.02	0.01	704.44	0.23
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Generator Sets	0.03	0.86	0.07	0.00	0.00	0.00	132.75	0.01
1.00			Tier 4	Graders	0.00	0.06	0.01	0.00	0.00	0.00	10.68	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.00			Tier 4	Off-Highway Trucks	0.50	8.61	0.99	0.05	0.05	0.02	1,571.92	0.51
3.00			Tier 4	Other Construction Equipment	0.07	1.66	0.13	0.01	0.01	0.00	210.17	0.07
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Paving Equipment	0.00	0.02	0.00	0.00	0.00	0.00	1.97	0.00
8.00			Tier 4	Plate Compactors	0.04	0.83	0.74	0.04	0.04	0.00	78.55	0.01
2.00			Tier 4	Pressure Washers	0.00	0.01	0.01	0.00	0.00	0.00	0.76	0.00
1.00			Tier 4	Pumps	0.03	0.69	0.06	0.00	0.00	0.00	106.20	0.01
4.00			Tier 4	Rollers	0.02	0.57	0.05	0.00	0.00	0.00	73.51	0.02
11.00			Tier 4	Rough Terrain Forklifts	0.02	0.56	0.05	0.00	0.00	0.00	71.92	0.02
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19.00			Tier 4	Tractors/Loaders/Backhoes	0.21	5.12	0.42	0.02	0.02	0.01	658.33	0.21
2.00			Tier 4	Trenchers	0.00	0.09	0.01	0.00	0.00	0.00	11.45	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		1.47	30.08	3.60	0.18	0.17	0.05	4,624.84	1.41
Drainage/Utilities/Sub-Grade	tons per phase		0.02	0.33	0.04	0.00	0.00	0.00	50.87	0.02

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Off-Highway Trucks	0.05	0.83	0.10	0.00	0.00	0.00	152.12	0.05
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Pavers	0.01	0.28	0.02	0.00	0.00	0.00	35.79	0.01
6.00				Tier 4	Paving Equipment	0.00	0.02	0.00	0.00	0.00	0.00	2.96	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.02	0.57	0.05	0.00	0.00	0.00	73.51	0.02
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.00
1.00				Tier 4	Tractors/Loaders/Backhoes	0.01	0.27	0.02	0.00	0.00	0.00	34.65	0.01
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.09	1.98	0.19	0.01	0.01	0.00	299.56	0.10
Paving	tons per phase	0.00	0.05	0.00	0.00	0.00	0.00	7.58	0.00
Total Emissions all Phases (tons per construction period) =>		0.03	0.65	0.07	0.00	0.00	0.00	97.51	0.03

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	73.70
0.00	0.00
0.00	158.23
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	141.63
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	6.61
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	70.04
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	450.21
0.00	4.95

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	594.80
0.00	0.00
0.00	221.11
0.00	0.00
0.00	395.58
0.00	0.00
0.00	0.00
0.00	43.17
0.00	0.00
0.00	51.25
0.00	0.00
0.00	0.00
0.00	0.00
0.00	36.18
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	74.31
0.00	66.08
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	12.63
0.00	0.00
0.00	70.04
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	1,565.15
0.00	34.43

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	518.95
0.00	0.00
0.00	0.00
0.00	41.73
0.00	442.23
0.00	0.00
0.01	712.04
0.00	0.00
0.00	133.20
0.00	10.79
0.00	0.00
0.01	1,588.84
0.00	212.44
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.99
0.00	78.95
0.00	0.77
0.00	106.57
0.00	74.31
0.00	72.69
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	665.42
0.00	11.58
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.04	4,672.49
0.00	51.40

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	153.76
0.00	0.00
0.00	0.00
0.00	0.00
0.00	36.18
0.00	2.99
0.00	0.00
0.00	0.00
0.00	0.00
0.00	74.31
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.53
0.00	35.02
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	302.79
0.00	7.66
0.00	98.44

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221	0.64	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.05	8
Crawler Tractors		212	0.77	8
Crushing/Proc. Equipment		85		8
Excavators		158	1.25	8
Forklifts		89		8
Generator Sets		84	0.85	8
Graders		187	0.13	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.32	8
Other Construction Equipment		172	0.94	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.21	8
Paving Equipment		132	0.01	8
Plate Compactors		8	2.28	8
Pressure Washers		13	0.08	8
Pumps		84	1.36	8
Rollers		80	0.58	8
Rough Terrain Forklifts		100	0.16	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263	0.08	8
Sweepers/Scrubbers		64	0.01	8
Tractors/Loaders/Backhoes		97	0.92	8
Trenchers		78	0.14	8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Dike 7	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.20	miles
Total Project Area	12.50	acres
Maximum Area Disturbed/Day	0.60	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00		52.27
	Drainage/Utilities/Sub-Grade	20.00	24.08	
	Paving	10.00	39.36	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.50	0.60		1/1/2023
Grading/Excavation	1.00	2.70		1/17/2023
Drainage/Utilities/Sub-Grade	4.00	1.80		2/17/2023
Paving	0.50	0.90		6/19/2023
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation	1.00		4	3	4.00
Miles/round trip: Drainage/Utilities/Sub-Grade	60.80		4	2	243.20
Miles/round trip: Paving	30.00		4	4	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.07	0.00	0.00	0.00	15.12	0.00	0.00	15.83
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.22	1.64	0.06	0.03	0.01	919.52	0.00	0.14	962.61
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.07	0.00	0.00	0.00	40.46	0.00	0.01	42.35
Pounds per day - Paving	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	2.61
Total tons per construction project	0.00	0.01	0.08	0.00	0.00	0.00	43.12	0.00	0.01	45.14

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip	20			
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	1.41
Pounds per day - Grading/Excavation	0.15	2.41	0.20	0.11	0.04	0.01	736.16	0.02	0.02	742.09
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	8.10	0.00	0.00	8.16
Pounds per day - Drainage/Utilities/Sub-Grade	0.17	2.69	0.22	0.12	0.05	0.01	821.10	0.02	0.02	827.71
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.12	0.01	0.01	0.00	0.00	36.13	0.00	0.00	36.42
Pounds per day - Paving	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.00	0.00	1.41
Total tons per construction project	0.01	0.15	0.01	0.01	0.00	0.00	47.03	0.00	0.00	47.41

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust	1		1.00			80.00		80.00
Grading/Excavation - Exhaust	1		1.00			80.00		80.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving	1		1.00			80.00		80.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.66	0.00	0.00	1.74
Pounds per day - Grading/Excavation	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	3.33	0.00	0.00	3.48
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	13.31	0.00	0.00	13.93
Pounds per day - Paving	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	1.66	0.00	0.00	1.74
Total tons per construction project	0.00	0.00	0.04	0.00	0.00	0.00	19.96	0.00	0.00	20.90

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			6.00	0.03	1.25	0.01
Fugitive Dust - Grading/Excavation			6.00	0.07	1.25	0.01
Fugitive Dust - Drainage/Utilities/Subgrade			6.00	0.26	1.25	0.05

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Bore/Drill Rigs	0.00	0.01	0.00	0.00	0.00	0.00	1.14	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Cranes	0.00	0.02	0.00	0.00	0.00	0.00	4.19	0.00
1.00			Tier 4	Crawler Tractors	0.00	0.02	0.00	0.00	0.00	0.00	2.84	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Graders	0.00	0.01	0.00	0.00	0.00	0.00	1.60	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00			Tier 4	Off-Highway Trucks	0.07	1.14	0.13	0.01	0.01	0.00	207.98	0.07
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Rollers	0.00	0.08	0.01	0.00	0.00	0.00	10.16	0.00
4.00			Tier 4	Rough Terrain Forklifts	0.00	0.07	0.01	0.00	0.00	0.00	8.35	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.00	0.03	0.00	0.00	0.00	0.00	3.77	0.00
1.00			Tier 4	Trenchers	0.00	0.03	0.00	0.00	0.00	0.00	4.09	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing	pounds per day		0.08	1.40	0.15	0.01	0.01	0.00	244.13	0.08
	Grubbing/Land Clearing	tons per phase		0.00	0.01	0.00	0.00	0.00	0.00	1.34	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Crawler Tractors	0.00	0.02	0.00	0.00	0.00	0.00	2.84	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Excavators	0.01	0.25	0.02	0.00	0.00	0.00	32.51	0.01
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00				Tier 4	Off-Highway Trucks	0.05	0.80	0.09	0.00	0.00	0.00	145.59	0.05
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pavers	0.00	0.10	0.01	0.00	0.00	0.00	12.52	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Plate Compactors	0.00	0.01	0.01	0.00	0.00	0.00	0.91	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.01	0.16	0.01	0.00	0.00	0.00	20.33	0.01
6.00				Tier 4	Rough Terrain Forklifts	0.00	0.10	0.01	0.00	0.00	0.00	12.52	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Tractors/Loaders/Backhoes	0.00	0.03	0.00	0.00	0.00	0.00	3.77	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.07	1.46	0.15	0.01	0.01	0.00	230.98	0.07
Grading/Excavation	tons per phase	0.00	0.02	0.00	0.00	0.00	0.00	2.54	0.00

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Bore/Drill Rigs	0.00	0.02	0.00	0.00	0.00	0.00	3.43	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Cranes	0.00	0.04	0.00	0.00	0.00	0.00	6.99	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Excavators	0.01	0.19	0.02	0.00	0.00	0.00	24.38	0.01
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Generator Sets	0.01	0.15	0.01	0.00	0.00	0.00	23.36	0.00
1.00			Tier 4	Graders	0.00	0.01	0.00	0.00	0.00	0.00	1.60	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00			Tier 4	Off-Highway Trucks	0.16	2.85	0.33	0.02	0.02	0.01	519.96	0.17
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Pavers	0.00	0.05	0.00	0.00	0.00	0.00	6.26	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Plate Compactors	0.00	0.01	0.01	0.00	0.00	0.00	0.91	0.00
1.00			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.00
1.00			Tier 4	Pumps	0.01	0.30	0.02	0.00	0.00	0.00	46.73	0.00
1.00			Tier 4	Rollers	0.00	0.04	0.00	0.00	0.00	0.00	5.08	0.00
10.00			Tier 4	Rough Terrain Forklifts	0.01	0.16	0.01	0.00	0.00	0.00	20.86	0.01
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Tractors/Loaders/Backhoes	0.01	0.15	0.01	0.00	0.00	0.00	18.85	0.01
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.21	3.97	0.43	0.02	0.02	0.01	678.89	0.20
Drainage/Utilities/Sub-Grade	tons per phase		0.01	0.17	0.02	0.00	0.00	0.00	29.87	0.01

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Off-Highway Trucks	0.01	0.11	0.01	0.00	0.00	0.00	20.80	0.01
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Pavers	0.00	0.05	0.00	0.00	0.00	0.00	6.26	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Tractors/Loaders/Backhoes	0.00	0.03	0.00	0.00	0.00	0.00	3.77	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.01	0.19	0.02	0.00	0.00	0.00	30.83	0.01
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00
Total Emissions all Phases (tons per construction period) =>		0.01	0.20	0.02	0.00	0.00	0.00	33.92	0.01

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	1.16
0.00	0.00
0.00	0.00
0.00	4.24
0.00	2.87
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.62
0.00	0.00
0.00	210.22
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	10.27
0.00	8.44
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	3.81
0.00	4.13
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	246.76
0.00	1.36

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	2.87
0.00	0.00
0.00	32.86
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	147.15
0.00	0.00
0.00	0.00
0.00	0.00
0.00	12.65
0.00	0.00
0.00	0.91
0.00	0.00
0.00	0.00
0.00	20.55
0.00	12.65
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	3.81
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	233.46
0.00	2.57

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	3.47
0.00	0.00
0.00	0.00
0.00	7.06
0.00	0.00
0.00	0.00
0.00	24.64
0.00	0.00
0.00	23.44
0.00	1.62
0.00	0.00
0.00	525.55
0.00	0.00
0.00	0.00
0.00	0.00
0.00	6.33
0.00	0.00
0.00	0.91
0.00	0.49
0.00	46.89
0.00	5.14
0.00	21.09
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	19.05
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	685.68
0.00	30.17

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	21.02
0.00	0.00
0.00	0.00
0.00	0.00
0.00	6.33
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	3.81
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.16
0.00	0.17
0.00	34.27

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221	0.01	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.02	8
Crawler Tractors		212	0.03	8
Crushing/Proc. Equipment		85		8
Excavators		158	0.13	8
Forklifts		89		8
Generator Sets		84	0.15	8
Graders		187	0.02	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.13	8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.11	8
Paving Equipment		132		8
Plate Compactors		8	0.21	8
Pressure Washers		13	0.10	8
Pumps		84	0.60	8
Rollers		80	0.16	8
Rough Terrain Forklifts		100	0.05	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.10	8
Trenchers		78	0.10	8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Dikes 1-3 Raise 2023 Mitigated	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	8.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.17	miles
Total Project Area	35.00	acres
Maximum Area Disturbed/Day	8.75	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		405.00
	Grading/Excavation	20.00	300.45	
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	57.09	

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.80		1/1/2023
Grading/Excavation	5.00	3.60		1/26/2023
Drainage/Utilities/Sub-Grade	1.00	2.40		6/28/2023
Paving	1.00	1.20		7/29/2023
Totals (Months)		8		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	21	120.00
Miles/round trip: Grading/Excavation	30.00		4	16	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade			4	0	0.00
Miles/round trip: Paving	30.00		4	0	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.99	0.00	0.00	4.18
Pounds per day - Grading/Excavation	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grading/Excavation	0.00	0.01	0.05	0.00	0.00	0.00	24.95	0.00	0.00	26.12
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	33.94	0.00	0.01	35.53

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving	30.00		4	3	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.24	0.00	0.00	2.26
Pounds per day - Grading/Excavation	0.15	2.41	0.20	0.11	0.04	0.01	736.16	0.02	0.02	742.09
Tons per const. Period - Grading/Excavation	0.01	0.13	0.01	0.01	0.00	0.00	40.49	0.00	0.00	40.81
Pounds per day - Drainage/Utilities/Sub-Grade	0.17	2.69	0.22	0.12	0.05	0.01	821.10	0.02	0.02	827.71
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	9.03	0.00	0.00	9.10
Pounds per day - Paving	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.80	0.00	0.00	2.83
Total tons per construction project	0.01	0.18	0.01	0.01	0.00	0.00	54.57	0.00	0.00	55.01

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1		1.00			80.00		80.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	2.66	0.00	0.00	2.79
Pounds per day - Grading/Excavation	0.01	0.14	1.07	0.04	0.02	0.01	604.95	0.00	0.10	633.29
Tons per const. Period - Grading/Excavation	0.00	0.01	0.06	0.00	0.00	0.00	33.27	0.00	0.01	34.83
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	35.93	0.00	0.01	37.62

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			87.50	0.77	18.20	0.16
Fugitive Dust - Grading/Excavation			87.50	4.81	18.20	1.00
Fugitive Dust - Drainage/Utilities/Subgrade			87.50	0.96	18.20	0.20

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00
5.00			Tier 4	Crawler Tractors	0.12	2.04	0.24	0.01	0.01	0.00	370.42	0.12
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00			Tier 4	Excavators	0.21	5.17	0.42	0.02	0.02	0.01	659.37	0.21
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Off-Highway Trucks	0.07	1.15	0.13	0.01	0.01	0.00	210.92	0.07
2.00			Tier 4	Other Construction Equipment	0.03	0.68	0.05	0.00	0.00	0.00	85.77	0.03
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Tractors/Loaders/Backhoes	0.06	1.59	0.13	0.01	0.01	0.00	205.15	0.07
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.49	10.64	0.97	0.05	0.04	0.02	1,533.24	0.50
Grubbing/Land Clearing	tons per phase	0.00	0.09	0.01	0.00	0.00	0.00	13.49	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Cranes	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00
8.00				Tier 4	Crawler Tractors	0.19	3.27	0.38	0.02	0.02	0.01	592.67	0.19
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00				Tier 4	Excavators	0.19	4.65	0.38	0.02	0.02	0.01	593.44	0.19
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Graders	0.07	1.17	0.13	0.01	0.01	0.00	213.06	0.07
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Off-Highway Trucks	0.09	1.54	0.18	0.01	0.01	0.00	281.22	0.09
1.00				Tier 4	Other Construction Equipment	0.01	0.34	0.03	0.00	0.00	0.00	42.88	0.01
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Paving Equipment	0.00	0.01	0.00	0.00	0.00	0.00	1.48	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00				Tier 4	Rollers	0.04	0.95	0.08	0.00	0.00	0.00	121.84	0.04
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23.00				Tier 4	Tractors/Loaders/Backhoes	0.11	2.82	0.23	0.01	0.01	0.00	362.95	0.12
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.70	14.75	1.40	0.07	0.06	0.02	2,211.17	0.72
Grading/Excavation	tons per phase	0.04	0.81	0.08	0.00	0.00	0.00	121.61	0.04

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.01	0.00	0.00	0.00	0.00	1.62	0.00
4.00			Tier 4	Crawler Tractors	0.09	1.63	0.19	0.01	0.01	0.00	296.34	0.10
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Excavators	0.04	1.03	0.08	0.00	0.00	0.00	131.87	0.04
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Graders	0.08	1.46	0.17	0.01	0.01	0.00	266.33	0.09
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Off-Highway Trucks	0.11	1.92	0.22	0.01	0.01	0.00	351.53	0.11
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment	0.00	0.01	0.00	0.00	0.00	0.00	1.48	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Pumps	0.90	22.13	1.79	0.09	0.08	0.04	3,398.37	0.16
4.00			Tier 4	Rollers	0.02	0.42	0.03	0.00	0.00	0.00	54.15	0.02
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.00			Tier 4	Tractors/Loaders/Backhoes	0.07	1.72	0.14	0.01	0.01	0.00	220.93	0.07
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Drainage/Utilities/Sub-Grade	pounds per day	1.31	30.34	2.63	0.13	0.12	0.05	4,722.62	0.58
	Drainage/Utilities/Sub-Grade	tons per phase	0.01	0.33	0.03	0.00	0.00	0.00	51.95	0.01

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Graders	0.02	0.29	0.03	0.00	0.00	0.00	53.27	0.02
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Off-Highway Trucks	0.07	1.15	0.13	0.01	0.01	0.00	210.92	0.07
2.00				Tier 4	Other Construction Equipment	0.03	0.68	0.05	0.00	0.00	0.00	85.77	0.03
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pavers	0.02	0.47	0.04	0.00	0.00	0.00	60.63	0.02
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Rollers	0.01	0.32	0.03	0.00	0.00	0.00	40.61	0.01
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.14	2.91	0.29	0.01	0.01	0.00	451.19	0.15
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	4.96	0.00
Total Emissions all Phases (tons per construction period) =>		0.06	1.27	0.12	0.01	0.01	0.00	192.02	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.63
0.00	374.42
0.00	0.00
0.01	666.48
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	213.19
0.00	86.69
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	207.35
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	1,549.77
0.00	13.64

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.63
0.01	599.07
0.00	0.00
0.01	599.83
0.00	0.00
0.00	0.00
0.00	215.36
0.00	0.00
0.00	284.25
0.00	43.35
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.50
0.00	0.00
0.00	0.00
0.00	0.00
0.00	123.15
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	366.86
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.02	2,234.99
0.00	122.92

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.63
0.00	299.53
0.00	0.00
0.00	133.30
0.00	0.00
0.00	0.00
0.00	269.20
0.00	0.00
0.00	355.31
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.50
0.00	0.00
0.00	0.00
0.03	3,409.88
0.00	54.73
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	223.31
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.04	4,748.38
0.00	52.23

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	53.84
0.00	0.00
0.00	213.19
0.00	86.69
0.00	0.00
0.00	0.00
0.00	61.28
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	41.05
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	456.05
0.00	5.02
0.00	193.81

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.02	8
Crawler Tractors		212	0.78	8
Crushing/Proc. Equipment		85		8
Excavators		158	1.05	8
Forklifts		89		8
Generator Sets		84		8
Graders		187	0.66	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.44	8
Other Construction Equipment		172	0.57	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.53	8
Paving Equipment		132	0.02	8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84	14.55	8
Rollers		80	0.43	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.42	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model **Version 9.0.0**

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Dikes 4-6 Raise 2023 Mitigated	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	9.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.03	miles
Total Project Area	39.00	acres
Maximum Area Disturbed/Day	9.75	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		6.45
	Grading/Excavation	20.00		30.68
	Drainage/Utilities/Sub-Grade			
	Paving	10.00		22.73
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.90		1/1/2023
Grading/Excavation	5.00	4.05		2/1/2023
Drainage/Utilities/Sub-Grade	2.00	2.70		7/4/2023
Paving	1.00	1.35		9/3/2023
Totals (Months)		9		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	1	120.00
Miles/round trip: Grading/Excavation	30.00		4	2	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				3	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22
Pounds per day - Grading/Excavation	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grading/Excavation	0.00	0.01	0.05	0.00	0.00	0.00	24.95	0.00	0.00	26.12
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	29.94	0.00	0.00	31.35

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving	30.00		4	0	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip	20			
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.80	0.00	0.00	2.83
Pounds per day - Grading/Excavation	0.15	2.41	0.20	0.11	0.04	0.01	736.16	0.02	0.02	742.09
Tons per const. Period - Grading/Excavation	0.01	0.13	0.01	0.01	0.00	0.00	40.49	0.00	0.00	40.81
Pounds per day - Drainage/Utilities/Sub-Grade	0.17	2.69	0.22	0.12	0.05	0.01	821.10	0.02	0.02	827.71
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.00	0.00	0.00	0.00	18.06	0.00	0.00	18.21
Pounds per day - Paving	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.80	0.00	0.00	2.83
Total tons per construction project	0.01	0.21	0.02	0.01	0.00	0.00	64.16	0.00	0.00	64.68

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust	2		1.00			80.00		160.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.14	1.07	0.04	0.02	0.01	604.95	0.00	0.10	633.29
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	6.65	0.00	0.00	6.97
Pounds per day - Grading/Excavation	0.01	0.14	1.07	0.04	0.02	0.01	604.95	0.00	0.10	633.29
Tons per const. Period - Grading/Excavation	0.00	0.01	0.06	0.00	0.00	0.00	33.27	0.00	0.01	34.83
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	6.65	0.00	0.00	6.97
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.08	0.00	0.00	0.00	46.58	0.00	0.01	48.76

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			97.50	1.07	20.28	0.22
Fugitive Dust - Grading/Excavation			97.50	5.36	20.28	1.12
Fugitive Dust - Drainage/Utilities/Subgrade			97.50	2.15	20.28	0.45

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.02	0.00	0.00	0.00	0.00	4.42	0.00
6.00			Tier 4	Crawler Tractors	0.13	2.26	0.26	0.01	0.01	0.00	410.30	0.13
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Excavators	0.04	1.01	0.08	0.00	0.00	0.00	128.72	0.04
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Other Construction Equipment	0.13	3.21	0.26	0.01	0.01	0.00	407.91	0.13
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Tractors/Loaders/Backhoes	0.03	0.76	0.06	0.00	0.00	0.00	97.70	0.03
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.33	7.27	0.67	0.03	0.03	0.01	1,049.04	0.34
Grubbing/Land Clearing	tons per phase	0.00	0.08	0.01	0.00	0.00	0.00	11.54	0.00

Grading/Excavation	Default Number of Vehicles	Override of	Mitigation Option Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Cranes	0.00	0.02	0.00	0.00	0.00	0.00	4.42	0.00
5.00			Tier 4	Crawler Tractors	0.11	1.88	0.22	0.01	0.01	0.00	341.91	0.11
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00			Tier 4	Excavators	0.05	1.18	0.10	0.00	0.00	0.00	150.17	0.05
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Graders	0.02	0.34	0.04	0.00	0.00	0.00	61.51	0.02
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment	0.04	1.04	0.08	0.00	0.00	0.00	132.66	0.04
1.00			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Rollers	0.01	0.30	0.02	0.00	0.00	0.00	37.84	0.01
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.00			Tier 4	Tractors/Loaders/Backhoes	0.04	1.05	0.09	0.00	0.00	0.00	135.28	0.04
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.27	5.82	0.55	0.03	0.03	0.01	864.12	0.28
Grading/Excavation	tons per phase	0.02	0.32	0.03	0.00	0.00	0.00	47.53	0.02

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Cranes	0.01	0.10	0.01	0.00	0.00	0.00	17.67	0.01
6.00			Tier 4	Crawler Tractors	0.13	2.26	0.26	0.01	0.01	0.00	410.30	0.13
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00			Tier 4	Excavators	0.07	1.68	0.14	0.01	0.01	0.00	214.53	0.07
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Graders	0.02	0.42	0.05	0.00	0.00	0.00	76.89	0.02
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Off-Highway Trucks	0.03	0.48	0.06	0.00	0.00	0.00	87.36	0.03
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Pumps	0.45	11.06	0.90	0.04	0.04	0.02	1,699.19	0.08
7.00			Tier 4	Rollers	0.01	0.34	0.03	0.00	0.00	0.00	44.14	0.01
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24.00			Tier 4	Tractors/Loaders/Backhoes	0.06	1.40	0.11	0.01	0.01	0.00	180.37	0.06
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.77	17.75	1.55	0.08	0.07	0.03	2,730.78	0.41
Drainage/Utilities/Sub-Grade	tons per phase		0.02	0.39	0.03	0.00	0.00	0.00	60.08	0.01

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Graders	0.00	0.08	0.01	0.00	0.00	0.00	15.38	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pavers	0.01	0.33	0.03	0.00	0.00	0.00	42.14	0.01
2.00				Tier 4	Paving Equipment	0.04	1.04	0.08	0.00	0.00	0.00	132.66	0.04
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Rollers	0.01	0.25	0.02	0.00	0.00	0.00	31.53	0.01
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.07	1.70	0.14	0.01	0.01	0.00	221.72	0.07
Paving	tons per phase	0.00	0.02	0.00	0.00	0.00	0.00	2.44	0.00
Total Emissions all Phases (tons per construction period) =>		0.04	0.81	0.07	0.00	0.00	0.00	121.58	0.03

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	4.47
0.00	414.72
0.00	0.00
0.00	130.11
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	412.31
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	98.75
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,060.36
0.00	11.66

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	4.47
0.00	345.60
0.00	0.00
0.00	151.79
0.00	0.00
0.00	0.00
0.00	62.18
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	134.09
0.00	0.32
0.00	0.00
0.00	0.00
0.00	38.24
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	136.73
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	873.43
0.00	48.04

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	17.87
0.00	414.72
0.00	0.00
0.00	216.85
0.00	0.00
0.00	0.00
0.00	77.72
0.00	0.00
0.00	88.31
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.32
0.00	0.00
0.01	1,704.94
0.00	44.62
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	182.31
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.02	2,747.65
0.00	60.45

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	15.54
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	42.60
0.00	134.09
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.87
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	224.11
0.00	2.47
0.00	122.62

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.06	8
Crawler Tractors		212	0.72	8
Crushing/Proc. Equipment		85		8
Excavators		158	0.34	8
Forklifts		89		8
Generator Sets		84		8
Graders		187	0.19	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.27	8
Other Construction Equipment		172	2.73	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.37	8
Paving Equipment		132	1.35	8
Plate Compactors		8	0.07	8
Pressure Washers		13		8
Pumps		84	7.27	8
Rollers		80	0.20	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.20	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Main Dam Gates 2023 Mitigated	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	21.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.26	miles
Total Project Area	4.90	acres
Maximum Area Disturbed/Day	0.01	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.60		1/1/2023
Grading/Excavation	0.00	2.70		1/1/2023
Drainage/Utilities/Sub-Grade	6.00	1.80		1/1/2023
Paving	0.00	0.90		7/3/2023
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade			1	0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	12		24	480.00
No. of employees: Drainage/Utilities/Sub-Grade	12		24	480.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.07	1.11	0.09	0.05	0.02	0.00	339.77	0.01	0.01	342.50
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.07	0.01	0.00	0.00	0.00	21.41	0.00	0.00	21.58
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.07	0.01	0.00	0.00	0.00	21.41	0.00	0.00	21.58

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust								0.00
Grading/Excavation - Exhaust								0.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.20	0.01	0.04	0.00

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Grubbing/Land Clearing	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Tier 4	Aerial Lifts	0.00	0.02	0.02	0.00	0.00	0.00	2.73	0.00
2.00			Tier 4	Air Compressors	0.00	0.06	0.00	0.00	0.00	0.00	9.38	0.00
11.00			Tier 4	Bore/Drill Rigs	0.12	2.06	0.24	0.01	0.01	0.00	373.01	0.12
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Concrete/Industrial Saws	0.00	0.04	0.00	0.00	0.00	0.00	6.38	0.00
16.00			Tier 4	Cranes	0.14	2.36	0.27	0.01	0.01	0.00	430.05	0.14
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Generator Sets	0.01	0.20	0.02	0.00	0.00	0.00	31.15	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.00			Tier 4	Off-Highway Trucks	0.11	1.98	0.23	0.01	0.01	0.00	362.61	0.12
1.00			Tier 4	Other Construction Equipment	0.01	0.15	0.01	0.00	0.00	0.00	19.44	0.01
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Paving Equipment	0.38	9.30	0.75	0.04	0.03	0.01	1,183.40	0.38
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Pumps	0.01	0.30	0.02	0.00	0.00	0.00	46.73	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.05	0.00	0.00	0.00	0.00	5.84	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00			Tier 4	Welders	0.14	3.14	2.55	0.02	0.01	0.01	435.70	0.05

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.92	19.69	4.13	0.09	0.09	0.03	2,906.81	0.82
Drainage/Utilities/Sub-Grade	tons per phase		0.06	1.24	0.26	0.01	0.01	0.00	183.13	0.05

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.06	1.24	0.26	0.01	0.01	0.00	183.13	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	2.76
0.00	9.42
0.00	377.03
0.00	0.00
0.00	6.40
0.00	434.69
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.26
0.00	0.00
0.00	0.00
0.00	366.52
0.00	19.65
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,196.17
0.00	0.00
0.00	0.00
0.00	46.89
0.00	0.00
0.00	5.90
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.38
0.00	0.00
0.00	437.98

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.03	2,935.05
0.00	184.91

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	0.00
0.00	0.00

0.00	184.91

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	0.13	8
Air Compressors		78	0.10	8
Bore/Drill Rigs		221	0.30	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81	0.09	8
Cranes		231	0.38	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84	0.40	8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.09	8
Other Construction Equipment		172	0.26	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.03	8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84	0.60	8
Rollers		80		8
Rough Terrain Forklifts		100	0.14	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.01	8
Trenchers		78		8
Welders		46	1.12	8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	MIAD Raise 2023 Mitigated	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	8.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.00	mile
Total Project Area	79.30	acres
Maximum Area Disturbed/Day	1.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		131.00
	Grading/Excavation	20.00	329.27	
	Drainage/Utilities/Sub-Grade			
	Paving	10.00	444.40	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.70	0.80		1/1/2023
Grading/Excavation	5.00	3.60		1/23/2023
Drainage/Utilities/Sub-Grade	1.00	2.40		6/25/2023
Paving	1.00	1.20		7/26/2023
Totals (Months)		8		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	50.00		4	7	200.00
Miles/round trip: Grading/Excavation	50.00		4	17	200.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving	50.00		4	45	200.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.18	1.35	0.05	0.02	0.01	756.18	0.00	0.12	791.62
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	5.82	0.00	0.00	6.10
Pounds per day - Grading/Excavation	0.01	0.18	1.35	0.05	0.02	0.01	756.18	0.00	0.12	791.62
Tons per const. Period - Grading/Excavation	0.00	0.01	0.07	0.00	0.00	0.00	41.59	0.00	0.01	43.54
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.18	1.35	0.05	0.02	0.01	756.18	0.00	0.12	791.62
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	8.32	0.00	0.00	8.71
Total tons per construction project	0.00	0.01	0.10	0.00	0.00	0.00	55.73	0.00	0.01	58.34

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker			
User Input	Commute Default Values	Default Values		
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	1.96	0.00	0.00	1.98
Pounds per day - Grading/Excavation	0.15	2.41	0.20	0.11	0.04	0.01	736.16	0.02	0.02	742.09
Tons per const. Period - Grading/Excavation	0.01	0.13	0.01	0.01	0.00	0.00	40.49	0.00	0.00	40.81
Pounds per day - Drainage/Utilities/Sub-Grade	0.17	2.69	0.22	0.12	0.05	0.01	821.10	0.02	0.02	827.71
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	9.03	0.00	0.00	9.10
Pounds per day - Paving	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.80	0.00	0.00	2.83
Total tons per construction project	0.01	0.18	0.01	0.01	0.00	0.00	54.29	0.00	0.00	54.72

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust	1		1.00			80.00		80.00
Grading/Excavation - Exhaust	4		1.00			80.00		320.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	2.44
Pounds per day - Grading/Excavation	0.02	0.29	2.14	0.08	0.03	0.01	1,209.89	0.00	0.19	1,266.59
Tons per const. Period - Grading/Excavation	0.00	0.02	0.12	0.00	0.00	0.00	66.54	0.00	0.01	69.66
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.02	0.12	0.00	0.00	0.00	68.87	0.00	0.01	72.10

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			15.00	0.12	3.12	0.02
Fugitive Dust - Grading/Excavation			15.00	0.83	3.12	0.17
Fugitive Dust - Drainage/Utilities/Subgrade			15.00	0.17	3.12	0.03

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Bore/Drill Rigs	0.29	5.07	0.58	0.03	0.03	0.01	915.40	0.30
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Crawler Tractors	0.14	2.39	0.28	0.01	0.01	0.00	432.70	0.14
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Excavators	0.25	6.20	0.50	0.03	0.02	0.01	791.11	0.26
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Generator Sets	0.56	13.75	1.11	0.06	0.05	0.02	2,111.26	0.09
1.00			Tier 4	Graders	0.04	0.71	0.08	0.00	0.00	0.00	128.80	0.04
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Off-Highway Trucks	0.28	4.81	0.55	0.03	0.03	0.01	878.26	0.28
2.00			Tier 4	Other Construction Equipment	0.02	0.41	0.03	0.00	0.00	0.00	51.71	0.02
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Paving Equipment	0.01	0.27	0.02	0.00	0.00	0.00	34.26	0.01
2.00			Tier 4	Plate Compactors	0.02	0.34	0.30	0.02	0.02	0.00	31.92	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rollers	0.01	0.33	0.03	0.00	0.00	0.00	42.68	0.01
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Tractors/Loaders/Backhoes	0.10	2.40	0.19	0.01	0.01	0.00	308.86	0.10
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grubbing/Land Clearing	pounds per day		1.71	36.66	3.69	0.19	0.17	0.06	5,726.96	1.26
Grubbing/Land Clearing	tons per phase		0.01	0.28	0.03	0.00	0.00	0.00	44.10	0.01

Grading/Excavation	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Air Compressors	0.02	0.38	0.03	0.00	0.00	0.00	58.23	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00			Tier 4	Crawler Tractors	0.32	5.57	0.64	0.03	0.03	0.01	1,009.64	0.33
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Excavators	0.04	1.03	0.08	0.00	0.00	0.00	131.85	0.04
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00			Tier 4	Graders	0.20	3.53	0.41	0.02	0.02	0.01	644.01	0.21
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment	0.02	0.54	0.04	0.00	0.00	0.00	68.51	0.02
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Rollers	0.08	2.00	0.16	0.01	0.01	0.00	256.07	0.08
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Tractors/Loaders/Backhoes	0.15	3.60	0.29	0.01	0.01	0.00	463.29	0.15
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Grading/Excavation	pounds per day	0.83	16.65	1.66	0.08	0.08	0.03	2,631.61	0.84
	Grading/Excavation	tons per phase	0.05	0.92	0.09	0.00	0.00	0.00	144.74	0.05

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Cranes	0.09	1.57	0.18	0.01	0.01	0.00	285.47	0.09
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Excavators	0.13	3.10	0.25	0.01	0.01	0.00	395.56	0.13
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Other Construction Equipment	0.01	0.20	0.02	0.00	0.00	0.00	25.85	0.01
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment	0.02	0.54	0.04	0.00	0.00	0.00	68.51	0.02
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.02	0.60	0.05	0.00	0.00	0.00	77.22	0.02
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Sub-Grade	pounds per day	0.27	6.01	0.54	0.03	0.02	0.01	852.60	0.28
Drainage/Utilities/Sub-Grade	tons per phase	0.00	0.07	0.01	0.00	0.00	0.00	9.38	0.00

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
2.00				Tier 4	Aerial Lifts	0.09	1.70	1.53	0.01	0.01	0.00	216.83	0.07
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Cement and Mortar Mixers	0.05	1.07	0.95	0.05	0.05	0.00	101.03	0.01
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Cranes	0.03	0.52	0.06	0.00	0.00	0.00	95.16	0.03
1.00				Tier 4	Crawler Tractors	0.05	0.80	0.09	0.00	0.00	0.00	144.23	0.05
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Excavators	0.21	5.16	0.42	0.02	0.02	0.01	659.26	0.21
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Generator Sets	1.67	41.24	3.34	0.17	0.15	0.07	6,333.79	0.28
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00				Tier 4	Off-Highway Tractors	0.53	13.05	1.06	0.05	0.05	0.02	1,668.89	0.54
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Pavers	0.04	1.01	0.08	0.00	0.00	0.00	128.60	0.04
2.00				Tier 4	Paving Equipment	0.02	0.54	0.04	0.00	0.00	0.00	68.51	0.02
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pumps	1.12	27.72	2.25	0.11	0.10	0.04	4,257.41	0.19
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Rough Terrain Forklifts	0.16	3.92	0.32	0.02	0.01	0.01	500.71	0.16
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Tractors/Loaders/Backhoes	0.05	1.20	0.10	0.00	0.00	0.00	154.43	0.05
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Paving	pounds per day		4.01	97.92	10.23	0.45	0.41	0.15	14,328.85	1.66
Paving	tons per phase		0.04	1.08	0.11	0.00	0.00	0.00	157.62	0.02
Total Emissions all Phases (tons per construction period) =>			0.11	2.34	0.24	0.01	0.01	0.00	355.83	0.08

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.01	925.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	437.37
0.00	0.00
0.01	799.64
0.00	0.00
0.02	2,118.32
0.00	130.19
0.00	0.00
0.01	887.71
0.00	52.27
0.00	0.00
0.00	0.00
0.00	0.00
0.00	34.63
0.00	32.08
0.00	0.00
0.00	0.00
0.00	43.14
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	312.19
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.05	5,772.81
0.00	44.45

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	58.45
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,020.53
0.00	0.00
0.00	133.27
0.00	0.00
0.00	0.00
0.01	650.95
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	69.25
0.00	0.00
0.00	0.00
0.00	0.00
0.00	258.83
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	468.28
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.02	2,659.56
0.00	146.28

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	288.54
0.00	0.00
0.00	0.00
0.00	399.82
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	26.13
0.00	0.00
0.00	0.00
0.00	0.00
0.00	69.25
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	78.05
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	861.79
0.00	9.48

N2O	CO2e
pounds/day	pounds/day
0.00	219.16
0.00	0.00
0.00	0.00
0.00	101.55
0.00	0.00
0.00	96.18
0.00	145.79
0.00	0.00
0.01	666.37
0.00	0.00
0.05	6,354.95
0.00	0.00
0.02	1,686.88
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	129.99
0.00	69.25
0.00	0.00
0.00	0.00
0.03	4,271.82
0.00	0.00
0.00	506.10
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	156.09
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.11	14,404.13
0.00	158.45
0.00	358.65

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	5.33	8
Air Compressors		78	1.24	8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	1.36	8
Crawler Tractors		212	1.52	8
Crushing/Proc. Equipment		85		8
Excavators		158	2.11	8
Forklifts		89		8
Generator Sets		84	27.11	8
Graders		187	1.61	8
Off-Highway Tractors		124	4.89	8
Off-Highway Trucks		402	5.49	8
Other Construction Equipment		172	0.35	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	2.26	8
Paving Equipment		132	0.69	8
Plate Compactors		8	3.70	8
Pressure Washers		13		8
Pumps		84	27.33	8
Rollers		80	1.34	8
Rough Terrain Forklifts		100	6.00	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	2.05	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	RWD Raise 2023 Mitigated	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.34	miles
Total Project Area	77.00	acres
Maximum Area Disturbed/Day	5.00	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		8.40
	Grading/Excavation	20.00		51.06
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	216.44	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	1.00	0.60		1/1/2023
Grading/Excavation	2.00	2.70		2/1/2023
Drainage/Utilities/Sub-Grade	1.00	1.80		4/3/2023
Paving	2.30	0.90		5/4/2023
Totals (Months)		6		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00		4	1	120.00
Miles/round trip: Grading/Excavation	30.00		4	3	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade			4	0	0.00
Miles/round trip: Paving	30.00		4	11	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	4.99	0.00	0.00	5.22
Pounds per day - Grading/Excavation	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	9.98	0.00	0.00	10.45
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	11.48	0.00	0.00	12.02
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	26.45	0.00	0.00	27.69

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip	20			
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Paving (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Paving (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.80	0.00	0.00	2.83
Pounds per day - Grading/Excavation	0.15	2.41	0.20	0.11	0.04	0.01	736.16	0.02	0.02	742.09
Tons per const. Period - Grading/Excavation	0.00	0.05	0.00	0.00	0.00	0.00	16.20	0.00	0.00	16.33
Pounds per day - Drainage/Utilities/Sub-Grade	0.17	2.69	0.22	0.12	0.05	0.01	821.10	0.02	0.02	827.71
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	9.03	0.00	0.00	9.10
Pounds per day - Paving	0.05	0.83	0.07	0.04	0.02	0.00	254.82	0.01	0.01	256.88
Tons per const. Period - Paving	0.00	0.02	0.00	0.00	0.00	0.00	6.45	0.00	0.00	6.50
Total tons per construction project	0.01	0.11	0.01	0.00	0.00	0.00	34.48	0.00	0.00	34.76

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust	2		1.00			80.00		160.00
Grading/Excavation - Exhaust	2		1.00			80.00		160.00
Drainage/Utilities/Subgrade	1		1.00			80.00		80.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Paving (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.14	1.07	0.04	0.02	0.01	604.95	0.00	0.10	633.29
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	6.65	0.00	0.00	6.97
Pounds per day - Grading/Excavation	0.01	0.14	1.07	0.04	0.02	0.01	604.95	0.00	0.10	633.29
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	13.31	0.00	0.00	13.93
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.07	0.54	0.02	0.01	0.00	302.47	0.00	0.05	316.65
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	3.33	0.00	0.00	3.48
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.04	0.00	0.00	0.00	23.29	0.00	0.00	24.38

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			50.00	0.55	10.40	0.11
Fugitive Dust - Grading/Excavation			50.00	1.10	10.40	0.23
Fugitive Dust - Drainage/Utilities/Subgrade			50.00	0.55	10.40	0.11

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Crawler Tractors	0.02	0.40	0.05	0.00	0.00	0.00	72.85	0.02
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Excavators	0.05	1.23	0.10	0.00	0.00	0.00	156.57	0.05
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Other Construction Equipment	0.04	1.10	0.09	0.00	0.00	0.00	140.10	0.05
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.05	0.00	0.00	0.00	0.00	6.54	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Tractors/Loaders/Backhoes	0.02	0.54	0.04	0.00	0.00	0.00	69.38	0.02
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.14	3.32	0.28	0.01	0.01	0.00	445.43	0.14
Grubbing/Land Clearing	tons per phase	0.00	0.04	0.00	0.00	0.00	0.00	4.90	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Concrete/Industrial Saws	0.16	3.86	0.31	0.02	0.01	0.01	592.67	0.03
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Crawler Tractors	0.07	1.20	0.14	0.01	0.01	0.00	218.54	0.07
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Excavators	0.12	3.07	0.25	0.01	0.01	0.00	391.43	0.13
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Graders	0.01	0.23	0.03	0.00	0.00	0.00	42.68	0.01
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Off-Highway Trucks	0.02	0.28	0.03	0.00	0.00	0.00	50.74	0.02
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Pavers	0.01	0.28	0.02	0.00	0.00	0.00	35.79	0.01
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Tier 4	Rollers	0.02	0.57	0.05	0.00	0.00	0.00	73.52	0.02
10.00				Tier 4	Rough Terrain Forklifts	0.02	0.51	0.04	0.00	0.00	0.00	65.39	0.02
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Surfacing Equipment	0.00	0.07	0.01	0.00	0.00	0.00	12.49	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Tractors/Loaders/Backhoes	0.02	0.54	0.04	0.00	0.00	0.00	69.38	0.02
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.46	10.62	0.92	0.05	0.04	0.02	1,552.61	0.34
Grading/Excavation	tons per phase	0.01	0.23	0.02	0.00	0.00	0.00	34.16	0.01

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00			Tier 4	Bore/Drill Rigs	0.16	2.85	0.33	0.02	0.02	0.01	514.43	0.17
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00			Tier 4	Cranes	0.01	0.23	0.03	0.00	0.00	0.00	41.28	0.01
6.00			Tier 4	Crawler Tractors	0.14	2.41	0.28	0.01	0.01	0.00	437.07	0.14
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00			Tier 4	Excavators	0.22	5.52	0.45	0.02	0.02	0.01	704.57	0.23
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Generator Sets	0.03	0.86	0.07	0.00	0.00	0.00	132.75	0.01
1.00			Tier 4	Graders	0.00	0.06	0.01	0.00	0.00	0.00	10.67	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.00			Tier 4	Off-Highway Trucks	0.50	8.61	0.99	0.05	0.05	0.02	1,573.03	0.51
3.00			Tier 4	Other Construction Equipment	0.07	1.66	0.13	0.01	0.01	0.00	210.15	0.07
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Paving Equipment	0.00	0.02	0.00	0.00	0.00	0.00	1.97	0.00
8.00			Tier 4	Plate Compactors	0.04	0.83	0.74	0.04	0.04	0.00	78.55	0.01
2.00			Tier 4	Pressure Washers	0.00	0.01	0.01	0.00	0.00	0.00	0.76	0.00
1.00			Tier 4	Pumps	0.03	0.69	0.06	0.00	0.00	0.00	106.20	0.00
4.00			Tier 4	Rollers	0.02	0.57	0.05	0.00	0.00	0.00	73.52	0.02
11.00			Tier 4	Rough Terrain Forklifts	0.02	0.56	0.05	0.00	0.00	0.00	71.93	0.02
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19.00			Tier 4	Tractors/Loaders/Backhoes	0.21	5.12	0.42	0.02	0.02	0.01	659.07	0.21
2.00			Tier 4	Trenchers	0.00	0.09	0.01	0.00	0.00	0.00	11.46	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		1.47	30.08	3.60	0.18	0.17	0.05	4,627.40	1.41
Drainage/Utilities/Sub-Grade	tons per phase		0.02	0.33	0.04	0.00	0.00	0.00	50.90	0.02

Paving	Default Number of Vehicles	Override of	Mitigation Option Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Off-Highway Trucks	0.05	0.83	0.10	0.00	0.00	0.00	152.23	0.05
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Pavers	0.01	0.28	0.02	0.00	0.00	0.00	35.79	0.01
6.00			Tier 4	Paving Equipment	0.00	0.02	0.00	0.00	0.00	0.00	2.96	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Rollers	0.02	0.57	0.05	0.00	0.00	0.00	73.52	0.02
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.01	0.27	0.02	0.00	0.00	0.00	34.69	0.01
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.09	1.98	0.19	0.01	0.01	0.00	299.70	0.10
Paving	tons per phase	0.00	0.05	0.00	0.00	0.00	0.00	7.58	0.00
Total Emissions all Phases (tons per construction period) =>		0.03	0.65	0.07	0.00	0.00	0.00	97.54	0.03

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	73.63
0.00	0.00
0.00	158.26
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	141.61
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	6.61
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	70.12
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	450.23
0.00	4.95

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	594.72
0.00	0.00
0.00	220.89
0.00	0.00
0.00	395.65
0.00	0.00
0.00	0.00
0.00	43.14
0.00	0.00
0.00	51.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	36.17
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	74.31
0.00	66.09
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	12.62
0.00	0.00
0.00	70.12
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	1,565.01
0.00	34.43

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	519.99
0.00	0.00
0.00	0.00
0.00	41.73
0.00	441.78
0.00	0.00
0.01	712.16
0.00	0.00
0.00	133.19
0.00	10.79
0.00	0.00
0.01	1,589.96
0.00	212.42
0.00	0.00
0.00	0.00
0.00	0.00
0.00	1.99
0.00	78.95
0.00	0.77
0.00	106.56
0.00	74.31
0.00	72.70
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	666.16
0.00	11.59
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.04	4,675.04
0.00	51.43

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	153.87
0.00	0.00
0.00	0.00
0.00	0.00
0.00	36.17
0.00	2.99
0.00	0.00
0.00	0.00
0.00	0.00
0.00	74.31
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.53
0.00	35.06
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	302.93
0.00	7.66
0.00	98.47

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221	0.64	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	0.05	8
Crawler Tractors		212	0.77	8
Crushing/Proc. Equipment		85		8
Excavators		158	1.25	8
Forklifts		89		8
Generator Sets		84	0.85	8
Graders		187	0.13	8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.32	8
Other Construction Equipment		172	0.94	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.21	8
Paving Equipment		132	0.01	8
Plate Compactors		8	2.28	8
Pressure Washers		13	0.08	8
Pumps		84	1.36	8
Rollers		80	0.58	8
Rough Terrain Forklifts		100	0.16	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263	0.08	8
Sweepers/Scrubbers		64	0.01	8
Tractors/Loaders/Backhoes		97	0.92	8
Trenchers		78	0.14	8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model **Version 9.0.0**

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Main Dam Gates 2024 Mitigated	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	21.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.26	miles
Total Project Area	4.90	acres
Maximum Area Disturbed/Day	0.01	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation).
Will all off-road equipment be tier 4?	All Tier 4 Equipment	Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.60		1/1/2024
Grading/Excavation	0.00	2.70		1/1/2024
Drainage/Utilities/Sub-Grade	6.00	1.80		1/1/2024
Paving	0.00	0.90		7/2/2024
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade			1	0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions **User Input**	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker			
User Input	Commute Default Values	Default Values		
Miles/ one-way trip	20		Calculated	Calculated
One-way trips/day	2		Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	12		24	480.00
No. of employees: Drainage/Utilities/Sub-Grade	12		24	480.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.07	1.03	0.08	0.05	0.02	0.00	328.05	0.01	0.01	330.56
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.01	0.00	0.00	0.00	20.67	0.00	0.00	20.83
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.06	0.01	0.00	0.00	0.00	20.67	0.00	0.00	20.83

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust								0.00
Grading/Excavation - Exhaust								0.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max	Default	PM10	PM10	PM2.5	PM2.5
	Acreage Disturbed/Day	Maximum Acreage/Day	pounds/day	tons/per period	pounds/day	tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.20	0.01	0.04	0.00

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Tier 4	Aerial Lifts	0.00	0.02	0.02	0.00	0.00	0.00	2.73	0.00
2.00			Tier 4	Air Compressors	0.00	0.06	0.00	0.00	0.00	0.00	9.38	0.00
11.00			Tier 4	Bore/Drill Rigs	0.12	2.06	0.24	0.01	0.01	0.00	373.81	0.12
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Concrete/Industrial Saws	0.00	0.04	0.00	0.00	0.00	0.00	6.38	0.00
16.00			Tier 4	Cranes	0.14	2.36	0.27	0.01	0.01	0.00	430.04	0.14
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Generator Sets	0.01	0.20	0.02	0.00	0.00	0.00	31.15	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.00			Tier 4	Off-Highway Trucks	0.11	1.98	0.23	0.01	0.01	0.00	362.74	0.12
1.00			Tier 4	Other Construction Equipment	0.01	0.15	0.01	0.00	0.00	0.00	19.44	0.01
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Paving Equipment	0.38	9.30	0.75	0.04	0.03	0.01	1,183.40	0.38
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Pumps	0.01	0.30	0.02	0.00	0.00	0.00	46.73	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.05	0.00	0.00	0.00	0.00	5.84	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00			Tier 4	Welders	0.14	3.14	2.55	0.02	0.01	0.01	435.70	0.04

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.92	19.69	4.13	0.09	0.09	0.03	2,907.73	0.82
Drainage/Utilities/Sub-Grade	tons per phase		0.06	1.24	0.26	0.01	0.01	0.00	183.19	0.05

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.06	1.24	0.26	0.01	0.01	0.00	183.19	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	2.76
0.00	9.42
0.00	377.84
0.00	0.00
0.00	6.40
0.00	434.68
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.25
0.00	0.00
0.00	0.00
0.00	366.65
0.00	19.65
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,196.17
0.00	0.00
0.00	0.00
0.00	46.88
0.00	0.00
0.00	5.90
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.38
0.00	0.00
0.00	437.90

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.03	2,935.89
0.00	184.96

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	184.96

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	0.13	8
Air Compressors		78	0.10	8
Bore/Drill Rigs		221	0.30	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81	0.09	8
Cranes		231	0.38	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84	0.40	8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.09	8
Other Construction Equipment		172	0.26	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.03	8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84	0.60	8
Rollers		80		8
Rough Terrain Forklifts		100	0.14	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.01	8
Trenchers		78		8
Welders		46	1.12	8

END OF DATA ENTRY SHEET

Road Construction Emissions Model **Version 9.0.0**

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	MIAD Raise 2024 Mitigated	
Construction Start Year	2024	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	8.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.00	mile
Total Project Area	79.30	acres
Maximum Area Disturbed/Day	1.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00		131.00
	Grading/Excavation	20.00	329.27	
	Drainage/Utilities/Sub-Grade			
	Paving	10.00	444.40	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.70	0.80		1/1/2024
Grading/Excavation	5.00	3.60		1/23/2024
Drainage/Utilities/Sub-Grade	1.00	2.40		6/24/2024
Paving	1.00	1.20		7/25/2024
Totals (Months)		8		

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	50.00		4	7	200.00
Miles/round trip: Grading/Excavation	50.00		4	17	200.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving	50.00		4	45	200.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.18	1.37	0.05	0.02	0.01	746.73	0.00	0.12	781.72
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	5.75	0.00	0.00	6.02
Pounds per day - Grading/Excavation	0.01	0.18	1.37	0.05	0.02	0.01	746.73	0.00	0.12	781.72
Tons per const. Period - Grading/Excavation	0.00	0.01	0.08	0.00	0.00	0.00	41.07	0.00	0.01	42.99
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.18	1.37	0.05	0.02	0.01	746.73	0.00	0.12	781.72
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	8.21	0.00	0.00	8.60
Total tons per construction project	0.00	0.01	0.10	0.00	0.00	0.00	55.03	0.00	0.01	57.61

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	26		52	1,040.00
No. of employees: Drainage/Utilities/Sub-Grade	29		58	1,160.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grading/Excavation (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Paving (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grubbing/Land Clearing (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Grading/Excavation (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Draining/Utilities/Sub-Grade (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Paving (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.77	0.06	0.04	0.02	0.00	246.04	0.01	0.01	247.92
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	1.89	0.00	0.00	1.91
Pounds per day - Grading/Excavation	0.14	2.23	0.18	0.11	0.04	0.01	710.77	0.02	0.02	716.21
Tons per const. Period - Grading/Excavation	0.01	0.12	0.01	0.01	0.00	0.00	39.09	0.00	0.00	39.39
Pounds per day - Drainage/Utilities/Sub-Grade	0.16	2.48	0.20	0.12	0.05	0.01	792.78	0.02	0.02	798.85
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	8.72	0.00	0.00	8.79
Pounds per day - Paving	0.05	0.77	0.06	0.04	0.02	0.00	246.04	0.01	0.01	247.92
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.71	0.00	0.00	2.73
Total tons per construction project	0.01	0.16	0.01	0.01	0.00	0.00	52.41	0.00	0.00	52.81

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1		1.00			80.00		80.00
Grading/Excavation - Exhaust	4		1.00			80.00		320.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grading/Excavation (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.54	0.02	0.01	0.00	298.69	0.00	0.05	312.69
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	2.30	0.00	0.00	2.41
Pounds per day - Grading/Excavation	0.02	0.29	2.17	0.08	0.03	0.01	1,194.77	0.00	0.19	1,250.76
Tons per const. Period - Grading/Excavation	0.00	0.02	0.12	0.00	0.00	0.00	65.71	0.00	0.01	68.79
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.02	0.12	0.00	0.00	0.00	68.01	0.00	0.01	71.20

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			15.00	0.12	3.12	0.02
Fugitive Dust - Grading/Excavation			15.00	0.83	3.12	0.17
Fugitive Dust - Drainage/Utilities/Subgrade			15.00	0.17	3.12	0.03

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Bore/Drill Rigs	0.29	5.07	0.58	0.03	0.03	0.01	917.36	0.30
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Crawler Tractors	0.14	2.39	0.28	0.01	0.01	0.00	432.92	0.14
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Tier 4	Excavators	0.25	6.20	0.50	0.03	0.02	0.01	791.36	0.26
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Generator Sets	0.56	13.75	1.11	0.06	0.05	0.02	2,111.26	0.09
1.00			Tier 4	Graders	0.04	0.71	0.08	0.00	0.00	0.00	128.73	0.04
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Off-Highway Trucks	0.28	4.81	0.55	0.03	0.03	0.01	878.57	0.28
2.00			Tier 4	Other Construction Equipment	0.02	0.41	0.03	0.00	0.00	0.00	51.71	0.02
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Paving Equipment	0.01	0.27	0.02	0.00	0.00	0.00	34.26	0.01
2.00			Tier 4	Plate Compactors	0.02	0.34	0.30	0.02	0.02	0.00	31.92	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rollers	0.01	0.33	0.03	0.00	0.00	0.00	42.68	0.01
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Tier 4	Tractors/Loaders/Backhoes	0.10	2.40	0.19	0.01	0.01	0.00	309.06	0.10
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		pounds per day	1.71	36.66	3.69	0.19	0.17	0.06	5,729.84	1.25
	Grubbing/Land Clearing		tons per phase	0.01	0.28	0.03	0.00	0.00	0.00	44.12	0.01

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Air Compressors	0.02	0.38	0.03	0.00	0.00	0.00	58.23	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.00				Tier 4	Crawler Tractors	0.32	5.57	0.64	0.03	0.03	0.01	1,010.15	0.33
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Excavators	0.04	1.03	0.08	0.00	0.00	0.00	131.89	0.04
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Graders	0.20	3.53	0.41	0.02	0.02	0.01	643.66	0.21
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Paving Equipment	0.02	0.54	0.04	0.00	0.00	0.00	68.51	0.02
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00				Tier 4	Rollers	0.08	2.00	0.16	0.01	0.01	0.00	256.10	0.08
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00				Tier 4	Tractors/Loaders/Backhoes	0.15	3.60	0.29	0.01	0.01	0.00	463.59	0.15
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	0.83	16.65	1.66	0.08	0.08	0.03	2,632.14	0.84
Grading/Excavation	tons per phase	0.05	0.92	0.09	0.00	0.00	0.00	144.77	0.05

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Cranes	0.09	1.57	0.18	0.01	0.01	0.00	285.46	0.09
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Excavators	0.13	3.10	0.25	0.01	0.01	0.00	395.68	0.13
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Other Construction Equipment	0.01	0.20	0.02	0.00	0.00	0.00	25.85	0.01
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Tier 4	Paving Equipment	0.02	0.54	0.04	0.00	0.00	0.00	68.51	0.02
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.02	0.60	0.05	0.00	0.00	0.00	77.26	0.02
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Sub-Grade	pounds per day	0.27	6.01	0.54	0.03	0.02	0.01	852.77	0.28
Drainage/Utilities/Sub-Grade	tons per phase	0.00	0.07	0.01	0.00	0.00	0.00	9.38	0.00

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Program-estimate					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
2.00				Tier 4	Aerial Lifts	0.09	1.70	1.53	0.01	0.01	0.00	216.83	0.07
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Cement and Mortar Mixers	0.05	1.07	0.95	0.05	0.05	0.00	101.03	0.01
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Cranes	0.03	0.52	0.06	0.00	0.00	0.00	95.15	0.03
1.00				Tier 4	Crawler Tractors	0.05	0.80	0.09	0.00	0.00	0.00	144.31	0.05
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00				Tier 4	Excavators	0.21	5.16	0.42	0.02	0.02	0.01	659.47	0.21
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Tier 4	Generator Sets	1.67	41.24	3.34	0.17	0.15	0.07	6,333.79	0.26
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00				Tier 4	Off-Highway Tractors	0.53	13.05	1.06	0.05	0.05	0.02	1,669.25	0.54
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Tier 4	Pavers	0.04	1.01	0.08	0.00	0.00	0.00	128.58	0.04
2.00				Tier 4	Paving Equipment	0.02	0.54	0.04	0.00	0.00	0.00	68.51	0.02
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Pumps	1.12	27.72	2.25	0.11	0.10	0.04	4,257.41	0.19
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Rough Terrain Forklifts	0.16	3.92	0.32	0.02	0.01	0.01	500.60	0.16
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Tier 4	Tractors/Loaders/Backhoes	0.05	1.20	0.10	0.00	0.00	0.00	154.53	0.05
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Paving	pounds per day		4.01	97.92	10.23	0.45	0.41	0.15	14,329.46	1.63
Paving	tons per phase		0.04	1.08	0.11	0.00	0.00	0.00	157.62	0.02
Total Emissions all Phases (tons per construction period) =>			0.11	2.34	0.24	0.01	0.01	0.00	355.89	0.08

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.01	927.26
0.00	0.00
0.00	0.00
0.00	0.00
0.00	437.59
0.00	0.00
0.01	799.90
0.00	0.00
0.02	2,118.13
0.00	130.12
0.00	0.00
0.01	888.03
0.00	52.26
0.00	0.00
0.00	0.00
0.00	0.00
0.00	34.63
0.00	32.08
0.00	0.00
0.00	0.00
0.00	43.14
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	312.38
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.05	5,775.52
0.00	44.47

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	58.45
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,021.04
0.00	0.00
0.00	133.32
0.00	0.00
0.00	0.00
0.01	650.60
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	69.25
0.00	0.00
0.00	0.00
0.00	0.00
0.00	258.86
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	468.57
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.02	2,660.09
0.00	146.30

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	288.54
0.00	0.00
0.00	0.00
0.00	399.95
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	26.13
0.00	0.00
0.00	0.00
0.00	0.00
0.00	69.25
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	78.10
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.01	861.96
0.00	9.48

N2O	CO2e
pounds/day	pounds/day
0.00	219.16
0.00	0.00
0.00	0.00
0.00	101.55
0.00	0.00
0.00	96.18
0.00	145.86
0.00	0.00
0.01	666.58
0.00	0.00
0.05	6,354.40
0.00	0.00
0.02	1,687.24
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	129.97
0.00	69.25
0.00	0.00
0.00	0.00
0.03	4,271.63
0.00	0.00
0.00	506.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	156.19
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.11	14,404.01
0.00	158.44
0.00	358.70

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	5.33	8
Air Compressors		78	1.24	8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231	1.36	8
Crawler Tractors		212	1.52	8
Crushing/Proc. Equipment		85		8
Excavators		158	2.11	8
Forklifts		89		8
Generator Sets		84	27.11	8
Graders		187	1.61	8
Off-Highway Tractors		124	4.89	8
Off-Highway Trucks		402	5.49	8
Other Construction Equipment		172	0.35	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	2.26	8
Paving Equipment		132	0.69	8
Plate Compactors		8	3.70	8
Pressure Washers		13		8
Pumps		84	27.33	8
Rollers		80	1.34	8
Rough Terrain Forklifts		100	6.00	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	2.05	8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Main Dam Gates 2025 Mitigated	
Construction Start Year	2025	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	6.00	months
Working Days per Month	21.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.26	miles
Total Project Area	4.90	acres
Maximum Area Disturbed/Day	0.01	acres
Water Trucks Used?	2	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard
Will all off-road equipment be tier 4?	All Tier 4 Equipment	

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.60		1/1/2025
Grading/Excavation	0.00	2.70		1/1/2025
Drainage/Utilities/Sub-Grade	6.00	1.80		1/1/2025
Paving	0.00	0.90		7/3/2025
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade			1	0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	9		18	360.00
No. of employees: Grading/Excavation	12		24	480.00
No. of employees: Drainage/Utilities/Sub-Grade	12		24	480.00
No. of employees: Paving	9		18	360.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.78	0.06	0.05	0.02	0.00	295.84	0.00	0.01	297.52
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.56	0.25	0.00	0.00	0.00	63.73	0.06	0.03	73.77
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.06	0.96	0.07	0.05	0.02	0.00	316.43	0.01	0.01	318.75
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.06	0.00	0.00	0.00	0.00	19.94	0.00	0.00	20.08
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.06	0.00	0.00	0.00	0.00	19.94	0.00	0.00	20.08

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust								0.00
Grading/Excavation - Exhaust								0.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.06	0.11	0.05	0.02	1,672.88	0.00	0.26	1,751.28
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation			0.00	0.00	0.00	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.20	0.01	0.04	0.00

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Grubbing/Land Clearing	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
1.00			Tier 4	Aerial Lifts	0.00	0.02	0.02	0.00	0.00	0.00	2.73	0.00
2.00			Tier 4	Air Compressors	0.00	0.06	0.00	0.00	0.00	0.00	9.38	0.00
11.00			Tier 4	Bore/Drill Rigs	0.12	2.06	0.24	0.01	0.01	0.00	373.76	0.12
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Concrete/Industrial Saws	0.00	0.04	0.00	0.00	0.00	0.00	6.38	0.00
16.00			Tier 4	Cranes	0.14	2.36	0.27	0.01	0.01	0.00	430.06	0.14
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Generator Sets	0.01	0.20	0.02	0.00	0.00	0.00	31.15	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.00			Tier 4	Off-Highway Trucks	0.11	1.98	0.23	0.01	0.01	0.00	362.55	0.12
1.00			Tier 4	Other Construction Equipment	0.01	0.15	0.01	0.00	0.00	0.00	19.46	0.01
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Tier 4	Paving Equipment	0.38	9.30	0.75	0.04	0.03	0.01	1,182.95	0.38
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Pumps	0.01	0.30	0.02	0.00	0.00	0.00	46.73	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Rough Terrain Forklifts	0.00	0.05	0.00	0.00	0.00	0.00	5.84	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00			Tier 4	Welders	0.14	3.14	2.55	0.02	0.01	0.01	435.70	0.04

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day		0.92	19.69	4.13	0.09	0.09	0.03	2,907.07	0.81
Drainage/Utilities/Sub-Grade	tons per phase		0.06	1.24	0.26	0.01	0.01	0.00	183.15	0.05

Paving	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.06	1.24	0.26	0.01	0.01	0.00	183.15	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
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0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
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0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	2.76
0.00	9.42
0.00	377.79
0.00	0.00
0.00	6.40
0.00	434.69
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	31.25
0.00	0.00
0.00	0.00
0.00	366.46
0.00	19.67
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,195.72
0.00	0.00
0.00	0.00
0.00	46.88
0.00	0.00
0.00	5.90
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.38
0.00	0.00
0.00	437.82

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.03	2,935.15
0.00	184.91

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	184.91

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	0.13	8
Air Compressors		78	0.10	8
Bore/Drill Rigs		221	0.30	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81	0.09	8
Cranes		231	0.38	8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84	0.40	8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402	0.09	8
Other Construction Equipment		172	0.26	8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130	0.03	8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84	0.60	8
Rollers		80		8
Rough Terrain Forklifts		100	0.14	8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97	0.01	8
Trenchers		78		8
Welders		46	1.12	8

END OF DATA ENTRY SHEET

SUBJECT TO CHANGE

Estimated by Tetra Tech
Designed by Tetra Tech
Prepared by Tetra Tech
Preparation Date 6/3/2020
Effective Date of Pricing 3/22/2020
Estimated Construction Time 275 Days

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Description	Model	EQHours
Equipment Utilization by Reach		
Folsom Dam Dike Raise [Dikes 1 - 3] - COA3Ca		
11 - Levees and Floodwalls		
Dikes 1 - 3		
Mobilization and Demobilization		
Mobilization		
P/U TRUCK, 3/4 TON	4X2 3/4 TON CONV GAS	720.0000
TRACTOR, CRAWLER (DOZER), 76-100 HP (57-75 KW), POWERSHIFT, W/UNIVERSAL BLADE	D-4K XL	480.0000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 20'	PVMXT-203C	480.0000
TRUCK TRAILER, FLATBED, 25 TON (22.7 MT), 2 AXLE (ADD TOWING TRUCK)	25T FLATBED TRAILER	40.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL	40.0000
Demobilization		
P/U TRUCK, 3/4 TON	4X2 3/4 TON CONV GAS	480.0000
TRACTOR, CRAWLER (DOZER), 76-100 HP (57-75 KW), POWERSHIFT, W/UNIVERSAL BLADE	D-4K XL	320.0000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 20'	PVMXT-203C	320.0000
TRUCK TRAILER, FLATBED, 25 TON (22.7 MT), 2 AXLE (ADD TOWING TRUCK)	25T FLATBED TRAILER	32.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL	32.0000
Staging and Site Preparation		
GRADER, MOTOR, ARTICULATED, 215 HP (160 KW), 14' (4.3 M) BLADE WIDTH	14-M	22.1257
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	10.6667
Diversion and Control of Surface Waters		
Dewater Pumping		
LOADER/BACKHOE, WHEEL, 1.10 CY (0.84 M3) FRONT END BUCKET, 14.6' (3.7 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4	3CX14	59.2593
PUMP, WATER, CENTRIFUGAL, TRASH, HOSE, SUCTION/DISCH, 2" (50 MM) DIA X 50' (15 M) WITH COUPLING (PER SECTION)	C373-90	960.0000
PUMP, WATER, CENTRIFUGAL, TRASH, HOSE, SUCTION/DISCH, 2" (51 MM) DIA x 20' (6.1 M) LENGTH, W/COUPLING/SECTION	C221-90	480.0000
PUMP, WATER, DIAPHRAGM, SKID MTD, ENGINE DRIVE, 2" (51 MM) DIA, 2,000 GPH (7,571 LPH) @ 25' (7.6 M) HEAD (ADD HOSES)	DP2B	480.0000
Clearing and Grubbing		
Clearing and Grubbing - Dikes		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	5.2000
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	20.8000
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	31.2000
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	20.8000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	20.8000
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	31.2000
Clearing and Grubbing - Roadways and Detours		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	8.8000
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	35.2000
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	52.8000
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	35.2000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	35.2000
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	52.8000
Stormwater Pollution Prevention Plan		

SUBJECT TO CHANGE

Description	Model	EQHours
Implementation		
Stabilized Construction Entrance		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	160-M2	0.4857
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	0.4513
LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	721D	0.4857
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW151AD-4	0.4857
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	4.0619
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	0.4857
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	0.4857
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	4.0619
Miscellaneous Items		
LOADER, FRONT END, WHEEL, SKID-STEER, 9-11 CF (0.2-0.3 M3), 60" (1.5 M) BUCKET {BOBCAT}, 13 CWT (590 KG)	S450	61.5385
Sediment Trap		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	160-M2	2.2500
HYDRAULIC EXCAVATOR, CRAWLER, 40,000 LB (18,144 KG), 1.00 CY (0.8 M3) BUCKET, 19.6' (5.9 M) MAX DIGGING DEPTH	PC170LC-10	7.5000
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	0.0796
LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	721D	2.2500
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW151AD-4	2.2500
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	0.7168
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	2.2500
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	2.2500
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	0.7168
Sediment Basin		
HYDRAULIC EXCAVATOR, CRAWLER, 40,000 LB (18,144 KG), 1.00 CY (0.8 M3) BUCKET, 19.6' (5.9 M) MAX DIGGING DEPTH	PC170LC-10	27.4074
LOADER, FRONT END, WHEEL, SKID-STEER, 9-11 CF (0.2-0.3 M3), 60" (1.5 M) BUCKET {BOBCAT}, 13 CWT (590 KG)	S450	6.0000
Demolition		
Existing Road Pavement Demolition		
HYDRAULIC EXCAVATOR, ATTACHMENT, CONCRETE PULVERIZER, 3,000 LB (1360 KG) W/POINT (ADD TO 26,000-36,000 LB (11,793-16,329 KG) HYDRAULIC EXCAVATOR)	FX175 QTV	421.0000
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, BUCKET, 36" (914 MM) PAVEMENT REMOVAL (ADD TO 75,000 LB (34,019 KG) HYDRAULIC EXCAVATOR)	EPR-B2-36	421.0000
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	421.0000
LOADER, FRONT END, WHEEL, ARTICULATED, 3.50 CY (2.7 M3) BUCKET, 4X4	938K	421.0000
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	421.0000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	421.0000
Existing Aggregate Base Removal		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	74.3839
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	68.2869
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	109.3839
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	109.3839
Existing Signage Removal and Salvage		
TRUCK OPTION, FLATBED, 8' (2.4M) x 12' (3.7 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)	PVMXT-123C	2.5000
TRUCK OPTIONS, HOIST, 4 TON (3.6 MT), 16'-24' (4.9 M-7.3 M) BOOM (ADD 25,000 LB (11,340 KG) GVW TRUCK & FLAT BED)	KH-1416-EE	2.5000
TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 26KGVW GAS	2.5000

SUBJECT TO CHANGE

Description	Model	EQHours
Remove Existing Riprap Bedding		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	38.2540
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	45.4344
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	76.2540
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	76.2540
Temporary Detour Demolition		
HYDRAULIC EXCAVATOR, ATTACHMENT, CONCRETE PULVERIZER, 3,000 LB (1360 KG) W/POINT (ADD TO 26,000-36,000 LB (11,793-16,329 KG) HYDRAULIC EXCAVATOR)	FX175 QTV	164.7500
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, BUCKET, 36" (914 MM) PAVEMENT REMOVAL (ADD TO 75,000 LB (34,019 KG) HYDRAULIC EXCAVATOR)	EPR-B2-36	164.7500
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	164.7500
LOADER, FRONT END, WHEEL, ARTICULATED, 3.50 CY (2.7 M3) BUCKET, 4X4	938K	164.7500
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	164.7500
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	164.7500
Remove Existing Riprap		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	120.5000
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	45.4344
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	240.5000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	240.5000
Tree, Stump, and Root Ball Removal		
Tree and Stump Removal		
BRUSH CHIPPER, 12" (305 MM) DIA LOG DISC TYPE CUTTER, TRAILER MOUNTED	M15R	82.4000
CHAIN SAW, 17"-59" (43CM-150CM) GUIDE BAR	MS880 MAGNUM	164.8000
DUMP TRUCK, HIGHWAY, 16 - 20 CY (12.2 - 15.3 M3) DUMP BODY, 75,000 LBS (34,000 KG) GVW, 2 AXLE, 6X4	6X4 75KGVW DSL	103.0000
HYDRAULIC EXCAVATOR, CRAWLER, 55,000 LB (24,948 KG), 1.50 CY (1.2 M3) BUCKET, 23.3' (7.1 M) MAX DIGGING DEPTH	SK260 LC LR	51.5000
LOADER, FRONT END, CRAWLER, 2.60 CY (2.0 M3) BUCKET	963-D	82.4000
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	13.7333
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	82.4000
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	130.0000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	130.0000
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	82.4000
Stripping		
Stripping and Stockpiling Topsoil - Roadways		
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	43.3053
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	43.3053
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	43.3053
Stripping and Stockpiling Topsoil - Dikes		
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	422.8632
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	422.8632
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	422.8632
Grass Seeding and Erosion Control		
Seeding and Revegetation (Detours)		
LANDSCAPING EQUIPMENT, HYDROSEEDER, 3,000 GAL (11,356 L) TRUCK MOUNTED	T330	3.4804
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL	3.4804

SUBJECT TO CHANGE

Description	Model	EQHours
Seeding and Revegetation - Dikes		
LANDSCAPING EQUIPMENT, HYDROSEEDER, 3,000 GAL (11,356 L) TRUCK MOUNTED	T330	41.7654
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL	41.7654
Erosion Protection and Sediment Control		
LOADER, FRONT END, WHEEL, SKID-STEER, 9-11 CF (0.2-0.3 M3), 60" (1.5 M) BUCKET {BOBCAT}, 13 CWT (590 KG)	S450	90.5908
Temporary Fencing, Signage, and Traffic Control		
Temporary Traffic Control		
CRANE, HYDRAULIC, TRUCK MOUNTED, 14 TON (12.7 MT), 80' (24.4 M) BOOM, 6X4	1970C	1.6667
Instrumentation		
CLSM		
CONCRETE PUMP, PUMP & BOOM, 117 CY/HR (89 M3/HR), 75' (23 M) BOOM, TRUCK MOUNTED	S28X	1.0000
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	2.0000
Sewer Relocation		
Clearing and Grubbing		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	0.1600
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	0.6400
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	0.9600
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	0.9600
Stripping and Stockpiling Topsoil - Roadways		
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	3.5079
Earthwork		
Excavation for New Sewer		
HAMMER, HYDRAULIC, 1300 FT-LBS (1763 N-M) (ADD 33-50 TON (23,937-45,359 KG) HYDRAULIC EXCAVATOR) (ADD COST FOR POINT WEAR)	GH15	19.8824
HYDRAULIC EXCAVATOR, CRAWLER, 30,000 LB (13,608 KG), 0.75 CY (0.6 M3) BUCKET, 19.6' (5.9 M) MAX DIGGING DEPTH	SK140SR LC	19.8824
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	19.8824
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	6.3689
Pipe Bedding (Sewer)		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	160-M2	1.8137
LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	721D	1.8137
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW151AD-4	1.8137
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	1.8137
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	1.8137
Pipe Backfill (New Sewer)		
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	8.0000
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	8.0000
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	8.0000
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	8.0000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	8.0000
Demo Existing Sewer		
CRANE, HYDRAULIC, TRUCK MOUNTED, 25 TON (22.7 MT), 80' (24.4 M) BOOM, 6X4	CD225	4.0000
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	0.4800
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	2.8800

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	2.8800
Seepage Control		
Structural Concrete for Seepage Control		
CONCRETE PUMP, PUMP & BOOM, 117 CY/HR (89 M3/HR), 75' (23 M) BOOM, TRUCK MOUNTED	S28X	2.5231
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	5.0462
Geotextile for Seepage Control		
TRUCK, HIGHWAY, CONVENTIONAL, 8,800 LB (3,992 KG) GVW, 4X4, 2 AXLE, 3/4 TON (0.68 MT) - PICKUP	4X4 3/4 TON CONV GAS	0.8222
Filter Sand		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	0.0345
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	0.0446
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	0.0446
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	0.0446
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	0.3793
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	0.0446
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	0.0446
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	0.3793
Seeding and Revegetation (Detours)		
LANDSCAPING EQUIPMENT, HYDROSEEDER, 3,000 GAL (11,356 L) TRUCK MOUNTED	T330	0.5222
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL	0.5222
Excavation		
Excavation - Dikes		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	156.7460
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	186.1639
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	156.7460
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	156.7460
Roadway Excavation		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	52.3509
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	28.1311
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	52.3509
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	52.3509
Embankment Fill for Dikes		
Foundation Preparation		
GRADER, MOTOR, ARTICULATED, 138 HP (103 KW), 12' (3.6 M) BLADE WIDTH	120-M2	353.6000
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	353.6000
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	353.6000
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	353.6000
Embankment Fill		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M2	398.0952
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	331.5172
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	398.0952
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	398.0952
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	398.0952
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	3,646.6897
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	398.0952

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	398.0952
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	3,646.6897
Roadway Embankment Fill		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	29.7586
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	36.2605
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	36.2605
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	36.2605
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	327.3448
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	36.2605
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	36.2605
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	327.3448
Disposal		
Riprap Disposal		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	98.1062
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	882.9558
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	882.9558
Offsite Disposal for Roadway Demolition		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	125.4267
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	752.5600
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	752.5600
Excavated Materials		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	40.6621
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	447.2828
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	447.2828
Riprap		
Riprap Delivery and Placement		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	366.0667
HYDRAULIC EXCAVATOR, CRAWLER, 98,600 LBS, 3.00 CY BUCKET, 30.41' MAX DIGGING DEPTH	345BL II	171.5938
HYDRAULIC EXCAVATORS, WHEEL, 1.28 CY BUCKET. TELESCOPIC BOOM, 20' 9" DIGGING DEPTH, AWD	M320F	366.0667
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	107.6667
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	171.5938
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	171.5938
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	538.3333
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	537.6604
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	537.6604
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	538.3333
Rock Bedding		
Riprap Bedding Stage 2 - Coarse		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	160-M2	27.6571
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	25.6991
LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	721D	27.6571
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW151AD-4	27.6571
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	231.2920
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	27.6571
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	27.6571

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	231.2920
Sand Bedding		
Filter Sand		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	21.5172
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	27.8571
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	27.8571
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	27.8571
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	236.6897
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	27.8571
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	27.8571
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	236.6897
Filter Sand		
Filter Sand		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	116.9793
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	151.4464
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B	151.4464
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	151.4464
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	1,286.7724
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	151.4464
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	151.4464
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	1,286.7724
Gravel Slope Protection		
Salvage Riprap		
HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	336F L	146.2500
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950K	55.1475
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	146.2500
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	146.2500
Riprap Purchase		
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	16.9912
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	152.9204
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	152.9204
Riprap Placement		
HYDRAULIC EXCAVATOR, CRAWLER, 98,600 LBS, 3.00 CY BUCKET, 30.41' MAX DIGGING DEPTH	345BL II	105.1250
LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	WA200-7	105.1250
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D-7R II LGP	105.1250
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	105.1250
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	105.1250
Aggregate Base		
Aggregate Base Course		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	160-M2	96.4865
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	94.7788
LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	721D	96.4865
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW151AD-4	96.4865
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	853.0088

SUBJECT TO CHANGE

Description	Model		EQHours
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000		96.4865
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL		96.4865
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL		853.0088
Asphalt Pavement			
Bituminous Tack Coat and Prime Coats			
ASPHALT DISTRIBUTOR, 3,000 GAL (11,355 L) (ADD 45,000 LB (20,412 KG) GVW TRUCK)	MAXIMIZER II		80.3800
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL		80.3800
Hot-Mix Asphalt (HMA)			
ASPHALT PAVER, 10.0' (3.1 M) WIDE, SELF PROPELLED, W/19' (5.8 M) SCREED EXTENSION, WHEEL	AP-1000E		38.8309
DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	4X2 35KGVW DSL		294.5313
ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 14.3 TON (13 MT), 68" (1.7M) WIDE, 9 TIRE, ASPHALT COMPACTOR	CW14		38.8309
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 11 TON (10.1 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW161AD-4		77.6618
Bituminous Material			
ASPHALT DISTRIBUTOR, 3,000 GAL (11,355 L) (ADD 45,000 LB (20,412 KG) GVW TRUCK)	MAXIMIZER II		43.7333
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 45KGVW DSL		43.7333
Painted Traffic Stripe, Yellow			
ASPHALT/PAVEMENT KETTLE, 260 GAL (984 L), BOTTOM FIRED, TRAILER MOUNTED, W/PUMP & HOSE	KEB-260T		8.0491
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	8.0491
TRUCK OPTION, FLATBED, 8' (2.4M) x 12' (3.7 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)	PVMXT-123C		8.0491
TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 26KGVW GAS		8.0491
TRUCK, HIGHWAY, CONVENTIONAL, 8,600 LB (3,901 KG) GVW, 4X2, 2 AXLE, 3/4 TON (0.68 MT) - PICKUP	4X2 3/4 TON CONV GAS		16.0983
Painted Traffic Stripe, White			
LINE STRIPING EQUIPMENT, STRIPER, 3-4 GUNS, 23 HP (17 KW) SELF-PROPELLED	260 ACL		2.4109
P/U TRUCK, 3/4 TON	4X2 3/4 TON CONV GAS		2.4109
TRUCK OPTION, FLATBED, 8' (2.4M) x 12' (3.7 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)	PVMXT-123C		2.4109
TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 26KGVW GAS		2.4109
Grading Roadway for Pavement			
GRADER, MOTOR, ARTICULATED, 215 HP (160 KW), 14' (4.3 M) BLADE WIDTH	14-M		61.8600
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	CB66B		61.8600
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000		61.8600
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL		61.8600
Poly Vinyl Chloride Pipe			
12" Perforated PVC			
LOADER/BACKHOE, WHEEL, 1.10 CY (0.84 M3) FRONT END BUCKET, 14.6' (3.7 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4	3CX14		38.5185
12" Solid Wall PVC			
CRANE, HYDRAULIC, SELF-PROPELLED, YARD, 10.5 TON (9.5 MT), 32' (9.8 M) BOOM, 4X4	YB4411		3.5000
Access Gates			
Existing Gate Removal and Salvage			
LOADER/BACKHOE, WHEEL, 1.10 CY (0.84 M3) FRONT END BUCKET, 14.6' (3.7 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4	3CX14		4.0000
Drain Rock			
Drain Rock			
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	160-M2		30.3557

SUBJECT TO CHANGE

Description	Model	EQHours
LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	924Hz	4.2478
LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	721D	30.3557
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	BW151AD-4	30.3557
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2M3), AIR GATE (W/HOIST) (ADD 50 KGVW TRUCK)	STAMPEDE	38.2301
TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	DS 3000	30.3557
TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	30.3557
TRUCK, HIGHWAY, 50,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 55KGVW DSL	38.2301

SUBJECT TO CHANGE

EQUIPMENT LIST BY CONSTRUCTION ACTIVITY

CLEARING AND GRUBBING

Item No.	Equipment Description	Count	Laborers
D-7R II LGP	TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	1	10
924Hz	LOADER, FRONT END, WHEEL, 2.20 CY BUCKET, ARTICULATED, 4X4	1	
4X2 35KGVW DSL	DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	7	

REMOVE EXISTING BEDDING AND RIPRAP

Item No.	Equipment Description	Count	Laborers
336F L	HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	1	4
950K	LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	1	

EXCAVATION

Item No.	Equipment Description	Count	Laborers
336F L	HYDRAULIC EXCAVATOR, CRAWLER, 80,500 LBS, 3.15 CY BUCKET, 26' 10" MAX DIGGING DEPTH	1	4
950K	LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	1	

HAULING EARTHEN MATERIALS

Item No.	Equipment Description	Count	Laborers
950K	LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	1	15
4X2 35KGVW DSL	DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	14	

FOUNDATION PREP

Item No.	Equipment Description	Count	Laborers
CB66B	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	1	4
120-M2	GRADER, MOTOR, ARTICULATED, 138 HP (103 KW), 12' (3.6 M) BLADE WIDTH	1	
6X4 45KGVW DSL	TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	1	
DS 3000	TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	1	

EMBANKMENT FILL

Item No.	Equipment Description	Count	Laborers
WA200-7	LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	1	7
CB66B	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	1	
D-7R II LGP	TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	1	
12-M2	GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	1	
6X4 45KGVW DSL	TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	1	
DS 3000	TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	1	

FILTER SAND

Item No.	Equipment Description	Count	Laborers
WA200-7	LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	1	6
CB66B	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	1	
D-7R II LGP	TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	1	
12-M2	GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	1	
6X4 45KGVW DSL	TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	1	
DS 3000	TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	1	

SUBJECT TO CHANGE

BEDDING PLACEMENT

Item No.	Equipment Description	Count	Laborers
160-M2	GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	1	6
BW151AD-4	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	1	
721D	LOADER, FRONT END, WHEEL, 3.0 CY BUCKET, ARTICULATED, 4X4	1	

ROCK HAULING

Item No.	Equipment Description	Count	Laborers
4X2 35KGVW DSL	DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	11	12

RIPRAP PLACEMENT

Item No.	Equipment Description	Count	Laborers
345BL II	HYDRAULIC EXCAVATOR, CRAWLER, 98,600 LBS, 3.00 CY BUCKET, 30.41' MAX DIGGING DEPTH	1	5

ASPHALT SURFACE TREATMENT

Item No.	Equipment Description	Count	Laborers
6X4 45KGVW DSL	TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	1	2
MAXIMIZER II	ASPHALT DISTRIBUTOR, 3,000 GAL (11,355 L) (ADD 45,000 LB (20,412 KG) GVW TRUCK)	1	

ASPHALT PAVING

Item No.	Equipment Description	Count	Laborers
CW14	ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 14.3 TON (13 MT), 68" (1.7M) WIDE, 9 TIRE, ASPHALT COMPACTOR	1	12
AP-1000E	ASPHALT PAVER, 10.0' (3.1 M) WIDE, SELF PROPELLED, W/19' (5.8 M) SCREED EXTENSION, WHEEL	1	
BW161AD-4	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 11 TON (10.1 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	1	

PAVEMENT STRIPING

Item No.	Equipment Description	Count	Laborers
4X2 3/4 TON CONV GA	TRUCK, HIGHWAY, CONVENTIONAL, 8,600 LB (3,901 KG) GVW, 4X2, 2 AXLE, 3/4 TON (0.68 MT) - PICKUP	1	5
KEB-260T	ASPHALT/PAVEMENT KETTLE, 260 GAL (984 L), BOTTOM FIRED, TRAILER MOUNTED, W/PUMP & HOSE	1	
360	LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED	1	
4X2 26KGVW GAS	TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	1	
PVMXT-123C	TRUCK OPTION, FLATBED, 8' (2.4M) x 12' (3.7 M) (ADD 25,000 LB (11,340 KG) GVW TRUCK)	1	

ROAD GRADING

Item No.	Equipment Description	Count	Laborers
14-M	GRADER, MOTOR, ARTICULATED, 215 HP (160 KW), 14' (4.3 M) BLADE WIDTH	1	2

PIPE PLACEMENT

Item No.	Equipment Description	Count	Laborers
3CX14	LOADER/BACKHOE, WHEEL, 1.10 CY (0.84 M3) FRONT END BUCKET, 14.6' (3.7 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4	1	2

SEEDING

Item No.	Equipment Description	Count	Laborers
T330	LANDSCAPING EQUIPMENT, HYDROSEEDER, 3,000 GAL (11,356 L) TRUCK MOUNTED	1	3
6X4 45KGVW DSL	TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	1	

Equipment No.	Equipment Description	Off/On Road	Make	Model	Days	Avg Mi. per Veh.	# of Equip.	Miles per Day
4X2 35KGVW DSL	DUMP TRUCK, HIGHWAY, 10 - 13 CY (7.6 - 9.9 M3) DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	ON	Mack	Granite GU813	110.0	80	11	880
4X2 26KGVW GAS	TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	ON	Ford	F650	1.5	10	1	10
6X4 45KGVW DSL	TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	ON	Mack	Granite GU813	25.0	80	14	1,120
4X2 3/4 TON CONV GAS	TRUCK, HIGHWAY, CONVENTIONAL, 8,600 LB (3,901 KG) GVW, 4X2, 2 AXLE, 3/4 TON (0.68 MT) - PICKUP	ON	Dodge	Ram	1.5	10	1	10
1/2 TON TRUCK	PICKUP TRUCKS FOR CONSTRUCTION MGMT AND OTHER STAFF	ON	Dodge	Ram	200.0	5	5	25

Equipment No.	Equipment Description	Off/On Road	Make	Model	Days	# of Equip.	Total Hours
MAXIMIZER II	ASPHALT DISTRIBUTOR, 3,000 GAL (11,355 L) (ADD 45,000 LB (20,412 KG) GVW TRUCK)	OFF	Rosco	Maximizer II	15.0	1	150
AP-1000E	ASPHALT PAVER, 10.0' (3.1 M) WIDE, SELF PROPELLED, W/19' (5.8 M) SCREED EXTENSION, WHEEL	OFF	Caterpillar	AP1000E	15.0	1	150
KEB-260T	ASPHALT/PAVEMENT KETTLE, 260 GAL (984 L), BOTTOM FIRED, TRAILER MOUNTED, W/PUMP & HOSE	OFF	Marathon	KEB-260T	5.0	1	50
160-M2	GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/9 RIPPER/SCARIFIERS	OFF	Caterpillar	160MS	230.0	1	2,300
345BL II	HYDRAULIC EXCAVATOR, CRAWLER, 98,600 LBS, 3.00 CY BUCKET, 30.41' MAX DIGGING DEPTH	OFF	Caterpillar	345B L	77.0	1	770
T330	LANDSCAPING EQUIPMENT, HYDROSEEDER, 3,000 GAL (11,356 L) TRUCK MOUNTED	OFF	Finn	Titan HT330	15.0	1	150
360	LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED	OFF	Transline	360SP	5.0	1	50
WA200-7	LOADER, FRONT END, WHEEL, 3.10 CY BUCKET, ARTICULATED, 4X4	OFF	Komatsu	WA200	205.0	1	2,050
950K	LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	OFF	Caterpillar	950K	60.0	1	600
3CX14	LOADER/BACKHOE, WHEEL, 1.10 CY (0.84 M3) FRONT END BUCKET, 14.6' (3.7 M) DEPTH OF HOE, 24" (0.61 M) DIPPER, 4X4	OFF	JCB	3CX-14	300.0	1	3,000
BW151AD-4	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	OFF	Bomag	BW151 AD-4	15.0	1	150
CB66B	ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 16.3 TON, 84" WIDE, 2X1, ASPHALT COMPACTOR	OFF	Caterpillar	CB66B	50.0	1	500
R30BO008	ROLLER, STATIC, SELF-PROPELLED, SOIL COMPACTOR, SHEEPSFOOT, 4X4, 63" DIA, 19.58' WIDHT	OFF	Caterpillar	CP44B	135.0	1	1,350
D-7R II LGP	TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	OFF	Caterpillar	D7R LGP	190.0	1	1,900
DS 3000	TRUCK OPTIONS, WATER TANK, 3,000 GAL (ADD 40,000 GVW TRUCK)	OFF	Rosco	DS 3000	300.0	1	3,000
T55CA014	TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 18CY, 25 TON, REAR DUMP	OFF	Caterpillar	725C2	90.0	2	1,800
N/A	PORTABLE GENERATOR	OFF	Generac	MDG100DF4	414.0	1	4,140

SUBJECT TO CHANGE

Construction Activity	Duration	Total Duration	Avg. Workers / Day	% of Duration	Weighted Workers
Dike 4	**120**	**414**			
Mobilization	30		12	10.0%	3.00
Sediment Control	10		6	5.0%	0.50
Staging/Stockpile Areas	10		6	5.0%	0.50
Relocate Utilities	15		10	8.3%	1.25
Build Haul Roads	10		12	10.0%	1.00
Clear and Grub	2		10	8.3%	0.17
Excavate Existing Riprap and Bedding	10		6	5.0%	0.50
Stripping	5		5	4.2%	0.21
Excavation	10		8	6.7%	0.67
Embankment Fill	25		7	5.8%	1.46
Filter Sand	20		7	5.8%	1.17
Bedding and Riprap Placement	30		12	10.0%	3.00
Gravel Slope Protection	5		8	6.7%	0.33
New Maintenance Roads	5		12	10.0%	0.50
Instrumentation	3		5	4.2%	0.13
Construct Security	10		10	8.3%	0.83
Seeding and Revegatation	5		4	3.3%	0.17
Gravel Surface Dike Crest	5		12	10.0%	0.50
Demobilize	2		12	10.0%	0.20
Dike 5	**170**				
Mobilization	30		12	7.1%	2.12
Sediment Control	10		6	3.5%	0.35
Staging/Stockpile Areas	10		6	3.5%	0.35
Relocate Utilities	15		10	5.9%	0.88
Build Haul Roads	10		12	7.1%	0.71
Clear and Grub	3		10	5.9%	0.18
Excavate Existing Riprap and Bedding	1		6	3.5%	0.04
Stripping	5		5	2.9%	0.15
Excavation	15		8	4.7%	0.71
Embankment Fill	75		7	4.1%	3.09
Filter Sand	20		7	4.1%	0.82
Bedding and Riprap Placement	10		12	7.1%	0.71
Gravel Slope Protection	5		8	4.7%	0.24
New Maintenance Roads	5		12	7.1%	0.35
Instrumentation	5		5	2.9%	0.15
Construct Security	10		10	5.9%	0.59
Seeding and Revegatation	5		4	2.4%	0.12
Gravel Surface Dike Crest	5		12	7.1%	0.35
Demobilize	2		12	7.1%	0.14

SUBJECT TO CHANGE

RWD Equipment Hours

FOLSOM DAM RAISE PROJECT

PLACER, EL DORADO & SCRAMENTO COUNTIES, CALIFORNIA

COA 3X HYBRID PARAPET WALL TECHNICAL MEMO - CONTRACT NO.W91238-17-D-0028 TASK ORDER W91238-19-F-0014

FY-2019

SUBJECT TO CHANGE

CURRENT WORKING ESTIMATE

Estimated by	SPK
Designed by	AECOM Technical Services, Inc.
Prepared by	Joe Reynolds
Preparation Date	4/19/2021
Effective Date of Pricing	4/19/2021
Estimated Construction Time	196 Days

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SUBJECT TO CHANGE

Description	Model	EQHours
Equipment Utilization by Reach		
BASE BID		
MOBILIZATION AND DEMOBILIZATION		
MOBILIZATION		
SETUP TEMPORARY FACILITIES		
CHIP SPREADER, TOWED, 10' (3M) WIDE, 1.41 CY (1.08 M3) (ADD DUMP TRUCK)	R-1 TOWED	3.4188
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 4.4 TON, 55" WIDE, 2X1, ASPHALT COMPACTOR	CB36B	3.4188
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D6T XW	3.4188
SETUP TEMPORARY UTILITIES		
TRENCHER, WHEEL TYPE CUTTER, 87" (2.2 M) DEEP X 18"-32" (46CM - 81CM) WIDE, ROUND BUCKET, WHEELED	2620	6.0789
TRANSPORT EQUIPMENT - PERMIT LOADS		
TRUCK TRAILER, LOWBOY, 120 T (108.9 MT), 4 AXLE (ADD TOWING TRUCK)	120T LOWBOY TRAILER	250.0000
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL	250.0000
TRANSPORT EQUIPMENT - LIGHT LOADS		
TRUCK TRAILER, LOWBOY, 40 TON, 3 AXLE (ADD TOWING TRUCK)	LBY-40	500.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	500.0000
DEMOBILIZATION		
TAKEDOWN TEMPORARY FACILITIES		
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792	16.3846
HYDRAULIC EXCAVATOR, ATTACHMENT, CONCRETE BREAKER, 3,250 FT-LB (4.4 KJ), W/4.72" (12 CM) DIA (ADD 13,000-22,000 LB (5.9-10.0 MT) HYDRAULIC EXCAVATOR)	FX175	31.7619
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, BUCKET, 36" (0.9M)CONCRETE/PAVEMENT REMOVAL (ADD 75,000 LB (34MT) HYDRAULIC EXCAVATOR)	EPR-B2-36	31.7619
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	48.0952
LOADER, FRONT END, WHEEL, ARTICULATED, 3.50 CY (2.7 M3) BUCKET, 4X4	930M	31.7619
TAKEDOWN TEMPORARY UTILITIES		
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792	2.0704
TRANSPORT EQUIPMENT - PERMIT LOADS		
TRUCK TRAILER, LOWBOY, 120 T (108.9 MT), 4 AXLE (ADD TOWING TRUCK)	120T LOWBOY TRAILER	250.0000
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL	250.0000
TRANSPORT EQUIPMENT - LIGHT LOADS		
TRUCK TRAILER, LOWBOY, 40 TON, 3 AXLE (ADD TOWING TRUCK)	LBY-40	500.0000
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL	250.0000
EQUIPMENT DEMOB CLEANUP		
TRACK EQUIPMENT		
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.1250
WATER BLASTER, LOW PRESSURE, HOT WATER, 3,000 PSI, 3.5 GPM, TRAILER MTD	H3.5*3000	12.5000
ALL OTHER EQUIPMENT / LOAD		
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.3125
WATER BLASTER, LOW PRESSURE, HOT WATER, 3,000 PSI, 3.5 GPM, TRAILER MTD	H3.5*3000	1.2500
TRUCK WHEEL WASHDOWN DAILY O & M		

Description	Model	EQHours
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 6 AXLE (3 RETRACTABLE) WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY	6X4 58KGVW DSL	5.0000
GENERATOR SET, SKID MTD, 20 KW	20KW	30.0000
LOADER, FRONT END, WHEEL, 3.80 HEAPED CY BUCKET, ARTICULATED, 4X4	938M	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.0000
SUMP PUMPING (24/7)		
GENERATOR SET, SKID MTD, 20 KW	20KW	120.0000
PUMP HOSE, DISCH, 3" DIA X 50' WITH COUPLING (PER SECTION)	C374-90	640.0000
PUMP, WATER, SUBMERSIBLE, ELECTRIC, 3" DIA, 278 GPM @ 20' HEAD (ADD HOSES), 230V 1-PHASE	S3A1	120.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV DSL	20.0000
SURVEYING & MOVEMENT MARKERS		
INITIAL SITE SURVEY		
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	4X4 3/4 TON CREW DSL	208.0000
MOVEMENT MARKERS		
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	4X4 3/4 TON CREW DSL	2.1875
SWPPP DESIGN AND IMPLEMENTATION		
INSTALL SILT FENCE		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	47.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	47.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	47.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	47.5000
REMOVE SILT FENCE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	26.2500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	26.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	26.2500
SET STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	12.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	12.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	12.5000
REMOVE STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	7.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	7.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	7.5000
INSTALL INLET PROTECTION		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	5.0000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
REMOVE INLET PROTECTION		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
TRAFFIC CONTROLS		
PROVIDE-LOAD-HAUL-SET JERSEY BARRIER		

SUBJECT TO CHANGE

Description	Model		EQHours
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 30T (27.2MT), 95' (29.0M) BOOM, 4X4	RT530E-2		1.8750
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4		940	1.8750
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		3.7500
REMOVE-HAUL-STACK JERSEY BARRIER			
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 30T (27.2MT), 95' (29.0M) BOOM, 4X4	RT530E-2		1.5000
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4		940	1.5000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		2.5000
TEMPORARY PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		0.7520
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	0.7520
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		0.7520
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW DSL		0.7520
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		1.5040
FENCING - TEMPORARY			
INSTALL CHAIN LINK FENCE - 6-FT HT			
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C		2.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C		2.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL		2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		2.5000
REMOVE CHAIN LINK FENCE & DISPOSE - 6-FT HT			
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C		1.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C		1.2500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL		1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		1.2500
CLEARING & GRUBBING			
CLEAR & GRUB - TREE+STUMP			
CHAIN SAW, 18"-22" (46CM-53CM) GUIDE BAR	MS241CM		65.5000
HYDRAULIC EXCAVATOR, CRAWLER, 44,800 LBS, 1.31 CY BUCKET, 19.5' MAX DIGGING DEPTH	315F		32.7500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M		32.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		16.3750
CLEAR & GRUB - BRUSH			
TRACTOR, CRAWLER (DOZER), 230 HP, LOW GROUND PRESSURE, W/5.5 CY VPAT BLADE (ADD ATTACHMENTS)	D6T LGP		2.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		1.1250
HANDLE & HAUL-OFF C & G DEBRIS / LOAD			
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M		2.1875
TRUCK OPTIONS, DUMP BODY, REAR, 20.0 CY (15.3 M3), AIR GATE (W/HOIST) (ADD 50KGVW (22.7 MT) TRUCK)	STAMPEDE		11.2500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL		10.9375
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		2.1875
REMOVE & DISPOSE OF MISCELLANEOUSE DEBRIS			
Concrete Breaker, Hydraulic, 5,000 Ft-Lb, 5.51" Dia Point (50 - 64,000 Lb Exc) - Kent KF27 QT	KF27 QT		6.2500
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 6 AXLE (3 RETRACTABLE) WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY	6X4 58KGVW DSL		25.0000

SUBJECT TO CHANGE

Description	Model	EQHours
HYDRAULIC EXCAVATOR, CRAWLER, 55,000 LB (24,948 KG), 1.50 CY (1.2 M3) BUCKET, 23.3' (7.1 M) MAX DIGGING DEPTH	325F	6.2500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	12.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
EROSION CONTROL - PERMANENT		
SET STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	25.0000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	25.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	25.0000
HYDROMULCH SEEDING - PERMANENT		
HYDROMULCH SEEDING		
LANDSCAPING EQUIPMENT, 3,000 GAL, HYDROMULCHER, TRUCK MTD (ADD 55,000 GVW TRUCK)	IMPERIAL 3000	25.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	25.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	25.0000
SPRINKILING		
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	37.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	7.5000
REMOVE GUARDRAIL		
REMOVE TRAFFIC RAIL & WOOD POSTS		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	17.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	17.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	17.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	17.5000
DEMOLITION (SMALL STRUCTURE)		
REMOVE - SIGN POST		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
POWER POLE		
CRANES, HYDRAULIC, TRUCK MTD, 60T (54.4MT), 110' (33.5M) BOOM, 8X4X4	TMS760E	1.6817
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 19T (17.2MT), 80' (24.4M) BOOM, 4X2	1970C	1.6817
POST DRIVER, 8" (203 MM) MAX DIA POST, 30,000 LB (13,608 KG) IMPACT (ADD 20,000-35,000 LB (9,072-15,876 KG) GVW TRUCK)	MISC. EQUIPMENT	1.6817
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW DSL	8.4083
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	8.4083
TRUCK, HIGHWAY, 8,600 GVW, 4X2 (SUBURBAN)	SUBURBAN 2500	13.1999
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS	8.4083
SURVEY MONUMENT		
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F	2.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000

SUBJECT TO CHANGE

Description	Model	EQHours
REMOVE ASPHALT SURFACING - 2 INCH		
REMOVE ASPHALT PAVEMENT - 2-INCH		
ASPHALT COLD PLANER, 80" (2 M) W X 13" (0.33 M) D, CRAWLER (ADD CUTTING TEETH COSTS)	PM-620	1.4434
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/7 SHANK RIPPER	14-M3	1.4434
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.4434
LOAD & HAUL PAVEMENT - 20 MILES R/T TO ASPHALT PLANT		
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II	0.4911
TRUCK OPTIONS, DUMP BODY, REAR, 20.0 CY (15.3 M3), AIR GATE (W/HOIST) (ADD 50KGVW (22.7 MT) TRUCK)	STAMPEDE	1.4732
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	1.4732
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.2455
SAW CUT ASPHALT PAVEMENT		
CONCRETE SAW, 12.125" DEPTH, SELF PROPELLED, 30" BLADE,W/TRANSAXLE (ADD COST FOR SAWBLADE WEAR & WATER)	FS 3500/30	1.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.2500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
REMOVE AGGREGATE BASE COURSE - 10 INCH		
REMOVE FLEX BASE - 10"		
ASPHALT COLD PLANER, 80" (2 M) W X 13" (0.33 M) D, CRAWLER (ADD CUTTING TEETH COSTS)	PM-620	25.0000
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/7 SHANK RIPPER	14-M3	24.8133
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	24.8133
LOAD & HAUL PAVEMENT - 2 MILES R/T		
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II	24.6131
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	24.6131
TRUCK OPTIONS, DUMP BODY, REAR, 20.0 CY (15.3 M3), AIR GATE (W/HOIST) (ADD 50KGVW (22.7 MT) TRUCK)	STAMPEDE	73.7500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	73.8393
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	12.3065
EXCAVATION		
TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 22.4 CY, 31 TON, 6 X 6, REAR DUMP	HM300-5	0.0000
EXCAVATE & HAUL TO LAYDOWN AREA STOCKPILE		
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T	27.5000
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	27.5000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	27.5000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	27.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	27.5000
FOUNDATION PREPARATION		
EXCAVATE & HAUL TO CREST STOCKPILE		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 6 AXLE (3 RETRACTABLE) WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY	6X4 58KGVW DSL	7.5000
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	2.5000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
EXCAVATE & HAUL DIRECT TO FILL		

SUBJECT TO CHANGE

Description	Model	EQHours
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 6 AXLE (3 RETRACTABLE) WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY	6X4 58KGVW DSL	11.2500
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	5.0000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
SCARIFY & COMPACT SUBGRADE		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	5.0000
ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 7.5 TON, 65" WIDE, 3X2, SOIL COMPACTOR	CA1500D	5.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
LOAD & HAUL CREST STOCKPILE TO FILL		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 6 AXLE (3 RETRACTABLE) WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY	6X4 58KGVW DSL	5.0000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
SPREAD-COMPACT FILL		
Crawler Dozer Semi-U Blade - Cat. D4-K XL	D-4K XL	5.0000
ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 7.5 TON, 65" WIDE, 3X2, SOIL COMPACTOR	CA1500D	5.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
FINE GRADE & SET ALIGNMENT WIRE		
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB	8.7500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	8.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	8.7500
EMBANKMENT FILL		
LOAD & HAUL FROM LAYDOWN AREA STOCKPILE		
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T	77.5000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	77.5000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	77.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	77.5000
TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 22.4 CY, 31 TON, 6 X 6, REAR DUMP	HM300-5	155.0000
SPREAD, COMPACT & FINE GRADE		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	77.5000
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	AR14H	155.0000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	77.5000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	77.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	77.5000
PROVIDE & PLACE GEOTEXTILE FABRIC - 12 OZ		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	17.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	17.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	17.5000

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	17.5000
RIPRAP SLOPE PROTECTION		
PLACE RIPRAP		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 6 AXLE (3 RETRACTABLE) WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY	6X4 58KGVW DSL	123.7500
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	123.7500
Hydraulic Rotating Grapple (38,000 - 70,000 Lb Excavator) - Labounty RDG-60	RDG 60	123.7500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	123.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	123.7500
PROVIDE & HAUL RIPRAP - 60.8 MILES R/T		
TRUCK TRAILER, END DUMP, 25 CY (19.1 M3), 30T (27.2 MT) (ADD TOWING TRUCK)	25CY END DUMP TRLR	205.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	205.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
AGGREGATE BASE COURSE - 8 INCH		
SPREAD, COMPACT & FINE GRADE CLASS 2 BASE 8"		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	27.5000
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	AR14H	53.7500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	27.5000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	27.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	27.5000
PROVIDE & HAUL AGGREGATE BASE - 39.4 MILES R/T		
TRUCK TRAILER, END DUMP, 25 CY (19.1 M3), 30T (27.2 MT) (ADD TOWING TRUCK)	25CY END DUMP TRLR	135.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	135.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	8.7500
HOT MIX ASPHALT SURFACING - 4 INCH		
HOT MIX ASPHALT - 2" (1ST LIFT)		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	1.2500
BROOM, 8' BROOM PATH, PAVEMENT, SELF PROPELLED	RJT-350	1.2500
ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 12T (10.9 MT), 68" (1.7 M) WIDE, 9 TIRE, ASPHALT COMPACTOR	BW11RH-5	1.2500
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	CB44B	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
HOT MIX ASPHALT - 2" (2ND LIFT)		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	1.2500
BROOM, 8' BROOM PATH, PAVEMENT, SELF PROPELLED	RJT-350	1.2500
ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 12T (10.9 MT), 68" (1.7 M) WIDE, 9 TIRE, ASPHALT COMPACTOR	BW11RH-5	1.2500
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6 TON (5.4 MT), 66" (1.7 M) WIDE, ASPHALT COMPACTOR	CB44B	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
HAUL HOT MIX ASPHALT - 39.4 MILES R/T		
TRUCK OPTIONS, DUMP BODY, REAR, 20.0 CY (15.3 M3), AIR GATE (W/HOIST) (ADD 50KGVW (22.7 MT) TRUCK)	STAMPEDE	7.5000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	7.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
ROADWAY STRIPING (EDGELINE) - 4“ WHITE		

SUBJECT TO CHANGE

Description	Model		EQHours
PERMANENET PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		0.5760
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	0.5760
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		0.5760
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW DSL		0.5760
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		1.1520
ROADWAY STRIPING (DOUBLE CENTERLINE) – 4" YELLOW			
PERMANENET PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		1.1520
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	1.1520
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		1.1520
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW DSL		1.1520
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		2.3040
ROADWAY STRIPING (DASHED CENTERLINE) – 4" YELLOW			
PERMANENT PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		0.2880
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	0.2880
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		0.2880
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW DSL		0.2880
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		0.5760
CONCRETE FLOODWALL			
CONCRETE WALL - 7-FT HEIGHT SLIPFORMED			
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB		381.2500
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II		381.2500
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000		381.2500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL		381.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		381.2500
TRIM PIEZOMETER & AUTOMATION			
TRIM PIEZOMETER TO DEGRADE & CAP			
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F		11.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C		11.2500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL		11.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		11.2500
WELL COMPLETION			
DRILL, ROTARY BLASTHOLE, WATER WELL, 6"-24" (15CM-61CM) DIA., 40,000 LB (178KN) PULL BACK, TRUCK MTD (ADD COST FOR DRILL STEEL AND BIT WEAR)	T2W		9.3333
PIEZOMETER EQUIPMENT			
Pickup Conv 3/4 Ton 4X4 Diesel - Ford F250	4X4 3/4 130 CONV DSL		70.0000
Pickup Conv 3/4 Ton 4X4 Diesel - Ford F250	4X4 3/4 130 CONV DSL		280.0000
DIRECT BURIAL CABLING			

SUBJECT TO CHANGE

Description	Model		EQHours
TRENCHER, WHEEL TYPE CUTTER, 87" (2.2 M) DEEP X 18"-32" (46CM - 81CM) WIDE, ROUND BUCKET, WHEELED		2620	18.5842
SECURITY MEASURES & UTILITIES / VE STUDY			
DEMOLITION (EXISTING SECURITY MEASURES)			
REMOVE CHAIN LINK FENCE & STORE ONSITE - 7-FT			
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C		3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C		3.7500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL		3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		3.7500
REMOVE CHAIN LINK FENCE GATES & STORE ONSITE - 7-FT			
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C		3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C		3.7500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL		3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		3.7500
REMOVE UTILITY BOX			
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F		2.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C		2.5000
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL		2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		2.5000
REMOVE-HAUL-STACK JERSEY BARRIER			
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 30T (27.2MT), 95' (29.0M) BOOM, 4X4	RT530E-2		1.0000
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4		940	1.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		2.0000
REMOVE CCTV & POLE			
CRANES, HYDRAULIC, TRUCK MTD, 60T (54.4MT), 110' (33.5M) BOOM, 8X4X4	TMS760E		1.2878
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 19T (17.2MT), 80' (24.4M) BOOM, 4X2	1970C		1.2878
POST DRIVER, 8" (203 MM) MAX DIA POST, 30,000 LB (13,608 KG) IMPACT (ADD 20,000-35,000 LB (9,072-15,876 KG) GVW TRUCK)	MISC. EQUIPMENT		1.2878
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW DSL		6.4389
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL		6.4389
TRUCK, HIGHWAY, 8,600 GVW, 4X2 (SUBURBAN)	SUBURBAN 2500		11.2304
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		6.4389
REMOVE & DISPOSE UNDERGROUND FIBER OPTIC CABLING			
EXCAVATE & REMOVE			
HYDRAULIC EXCAVATOR, CRAWLER, 44,800 LBS, 1.31 CY BUCKET, 19.5' MAX DIGGING DEPTH	315F		38.7500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M		38.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		38.7500
COMPACTED BACKFILL - GENERAL FILL			
Crawler Dozer Power-Angle-Tilt Blade 2.85 Cy - Cat. D5-G XL	D-5G XL		68.7500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M		68.7500
Roller Vibratory, Single Drum 66" x 7.1 Ton Pad Foot - Cat.CP-433E (PADS)	CP-433E (PADS)		68.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		68.7500
LOAD & HAUL TO DISPOSAL - 10 MILES R/T			
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T		0.3750

SUBJECT TO CHANGE

Description	Model	EQHours
LOADER, FRONT END, WHEEL, 4.75 HEAPED CY BUCKET, ARTICULATED, 4X4	962M	0.3750
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	1.8750
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.3750
NEW SECURITY MEASURES		
REPLACE FIBER OPTIC CABLING		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	425.0000
HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH	308E2	425.0000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	425.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	425.0000
REPLACE CCTV POLE MOUNTED		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	425.0000
HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH	308E2	425.0000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	425.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	425.0000
CCTV POLE MOUNTED		
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 25T (22.7MT), 64' (19.5M) BOOM, 4X4, NON-ROTATING OPERATOR'S CAB, BOOM ROTATES 360°	IC-400-3A	7.0000
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	70.0000
MOTION SENSORS		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	62.5000
HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH	308E2	62.5000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	62.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	62.5000
AUDIO WARNING SPEAKER		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	31.2500
HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH	308E2	31.2500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	31.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	31.2500
REMOVE EXISTING UTILITIES		
REMOVE ELECTRIC POWER SYSTEM		
REMOVE & DISPOSE SERVICE TRANSFORMER		
CRANE, HYDRAULIC, SELF-PROPELLED, YARD, 10.5 TON (9.5 MT), 32' (9.8 M) BOOM, 4X4	IC-80-1J	4.0000
REMOVE PANELS, SWITCHBOARDS & DRY TRANSFORMER		
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792	1.1250
EXCAVATE DUCTBANK		
HYDRAULIC EXCAVATOR, CRAWLER, 44,800 LBS, 1.31 CY BUCKET, 19.5' MAX DIGGING DEPTH	315F	37.5000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	37.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	37.5000

SUBJECT TO CHANGE

Description	Model	EQHours
BACKFILL DUCTBANK		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	77.5000
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	AR14H	77.5000
Crawler Dozer Power-Angle-Tilt Blade 2.85 Cy - Cat. D5-G XL	D-5G XL	77.5000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	77.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	77.5000
DEMOLISH DUCTBANK & MANHOLES		
Concrete Breaker, Hydraulic, 2,000 Ft-Lb, 4.25" Dia Point (16-24,000 Lb Exc) - Kent KF12 TLB	KF12 TLB	255.0000
HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH	308E2	255.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	127.5000
LOAD & HAUL TO DISPOSAL - 10 MILES R/T		
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T	7.6250
LOADER, FRONT END, WHEEL, 4.75 HEAPED CY BUCKET, ARTICULATED, 4X4	962M	7.6250
TRUCK TRAILER, END DUMP, 25 CY (19.1 M3), 30T (27.2 MT) (ADD TOWING TRUCK)	25CY END DUMP TRLR	38.1250
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	38.1250
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	7.6250
RECONTRUCT UTILITIES - PERMANENT		
REPLACE ELECTRIC POWER SYSTEM		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 4 INCH & ELECTRICAL MANHOLES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	566.2500
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	AR14H	566.2500
Crawler Dozer Power-Angle-Tilt Blade 2.85 Cy - Cat. D5-G XL	D-5G XL	566.2500
HYDRAULIC EXCAVATOR, CRAWLER, 44,800 LBS, 1.31 CY BUCKET, 19.5' MAX DIGGING DEPTH	315F	566.2500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	566.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	566.2500
MAIN TRANSFORMER 400 AMP		
MAIN TRANSFORMER 400 AMP		
CRANE, HYDRAULIC, SELF-PROPELLED, YARD, 10.5 TON (9.5 MT), 32' (9.8 M) BOOM, 4X4	IC-80-1J	11.1111
TRANSFORMER PAD		
COMPACTOR, VIBROPLATE, 19.5" (495 MM) X 25.5" (648 MM) PLATE, REVERSIBLE, 5,600 LBS (25 KN) IMPACT	BPU 2540 A	0.0286
CONCRETE PUMP, 117 CY/HR (89.5 M3/HR), 75' (22.9M) BOOM, TRUCK MTD	S28X	0.0667
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	0.1333
UNDERGROUND SECONDARY 200 AMP		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	16.2500
HYDRAULIC EXCAVATOR, CRAWLER, 18,500 LBS, 0.48 CY BUCKET, 15.5' MAX DIGGING DEPTH	308E2	16.2500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914M	16.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	16.2500
CHAIN LINK FENCE (GALVANIZED, 9 GA 7-FT) – SECURITY		
REPLACE CHAIN LINK FENCE - 7-FT		
POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	PH980E	6.2500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	6.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	6.2500

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	6.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	6.2500
CHAIN LINK SWING GATES (GALVANIZED, 9 GA 7-FT X 24-FT WIDTH) – SECURITY		
REPLACE CHAIN LINK FENCE GATE - 7-FT X 28-FT		
POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	PH980E	3.7500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	3.7500
TRUCK, HIGHWAY, 16,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 16KGVW DSL	3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.7500
AUTOMATED PIEZOMETER		
MOBILIZATION & DEMOBILIZATION / RIG		
DRILL, EARTH / AUGER, MULTI-PURPOSE, 8" (20CM) DIA, 250' (76.2M) DEPTH, 7,000 FT-LBS (9.5KNM) TORQUE W/45KGVW (20.4MT) TRUCK (ADD COST FOR DRILL STEEL AND CUTTING EDGE WEAR)	B-60 TRUCK	40.0000
WELL DRILLING & LOGGING		
DRILL, EARTH / AUGER, MULTI-PURPOSE, 8" (20CM) DIA, 250' (76.2M) DEPTH, 7,000 FT-LBS (9.5KNM) TORQUE W/45KGVW (20.4MT) TRUCK (ADD COST FOR DRILL STEEL AND CUTTING EDGE WEAR)	B-60 TRUCK	306.7976
DRILL, ROTARY BLASTHOLE, WATER WELL, 6"-24" (15CM-61CM) DIA., 40,000 LB (178KN) PULL BACK, TRUCK MTD (ADD COST FOR DRILL STEEL AND BIT WEAR)	T2W	27.0000
WELL COMPLETION		
DRILL, ROTARY BLASTHOLE, WATER WELL, 6"-24" (15CM-61CM) DIA., 40,000 LB (178KN) PULL BACK, TRUCK MTD (ADD COST FOR DRILL STEEL AND BIT WEAR)	T2W	4.0000
PIEZOMETER EQUIPMENT		
Pickup Conv 3/4 Ton 4X4 Diesel - Ford F250	4X4 3/4 130 CONV DSL	30.0000
Pickup Conv 3/4 Ton 4X4 Diesel - Ford F250	4X4 3/4 130 CONV DSL	120.0000

SUBJECT TO CHANGE

SUBJECT TO CHANGE

Estimated by	SPK/NWW
Designed by	SPK
Prepared by	Theresa Gneiting-James
Preparation Date	3/30/2020
Effective Date of Pricing	3/30/2020
Estimated Construction Time	3,650 Days

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Description	Model	EQHours
Equipment Utilization by Reach		
GATE US STOPLOGS HEIGHT INCREASED, (CREATE THREE FULL SETS)		
Furnish Two New Tainter Gate Stoplogs plus 2 new bottom stoplog for existing stoplog.		
CRANES, HYDRAULIC, TRUCK MTD, ALL TERRAIN, 110 TON (99.8MG), 168' (51.2M) BOOM, 8X6	ATF 100G-6	14.2215
TRUCK TRAILER, LOWBOY, 120 TON, 4 AXLE (ADD TOWING TRUCK)	120T LOWBOY TRAILER	15.2389
TRUCK TRAILER, LOWBOY, 75 TON (68.0 MT), 3 AXLE (ADD TOWING TRUCK)	75T LOWBOY TRAILER	188.8889
TRUCK, HIGHWAY, 25,000 LB (11,340 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	4X2 26KGVW GAS	188.8889
TRUCK, HIGHWAY, 70,000 LBS GVW, 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL	15.2389
Remove & Install Tainter Gate Stoplogs Seals		
CRANES, HYDRAULIC, TRUCK MTD, ALL TERRAIN, 110 TON (99.8MG), 168' (51.2M) BOOM, 8X6	ATF 100G-6	23.3333
MISC. POWER TOOLS	MISC. EQUIPMENT	233.3333
TRUCK, HIGHWAY, 50,000 LB (22,680 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 55KGVW DSL	23.3333
TRUCK, HIGHWAY, 50,000 LB (22,680 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	6X4 55KGVW DSL	0.0000
WELDER, ENGINE DRIVEN, DIESEL, 300 AMP, TRAILER MOUNTED	DIESEL 450 DC-CC/CV	233.3333

SUBJECT TO CHANGE

LWD Equipment Hours

FOLSOM DAM RAISE PROJECT

PLACER, EL DORADO & SCRAMENTO COUNTIES, CALIFORNIA

COA 3X HYBRID PARAPET WALL TECHNICAL MEMO - CONTRACT NO.W91238-17-D-0028 TASK ORDER W91238-19-F-0014

FY-2019

SUBJECT TO CHANGE

CURRENT WORKING ESTIMATE

Estimated by	
Designed by	AECOM Technical Services, Inc.
Prepared by	JReynolds x7573
Preparation Date	3/9/2021
Effective Date of Pricing	3/9/2021
Estimated Construction Time	126 Days

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Description	Model		EQHours
Equipment Utilization by Reach			
BASE BID			
MOBILIZATION AND DEMOBILIZATION			
MOBILIZATION			
SETUP TEMPORARY FACILITIES			
CHIP SPREADER, TOWED, 10' (3M) WIDE, 1.41 CY (1.08 M3) (ADD DUMP TRUCK)	R-1 TOWED		1.7094
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 2.7 TON (2.5 MT), 47"(3.8 M) WIDE, ASPHALT COMPACTOR	BW120AD-4		1.7094
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D6T XW		1.7094
SETUP TEMPORARY UTILITIES			
TRENCHER, WHEEL TYPE CUTTER, 87" (2.2 M) DEEP X 18"-32" (46CM - 81CM) WIDE, ROUND BUCKET, WHEELED		2620	3.0395
TRANSPORT EQUIPMENT - PERMIT LOADS			
TRUCK TRAILER, LOWBOY, 100 TON, 4 AXLE (ADD TOWING TRUCK)			100.0000
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL		100.0000
TRANSPORT EQUIPMENT - LIGHT LOADS			
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER		150.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		150.0000
DEMOBILIZATION			
TAKEDOWN TEMPORARY FACILITIES			
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792		16.3846
HYDRAULIC EXCAVATOR, ATTACHMENT, CONCRETE BREAKER, 3,250 FT-LB (4.4 KJ), W/4.72" (12 CM) DIA (ADD 13,000-22,000 LB (5.9-10.0 MT) HYDRAULIC EXCAVATOR)	FX175 QTV		15.8810
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, BUCKET, 36" (0.9M)CONCRETE/PAVEMENT REMOVAL (ADD 75,000 LB (34MT) HYDRAULIC EXCAVATOR)	EPR-B2-36		15.8810
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F		24.0476
LOADER, FRONT END, WHEEL, ARTICULATED, 3.50 CY (2.7 M3) BUCKET, 4X4	930M		15.8810
TAKEDOWN TEMPORARY UTILITIES			
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792		1.4102
TRANSPORT EQUIPMENT - PERMIT LOADS			
TRUCK TRAILER, LOWBOY, 100 TON, 4 AXLE (ADD TOWING TRUCK)			100.0000
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL		100.0000
TRANSPORT EQUIPMENT - LIGHT LOADS			
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER		150.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		150.0000
EQUIPMENT DEMOB CLEANUP			
TRACK EQUIPMENT			
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		1.2500
WATER BLASTER, LOW PRESSURE, HOT WATER, 3,000 PSI, 3.5 GPM, TRAILER MTD	H3.5*3000		5.0000
ALL OTHER EQUIPMENT / LOAD			
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		0.3125
WATER BLASTER, LOW PRESSURE, HOT WATER, 3,000 PSI, 3.5 GPM, TRAILER MTD	H3.5*3000		1.2500

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK WHEEL WASHDOWN DAILY O & M		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	2.5000
GENERATOR SET, SKID MTD, 20 KW	20KW	15.0000
LOADER, FRONT END, WHEEL, 3.80 CY BUCKET, ARTICULATED, 4X4	938M	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.5000
SUMP PUMPING (24/7)		
GENERATOR SET, SKID MTD, 20 KW	20KW	60.0000
PUMP HOSE, DISCH, 3" DIA X 50' WITH COUPLING (PER SECTION)	C374-90	320.0000
PUMP, WATER, SUBMERSIBLE, ELECTRIC, 3" DIA, 278 GPM @ 20' HEAD (ADD HOSES), 230V 1-PHASE	S3A1	60.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV DSL	10.0000
SURVEYING		
INITIAL SITE SURVEY		
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	4X4 3/4 TON CREW DSL	43.2000
MOVEMENT MARKERS		
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	4X4 3/4 TON CREW DSL	1.5625
SWPPP DESIGN AND IMPLEMENTATION		
INSTALL SILT FENCE		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	17.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	17.5000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	17.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	17.5000
REMOVE SILT FENCE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	10.0000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	10.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
SET STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	12.5000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	12.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	12.5000
REMOVE STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	7.5000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	7.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	7.5000
INSTALL INLET PROTECTION		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.2500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
REMOVE INLET PROTECTION		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.2500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
TRAFFIC CONTROLS		

SUBJECT TO CHANGE

Description	Model	EQHours
PROVIDE-LOAD-HAUL-SET JERSEY BARRIER		
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 70 TON, 110' BOOM 4X4	RT875C	0.8333
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	940	0.8333
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER	1.6667
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	1.6667
REMOVE-HAUL-STACK JERSEY BARRIER		
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 70 TON, 110' BOOM 4X4	RT875C	0.6667
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	940	0.6667
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER	1.3333
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	1.3333
TEMPORARY PAVEMENT STRIPING & MARKS		
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T	0.4000
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED	360	0.4000
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C	0.4000
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS	0.4000
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS	0.8000
FENCING - TEMPORARY		
INSTALL CHAIN LINK FENCE - 6-FT HT		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	7.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	7.5000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	7.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	7.5000
REMOVE CHAIN LINK FENCE & DISPOSE - 6-FT HT		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	3.7500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.7500
EROSION CONTROL - PERMANENT		
SET STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	6.2500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	6.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	6.2500
HYDROMULCH SEEDING - PERMANENT		
HYDROMULCH SEEDING		
LANDSCAPING EQUIPMENT, 3,000 GAL, HYDROMULCHER, TRUCK MTD (ADD 55,000 GVW TRUCK)	IMPERIAL 3000	10.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	10.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
SPRINKILING		
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	14.3750
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	14.3750
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.8750

SUBJECT TO CHANGE

Description	Model	EQHours
= REMOVE MB GUARDRAIL		
REMOVE TRAFFIC RAIL & WOOD POSTS		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	71.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	71.2500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	71.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	71.2500
DEMOLITION (SMALL STRUCTURE)		
POWER POLE		
CRANES, HYDRAULIC, TRUCK MTD, 60T (54.4MT), 110' (33.5M) BOOM, 8X4X4	TMS760E	2.4694
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 19T (17.2MT), 80' (24.4M) BOOM, 4X2	1970C	2.4694
POST DRIVER, 8" (203 MM) MAX DIA POST, 30,000 LB (13,608 KG) IMPACT (ADD 20,000-35,000 LB (9,072-15,876 KG) GVW TRUCK)	MISC. EQUIPMENT	2.4694
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	12.3472
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	12.3472
TRUCK, HIGHWAY, 8,600 GVW, 4X2 (SUBURBAN)	SUBURBAN 2500	17.1387
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS	12.3472
SURVEY MONUMENT		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	10.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
TRIM PIEZOMETER TO DEGRADE & CAP		
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F	2.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.5000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
= REMOVE ASPHALT SURFACING - 4 INCH		
LOAD & HAUL PAVEMENT - 20 MILES R/T TO ASPHALT PLANT		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/7 SHANK RIPPER	14-M	17.5000
Planner/Miller 78" W X 12" Depth - Roadtech RX-45B	RX-45B	17.5000
TRUCK TRAILER, END DUMP, 25 CY, 30 TON (ADD TOWING TRUCK)	25CY END DUMP TRLR	133.7500
TRUCK, HIGHWAY, 52,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	133.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	17.5000
SAW CUT ASPHALT PAVEMENT		
CONCRETE SAW, 6.625" (17CM) DEPTH, SELF-PROPELLED, 18" (46CM) BLADE (ADD COST FOR SAWBLADE WEAR & WATER)	K1270	1.0417
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV GAS	1.0417
= REMOVE AGGREGATE BASE COURSE - 8 INCH		
LOAD & HAUL PAVEMENT - 8.24 MILES R/T		
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/7 SHANK RIPPER	14-M	17.5000
Planner/Miller 78" W X 12" Depth - Roadtech RX-45B	RX-45B	17.5000
TRUCK TRAILER, END DUMP, 25 CY, 30 TON (ADD TOWING TRUCK)	25CY END DUMP TRLR	90.0000
TRUCK, HIGHWAY, 52,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	90.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	17.5000
= EXCAVATION		
EXCAVATE & loadHAUL TO LAYDOWN AREA STOCKPILE		

SUBJECT TO CHANGE

Description	Model	EQHours
GRADER, MOTOR, ARTICULATED, 6X4, 14' BLADE W/7 SHANK RIPPER	14-M	36.2500
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	36.2500
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	36.2500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	36.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	36.2500
TRUCK, OFF-HIGHWAY, ARTICULATED FRAME, 22 CY, 30 TON, 4X4, REAR DUMP	D30D	72.5000
FOUNDATION PREPARATION		
EXCAVATE & HAUL TO CREST STOCKPILE		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	2.5000
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	1.2500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
SCARIFY & COMPACT SUBGRADE		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	3.7500
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	3.7500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.7500
Vibratory Roller 66" x 7.1 Ton Pad-Foot - Cat.CP-433E	CS-433E	3.7500
SPREAD-COMPACT FILL		
Crawler Dozer Semi-U Blade - Cat. D4-K XL	D-4K XL	1.2500
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	1.2500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
Vibratory Roller 66" x 7.1 Ton Pad-Foot - Cat.CP-433E	CS-433E	1.2500
FINE GRADE & SET ALIGNMENT WIRE		
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB	5.0000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	5.0000
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 16' (2.4M X 4.9M)	PVMXT-163C	5.0000
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
CLSM		
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" (0.91M) WIDE MOLD/FORM	COMMANDER III (CURB	10.0000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 10'	PVMXT-103C	10.0000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	10.0000
EMBANKMENT FILL		
LOAD & HAUL FROM LAYDOWN AREA STOCKPILE		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	52.5000
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	26.2500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	26.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	26.2500
SPREAD, COMPACT & FINE GRADE		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	26.2500

SUBJECT TO CHANGE

Description	Model	EQHours
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	26.2500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	26.2500
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	26.2500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	26.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	26.2500
PROVIDE & PLACE GEOTEXTILE FABRIC - 12 OZ		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	6.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	6.2500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	6.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	6.2500
RIPRAP SLOPE PROTECTION		
PLACE RIPRAP		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	40.0000
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	40.0000
Hydraulic Rotating Grapple (38,000 - 70,000 Lb Excavator) - Labounty RDG-60	RDG 60	40.0000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	40.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	40.0000
PROVIDE & HAUL RIPRAP - 60.8 MILES R/T		
TRUCK OPTIONS, DUMP BODY, REAR, 16 CY (12.2 M3), AIR GATE (W/HOIST) (ADD 50KGVW (22.7 MT) TRUCK)	STAMPEDE	40.0000
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	40.0000
AGGREGATE BASE COURSE - 8 INCH		
SPREAD, COMPACT & FINE GRADE CLASS 2 BASE 8"		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	8.7500
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	17.5000
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	8.7500
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	8.7500
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	8.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	8.7500
PROVIDE & HAUL AGGREGATE BASE - 39.4 MILES R/T		
DUMP TRUCK, HIGHWAY, 75KGVW, 4 AXLES (1 RETRACTABLE), WITH REAR 16 CY - 18 CY DUMP BODY	8X4 75KGVW DSL	82.5000
HOT MIX ASPHALT SURFACING - 4 INCH		
HOT MIX ASPHALT - 2" (2ND LIFT)		
ASPHALT PAVER, 10' - 19.5' (5.9M) WIDE PAVEMASTER SCREED, WHEEL, 267 CF (7.6 M3) HOPPER	AP-1000F	10.0000
BROOM, 8' BROOM PATH, PAVEMENT, SELF PROPELLED	RJT-350	10.0000
ROLLER, STATIC, SELF-PROPELLED, PNEUMATIC, 14.25 TON, 68" WIDE, 9 TIRE, ASPHALT COMPACTOR	PS-150B	10.0000
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 6.6 TON, 56" WIDE, 2X1, ASPHALT COMPACTOR	CB-434D	10.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
HAUL HOT MIX ASPHALT - 39.4 MILES R/T		
DUMP TRUCK, HIGHWAY, 75KGVW, 4 AXLES (1 RETRACTABLE), WITH REAR 16 CY - 18 CY DUMP BODY	8X4 75KGVW DSL	50.0000
ROADWAY STRIPING (EDGELINE) - 4 INCH WHITE		

SUBJECT TO CHANGE

Description	Model		EQHours
PERMANENET PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		3.3640
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	3.3640
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		3.3640
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS		3.3640
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		6.7280
ROADWAY STRIPING (DOUBLE CENTERLINE) – 4" YELLOW			
PERMANENET PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		6.7280
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	6.7280
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		6.7280
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS		6.7280
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		13.4560
ROADWAY STRIPING (DASHED CENTERLINE) – 4" YELLOW			
PERMANENT PAVEMENT STRIPING & MARKS			
ASPHALT/PAVEMENT KETTLE (TACK DISTRIBUTOR), 250 GAL (946 L), TRAILER MOUNTED W/ 8' (2.4 M) SPRAY BAR AND CONTROLS, 6' (1.8 M) WAND W/ 40' (12 M) HOSE	L250T		1.6820
LINE STRIPING EQUIPMENT, STRIPER, THERMAL 120 GAL (454 L), TRUCK MOUNTED		360	1.6820
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C		1.6820
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS		1.6820
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS		3.3640
CONCRETE FLOODWALL			
CONCRETE WALL - 7-FT HEIGHT SLIPFORMED			
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB		112.5000
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II		112.5000
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000		112.5000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL		112.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		112.5000
CONCRETE FLOODWALL - SPUR DIKE			
CONCRETE WALL - 7-FT HEIGHT SLIPFORMED			
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB		14.8295
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II		14.8295
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000		14.8295
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL		14.8295
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		14.8295
CONCRETE FLOODWALL - FOLSOM LAKE CROSSING			
CONCRETE WALL - 7-FT HEIGHT SLIPFORMED			
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB		14.8295
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II		14.8295
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000		14.8295
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL		14.8295
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		14.8295

SUBJECT TO CHANGE

Description	Model	EQHours
ALUMINUM STOP LOGS 3.5-FT X 30-FT		
CONCRETE STRUCTURE		
CONCRETE PUMP, 117 CY/HR (89.5 M3/HR), 75' (22.9M) BOOM, TRUCK MTD	S28X	15.0000
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	30.0000
PROVIDE & SET STOP LOGS 1' 0" x 1' 9" x 15' 0" and Hardware		
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	1.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.2500
SECURITY MEASURES & UTILITIES / VE STUDY		
DEMOLITION (EXISTING SECURITY MEASURES)		
REMOVE CHAIN LINK FENCE & STORE ONSITE - 7-FT		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	3.7500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.7500
REMOVE CHAIN LINK FENCE GATES & STORE ONSITE - 7-FT		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	3.7500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.7500
REMOVE - UTILITY BOX		
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F	2.5000
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.5000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	2.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.5000
REMOVE-HAUL-STACK JERSEY BARRIER		
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 70 TON, 110' BOOM 4X4	RT875C	1.0000
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	940	1.0000
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER	2.0000
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	2.0000
REMOVE DELTA GATE		
STRUCTURAL EXCAVATION		
Hydraulic Excavator 10,800 Lbs, 0.40 Cy 11.08' Digging Depth - Cat.305cr	305 CR	3.6000
LOADER, FRONT END, WHEEL, SKID-STEER, 14.0 CF, 66" BUCKET, 4X4	236B3	3.6000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.9000
REMOVE STEEL WEDGE & HYDRAULICS		
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	10.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
DEMO STRUCTURAL CONCRETE WALL & FOOTING		
Concrete Breaker, Hydraulic, 2,000 Ft-Lb, 4.25" Dia Point (16-24,000 Lb Exc) - Kent KF12 TLB	KF12 TLB	8.3750
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	8.3750
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	4.1875

SUBJECT TO CHANGE

SUBJECT TO CHANGE

Description	Model	EQHours
LOAD & HAUL CONCRETE - 10 MILES R/T		
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T	0.0000
LOADER, FRONT END, WHEEL, 4.50 CY BUCKET, ARTICULATED, 4X4	962M	0.0000
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	0.0000
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	0.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.0000
REMOVE CCTV & POLE		
CRANES, HYDRAULIC, TRUCK MTD, 60T (54.4MT), 110' (33.5M) BOOM, 8X4X4	TMS760E	2.4694
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 19T (17.2MT), 80' (24.4M) BOOM, 4X2	1970C	2.4694
POST DRIVER, 8" (203 MM) MAX DIA POST, 30,000 LB (13,608 KG) IMPACT (ADD 20,000-35,000 LB (9,072-15,876 KG) GVW TRUCK)	MISC. EQUIPMENT	2.4694
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	12.3472
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	12.3472
TRUCK, HIGHWAY, 8,600 GVW, 4X2 (SUBURBAN)	SUBURBAN 2500	17.1387
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS	12.3472
REMOVE & DISPOSE UNDERGROUND FIBER OPTIC CABLING		
EXCAVATE & REMOVE		
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	20.0000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	20.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	20.0000
COMPACTED BACKFILL - GENERAL FILL		
Crawler Dozer Power-Angle-Tilt Blade 2.85 Cy - Cat. D5-G XL	D-5G XL	35.0000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	35.0000
Roller Vibratory, Single Drum 66" x 7.1 Ton Pad Foot - Cat.CP-433E (PADS)	CP-433E (PADS)	35.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	35.0000
LOAD & HAUL TO DISPOSAL - 10 MILES R/T		
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T	0.1250
LOADER, FRONT END, WHEEL, 4.50 CY BUCKET, ARTICULATED, 4X4	962M	0.1250
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	0.8750
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	0.8750
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.1250
NEW SECURITY MEASURES		
REPLACE FIBER OPTIC CABLING		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	131.2500
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	131.2500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	131.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	131.2500
REPLACE CCTV POLE MOUNTED		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	262.5000
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	262.5000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	262.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	262.5000

Description	Model	EQHours
CCTV POLE MOUNTED		
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 25T (22.7MT), 64' (19.5M) BOOM, 4X4, NON-ROTATING OPERATOR'S CAB, BOOM ROTATES 360°	IC-400-3A	2.5000
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	25.0000
MOTION SENSORS		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	62.5000
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	62.5000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	62.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	62.5000
AUDIO WARNING SPEAKER		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	31.2500
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	31.2500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	31.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	31.2500
REPLACE DELTA GATE - 24-FT WIDE		
CONCRETE STRUCTURE		
CONCRETE PUMP, 117 CY/HR (89.5 M3/HR), 75' (22.9M) BOOM, TRUCK MTD	S28X	1.4000
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	2.8000
PROVIDE & INSTALL WEDGE & HYDRAULICS		
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F	20.0000
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	20.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	20.0000
REMOVE EXISTING & INSTALL UTILITIES		
REMOVE ELECTRIC POWER SYSTEM		
REMOVE & DISPOSE SERVICE TRANSFORMER		
CRANE, HYDRAULIC, SELF-PROPELLED, YARD, 10.5 TON (9.5 MT), 32' (9.8 M) BOOM, 4X4	IC-80-1J	4.0000
REMOVE PANELS, SWITCHBOARDS & DRY TRANSFORMER		
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792	0.3750
EXCAVATE DUCTBANK		
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	11.2500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	11.2500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	11.2500
BACKFILL DUCTBANK		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	23.7500
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	23.7500
Crawler Dozer Power-Angle-Tilt Blade 2.85 Cy - Cat. D5-G XL	D-5G XL	23.7500
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	23.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	23.7500
DEMOLISH DUCTBANK & MANHOLES		
Concrete Breaker, Hydraulic, 2,000 Ft-Lb, 4.25" Dia Point (16-24,000 Lb Exc) - Kent KF12 TLB	KF12 TLB	79.0000
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	79.0000

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	39.5000
LOAD & HAUL TO DISPOSAL - 10 MILES R/T		
Crawler Dozer Low Ground Pressure Semi-U Blade 5.09 Cy - Cat.D-6T LGP	D-6T	2.3750
LOADER, FRONT END, WHEEL, 4.50 CY BUCKET, ARTICULATED, 4X4	962M	2.3750
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	11.8750
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	11.8750
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.3750
RECONTRUCT UTILITIES - PERMANENT		
REPLACE ELECTRIC POWER SYSTEM		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 4 INCH & ELECTRICAL MANHOLES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	175.0000
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	175.0000
Crawler Dozer Power-Angle-Tilt Blade 2.85 Cy - Cat. D5-G XL	D-5G XL	175.0000
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	175.0000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	175.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	175.0000
MAIN TRANSFORMER 400 AMP		
MAIN TRANSFORMER 400 AMP		
CRANE, HYDRAULIC, SELF-PROPELLED, YARD, 10.5 TON (9.5 MT), 32' (9.8 M) BOOM, 4X4	IC-80-1J	11.1111
TRANSFORMER PAD		
COMPACTOR, VIBROPLATE, 19.5" (495 MM) X 25.5" (648 MM) PLATE, REVERSIBLE, 5,600 LBS (25 KN) IMPACT	BPU 2540 A	0.0286
CONCRETE PUMP, 117 CY/HR (89.5 M3/HR), 75' (22.9M) BOOM, TRUCK MTD	S28X	0.0667
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	0.1333
UNDERGROUND SECONDARY 200 AMP		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	5.0000
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	5.0000
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	5.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.0000
CHAIN LINK FENCE (GALVANIZED, 9 GA 7-FT) – SECURITY		
REPLACE CHAIN LINK FENCE - 7-FT		
POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	PH980E	6.2500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	6.2500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	6.2500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	6.2500
CHAIN LINK SWING GATES (GALVANIZED, 9 GA 7-FT X 24-FT WIDTH T) – SECURITY		
REPLACE CHAIN LINK FENCE GATE - 7-FT X 28-FT		
POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	PH980E	3.7500
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.7500
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	3.7500
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	3.7500
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.7500

SUBJECT TO CHANGE

Description	Model	EQHours
CONTROL STRUCTURE PADDING/MATTING		
PROVIDE & SET PADDING/MATTING		
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	65.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	65.0000
REMOVE-LOAD-UNLOAD PADDING & MATTING		
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	32.5000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	32.5000

SUBJECT TO CHANGE

Dike 7 COA3A (Hybrid) Equipment Hours

FOLSOM DAM RAISE PROJECT

PLACER, EL DORADO & SCRAMENTO COUNTIES, CALIFORNIA

COA 3A 3.5-FT PARAPET WALL TECHNICAL MEMO - CONTRACT NO.W91238-17-D-0028 TASK ORDER W91238-19-F-0014

FY-2019

SUBJECT TO CHANGE

CURRENT WORKING ESTIMATE

Estimated by Rule of Thumb Services - Centennial, Colorado
Designed by AECOM Technical Services, Inc.
Prepared by Al Meyer
Preparation Date 6/24/2020
Effective Date of Pricing 6/8/2020
Estimated Construction Time 93 Days

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Description	Model		EQHours
Equipment Utilization by Reach			
BASE BID			
MOBILIZATION AND DEMOBILIZATION			
MOBILIZATION			
SETUP TEMPORARY FACILITIES			
CHIP SPREADER, TOWED, 10' (3M) WIDE, 1.41 CY (1.08 M3) (ADD DUMP TRUCK)	R-1 TOWED		1.5195
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, SMOOTH, 2.7 TON (2.5 MT), 47"(3.8 M) WIDE, ASPHALT COMPACTOR	BW120AD-4		1.5195
TRACTOR, CRAWLER (DOZER), 181-250 HP (135-186 KW), POWERSHIFT, LGP, W/UNIVERSAL BLADE	D6T XW		1.5195
SETUP TEMPORARY UTILITIES			
TRENCHER, WHEEL TYPE CUTTER, 87" (2.2 M) DEEP X 18"-32" (46CM - 81CM) WIDE, ROUND BUCKET, WHEELED		2620	2.7018
TRANSPORT EQUIPMENT - PERMIT LOADS			
TRUCK TRAILER, LOWBOY, 100 TON, 4 AXLE (ADD TOWING TRUCK)			88.8889
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL		88.8889
TRANSPORT EQUIPMENT - LIGHT LOADS			
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER		133.3333
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		133.3333
DEMOBILIZATION			
TAKEDOWN TEMPORARY FACILITIES			
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792		14.5641
HYDRAULIC EXCAVATOR, ATTACHMENT, CONCRETE BREAKER, 3,250 FT-LB (4.4 KJ), W/4.72" (12 CM) DIA (ADD 13,000-22,000 LB (5.9-10.0 MT) HYDRAULIC EXCAVATOR)	FX175 QTV		14.1164
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, BUCKET, 36" (0.9M)CONCRETE/PAVEMENT REMOVAL (ADD 75,000 LB (34MT) HYDRAULIC EXCAVATOR)	EPR-B2-36		14.1164
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F		21.3757
LOADER, FRONT END, WHEEL, ARTICULATED, 3.50 CY (2.7 M3) BUCKET, 4X4	930M		14.1164
TAKEDOWN TEMPORARY UTILITIES			
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 23.5T (21.3MT), 102' (31.1M) BOOM, 6X2	BT4792		1.2535
TRANSPORT EQUIPMENT - PERMIT LOADS			
TRUCK TRAILER, LOWBOY, 100 TON, 4 AXLE (ADD TOWING TRUCK)			88.8889
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL		88.8889
TRANSPORT EQUIPMENT - LIGHT LOADS			
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER		133.3333
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL		133.3333
EQUIPMENT DEMOB CLEANUP			
TRACK EQUIPMENT			
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		1.1111
WATER BLASTER, LOW PRESSURE, HOT WATER, 3,000 PSI, 3.5 GPM, TRAILER MTD	H3.5*3000		4.4444
ALL OTHER EQUIPMENT / LOAD			
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL		0.2778
WATER BLASTER, LOW PRESSURE, HOT WATER, 3,000 PSI, 3.5 GPM, TRAILER MTD	H3.5*3000		1.1111

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK WHEEL WASHDOWN DAILY O & M		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	2.2222
GENERATOR SET, SKID MTD, 20 KW	20KW	13.3333
LOADER, FRONT END, WHEEL, 3.80 CY BUCKET, ARTICULATED, 4X4	938M	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	0.4444
SUMP PUMPING (24/7)		
GENERATOR SET, SKID MTD, 20 KW	20KW	53.3333
PUMP HOSE, DISCH, 3" DIA X 50' WITH COUPLING (PER SECTION)	C374-90	284.4444
PUMP, WATER, SUBMERSIBLE, ELECTRIC, 3" DIA, 278 GPM @ 20' HEAD (ADD HOSES), 230V 1-PHASE	S3A1	53.3333
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV DSL	8.8889
SURVEYING		
INITIAL SITE SURVEY		
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	4X4 3/4 TON CREW DSL	38.4000
MOVEMENT MARKERS		
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	4X4 3/4 TON CREW DSL	1.3889
SWPPP DESIGN AND IMPLEMENTATION		
INSTALL SILT FENCE		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	4.4444
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	4.4444
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	4.4444
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	4.4444
REMOVE SILT FENCE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.2222
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
SET STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	10.0000
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	10.0000
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	10.0000
REMOVE STRAW WADDLE		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	6.6667
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	6.6667
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	6.6667
INSTALL INLET PROTECTION		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.1111
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
REMOVE INLET PROTECTION		
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.1111
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
TRAFFIC CONTROLS		

SUBJECT TO CHANGE

Description	Model	EQHours
PROVIDE-LOAD-HAUL-SET JERSEY BARRIER		
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 70 TON, 110' BOOM 4X4	RT875C	1.6667
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	940	1.6667
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER	3.3333
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	3.3333
REMOVE-HAUL-STACK JERSEY BARRIER		
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 70 TON, 110' BOOM 4X4	RT875C	1.3333
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	940	1.3333
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER	2.6667
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	2.6667
HYDROMULCH SEEDING - PERMANENT		
HYDROMULCH SEEDING		
LANDSCAPING EQUIPMENT, 3,000 GAL, HYDROMULCHER, TRUCK MTD (ADD 55,000 GVW TRUCK)	IMPERIAL 3000	17.7778
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	17.7778
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	17.7778
SPRINKILING		
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	26.5556
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	26.5556
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.3111
REMOVE GUARDRAIL		
REMOVE TRAFFIC RAIL & WOOD POSTS		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.3333
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	3.3333
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	3.3333
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.3333
EXCAVATION		
EXCAVATE & HAUL TO UPSTREAM TOE STOCKPILE		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	62.2222
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	31.1111
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	31.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	31.1111
FOUNDATION PREPARATION		
EXCAVATE & HAUL TO UPSTREAM TOE STOCKPILE		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	4.4444
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	2.2222
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
EXCAVATE & HAUL DIRECT TO FILL		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	4.4444
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	2.2222

SUBJECT TO CHANGE

Description	Model	EQHours
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
SCARIFY & COMPACT SUBGRADE		
GRADER, MOTOR, ARTICULATED, 6X4, 12' BLADE W/11 TEETH SCARIFIERS	12-M3	1.1111
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	1.1111
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
Vibratory Roller 66" x 7.1 Ton Pad-Foot - Cat.CP-433E	CS-433E	1.1111
LOAD & HAUL UPSTREAM TOE STOCKPILE TO FILL		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	3.3333
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
SPREAD-COMPACT FILL		
Crawler Dozer Semi-U Blade - Cat. D4-K XL	D-4K XL	1.1111
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	1.1111
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
Vibratory Roller 66" x 7.1 Ton Pad-Foot - Cat.CP-433E	CS-433E	1.1111
FINE GRADE & SET GRADE WIRE		
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB	2.2222
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
EMBANKMENT FILL		
LOAD & HAUL FROM UPSTREAM TOE STOCKPILE		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	37.7778
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	18.8889
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	18.8889
SPREAD & COMPACT FILL		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	18.8889
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	37.7778
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	18.8889
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	18.8889
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	18.8889
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	18.8889
PROVIDE & PLACE GEOTEXTILE FABRIC - 12 OZ		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.2222
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.2222
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222

SUBJECT TO CHANGE

Description	Model	EQHours
RIPRAP SLOPE PROTECTION		
PLACE RIPRAP		
DUMP TRUCK, HIGHWAY, 80KGVW (36.3MT), 3 AXLE, 6X4 WITH REAR 16 - 20 CY (12.2-15.3 M3) DUMP BODY, 3 LIFT AXLES	6X4 80KGVW DSL	26.6667
Hydraulic Excavator 40,600 Lbs, 1.00 Cy 22.5' Digging Depth - Cat.319CL	319CL	26.6667
Hydraulic Rotating Grapple (38,000 - 70,000 Lb Excavator) - Labounty RDG-60	RDG 60	26.6667
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	26.6667
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	26.6667
PROVIDE & HAUL RIPRAP - 60.8 MILES R/T		
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	43.3333
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	43.3333
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
FINE GRAINED BEDDING (C33 SAND IMPORTED) - 6 INCH		
SPREAD-COMPACT C33 SAND		
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	6.6667
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	3.3333
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	3.3333
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	3.3333
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	3.3333
PROVIDE & HAUL C33 SAND - 39.4 MILES R/T		
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	8.8889
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	8.8889
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
COURSE GRAINED BEDDING (CRUSHED GRAVEL FINES) - 9 INCH		
SPREAD-COMPACT GRAVEL SCREENINGS		
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	15.5556
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	7.7778
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	7.7778
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	7.7778
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	7.7778
PROVIDE & HAUL GRAVEL SCREENING - 39.4 MILES R/T		
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	18.8889
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	18.8889
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
AGGREGATE BASE COURSE - 6 INCH		
SPREAD, COMPACT & FINE GRADE CLASS 2 BASE 8"		
ASPHALT PAVER, SHOULDER PAVING MACHINE, 1'-10' WIDE, BITUMINOUS & AGGREGATE, WHEEL, 80 CF HOPPER	SPD-10	13.3333
COMPACTOR, TRENCH ROLLER, VIBRATORY, 47"W X 22"DIA, QUAD PADFOOT DRUMS, RIDE ON, 21,600 LBS IMPACT	P47/40KM	26.6667
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	13.3333
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	13.3333
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	13.3333

SUBJECT TO CHANGE

Description	Model	EQHours
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	13.3333
PROVIDE & HAUL AGGREGATE BASE - 39.4 MILES R/T		
Rear Dump Trailer, Air Gate 20.0 Cy - Midland Kleenside SL3000	KLEENSIDE	25.5556
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	25.5556
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
CONCRETE FLOODWALL		
CONCRETE WALL - 3.5-FT HEIGHT SLIPFORMED		
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB	11.1111
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II	11.1111
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	11.1111
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	11.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	11.1111
GUARDRAIL		
TRAFFIC GUARDRAIL		
DRILL, AUGER, FENCE POST, TOWED, 550 DIG-R-MOBILE - GENERAL EQUIP	MISC. EQUIPMENT	2.9469
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C	0.4558
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 20' (2.4M X 6.1M)	PVMXT-203C	5.3172
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS	5.7731
SECURITY MEASURES & UTILITIES		
REPLACE ELECTRIC POWER SYSTEM		
UNDERGROUND SECONDARY 200 AMP		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	5.5556
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	5.5556
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	5.5556
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	5.5556
DEMOLITION (EXISTING SECURITY MEASURES)		
REMOVE CHAIN LINK FENCE & STORE ONSITE - 7-FT		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	2.2222
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	2.2222
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	2.2222
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	2.2222
REMOVE CHAIN LINK FENCE GATES & STORE ONSITE - 7-FT		
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	1.1111
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.1111
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111
REMOVE - UTILITY BOX		
Frontend Loader Backhoe 4x4 1.5 Cy x 14'4" Depth 8.5 Cf - Cat 420F	420F	1.1111
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.1111
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111

SUBJECT TO CHANGE

Description	Model	EQHours
REMOVE-HAUL-STACK JERSEY BARRIER		
CRANES, HYDRAULIC, SELF-PROPELLED, ROUGH TERRAIN, 70 TON, 110' BOOM 4X4	RT875C	0.2963
FORK LIFT, ROUGH TERRAIN, 8,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	940	0.2963
TRUCK TRAILER, FLATBED, 40 TON, 2 AXLE (ADD TOWING TRUCK)	40T FLATBED TRAILER	0.5926
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	4X2 37KGVW DSL	0.5926
REMOVE CCTV & POLE		
CRANES, HYDRAULIC, TRUCK MTD, 60T (54.4MT), 110' (33.5M) BOOM, 8X4X4	TMS760E	0.7946
CRANES, HYDRAULIC, TRUCK MTD, BOOM TRUCK, 19T (17.2MT), 80' (24.4M) BOOM, 4X2	1970C	0.7946
POST DRIVER, 8" (203 MM) MAX DIA POST, 30,000 LB (13,608 KG) IMPACT (ADD 20,000-35,000 LB (9,072-15,876 KG) GVW TRUCK)	MISC. EQUIPMENT	0.7946
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	3.9728
TRUCK, HIGHWAY, 26 KGVW, 2 AXLE, 4X2, WITH KNAPHEIDE CRANE, 5T (4.5 MT), 22' (6.7 M) BOOM, WITH TOOL BOX REAR	4X2 26KGVW DSL	3.9728
TRUCK, HIGHWAY, 8,600 GVW, 4X2 (SUBURBAN)	SUBURBAN 2500	8.2320
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X2	4X2 3/4 TON CONV GAS	3.9728
NEW SECURITY MEASURES		
EXCAVATE-BACKFILL / PROVIDE & INSTALL CONDUIT 2 INCH + SPARE & PULL BOXES		
COMPACTOR, RAMMER, 13" X 13" SHOE, 3,550 LBS IMPACT	DS 70	53.3333
HYDRAULIC EXCAVATOR, CRAWLER, 14,310 LBS, 0.48 CY BUCKET, 15.25' MAX DIGGING DEPTH	308E2	53.3333
LOADER, FRONT END, WHEEL, 2.0 CY (1.5 M3) BUCKET, ARTICULATED, 4X4	914K	53.3333
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	53.3333
CCTV POLE MOUNTED		
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 25T (22.7MT), 64' (19.5M) BOOM, 4X4, NON-ROTATING OPERATOR'S CAB, BOOM ROTATES 360°	IC-400-3A	0.4444
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	4.4444
CHAIN LINK FENCE (GALVANIZED, 9 GA 7-FT) – SECURITY		
REPLACE CHAIN LINK FENCE - 7-FT		
POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	PH980E	4.4444
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	4.4444
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	4.4444
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	4.4444
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	4.4444
CHAIN LINK SWING GATES (GALVANIZED, 9 GA 7-FT X 24-FT WIDTH T) – SECURITY		
REPLACE CHAIN LINK FENCE GATE - 7-FT X 28-FT		
POST HOLE DRILL, UP TO 8" DIA, 30" DEEP, ONE MAN OPERATION	PH980E	1.1111
TELEHANDLER, 5500 LB RATED LOAD CAPACITY, 18.4' MAX LIFT HEIGHT WITH 3000 LB CAPACITY, 10.8' MAX FORWARD REACH WITH 1700 LB CAPACITY, 4X4	TH255C	1.1111
TRUCK OPTIONS, FLATBED, W/40" SIDE RACKS, 8' X 16'	PVMXT-163C	1.1111
TRUCK, HIGHWAY, 25,000 LBS GVW, 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 25KGVW DSL	1.1111
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	1.1111

SUBJECT TO CHANGE

SUBJECT TO CHANGE

Estimated by AECOM - Aleksandar Icev
Designed by AECOM
Prepared by US Army Corps of Engineers Sacramento District
Preparation Date 4/2/2020
Effective Date of Pricing 10/1/2020
Estimated Construction Time 277 Days

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Description	Model	EQHours
Equipment Utilization by Reach		
Folsom Dam Raise Project MIAD 3' Floodwall Raise w		
CLIN 0001 Mobilization & Demobilization		
Equipment		
DRILL, EARTH / AUGER, MULTI-PURPOSE, 8" (20CM) DIA, 250' (76.2M) DEPTH, 7,000 FT-LBS (9.5KNM) TORQUE W/45KGVW (20.4MT) TRUCK (ADD COST FOR DRILL STEEL AND CUTTING EDGE WEAR)	B-60	0.0000
GRADER, MOTOR, ARTICULATED, 6X4, 12' (3.6M) BLADE W/11 TEETH SCARIFIERS	120-M2	462.2222
HYDRAULIC EXCAVATOR, ATTACHMENT, ROCK BUCKET, 1.63 CY (1.25 M3) BUCKET, W/TIPS (ADD 35-50T (32-45 MT) HYDRAULIC EXCAVATOR)	30X1.63-HX-45T	462.2222
LOADER, FRONT END WHEEL, SKID-STEER, 0.63 CY (0.48 M3), 84" (2.1 M) BUCKET	SR240	462.2222
LOADER, FRONT END, WHEEL, 5.5 CY (4.2 M3) BUCKET, ARTICULATED, 4X4	1021G	462.2222
ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12.2 T (11.1 MT), 84" (2.1 M) WIDE, 3X2, SOIL COMPACTOR	CS56B	462.2222
TRACTOR, CRAWLER (DOZER), 600 HP (447 KW), POWERSHIFT, W/24.2 CY (18.5 M3) SEMI-U BLADE (ADD ATTACHMENTS)	D10T2	462.2222
TRUCK TRAILER, LOWBOY, 80 T (72.6 MT), 4 AXLE (ADD TOWING TRUCK)	80T LOWBOY TRAILER	462.2222
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	462.2222
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV GAS	462.2222
TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	KT-50D	462.2222
CLIN 0002 - SWPPP Design and Implementation		
Construction Entrance		
COMPACTOR, VIBROPLATE, 17.7" X 22" (450 X 559 MM) PLATE, 4,050 LBS (18 KN) IMPACT	BVP 18/45	5.1556
GENERATOR SET, SKID MTD, 116 KW	116D	2,000.2900
LOADER, FRONT END, WHEEL, 3.80 CY (2.9 M3) BUCKET, ARTICULATED, 4X4	938M	0.0000
Temporary Cover on Slopes		
COMPACTOR, RAMMER, 13" (330MM) X 13" (330MM) SHOE, 3,550 LBS (15.8 KN) IMPACT	DS 70	113.3333
HYDRAULIC EXCAVATOR, CRAWLER, 115,700 LBS (52.5 MT), 4.05 CY (3.1 M3) BUCKET, 28' 10" (8.79M) MAX DIGGING DEPTH	352F	0.3556
Fiber Rolls		
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	87.8333
Silt Fence		
LOADER, FRONT END, WHEEL, SKID-STEER, 10.5 CF (0.3 M3), 62" (1.6 M) BUCKET	S450	63.7074
Plow Attachement for Silt Fence Installation	SFPLOW	63.7074
Maintenance of Erosion Control		
TRUCK, HIGHWAY, 8,600 GVW, 4X2 (SUBURBAN)	SUBURBAN 2500	2,666.6667
CLIN 0003- Demolition		
Misc. Demolition		
CONCRETE BLASTER, SELF PROPELLED, 48" (1.2 M) PATH	BPZ 20-360	26.6667
HAMMERS, HYDRAULIC, 8,000 FT-LBS (10.8 KJ), IMPACT FREQUENCY 360 BPM (ADD 66K-100K LB (30MT-45MT) EXCAVATOR)(ADD COST FOR POINT WEAR)	GH15	11.6981
HYDRAULIC EXCAVATOR, CRAWLER, 29,300 LBS (13.3MT), 0.69 CY (0.53 M3) BUCKET, 19' 9" (6.0 M) MAX DIGGING DEPTH	313F L GC	11.6981
HYDRAULIC EXCAVATOR, CRAWLER, 47,400 LBS (21.5 MT), 1.56 CY (1.2 M3) BUCKET, 25' (7.6 M) MAX DIGGING DEPTH	320F L	11.6981
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	23.8862
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	4.4444
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	4.4444
CLIN 0004 - Clearing and Grubbing		
HYDRAULIC EXCAVATOR, CRAWLER, 109,300 LBS (50 MT), 3.37 CY (2.58 M3) BUCKET, 30.17' (9.2 M) MAX DIGGING DEPTH	CX490D	11.6410

SUBJECT TO CHANGE

Description	Model	EQHours
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	11.5556
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	33.7978
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	33.7978
CLIN 0005 - Stripping		
HYDRAULIC EXCAVATOR, CRAWLER, 109,300 LBS (50 MT), 3.37 CY (2.58 M3) BUCKET, 30.17' (9.2 M) MAX DIGGING DEPTH	CX490D	110.3863
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	89.6889
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	801.1111
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	801.1111
CLIN 0006 - Grass Seeding and Erosion Control		
BRUSH CHIPPER, 12" (30 CM) CAPACITY, DRUM TYPE, TRAILER MTD	M12R DIESEL	25.1284
LANDSCAPING EQUIPMENT, 3,000 GAL (11,356 L), HYDROSEEDER, TRUCK MTD (ADD 56 KGVW (25 MT) TRUCK)	T330	132.1175
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	18.6137
TRACTOR, AGRICULTURAL, WHEEL, 45 HP (34 KW), 4X2, PTO, 3 POINT HITCH	5045D	27.9200
TRUCK OPTIONS, WATER TANK, 3,000 GAL (11.4 M3)(ADD 40 KGVW (18.1 MT) TRUCK)	DS 3000	2,598.8127
TRUCK OPTIONS, WATER TANK, 3,000 GAL (11.4 M3)(ADD 40 KGVW (18.1 MT) TRUCK)	DS 3000	288.7570
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	25.1284
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS	2,598.8127
TRUCK, HIGHWAY, 32 KGVW (14.5 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 32KGVW DSL	420.8745
CLIN 0007 - Temporary Fencing, Signage, and Traffic Control		
POST DRIVER, 8" (203 MM) MAX DIA POST, 30,000 LB (13,608 KG) IMPACT (ADD 20,000-35,000 LB (9,072-15,876 KG) GVW TRUCK)	MISC. EQUIPMENT	2.4635
POST HOLE DRILL, UP TO 8" (20 CM) DIA, 30" (76 CM) DEEP, ONE MAN OPERATION	BT131	5.5556
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C	2.4635
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	5.5556
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS	2.4635
CLIN 0008 - Foundation Preparation		
AIR COMPRESSOR, 100 CFM (2.8 CMM), 100 PSI (689 KPA), TRAILER MTD (ADD HOSE)	100D	222.2222
AIR HOSE, 1.50" (38MM), 100' (31M), AIR DRILL 500	3618-0041	222.2222
CONCRETE BUGGY, 11.5 CF (0.33 M3) BUCKET, 1,500 LBS (680 KG), CRAWLER MTD	107TT	2.7753
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	0.2855
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	222.2222
CLIN 0009 - Electrical		
Electrical Demolition		
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 4.5T (4.1MT), 19' (5.8M) BOOM, 4X4, NON-ROTATING OPERATOR'S CAB, BOOM ROTATES 360°	IC-40-2D	1.4815
HAMMERS, HYDRAULIC, 8,000 FT-LBS (10.8 KJ), IMPACT FREQUENCY 360 BPM (ADD 66K-100K LB (30MT-45MT) EXCAVATOR)(ADD COST FOR POINT WEAR)	GH15	7.2727
HYDRAULIC EXCAVATOR, CRAWLER, 29,300 LBS (13.3MT), 0.69 CY (0.53 M3) BUCKET, 19' 9" (6.0 M) MAX DIGGING DEPTH	313F L GC	7.2727
HYDRAULIC EXCAVATOR, CRAWLER, 47,400 LBS (21.5 MT), 1.56 CY (1.2 M3) BUCKET, 25' (7.6 M) MAX DIGGING DEPTH	320F L	7.2727
Reinstall Surveillance System		
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	0.3152
MAN-LIFT, LINE-TRUCK, W/ 1,000 LB (454 KG) MATERIAL HANDLER, SINGLE MAN BUCKET W/ 60' (18.3 M) MAX WORKING HEIGHT. MOUNTED ON FORD F750 4X2	XT55	2.0672
CLIN 0010 - Instrumentation Conduit Raises		
Reinstall Surveillance System		
COMPACTOR, VIBROPLATE, 17.7" X 22" (450 X 559 MM) PLATE, 4,050 LBS (18 KN) IMPACT	BVP 18/45	111.9259
TRENCHER, CHAIN TYPE CUTTER, 63" (1.6M) MAX DEPTH X 6"-12" (15CM - 30CM) WIDTH, RIDE-ON, 4X4	RT45	39.9211

SUBJECT TO CHANGE

Description	Model	EQHours
CLIN 0011 - Excavation		
HYDRAULIC EXCAVATOR, CRAWLER, 109,300 LBS (50 MT), 3.37 CY (2.58 M3) BUCKET, 30.17' (9.2 M) MAX DIGGING DEPTH	CX490D	30.4793
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	155.4568
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	232.2222
TRUCK, HIGHWAY, 20KGVW (9000KG), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 20KGVW GAS	17.1667
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	232.2222
CLIN 0012 - Sand Bedding		
LOADER, FRONT END, CRAWLER, 2.25 CY (1.7 M3) BUCKET	953-D	0.0000
LOADER, FRONT END, WHEEL, 5.5 CY (4.2 M3) BUCKET, ARTICULATED, 4X4	1021G	2.0650
ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12.2 T (11.1 MT), 84" (2.1 M) WIDE, 3X2, SOIL COMPACTOR	CS56B	22.8169
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	45.6338
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	161.1111
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	161.1111
CLIN 0013 - Rock Bedding		
HYDRAULIC EXCAVATOR, CRAWLER, 109,300 LBS (50 MT), 3.37 CY (2.58 M3) BUCKET, 30.17' (9.2 M) MAX DIGGING DEPTH	CX490D	99.9333
LOADER, FRONT END, WHEEL, 3.0 CY (2.3 M3) BUCKET, ARTICULATED, 4X4	621G	30.2963
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	30.2963
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	102.2222
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	102.2222
CLIN 0015 - Rock Slope Protection		
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, ROTATING GRAPPLE, 2.00 CY (1.5 M3) (ADD 120,000-160,000 LB (54-73 MT) HYDRAULIC EXCAVATOR)	RDG 120	37.7778
HYDRAULIC EXCAVATOR, ATTACHMENT, ROCK BUCKET, 3.00 CY (2.3 M3) BUCKET, W/TIPS (ADD 35-50T (32-45MT) HYDRAULIC EXCAVATOR)	54X3.00-HX-45T	37.7778
HYDRAULIC EXCAVATOR, CRAWLER, 115,700 LBS (52.5 MT), 4.05 CY (3.1 M3) BUCKET, 28' 10" (8.79M) MAX DIGGING DEPTH	352F	37.7778
LOADER, FRONT END, WHEEL, 5.5 CY (4.2 M3) BUCKET, ARTICULATED, 4X4	1021G	3.5583
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	288.8889
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	288.8889
CLIN 0016 - Embankment Fill		
GRADER RIPPER/SCARIFIER, REAR-MOUNT (ADD 215 HP (160 KW) GRADER)	MISC. EQUIPMENT	125.0746
GRADER, MOTOR, ARTICULATED, 6X4, 12' (3.6M) BLADE W/11 TEETH SCARIFIERS	120-M2	67.5852
GRADER, MOTOR, ARTICULATED, 6X4, 14' (4.3M) BLADE W/7 SHANK RIPPER	14-M	72.6477
LOADER, FRONT END, WHEEL, 5.5 CY (4.2 M3) BUCKET, ARTICULATED, 4X4	1021G	67.5852
ROLLER, STATIC, SELF-PROPELLED, LANDFILL/SOIL COMPACTOR, TAMPING FOOT, CHOPPER, 4X4, 25.0T (22.7MT), 14.75' (14.8 M) WIDTH PER 2-PASS, W/BLADE	816F2	67.5852
ROLLER, VIBRATORY, TOWED, SINGLE DRUM, SHEEPSFOOT, 15,000 LB (6.8 MT) OPER. WT., 13.3T (135KN) CENTRIFUGAL FORCE, 67" (1.7M) WIDE (ADD 180 HP TOWING UNIT)	BW6S	67.5852
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	0.0000
TRACTOR, CRAWLER (DOZER), 333 HP (248 KW), W/11.4 CY (8.7 M3) SEMI-U BLADE (ADD ATTACHMENTS)	D8T	67.5852
TRACTOR, CRAWLER (DOZER), 600 HP (447 KW), POWERSHIFT, W/24.2 CY (18.5 M3) SEMI-U BLADE (ADD ATTACHMENTS)	D10T2	67.5852
TRUCK, HIGHWAY, CREW, 1/2 TON PICKUP, 4X4	4X4 1/2 TON CREW GAS	135.1704
TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	KT-50D	67.5852
TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	KT-50D	135.1704
CLIN 0017 - Geotextile Fabric		
TRUCK OPTIONS, FLATBED, W/40" (1M) SIDE RACKS, 8' X 12' (2.4M X 3.7M)	PVMXT-123C	415.5556
TRUCK, HIGHWAY, 26 KGVW (11.8 MT), 2 AXLE, 4X2 (CHASSIS ONLY-ADD OPTIONS)	4X2 26KGVW GAS	415.5556
CLIN 0019 - Crash Gates		

SUBJECT TO CHANGE

Description	Model	EQHours
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	2.8369
HYDRAULIC EXCAVATOR, CRAWLER, 30,000 LB (13,608 KG), 0.75 CY (0.6 M3) BUCKET, 19.6' (5.9 M) MAX DIGGING DEPTH	135SR LC	0.4722
CLIN 0020 Controlled Low Strength Materail (CLSM)		
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	33.8941
CLIN 0021 - Survey Monuments		
LOADER / BACKHOE, WHEEL, 1.0 CY (0.76 M3) FRONT END BUCKET, 24" (61 CM) DIP, 6.2 CF (0.18 M3), 14.5' (4.4 M) DIGGING DEPTH, 4X2	416F	54.6667
CLIN 0022 - Manhole Abandonment and Replacement		
BUCKET, CONCRETE, GENERAL PURPOSE, 1.0 CY (0.76 M3)	433-G	1.8418
CONCRETE VIBRATOR, 2.5" (63.5 MM) DIA, W/7.5 HP (5.6 KW) GENERATOR	MISC. EQUIPMENT	3.6837
CRANES, HYDRAULIC, TRUCK MTD, 60T (54.4MT), 110' (33.5M) BOOM, 8X4X4	TMS760E	1.8418
CRANES, HYDRAULIC, TRUCK MTD, ALL TERRAIN, 60T (54.4MT), 110' (30.5M) BOOM, 8X4	T560-1	53.3333
CLIN 0022 - Filter Sand		
LOADER, FRONT END, CRAWLER, 2.25 CY (1.7 M3) BUCKET	953-D	0.0000
LOADER, FRONT END, WHEEL, 5.5 CY (4.2 M3) BUCKET, ARTICULATED, 4X4	1021G	3.6581
ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, SMOOTH, 12.2 T (11.1 MT), 84" (2.1 M) WIDE, 3X2, SOIL COMPACTOR	CS56B	107.0736
TRACTOR, CRAWLER (DOZER), 241 HP (180 KW), W/6.57 CY (5.0 M3) BLADE	D6T XW	214.1471
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	753.3333
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	753.3333
CLIN 0023 - Shell Fill		
GRADER RIPPER/SCARIFIER, REAR-MOUNT (ADD 215 HP (160 KW) GRADER)	MISC. EQUIPMENT	368.6263
GRADER, MOTOR, ARTICULATED, 6X4, 12' (3.6M) BLADE W/11 TEETH SCARIFIERS	120-M2	368.6263
LOADER, FRONT END, CRAWLER, 3.20 CY (2.4 M3) BUCKET	963-K	540.6519
LOADER, FRONT END, WHEEL, 5.5 CY (4.2 M3) BUCKET, ARTICULATED, 4X4	1021G	368.6263
ROLLER, STATIC, SELF-PROPELLED, LANDFILL/SOIL COMPACTOR, TAMPING FOOT, CHOPPER, 4X4, 25.0T (22.7MT), 14.75' (14.8 M) WIDTH PER 2-PASS, W/BLADE	816F2	368.6263
ROLLER, VIBRATORY, TOWED, SINGLE DRUM, SHEEPSFOOT, 15,000 LB (6.8 MT) OPER. WT., 13.3T (135KN) CENTRIFUGAL FORCE, 67" (1.7M) WIDE (ADD 180 HP TOWING UNIT)	BW6S	368.6263
TRACTOR, CRAWLER (DOZER), 333 HP (248 KW), W/11.4 CY (8.7 M3) SEMI-U BLADE (ADD ATTACHMENTS)	D8T	368.6263
TRACTOR, CRAWLER (DOZER), 600 HP (447 KW), POWERSHIFT, W/24.2 CY (18.5 M3) SEMI-U BLADE (ADD ATTACHMENTS)	D10T2	368.6263
TRUCK TRAILER, PUP TRAILER, 15 CY (11.5 M3), 17' (5.2 M), TRIPLE AXLE (W/HOIST) (ADD TOWING TRUCK)	17' PUP	901.1111
TRUCK, HIGHWAY, 45 KGVW (20.4 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 45KGVW DSL	901.1111
TRUCK, HIGHWAY, CREW, 1/2 TON PICKUP, 4X4	4X4 1/2 TON CREW GAS	737.2525
TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	KT-50D	368.6263
TRUCK, WATER, OFF-HIGHWAY, 5,000 GAL (18,927 L), W/175 HP (130 KW) TRACTOR	KT-50D	737.2525
CLIN 0024 - CONCRETE FLOODWALL		
CONCRETE WALL - 3-FT HEIGHT SLIPFORMED		
CONCRETE PAVING MACHINES, CURB/GUTTER SLIPFORM PAVER, CRAWLER, 3-TRACK, 36" WIDE MOLD/FORM	COMMANDER III (CURB	56.6667
Front End Loader 4.75 Cy & Grapple - Cat.966G II	966G II	56.6667
TRUCK OPTIONS, WATER TANK, 4,000 GAL (ADD 50,000 GVW TRUCK)	DS 4000	56.6667
TRUCK, HIGHWAY, 52 KGVW (23.6 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	56.6667
TRUCK, HIGHWAY, CONVENTIONAL, 1 TON PICKUP, 4X2	4X2 1 TON CONV DSL	56.6667
CLIN 0025 - SLAG-CEMENT-BENTONITE CUTOFF WALL - Excavator		
20K Gallon Baker Tank		666.6667
36" Ripper Bucket		166.6667

SUBJECT TO CHANGE

Description	Model	EQHours
Bentonite Mixing Plant		166.6667
Desanding Unit		166.6667
GENERATOR SET, SKID MTD, 116 KW	116D	166.6667
GENERATOR SET, SKID MTD, 300 KW	300D	166.6667
HYDRAULIC EXCAVATOR, CRAWLER, 74,803 LBS, 2.50 CY BUCKET, 24.25' MAX DIGGING DEPTH	PC 300 LC-5	166.6667
LOADER, FRONT END, WHEEL, 4.25 CY BUCKET, ARTICULATED, 4X4	950M	166.6667
MAN-LIFT, ARTICULATED BOOM, 55' HEIGHT, 500 LBS, 29' REACH, 4X4, SELF PROPELLED, 2.2' X 5' PLATFORM	TA50RT	166.6667
PC 1250		166.6667
PC 1250 Long Stick & Boom		166.6667
PUMP HOSE, DISCH, 6" DIA X 50' WITH COUPLING (PER SECTION)	C376-90	11,666.6667
PUMP, WATER, CENTRIFUGAL, TRASH, ENGINE DRIVE, 6" DIA, 1,600 GPM, LIQUID COOLED, TRAILER MTD (ADD HOSES)	6" DIESEL	833.3333
Storage Box		166.6667
TELEHANDLER, 11,000 LB (5,000 KG) RATED LOAD CAPACITY, 45' (13.7M) MAX LIFT HEIGHT WITH 7,000 LB (3200KG) CAPACITY, 30.3' (9.2M) MAX FORWARD REACH WITH 3,000 LB (1360KG) CAPACITY, 4X4	TH514C	166.6667
TRACTOR, CRAWLER (DOZER), 241 HP, LOW GROUND PRESSURE, W/6.57 CY VPAT BLADE (ADD ATTACHMENTS)	D6T LGP	166.6667
TRUCK TRAILER, END DUMP, 17 CY (13 CM), 22 TON (20.0 MT) (ADD TOWING TRUCK)	28' SK2000	1,188.8889
TRUCK, HIGHWAY, 52,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 52KGVW DSL	1,188.8889
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV GAS	166.6667
Mob & Set up		
20K Gallon Baker Tank		533.3333
75 th Hyd truck Crane		100.0000
Bentonite Mixing Plant		133.3333
Desanding Unit		133.3333
GENERATOR SET, SKID MTD, 300 KW	300D	133.3333
HYDRAULIC EXCAVATOR, ATTACHMENT, MATERIAL HANDLING, BUCKET, 36" (0.9M)CONCRETE/PAVEMENT REMOVAL (ADD 75,000 LB (34MT) HYDRAULIC EXCAVATOR)	EPR-B2-36	100.0000
HYDRAULIC EXCAVATOR, CRAWLER, 99,517 LBS, 2.75 CY BUCKET, 25.50' MAX DIGGING DEPTH	PC 400 LC-6	100.0000
MAN-LIFT, ARTICULATED BOOM, 86' HEIGHT, 500 LBS, 64' REACH, 4X4, SELF PROPELLED, 3' X 8' PLATFORM	A80J	100.0000
PC 1250		100.0000
PC 1250 Long Stick & Boom		100.0000
PC 400 Long Stick & Boom		100.0000
PC1250 36" Bucket		100.0000
PUMP HOSE, DISCH, 6" DIA X 50' WITH COUPLING (PER SECTION)	C376-90	6,666.6667
PUMP, WATER, CENTRIFUGAL, TRASH, ENGINE DRIVE, 6" DIA, 1,600 GPM, LIQUID COOLED, TRAILER MTD (ADD HOSES)	6" DIESEL	533.3333
Storage Box		133.3333
TELEHANDLER, 11,000 LB (5,000 KG) RATED LOAD CAPACITY, 45' (13.7M) MAX LIFT HEIGHT WITH 7,000 LB (3200KG) CAPACITY, 30.3' (9.2M) MAX FORWARD REACH WITH 3,000 LB (1360KG) CAPACITY, 4X4	TH514C	133.3333
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV GAS	100.0000
Secondary Containment Barrier		
K Rail Rental		

SUBJECT TO CHANGE

Description	Model	EQHours
Place K Rail		
HYDRAULIC EXCAVATOR, CRAWLER, 74,803 LBS, 2.50 CY BUCKET, 24.25' MAX DIGGING DEPTH	PC 300 LC-5	6.6667
TRUCK TRAILER, LOWBOY, 35 TON, 2 AXLE, DETATCHABLE GOOSENECK (ADD TOWING TRUCK)	35GSL-BR	11.5787
TRUCK, HIGHWAY, 75 KGVW (34.0 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 75KGVW DSL	11.5787
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV GAS	6.6667
Remove K Rail		
HYDRAULIC EXCAVATOR, CRAWLER, 74,803 LBS, 2.50 CY BUCKET, 24.25' MAX DIGGING DEPTH	PC 300 LC-5	6.6667
TRUCK TRAILER, LOWBOY, 35 TON, 2 AXLE, DETATCHABLE GOOSENECK (ADD TOWING TRUCK)	35GSL-BR	6.6667
TRUCK, HIGHWAY, 75 KGVW (34.0 MT), 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS)	6X4 75KGVW DSL	6.6667
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV GAS	6.6667
Place visqueen, fill sand bags, & place		
TRUCK, HIGHWAY, CONVENTIONAL, 3/4 TON PICKUP, 4X4	4X4 3/4 TON CONV GAS	17.7778
Export excess slurry at completion of project		
TRUCK, HIGHWAY, 70 KGVW (31.8 MT), 3 AXLE, 6X6 (CHASSIS ONLY-ADD OPTIONS)	6X6 70KGVW DSL	20.0000
TRUCK, VACUUM, 3,600 GAL, 2,600 CFM, REAR DOOR & HYDRAULIC DUMP SYSTEM, INCLUDES TRUCK CHASSIS	TVAC3600TPMBUS	20.0000

SUBJECT TO CHANGE

APPENDIX D

USFWS COORDINATION AND ENDANGERED SPECIES ACT CONSULTATION

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

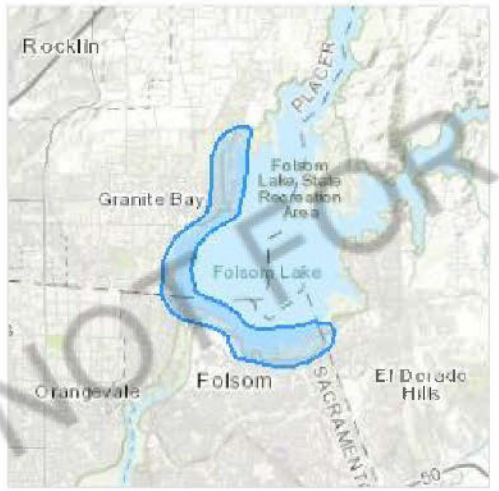
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

El Dorado, Placer, and Sacramento counties, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS

NOT FOR CONSULTATION

Giant Garter Snake Thamnophis gigas — Threatened
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii — Threatened
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/2891

California Tiger Salamander Ambystoma californiense — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/2076

Fishes

NAME	STATUS

Delta Smelt Hypomesus transpacificus — Threatened
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus — Candidate
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/9743

Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus — Threatened
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS

NOT FOR CONSULTATION

Conservancy Fairy Shrimp Branchinecta conservatio — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS

El Dorado Bedstraw Galium californicum ssp. sierrae — Endangered
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/5209

Layne's Butterweed Senecio layneae — Threatened
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/4062

Pine Hill Ceanothus Ceanothus roderickii — Endangered
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/3293

Pine Hill Flannelbush Fremontodendron californicum ssp. decumbens — Endangered
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/4818

Sacramento Orcutt Grass Orcuttia viscida — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
http://ecos.fws.gov/ecp/species/5507

NOT FOR CONSULTATION

Stebbins' Morning-glory Calystegia stebbinsii Endangered
Wherever found
No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/3991

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. http://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
California Thrasher *Toxostoma redivivum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA http://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. http://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/9464

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
http://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/3914

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/3910

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
http://ecos.fws.gov/ecp/species/9726

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

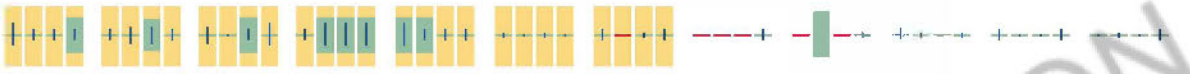
NOT FOR CONSULTATION

▪ probability of presence ▪ breeding season | survey effort – no data

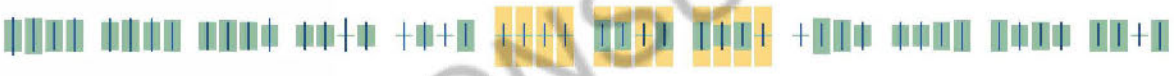
SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

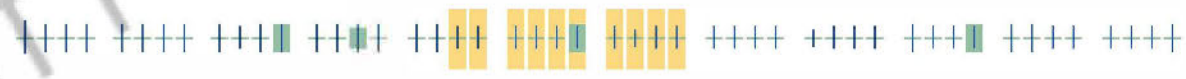
California Thrasher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Clark's Grebe BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

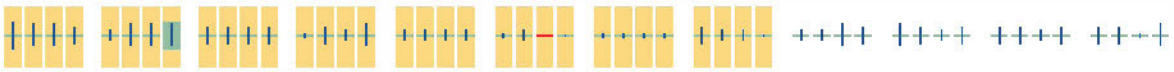


Common Yellowthroat BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

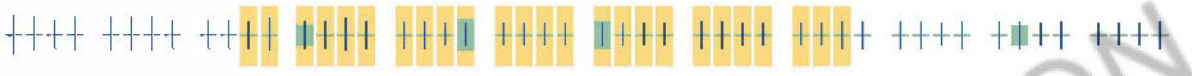


NOT FOR CONSULTATION

Golden Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Lawrence's Goldfinch BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

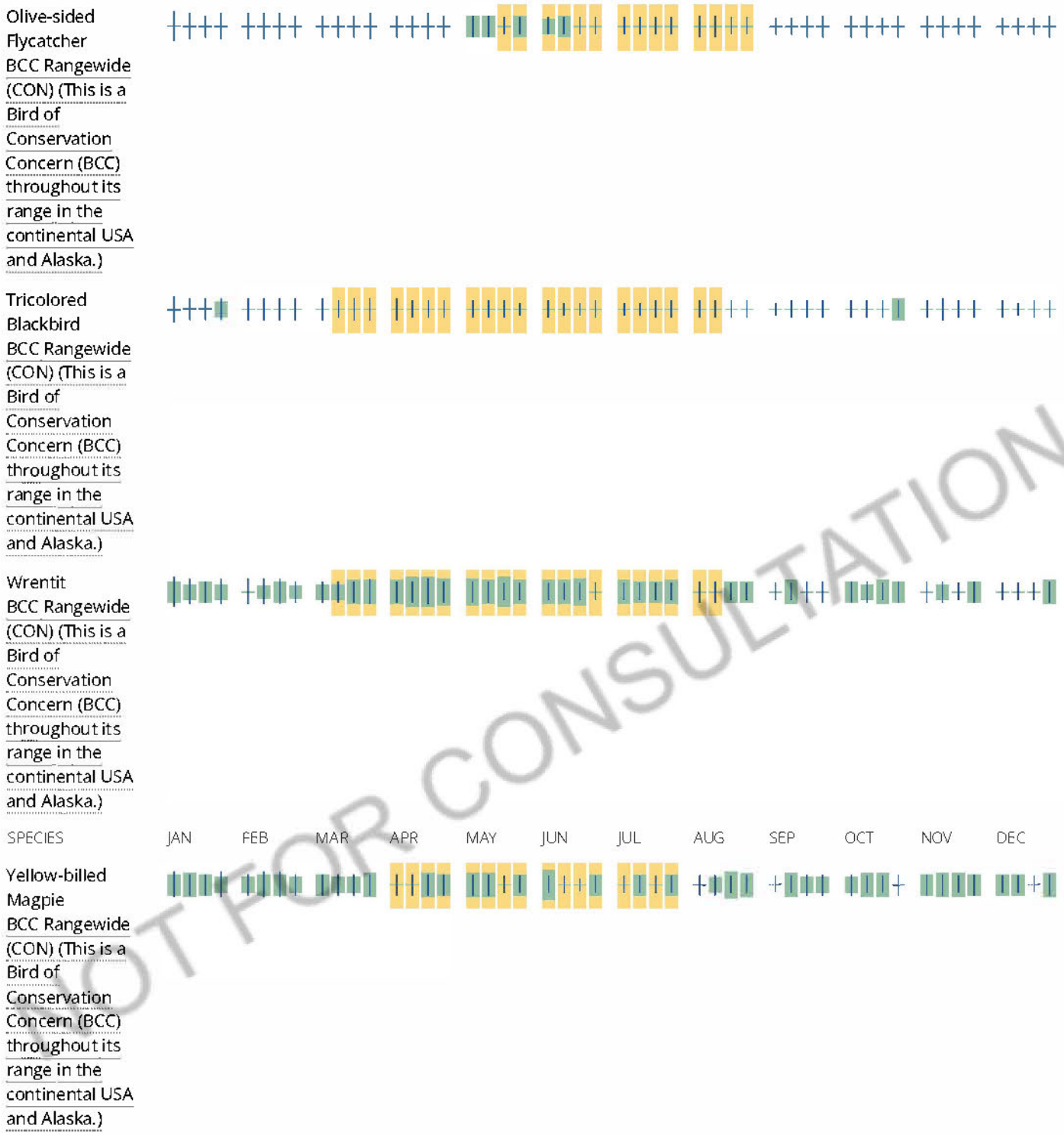


Marbled Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nuttall's Woodpecker BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

NOT FOR CONSULTATION



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

NOT FOR CONSULTATION

Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Ch
- PEM1C
- PEM1A
- PEM1Cx
- PEM1Ah

FRESHWATER FORESTED/SHRUB WETLAND

- PSSCx
- PFOA
- PSSC

FRESHWATER POND

- PUBHr
- PUBHh
- PUBH
- PUBF
- PABF
- PUBFx
- PUBFh

LAKE

- L1UBHh
- L2USCh

RIVERINE

- R4SBC
- R5UBFx
- R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error

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is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

SEP 20 2019

In Reply Refer to:
08ESMF00-
2017-F-0043-R001

Mr. Mark T. Ziminski
Chief, Environmental Resources Branch
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Reinitiation of Formal Consultation on the Proposed Folsom Dam Raise Project, Sacramento, El Dorado, and Placer Counties, California

Dear Mr. Ziminske:

This letter is in response to the Corps of Engineers' (Corps) September 9, 2019, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Folsom Dam Raise Project (proposed project) in Sacramento, El Dorado, and Placer Counties, California. Your request was received by the Service on September 9, 2019. The Service issued a biological opinion for this project on October 13, 2016 (08ESMF00-F-0043) that analyzed the project's effects on the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

Since the Service issued the biological opinion, the Corps has determined the Folsom Residence Office needs to be moved. The office, currently located near Folsom State Prison will be moved about 880 feet northeast to a parking lot near Folsom Lake Dike 7 (former Dike 7 Office Complex area). The move is anticipated to occur January through March 2020, and last about 12 weeks.

A single elderberry shrub is located on the north side of the entrance to the Dike 7 parking lot near Folsom Lake Crossing. The shrub is located in close proximity to the road, but is protected behind a fence. No construction activity is proposed behind the fence and no trimming is anticipated for access to the site by modular building installers. However, delivery and contractor vehicles will travel the adjacent road. Based on implementation of the Conservation Measures identified in the biological opinion, the Corps has determined the Folsom Residence Office move may affect, but is not likely to adversely affect the beetle or its habitat. Pursuant to Conservation Measure 2 in the biological opinion, the Corps is also seeking approval from the Service to establish a buffer around an elderberry shrub less than 20 feet.

The Service concurs with the Corps' determination that moving the Folsom Residence Office may affect, but is not likely to adversely affect the beetle or its habitat. The Service also agrees to the Corps' proposal of a minimum setback less than 20 feet for a single elderberry shrub along the access road to the office site. The biological opinion will be amended to reflect these changes. To

provide ease of reading, the new language in the biological opinion will be in bold text. Therefore, the Folsom Dam Raise Project biological opinion is amended as follows:

Page 2. Consultation History

April 9, 2014:	The Service, Reclamation, and the Department of Water Resources conducted an elderberry shrub survey of the proposed project footprint
September 6 2016:	The Service received the September 6, 2016, letter from the Corps requesting reinitiation of formal consultation with undated biological assessment.
September 9, 2019:	**The Service received a request (undated) to reinitate consultation related to moving the location of the Folsom Residence Office for the proposed project and establishing a minimum setback (buffer) of less than 20 feet for a single elderberry shrub along the road to the proposed Folsom Resident Office site.**

Page 5. Earthen Raise Elements

Construction staging areas for the proposed work on dike 7 will include the existing "Dike 7 complex" area immediately south of the dike, plus previously disturbed land along the north side of the dike (see Enclosure, Figure 10). Both of these areas have been used as staging areas during various Folsom JFP construction phases. The main construction staging area for Dike 8 will likely be a previously disturbed area immediately adjacent to the north side of this dike (see Enclosure, Figure 10), but the Dike 7 Office Complex site may be used. **A portion of the Dike 7 Office Complex site may also be used as a future office site if needed.**

All other sections of the October 13, 2016, biological opinion for the Folsom Dam Raise Project remain the same. If you have any questions regarding this biological opinion please contact Doug Weinrich (douglas_weinrich@fws.gov), Assistant Field Supervisor, at (916) 414-6563.

Sincerely,

Doug Weinrich

for Jennifer M. Norris, Ph.D.
Field Supervisor

ec:
Bert Skillen, COE, Sacramento, CA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08SESMF00-
2017-F-0043-002

JAN 15 2020

Mr. Mark T. Ziminiske
Chief, Environmental Resources Branch
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Reinitiation of Formal Consultation on the Proposed Folsom Dam Raise Project, Sacramento, El Dorado and Placer Counties, California

Dear Mr. Ziminske:

This letter is in response to the Corps of Engineers' (Corps) December 10, 2019, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Folsom Dam Raise Project (proposed project) in Sacramento, El Dorado, and Placer Counties, California. Your request was received by the Service on December 16, 2019. The Service issued a biological opinion for this project on October 13, 2016 (08ESMF00-F-0043) and a subsequent reinitiation of consultation (08ESMF00-F-0043-R001) on September 20, 2019, that analyzed the project's effects on the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

Since the Service issued the biological opinion and first reinitiation, the Corps has determined about 2,300 feet of the Pioneer Express Trail needs to be widened from about 2 feet to 4-6 feet to accommodate equestrian and bicycle traffic. The widened trail will serve as a detour for other trails which will be closed during construction activities associated with Dike 6 and the Right Wing Dam The widening effort is anticipated to begin in February and be complete by December 2020.

Three elderberry shrubs are located along the Pioneer Express Trail. The driplines of the shrubs are less than 20 feet from where the trail widening will occur. However, all of the elderberry shrubs are located on the west or south side of the existing trail and the widening activities will occur to the east or north to avoid disturbance of the shrubs.

Based on implementation of the Conservation Measures identified in the biological opinion and additional measures proposed in this reinitiation, the Corps has determined widening of the Pioneer Express Trail may affect, but is not likely to adversely affect the beetle or its habitat. Pursuant to Conservation Measure 2 in the biological opinion, the Corps is also seeking approval from the Service to establish a buffer around an elderberry shrub less than 20 feet.

The Service concurs with the Corps' determination that widening of the Pioneer Express Trail may affect, but is not likely to adversely affect the beetle or its habitat. The Service also agrees to the Corps' proposal of a minimum setback less than 20 feet for three elderberry shrubs along the existing trail. The biological opinion will be amended to reflect these changes. To provide ease of reading, the new language in the biological opinion will be in bold text. Therefore, the Folsom Dam Raise Project biological opinion is amended as follows:

Page 2. Consultation History

April 9, 2014:	The Service, Reclamation, and the Department of Water Resources conducted an elderberry shrub survey of the proposed project footprint.
September 6 2016:	The Service received the September 6, 2016, letter from the Corps requesting reinitiation of formal consultation with undated biological assessment.
September 9, 2019:	The Service received a request (undated) to reinitiate consultation related to moving the location of the Folsom Residence Office for the proposed project and establishing a minimum setback (buffer) of less than 20 feet for a single elderberry shrub along the road to the proposed Folsom Resident Office site.
December 16, 2019:	***The Service received a request dated December 10, 2019, to reinitiate consultation related to widening the Pioneer Express Trail to serve as a detour for trails that will be closed during construction activities at Dike 6 and the Right Wing Dam and establishing a minimum setback (buffer) of less than 20 feet for three elderberry shrubs along the trail proposed for widening.***
January 9-14, 2020:	***The Corps and Service exchanged emails providing clarification on the project description and additional conservation measures for the widening Pioneer Express Trail portion of the project.***

Page 4. Earthen Raise Elements

As with Dikes 1, 2, and 3, the proposed modifications to Dikes 4, 5, and 6 will also primarily affect the existing crest and landward side slopes of these dikes through the removal of existing materials (ex. Riprap, earthen materials, roadway pavement, roadway gravel) and the addition of new materials (ex. engineered fill, riprap, pavement). An existing gravel road/trail currently extends from the south end of Dike 4 to the north end of Dike 5. A significant portion of this road will be raised to the same elevation se the proposed raised crest elevation of the adjacent dikes because the affected road segments are presently lower than the necessary dike elevation. Gravel maintenance roads currently run along the landward side toe of the dikes to the landward side slopes of the dikes. Portions of these maintenance roadways will be relocated in a manner that mimics their current alignments to accommodate changes in the side slopes of the dikes. **In addition, some existing trails in the vicinity of Dike 6 used by pedestrians, equestrians and bicyclists will be closed during construction. A detour will be provided by widening a 2,300-foot-long segment of the Pioneer Express Trail.**

Page 6. Concrete Floodwall Elements

There will be two construction access points for work on the RWD (see Enclosure, Figure 9). One will be off Auburn-Folsom Road at the Beal's Point roadway (e.g. the same access point used to access the southern end of Dike 6). S**ome existing trails in the vicinity of Dike 6 used by pedestrians, equestrians and bicyclists will be closed during construction of the RWD. A detour will be provided by widening a 2,300-foot-long segment of the Pioneer Express Trail.** The other access point will be off Folsom-Auburn Road at Folsom Dam Road. The construction access/haul route from this access point will follow established roads within Reclamation's CCAO Facilities. The main construction access point for work on the LWD will be off Folsom Lake Crossing at the existing Gate 1 construction access (see Enclosure, Figure 10). The construction access/haul route from this access point will follow an existing haul road before passing over the control structure of the new auxiliary spillway. During construction work on the LWD and RWD, one lane of the existing road that runs from the LWD to the main dam and then to the RWD (e.g. Folsom Dam Road) will be open to traffic.

Page 9. Conservation Measures

The following conservation measure is added:

11. Specific to the widening of the Pioneer Express Trail:
a. work will not occur during the flight season for the beetle (March-July);
b. trail work within 20 feet of the dripline of elderberry shrubs will be conducted by hand crews only.

All other sections of the October 13, 2016, biological opinion and September 20, 2019, reinitiation for the Folsom Dam Raise Project remain the same. If you have any questions regarding this biological opinion please contact Doug Weinrich (douglas_weinrich@fws.gov), Assistant Field Supervisor, at (916) 414-6563.

Sincerely,

Doug Weinrich

for Jennifer M. Norris, Ph.D.
Field Supervisor

ec:
Bert Skillen, COE, Sacramento, CA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
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Sacramento, California 95825-1846

In Reply Refer to:
08SESMF00-
2017-F-0043-R003

FEB 0 3 2020

Mr. Mark T. Ziminiske
Chief, Environmental Resources Branch
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Reinitiation of Formal Consultation on the Proposed Folsom Dam Raise Project, Sacramento, El Dorado and Placer Counties, California

Dear Mr. Ziminske:

This letter is in response to the Corps of Engineers' (Corps) January 27, 2020, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Folsom Dam Raise Project (proposed project) in Sacramento, El Dorado, and Placer Counties, California. Your request was received by the Service on January 30, 2020. The Service issued a biological opinion for this project on October 13, 2016 (08ESMF00-F-0043) and subsequent reinitiations of consultation on September 20, 2019 (08ESMF00-F-0043-R001), and January 15, 2020 (08ESMF00-F-0043-R002), that analyzed the project's effects on the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

Since the Service issued the biological opinion and two reinitiations, the Corps re-surveyed a 2-mile section of the Pioneer Express Trail and other trails north of Beal's Point Road for the presence of elderberry shrubs. These trails are scheduled to be widened from about 2 feet to 4-6 feet to accommodate equestrian and bicycle traffic and will serve as a detour for other trails which will be closed during construction activities associated with Dikes 4-6. The widening effort is anticipated to begin in February and be complete by December 2020.

A new elderberry shrub was located along the Pioneer Express Trail just north of Beal's Point Road. The driplines of the shrub is less than 20 feet from where the trail widening will occur. However, the elderberry shrub is located on the west side of the existing trail and the widening activities will occur to the east to avoid disturbance of the shrub.

Based on implementation of the Conservation Measures identified in the biological opinion and additional measures proposed in this reinitiation, the Corps has determined widening of this section of the Pioneer Express Trail and other trails north of Beal's Point Road may affect, but is not likely to adversely affect the beetle or its habitat. Pursuant to Conservation Measure 2 in the biological opinion, the Corps is also seeking approval from the Service to establish a buffer around an elderberry shrub less than 20 feet.

The Service concurs with the Corps' determination that widening of the Pioneer Express Trail and other trails north of Beal's Point Road may affect, but is not likely to adversely affect the beetle or its habitat. The Service also agrees to the Corps' proposal of a minimum setback less than 20 feet for the single elderberry shrub along the existing trail. The biological opinion will be amended to reflect these changes. To provide ease of reading, the new language in the biological opinion will be in bold text. Therefore, the Folsom Dam Raise Project biological opinion is amended as follows:

Page 2. Consultation History

April 9, 2014:	The Service, Reclamation, and the Department of Water Resources conducted an elderberry shrub survey of the proposed project footprint.
September 6 2016:	The Service received the September 6, 2016, letter from the Corps requesting reinitiation of formal consultation with undated biological assessment.
September 9, 2019:	The Service received a request (undated) to reinitiate consultation related to moving the location of the Folsom Residence Office for the proposed project and establishing a minimum setback (buffer) of less than 20 feet for a single elderberry shrub along the road to the proposed Folsom Resident Office site.
December 16, 2019:	The Service received a request dated December 10, 2019, to reinitiate consultation related to widening the Pioneer Express Trail to serve as a detour for trails that will be closed during construction activities at Dike 6 and the Right Wing Dam and establishing a minimum setback (buffer) of less than 20 feet for three elderberry shrubs along the trail proposed for widening.
January 9-14, 2020:	The Corps and Service exchanged emails providing clarification on the project description and additional conservation measures for the widening Pioneer Express Trail portion of the project ***south of Beal's Point Road.***
January 30, 2020	***The Service received a request via email dated January 27, 2020, to reinitiate consultation related to widening the Pioneer Express Trail and other trails north of Beal's Point Road to serve as a detour for trails that will be closed during construction activities at Dikes 4-6 and establishing a minimum setback (buffer) of less than 20 feet for a newly discovered elderberry shrub along the trail proposed for widening***

Page 4. Earthen Raise Elements

As with Dikes 1, 2, and 3, the proposed modifications to Dikes 4, 5, and 6 will also primarily affect the existing crest and landward side slopes of these dikes through the removal of existing materials (ex. Riprap, earthen materials, roadway pavement, roadway gravel) and the addition of new materials (ex. engineered fill, riprap, pavement). An existing gravel road/trail currently extends from the south end of Dike 4 to the north end of Dike 5. A significant portion of this road will be raised to the same elevation se the proposed raised crest elevation of the adjacent dikes because the affected road segments are presently lower than the necessary dike elevation. Gravel maintenance roads currently run along the landward side toe of the dikes to the landward side slopes of the dikes. Portions of

these maintenance roadways will be relocated in a manner that mimics their current alignments to accommodate changes in the side slopes of the dikes. In addition, some existing trails in the vicinity of **Dikes 4-6** used by pedestrians, equestrians and bicyclists will be closed during construction. A detour will be provided by widening a 2,300-foot-long segment of the Pioneer Express Trail **south of Beal's Point Road and a 2-mile-long segment of the Pioneer Express Trail and other trails north of Beal's Point Road.**

Page 6. Concrete Floodwall Elements

There will be two construction access points for work on the RWD (see Enclosure, Figure 9). One will be off Auburn-Folsom Road at the Beal's Point roadway (e.g. the same access point used to access the southern end of Dike 6). Some existing trails in the vicinity of Dike 6 used by pedestrians, equestrians and bicyclists will be closed during construction of the RWD. A detour will be provided by widening a 2,300-foot-long segment of the Pioneer Express Trail.

The other access point will be off Folsom-Auburn Road at Folsom Dam Road. The construction access/haul route from this access point will follow established roads within Reclamation's CCAO Facilities. The main construction access point for work on the LWD will be off Folsom Lake Crossing at the existing Gate 1 construction access (see Enclosure, Figure 10). The construction access/haul route from this access point will follow an existing haul road before passing over the control structure of the new auxiliary spillway. During construction work on the LWD and RWD, one lane of the existing road that runs from the LWD to the main dam and then to the RWD (e.g. Folsom Dam Road) will be open to traffic.

Page 9. Conservation Measures

The following conservation measure is added:

11. Specific to the widening of the Pioneer Express Trail and other trails:
a. to the extent feasible, all activities that occur within 50 meters (165 feet) of elderberry shrubs will be conducted outside the flight season of the beetle (March-July);
b. trail work within 20 feet of the dripline of elderberry shrubs will be conducted by hand crews only (no heavy equipment).

All other sections of the October 13, 2016, biological opinion and the September 20, 2019, and January 15, 2020 reinitiations for the Folsom Dam Raise Project remain the same. If you have any questions regarding this biological opinion please contact Doug Weinrich (douglas_weinrich@fws.gov), Assistant Field Supervisor, at (916) 414-6563.

Sincerely,

Doug Weinrich

for Jennifer M. Norris, Ph.D.
Field Supervisor

ec:
Bert Skillen, U.S. Army Corps of Engineers, Sacramento, CA

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO, CA 95814-2922

Environmental Resources Branch October 14, 2021

Mr. Mike Fris
Field Supervisor
Sacramento FWO
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Dear Mr. Fris:

This letter is a request for concurrence with our determination that the proposed Folsom Dam Raise Modifications Project, California, may affect, but is not likely to adversely affect, the Federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) and its habitat. This letter serves as a correction to our most recent consultation with your office on this project titled *Reinitation of Formal Consultation on the Folsom Dam Raise Project, Sacramento, El Dorado, and Placer Counties, California*, dated January 30, 2020 (ref. #08SESMF00-2017-F-0043-R003).

The purpose of this reinitiation is to seek concurrence on activities where avoidance with a 100-foot buffer around elderberry shrubs has been determined to not be feasible, including locations where construction traffic will be required to drive within 20 feet of the dripline of elderberry shrubs. Further details on these effects including specific locations are in the enclosed memorandum.

No designated critical habitat for listed species is found within the project area. However, elderberry shrubs are located throughout the project (see Figure 1 in the Enclosure). Although no elderberry trimming, transplantation, or other associated mitigation would be necessary for the current design, some construction activities would take place within the 100-foot buffer and a few within the 20-foot buffer from the dripline of elderberry shrubs (see Table 2 in the Enclosure). While ground disturbing activities would take place within the 100-foot buffer for some elderberry shrubs, no ground disturbing activities would take place within the 20-foot buffers that have not already been covered by previous consultations (e.g., detour trail construction). The primary activity that would take place within the 20-foot buffers would be haul trucks and equipment driving by elderberry shrubs on adjacent haul routes. Many of these haul routes are currently subject to daily vehicle traffic associated with public recreation and State Parks personnel activities.

Avoidance procedures for VELB are outlined in the Folsom Dam Raise 2017 Supplemental Environmental Impact Statement/Supplemental Environmental Impact

Report and will be followed by the contractors and U.S. Army Corps of Engineers (USACE) personnel. These include:

a. Construction personnel would receive U.S. Fish and Wildlife Service (USFWS) - approved worker environmental awareness training to ensure that workers recognize elderberry shrubs and the VELB. The training would include: the protected status of VELBs and their host plants, elderberry shrubs; the need to avoid adversely affecting elderberry shrubs; elderberry shrub avoidance areas (protective buffers/exclusion zones); measures to be taken by workers during construction to protect elderberry shrubs; possible penalties that could be imposed for not complying with requirements established for the protection of elderberry shrubs and the VELB.

b. Where practicable, a minimum setback (buffer) of 100 feet from the drip-line of all elderberry shrubs containing stems measuring 1.0 inch or greater in diameter at ground level would be established. There may be instances where a 100-foot buffer is not practicable due to various constraints. In such cases, a buffer of at least 20 feet from the dripline of such elderberry shrubs would be established if feasible. The USACE will consult with USFWS prior to establishing any elderberry shrub buffer zones (setbacks) that extend less than 100 feet from the drip-line of a particular shrub. Prior to project construction activities near elderberry shrubs to be preserved, temporary protective barriers would be installed along the limits (boundaries) of approved elderberry shrub buffer zones (exclusion areas). No construction activities or similar disturbances would be allowed within the elderberry shrub buffer zones unless authorized in advance by the Corps and USFWS. In situations where elderberry shrubs to be preserved are located more than 100 feet from the project's limits of construction, protective barriers may not be installed if existing landscape conditions are such that inadvertent damage to the shrubs during construction is unlikely. The contractor would install signs approximately every 50 feet along the edge of any protective structural barriers. The signs would include the text: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs would be readable from a distance of 20 feet and would be maintained during project construction.

Based on the implementation of the avoidance and minimization measures described above, we request your concurrence with our determination that the changes to the proposed action on the Folsom Dam Raise Modifications Project, may affect, but is not likely to adversely affect the valley elderberry longhorn beetle and its habitat.

If you have any questions or concerns, please contact Kim Watts, Environmental Manager at (916) 557-7770, or e-mail: Kimberly.J.Watts@usace.army.mil. Thank you for your attention to this matter.

Sincerely,

ARTHO.DANIEL.FRANCIS.1254218576 Digitally signed by ARTHO.DANIEL.FRANCIS.1254218576 Date: 2021.10.14 13:21:19 -07'00'

Daniel F. Artho
Deputy Chief, Planning Division

Enclosure

cc:
Jennifer Hobbs

CESPK-PDR-A 6/2/21

MEMORANDUM FOR RECORD

SUBJECT: USFWS Concurrence with Oak Tree Mitigation and Valley Elderberry Longhorn Beatle (VELB) Determination Associated with the Folsom Dam Raise Modifications Project, Folsom, California

ATTN:
Ms. Jennifer Hobbs
Sacramento Fish and Wildlife Office
U.S. Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

1. **Locations:** The oak planting locations for mitigation are located in the areas designated in Figurers 2 through 7 below. The locations of all impacted elderberry shrubs are listed in Table 2. All locations are within the Folsom Lake State Recreation Area in Folsom, California.

2. **Project Background:** The Folsom Dam Raise project was authorized under section 101(a)(6) of the Water Resources Development Act of 1999 (Public Law 106-53), Section 128 of the Energy and Water Development Appropriations Act of 2004 (Public Law 108-137), and Section 3029(b) of the Water Resources Development Act of 2007 (Public Law 110-114). The Folsom Dam Raise project was reevaluated jointly with the Folsom Modification Project in the American River Watershed Project Post Authorization Change Report (PACR) for the American River Watershed Project dated March 2007. The PACR resulted in the recommendation of an auxiliary spillway at the Folsom Dam – which was constructed jointly with the USBR – known as the Folsom Joint Federal Project (JFP). In addition to the JFP, the PACR resulted in the authorization of the Folsom Dam Raise project This MFR is a request for concurrence with our determination that construction of the proposed Folsom Dam Raise Modification project may affect, but is not likely to adversely affect, the Federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)(VELB) in accordance with Section 7 of the Endangered Species Act. Additionally, this MFR details the plan to mitigate for oak woodland habitat that would be removed for construction by planting native oaks at 10 separate onsite locations in accordance with the April 20, 2015 Fish and Wildlife Coordination Act Report for the Folsom Dam Raise Project (ref. #FF08ESMF00-2014-CPA-0010). Our most recent consultation with your office on this project was the Biological Opinion titled Reinitiation of Formal Consultation on the Proposed Folsom Dam Raise Project, Sacramento, El Dorado, and Placer Counties, California dated September 20, 2019 (ref. #08ESMF00-2017-F-0043-R001).

3. **National Environmental Policy Act (NEPA) Compliance Background:** The Folsom Dam Raise was evaluated in the 2007 Final Folsom Dam Safety and Flood Damage Reduction Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and in a 2017 Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/SEIR). A draft SEIS/EIR for this and other changes since the 2017 SEIS/EIR is currently in routing.

4. **MFR Purpose:** The proposed action would involve (1) raising the dikes and dams by 3.5 feet and includes constructing a new earthen embankment for Dike 3, earthen raise of Dikes 2 and 7, concrete floodwall raises for Dike 1, Dikes 4-6, the Left Wing Dam (LWD), the Right Wing Dam (RWD), and the Mormon Island Auxiliary Dam (MIAD); (2) onsite borrow and disposal at MIAD West; (3) rock crushing operations at MIAD East; (4) modification of the Main Dam Tainter Gates, and (5) a project mitigation and restoration plan. Construction is anticipated to begin in early 2022 and continue through 2025. See Table 1 below for the current anticipated construction schedule.

Table 1. Anticipated construction schedule for the Folsom Dam Raise Modifications Project.

Project Activity	Starting Year	Ending Year	Duration
Main Dam Tainter Gates & related structural refinements LWD & RWD – concrete floodwall raises	2022	2025	4 years
Dike 7 and MIAD – concrete floodwall raises	2022	2024	2 years
Dikes 1, 4, 5, & 6 – concrete floodwall raises Dikes 2 - earthen embankment raise New Dike 3 – earthen embankment construction	2022	2024	2 years

No designated critical habitat for listed species is found within the project area. However, elderberry shrubs are located throughout the project (see Fig. 1). Although no elderberry trimming, transplantation, or other associated mitigation would be necessary for the current design, some construction activities would take place within the 100 ft buffer and a few within the 20 ft buffer from the dripline of elderberry shrubs (see Table 2). Although ground disturbing activities would take place within the 100 ft buffer for some elderberry shrubs, no ground disturbing activities would take place within the 20 ft buffers that have not already been covered by previous consultations (e.g. detour trail construction). The primary activity that would take place within the 20 ft buffers would be haul trucks and equipment driving by elderberry shrubs on adjacent haul routes. Many of these haul routes are currently subject to daily vehicle traffic associated with public recreation and State Parks personnel activities.

Figure 1: Elderberry locations throughout the Folsom Dam Raise Modifications Project

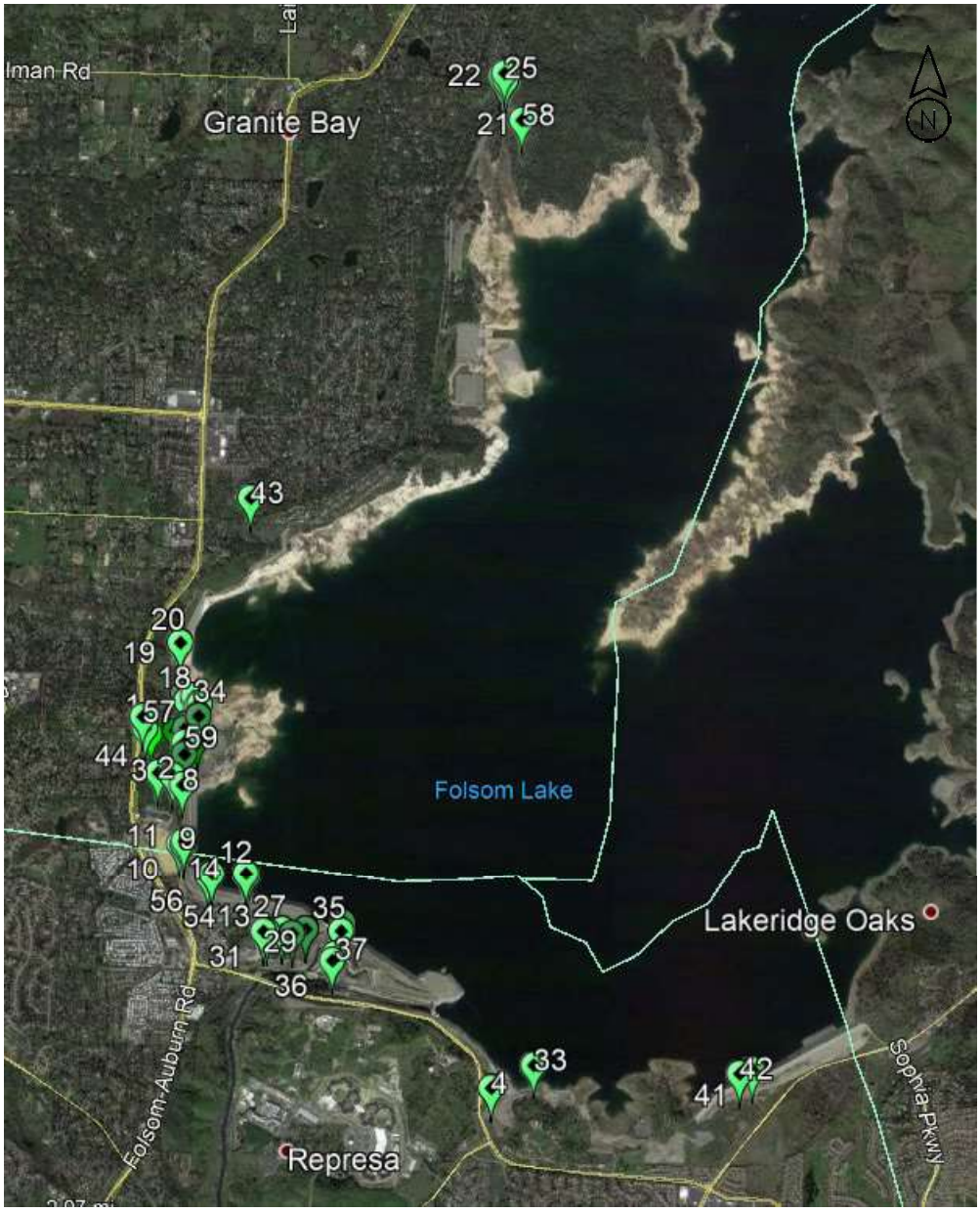


Table 2. Locations and anticipated impacts to existing elderberry shrubs within or near the limits of the proposed project.

Shrub ID	General Location	Latitude	Longitude	Project Impact Anticipated	Work Within 20 ft or 100 ft of Dripline
1	Beals Point	38.719209	-121.174707	Indirect	20 ft
2	Beals Point	38.716153	-121.173462	Indirect	20 ft
3	Beals Point	38.715998	-121.172167	Indirect	20 ft
4	Dike 7	38.695054	-121.142840	Indirect	20 ft
5	RWD	38.719531	-121.171076	Indirect	100 ft
6	RWD	38.719576	-121.171075	Indirect	100 ft
7	RWD	38.719298	-121.171151	Indirect	100 ft
8	RWD	38.715361	-121.171251	Indirect	100 ft
9	RWD	38.711281	-121.171367	Indirect	100 ft
10	RWD	38.711213	-121.171000	Indirect	100 ft
11	RWD	38.711464	-121.170960	Indirect	100 ft
12	RWD	38.709229	-121.165151	Indirect	100 ft
13	RWD	38.709331	-121.165344	Indirect	100 ft
14	RWD	38.709331	-121.165344	Indirect	100 ft
15	RWD	38.720226	-121.170023	Indirect	100 ft
16	RWD	38.720181	-121.169990	Indirect	100 ft
17	Dike 6	38.721244	-121.171136	Indirect	100 ft
18	Dike 6	38.721198	-121.171102	Indirect	100 ft
19	Between Dikes 5 & 6	38.725228	-121.171828	Indirect	20 ft
20	Between Dikes 5 & 6	38.725228	-121.171828	Indirect	20 ft
21	Dike 1	38.764933	-121.144608	Indirect	20 ft
22	Dike 1	38.764933	-121.144620	Indirect	20 ft
23	Dike 1	38.764898	-121.144644	Indirect	20 ft
24	Dike 1	38.765177	-121.145189	Indirect	20 ft
25	Dike 1	38.765431	-121.144757	Indirect	100 ft
26	Right Bank of American River	38.705471	-121.160004	None	>100 ft
27	Right Bank of American River	38.705378	-121.162076	None	>100 ft

Shrub ID	General Location	Latitude	Longitude	Project Impact Anticipated	Work Within 20 ft or 100 ft of Dripline
28	Right Bank of American River	38.705480	-121.159980	None	>100 ft
29	Right Bank of American River	38.705224	-121.163736	None	>100 ft
30	Right Bank of American River	38.705444	-121.159993	None	>100 ft
31	Right Bank of American River	38.705210	-121.163437	None	>100 ft
32	Right Bank of American River	38.705093	-121.161186	None	>100 ft
33	Dike 7	38.696770	-121.139116	Indirect	100 ft
34	Dike 6	38.721540	-121.170496	Indirect	100 ft
35	Main Dam	38.705439	-121.15678	None	>100 ft
36	Auxiliary Spillway	38.703404	-121.157446	None	>100 ft
37	Auxiliary Spillway	38.703815	-121.157275	None	>100 ft
38	Main Dam	38.706013	-121.156643	None	>100 ft
39	Beals Point	38.720993	-121.169918	Indirect	20 ft
40	Beals Point	38.702815	-121.109269	Indirect	20 ft
41	MIAD	38.696900	-121.119646	None	>100 ft
42	MIAD	38.696612	-121.120781	Indirect	100 ft
43	Dike 4	38.735410	-121.166046	Indirect	100 ft
44	Beals Point	38.720562	-121.174224	Indirect	100 ft
45	Beals Point	38.720819	-121.172216	None	100 ft
46	Beals Point	38.720828	-121.172205	None	100 ft
47	Beals Point	38.720827	-121.172170	None	100 ft
48	Beals Point	38.720827	-121.172147	None	100 ft
49	Beals Point	38.720836	-121.172170	None	100 ft
50	Beals Point	38.720845	-121.172135	None	100 ft
51	Beals Point	38.720872	-121.172134	None	100 ft
52	RWD	38.720218	-121.170081	Indirect	100 ft

Shrub ID	General Location	Latitude	Longitude	Project Impact Anticipated	Work Within 20 ft or 100 ft of Dripline
53	RWD	38.720399	-121.170111	Indirect	100 ft
54	RWD	38.709208	-121.168408	Indirect	100 ft
55	RWD	38.708973	-121.168719	Indirect	100 ft
56	RWD	38.709035	-121.168741	Indirect	100 ft
57	Beals Point	38.720001	-121.174976	Indirect	100 ft
58	Dike 1	38.762221	-121.143068	Indirect	100 ft
59	RWD	38.718307	-121.171199	Indirect	100 ft
60	Dike 6	38.721726	-121.171426	Indirect	100 ft
61	RWD	38.717492	-121.171150	Indirect	100 ft

Avoidance and minimization procedures for VELB are clearly outlined in the 2017 Folsom Dam Raise SEIS/SEIR and the 2021 Folsom Dam Raise Modifications Draft SEIS/EIR (in review) and would be followed by the contractor and USACE personnel. These include:

A. Construction personnel would receive USFWS approved worker environmental awareness training to ensure that workers recognize elderberry shrubs and the VELB. The training would include: the protected status of VELBs and their host plants, elderberry shrubs; the need to avoid adversely affecting elderberry shrubs; elderberry shrub avoidance areas (protective buffers/exclusion zones); measures to be taken by workers during construction to protect elderberry shrubs; possible penalties that could be imposed for not complying with requirements established for the protection of elderberry shrubs and the VELB.

B. Where practicable, a minimum setback (buffer) of 100 feet from the dripline of all elderberry shrubs containing stems measuring 1.0 inch or greater in diameter at ground level would be established. There may be instances where a 100-foot buffer is not practicable due to various constraints. In such cases, a buffer of at least 20 feet from the dripline of such elderberry shrubs would be established if feasible. The Corps will consult with USFWS prior to establishing any elderberry shrub buffer zones (setbacks) that extend less than 100 feet from the dripline of a particular shrub. Prior to project construction activities near elderberry shrubs to be preserved, temporary protective barriers would be installed along the limits (boundaries) of approved elderberry shrub buffer zones (exclusion areas). No construction activities or similar disturbances would be allowed within the elderberry shrub buffer zones unless authorized in advance by the Corps and USFWS. In situations where elderberry shrubs to be preserved are located more than 100 feet from the project's limits of construction, protective barriers may not

be installed if existing landscape conditions are such that inadvertent damage to the shrubs during construction is unlikely. The contractor would install signs approximately every 50 feet along the edge of any protective structural barriers. The signs would include the text: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs would be readable from a distance of 20 feet and would be maintained during project construction.

The first purpose of this MFR is to request consultation on activities associated with "B" above for ground disturbing construction activities to take place within 100 ft and construction traffic to drive within 20 feet of the dripline of the elderberry shrubs as listed in Table 2 as long as 1) all of the contractor training and avoidance and minimization measures mentioned in "B" above are followed by USACE and the contractor(s), 2) protective barriers are placed as far from the dripline of elderberry shrubs as practicable, and 3) in cases where elderberry shrubs are immediately adjacent to roadways, protective fencing would be placed up to but not within the dripline of the elderberry shrub.

The second purpose of this MFR is to detail the anticipated oak woodland mitigation as described in the 2021 Folsom Dam Raise Modifications Draft SEIS/EIR (in review). Oak woodland habitat removed for construction is estimated to at approximately 12.3 acres. Mitigated at a 1.2:1 ratio, this equates to approximately 14.8 acres of native oak plantings required for mitigation. This calculation includes trees that have been removed for the construction of Dike 8 (complete) and trees that are anticipated to be removed for clearing staging and construction areas for Dikes 1-6. No tree removal is anticipated for Dike 7, RWD, LWD, Main Dam, or MIAD. The oak plantings at the MIAD West borrow site cover 8.8 acres. Disturbance of the oak plantings would be avoided as much as practicable and any disturbance of those plantings would be mitigated at a 1:1 ratio. Therefore, the total acreage of all oak plantings required for mitigation would be approximately 23.6 acres. These impacts would be mitigated by planting native oaks in the areas designated in Figures 2 through 7 below. The total acreage for all proposed oak planting sites equates to approximately 24.8 acres and would be planted at a density of approximately 170 trees per acre. The contractor responsibilities would include planting, watering, protecting, monitoring, and maintain areas for a minimum of 4 years with a survival goal on average density of at least 25 living native oak trees per acre planted. Beyond the 4-year minimum monitoring, it would be the responsibility of State Parks and the U.S. Bureau of Reclamation to maintain the oak plantings in perpetuity. The additional 1.2 acres beyond the mitigation acreage required accounts for

the fact that a road, trails, and a few existing trees and shrubs are found within the proposed planting sites where trees would not be planted.

Figure 2: Overview of Oak Mitigation Planting Areas 1-10.

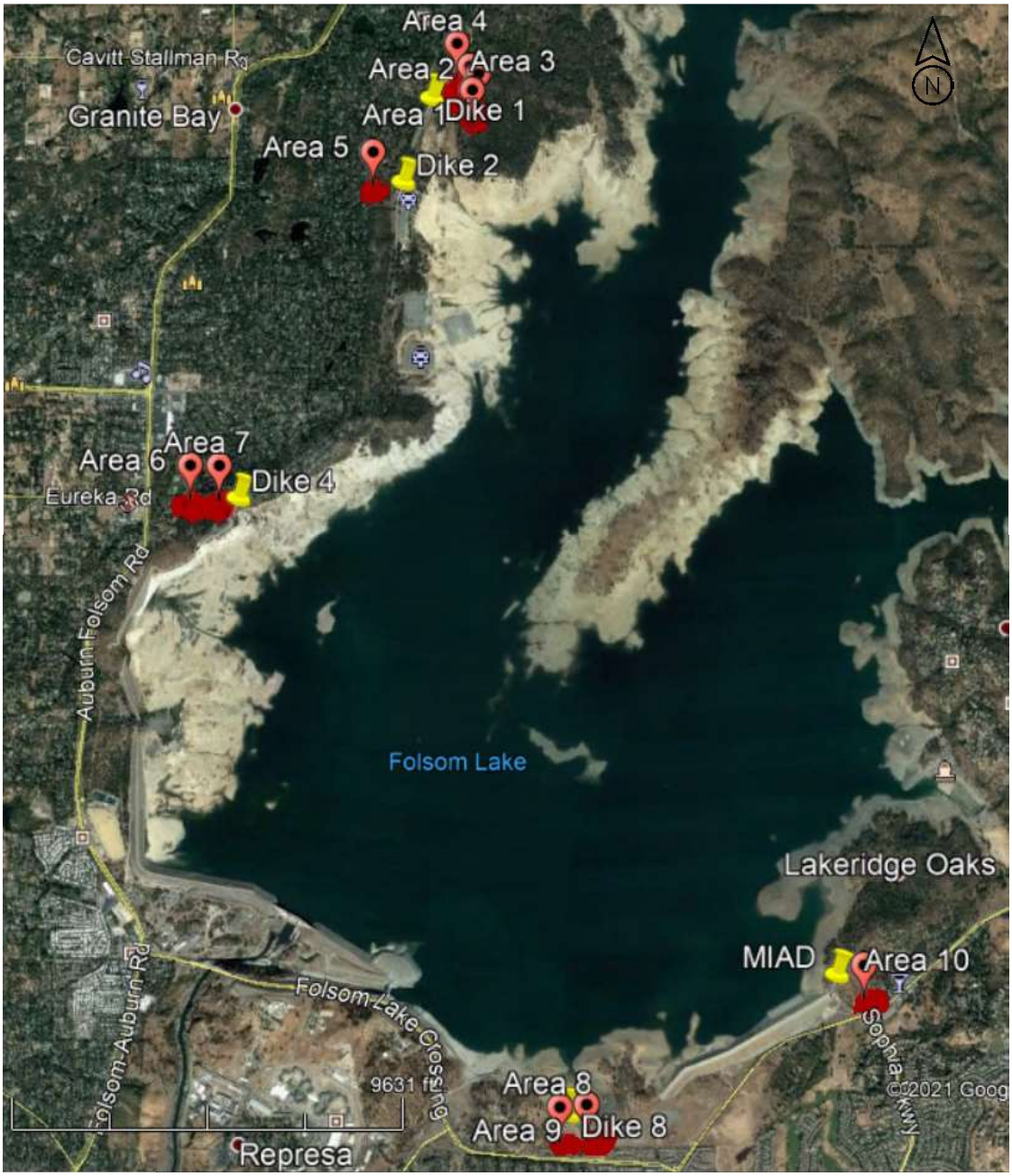


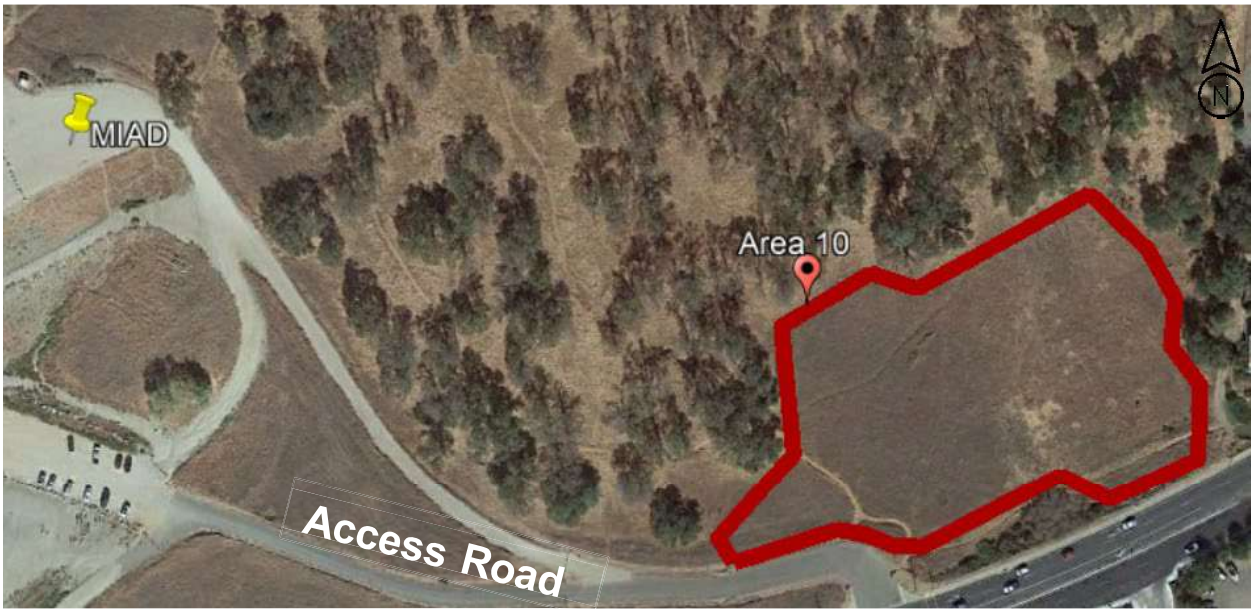
Figure 3. Proposed Oak Tree Planting Mitigation Areas 1 (0.67 acres), 2 (1.24 acres), 3 (0.37 acres), and 4 (5.79 acres).

Figure 4. Proposed Oak Tree Planting Mitigation Area 5 (2.0 acres).

Figure 5. Proposed Oak Tree Planting Mitigation Areas 6 (2.71 acres) & 7 (4.61 acres).

Figure 6. Proposed Oak Tree Planting Mitigation Areas 8 (1.26 acres) & 9 (3.24 acres).

Figure 7. Proposed Oak Tree Planting Mitigation Area 10 (2.93 acres).



CESPK-PDR-A
SUBJECT: Folsom Dam Raise Modifications Project, Oak Tree Mitigation and VELB Determination Concurrence for the Folsom Dam Raise Modifications Project, Folsom, California

Based on the implementation of the avoidance and minimization measures described above for VELB, we request your concurrence with our determination that the proposed Folsom Dam Raise Modifications project may affect, but is not likely to adversely affect, the VELB and its habitat. Thank you for your attention to this matter.

5. **POC:** Kim Watts, 916-557-7770 or Kimberly.J.Watts@usace.army.mil

GRIFFIN.SEABROOK.JOSEPH.1384866723
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Date: 2021.06.02 17:19:08 -07'00'

S. Joe Griffin
Chief, Environmental Resources Branch

Watts, Kimberly J (Kim) CIV USARMY CESPK (USA)

From: Prestera, Wendy J <wendy_prestera@fws.gov>
Sent: Monday, January 24, 2022 3:49 PM
To: Watts, Kimberly J (Kim) CIV USARMY CESPK (USA)
Cc: Hobbs, Jennifer
Subject: [Non-DoD Source] RE: [EXTERNAL] Request for reinitation on the Folsom Dam Raise Project

Good afternoon Kim,

In response to your request dated October 15, 2021, we agree that implementation of buffer zones within 100 feet of the dripline of 61 identified elderberry shrubs does not conflict with the requirements of Conservation Measure 2 within our biological opinion for the Folsom Dam Raise Project (08ESMF00-2017-F-0043, dated October 13, 2016) and does not alter our analysis of the project and its effects on federally listed species as provided in the biological opinion.

Conservation Measure 2 states: "Where practicable, a minimum setback (buffer) of 100 feet from the drip-line of all elderberry shrubs containing stems measuring 1.0 inch or greater in diameter at ground level will be established. There may be instances where a 100-foot buffer is not practicable due to various constraints. In such cases, a buffer of at least 20 feet from the dripline of such elderberry shrubs will be established if feasible. The Corps will consult with the Service prior to establishing any elderberry shrub buffer zones (setbacks) that extend less than 100 feet from the drip-line of a particular shrub. Such buffer zones will not be established without first obtaining approval from the Service."

Since the Service issued the biological opinion and three reinitiations for the Folsom Dam Raise project, the Corps has further defined the project design and identified a total of 75 elderberry shrubs within the action area, including the four discussed in previous reinitiations, which is an increase of 41 shrubs from those initially identified. Per your letter, it is not feasible to establish the 100-foot buffer around 61 shrubs: 14 shrubs with driplines that are within 20 feet of the proposed project footprint and 47 shrubs with driplines between 20 and 100 feet of the footprint. The majority of shrubs occur individually on the landside of the dikes, intermittently dispersed among oaks. In most cases, the protective buffer will be greater than 20 feet from the dripline of the shrub. The shrubs whose driplines are within 20 feet of the project footprint are alongside roads regularly used by the public and State Parks personnel. The roads will be used to transport materials for project activities, but no ground disturbance will occur within 20 feet of driplines. Ground-disturbing activities including road demolition and paving, utility installation, and vegetation removal will occur between 20 and 100 feet from the driplines of 47 shrubs. For all except two elderberry shrubs (to be discussed in a forthcoming communication), no trimming or removal is required. In addition, high-visibility fencing or flagging will be installed along the limits of elderberry buffer zones (CM 3). As such, we agree that the Corps is in compliance with the measure despite use of a reduced buffer for a number of shrubs and that this does not alter our analysis within the biological opinion.

We appreciate your continued coordination with us regarding activities that may affect federally listed species. Please contact me should you have any questions.

Sincerely,
Wendy

Wendy Prestera (she/her)
Military and Waterway Planning Division
Sacramento Fish and Wildlife Office
(916) 414-6675 (desk)

(707) 953-2825 (cell)

In an effort to slow the spread of the coronavirus (COVID-19), staff in the Sacramento Fish and Wildlife Office have implemented an aggressive telework schedule. At this time, we are responding to requests for information via email or phone as often as possible as we do not have the in-office capacity to support regular mail service. We appreciate your understanding.

From: Watts, Kimberly J (Kim) CIV USARMY CESPK (USA) <Kimberly.J.Watts@usace.army.mil>
Sent: Friday, October 15, 2021 2:14 PM
To: Fris, Michael <michael_fris@fws.gov>
Cc: Hobbs, Jennifer <jennifer_hobbs@fws.gov>; Meier, Andrea J CIV USARMY CESPK (USA) <Andrea.J.Meier@usace.army.mil>; Stewart, Chelsea D CIV (USA) <Chelsea.D.Stewart@usace.army.mil>; Campos, Dan CIV USARMY CESPK (USA) <Dan.Campos@usace.army.mil>; Prestera, Wendy J <wendy_prestera@fws.gov>
Subject: [EXTERNAL] Request for reinitation on the Folsom Dam Raise Project

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good Afternoon Mike,

The Corps requests reinitiation under Section 7 of ESA on the Folsom Dam Raise Project. Our formal request letter is attached.

Project features are being designed to safely pass the probable maximum flood, 1/240-year storm events, and reduce flood damage due to wind wake during these flood events. Features include the raising of the Folsom Dam Facilities which include the Left and Right Wing Dams, 8 dikes, and the Mormon Island Auxiliary Dam. Most of the raises are to be raised by construction floodwalls on the waterside crests, Dike 2 will be an earthen raise, and a new Dike 3 will be constructed as the current dike was determined to be unreliable. A mitigation strategy is provided for impacts to oak woodland as a result of construction.

We appreciate your agency's collaborative spirit to date and willingness to discuss our approach to assessing effects and identifying mitigation opportunities during the preparation of this reinitiation request. Thank you.

If you have any questions or concerns, please feel free to contact me.

Kimberly (Watts) Donner
She/her
Environmental Manager
Sacramento District
U.S. Army Corps of Engineers
1325 J Street, Room N65
Sacramento California 95814
Kimberly.J.Watts@usace.army.mil
(916) 557 - 7770 (Desk)

APPENDIX E

PUBLIC INVOLVEMENT

A

Powering forward. Together.

SMUD®

Sent Via E-Mail

December 16,2021

Flood Projects Branch
Department of Water Resources
3310 El Camino Avenue Room 200
Sacramento, CA 95821
Kalia.Schuster@water.ca.gov

Subject: **Folsom Dam Raise Modifications Project / SIR / 2006022091**

Dear Ms. Schuster:

The Sacramento Municipal Utility District (SMUD) appreciates the opportunity to provide comments on the Supplemental Environmental Impact Report (SIR) for the Folsom Dam Raise Modifications Project (Project, SCH 2006022091). SMUD is the primary energy provider for Sacramento County and the proposed Project area. SMUD's vision is to empower our customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve our region. As a Responsible Agency, SMUD aims to ensure that the proposed Project limits the potential for significant environmental effects on SMUD facilities, employees, and customers.

It is our desire that the Project will acknowledge any impacts related to the following:

A-1

- Overhead and or underground transmission and distribution line easements. Please view the following links on smud.org for more information regarding transmission encroachment:
  - https://www.smud.org/en/Business-Solutions-and-Rebates/Design-and-Construction-Services
  - https://www.smud.org/en/Corporate/Do-Business-with-SMUD/Land-Use/Transmission-Right-of-Way
- Utility line routing
- Electrical load needs/requirements
- Energy Efficiency
- Climate Change
- Cumulative impacts related to the need for increased electrical delivery

- The potential need to relocate and or remove any SMUD infrastructure that may be affected in or around the project area
    - All existing SMUD facilities are to remain, and proper clearances shall be maintained around all existing SMUD infrastructure.
    - A PUE may be required for any new construction.

More specifically, SMUD would like to have the following details related to the electrical infrastructure incorporated into the project description:

A-2

- There is an existing 12kV overhead line between Folsom Lake Crossing and Dike 7. This overhead line is to remain.
- There is an existing 12kV overhead line between Green Valley Rd and the Mormon Island Auxiliary Dam. This overhead line is to remain.

A-3 Additionally, please update all references to "Sacramento Metropolitan Utility District" to "Sacramento Municipal Utility District".

SMUD would like to be involved with discussing the above areas of interest as well as discussing any other potential issues. We aim to be partners in the efficient and sustainable delivery of the proposed Project. Please ensure that the information included in this response is conveyed to the Project planners and the appropriate Project proponents.

Environmental leadership is a core value of SMUD, and we look forward to collaborating with you on this Project. Again, we appreciate the opportunity to provide input on this SIR. If you have any questions regarding this letter, please do not hesitate to contact me at 916.732.6676, or by email at rob.ferrera@smud.org.

Sincerely,

Rob Ferrera
Environmental Services Specialist
Sacramento Municipal Utility District
6201 S Street
Sacramento, CA 95817

cc: Entitlements

B

17 December 2021

Kalia Schuster
Central Valley Flood Protection Board
3310 El Camino Avenue, Suite 170
Sacramento, CA 95821
kalia.schuster@water.ca.gov

COMMENTS TO REQUEST FOR REVIEW FOR THE SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT, FOLSOM DAM RAISE MODIFICATIONS PROJECT, SCH#2006022091, EL DORADO, PLACER, AND SACRAMENTO COUNTIES

Pursuant to the State Clearinghouse's 12 November 2021 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Supplemental Environmental Impact Report* for the Folsom Dam Raise Modifications Project, located in El Dorado, Placer, and Sacramento Counties.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has

adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at:https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4709 or Greg.Hendricks@waterboards.ca.gov.

Greg Hendricks
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

December 27, 2021

Kimberly Watts
U.S. Army Corps of Engineers
Sacramento District
1325 J Street, Room 1513
Sacramento, California 95814

Subject: Draft Supplemental Joint Environmental Impact Statement/Environmental Impact Report for the 2007 Folsom Dam Safety and Flood Damage Reduction Project, Sacramento, Placer, and El Dorado Counties, California (EIS No. 20210171)

Dear Kimberly Watts:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineer's Notice of Intent to prepare a Draft Supplemental Joint Environmental Impact Statement/Environmental Impact Report for the 2007 Folsom Dam Safety and Flood Damage Reduction Project. Our review and comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The Draft Supplemental EIS supplements the 2017 Final Supplemental EIS/EIR for the Folsom Dam Raise Project and the 2007 Final EIS/EIR for the Folsom Dam Safety and Flood Damage Reduction Project. The current supplemental document updates the previous environmental and programmatic analyses and is limited in scope to constructing a new Dike 3, modifying concrete and earthen floodwall elements, onsite borrow and disposal at Mormon Island Auxiliary Dam West, rock crushing facilities at MIAD East, and defining a project mitigation plan. The Draft Supplemental EIS evaluates a single action alternative with a goal to "fully disclose design refinements and their associated environmental effects."

The EPA commends the Corps' commitment to provide compensatory mitigation at similar sites within the Folsom Lake State Recreation Area. These areas are designed to partially off-set significant and unavoidable effects of construction activities by adhering to various mitigation ratios, timing limitations, and avoidance measures. We offer the following recommendations for clarifying mitigated air quality emissions, updating baseline water quality data, further mitigation for noise impacts, and consultation regarding biological resources to assist in completing the Final Supplemental EIS.

C-1 **Air Quality**

Tables 3-6 through 3-9 summarize the unmitigated and mitigated estimated project construction emissions for each year of construction work project wide. We understand that both the unmitigated and mitigated emissions presented in these tables are lower than those of the 2017 Final Supplemental EIS/EIR. We also observed that, for multiple years, the mitigated emissions of particulate matter less than 10 microns, particulate matter less than 2.5 microns, and carbon monoxide presented in Tables 3-7 and 3-9 are higher than the associated unmitigated emissions presented in Tables 3-6 and 3-8. The

current Draft Supplemental EIS does not explain this apparent increase in mitigated emissions as compared to unmitigated emissions.

> ***Recommendation:*** For the Final Supplemental EIS, clarify why mitigated project emissions of CO, PM_{10}, and $PM_{2.5}$ are elevated when compared to unmitigated project emissions. If values within Tables 3-6 through 3-9 are incorrect, update the values as necessary.

C-2

Baseline Water Quality

The Draft Supplemental EIS states "that existing conditions are set in 2020 when the NOI was published, and analysis initiated…and so 2014 conditions are no longer an appropriate baseline for analysis," (p. 48). However, in Section 3.3.8.1, water quality data is obtained from datasets as old as 1992, and as recent as 2005 with no rationale as to why more recent historical data has not been used. Additionally, the California Surface Water Ambient Monitoring Program[1] has data, that while limited, was collected as recently as 2019 from Folsom Lake. Upon further review of reservoir storage data for Folsom Lake from the California Data Exchange Center[2], long-term declining trends in storage have been observed since 2000. With such reductions in storage since 2000, Folsom Lake may experience negative effects on lake water quality and ecosystem health[3] that are not captured in the baselines used in Section 3.3.8.1.

> ***Recommendation:*** In the Final Supplemental EIS, address whether the water quality data used for developing baseline water quality conditions for the project represents current conditions; consider conducting a statistical analysis of the original data with more current data to determine if the differences are significant. If baseline conditions utilized for the Draft Supplemental EIS analysis are determined to not be representative of current conditions, update water quality data and include in the Final Supplemental EIS.

C-3

Noise Impacts

The Draft Supplemental EIS indicates several sites have sensitive noise receptors with 2,000 feet of planned construction areas for the proposed action. During daytime hours, residents and recreationists near Dikes 1-7 and MIAD would be exposed to outdoor noise levels that would lead to substantial increases in the ambient background level of 50 A-weighted decibels (dBA) and would be above local noise ordinance standards (p. 127). Typical ambient noise levels in these areas currently range from 40 dBA to 60 dBA (p. 124), and estimated construction noise within the project area may experience maximum increases of up to 72 dBA which have been identified as significant and unavoidable (p. 97). The Draft Supplemental EIS states construction noise would be in accordance with timeframes and requirements of local and county ordinances. We note that construction would also occur on weekends, including Sundays.[4]

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[1] https://data.ca.gov/dataset/surface-water-ambient-monitoring-program

[2] https://cdec.water.ca.gov/

[3] Georgakakos, A., P. Fleming, M. Dettinger, C. Peters-Lidard, Terese (T.C.) Richmond, K. Reckhow, K. White, and D. Yates, 2014: Ch. 3: Water Resources. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 69-112. doi:10.7930/J0G44N6T.

[4] From p. 134 - "Construction noise would be limited in accordance with timeframes and requirements in the City of Folsom, Sacramento County, and Place County Noise Ordinance exemption for construction…Construction noise is exempt from these standards during the periods of 7:00 a.m. to 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on weekends."

Recommendation: Identify in the Final Supplemental EIS how long the occupants of the many residences could expect to be exposed to these high noise levels. Additionally, consider the following additional noise mitigation.

- Identify a noise disturbance coordinator who will be responsible for responding to noise complaints during construction.
- Attempt to notify residents more than two weeks prior to construction noise so residents can have the most time to plan ahead.
- Refrain from noise-generating activities on Sundays and holidays[5].
- Provide additional information for mitigation measure N-6 to impacted residents on efforts they can take to protect their hearing during construction; ensure that the 24-hour hotline for noise complaints in mitigation measure N-8 is included in the written notice for mitigation measure N-6.

C-4

Biological Resources

Section 3.3.3.4 discusses the requirements from the 2016 Biological Opinion and states that consultation with the U.S. Fish and Wildlife Service was reinitiated in 2021 due to changes in Valley Elderberry Longhorn Beetle impacts in the current analysis (p. 88). The Draft Supplemental EIS presents mitigation, monitoring and maintenance measures relative to the 2016 Biological Opinion and other VELB conservation guidelines to ensure the proposed project will not jeopardize the continued existence of species or adversely modify critical habitat. While mitigation, monitoring and maintenance measures are expected to minimize adverse, short-term impacts and long-term impacts, it is unclear if new mitigation, monitoring and maintenance measures in the updated 2021 Biological Opinion will also result in the same outcomes for the VELB.

Recommendation: The EPA recommends that the Corps continue to work with the USFWS to ensure that all mitigation, monitoring and maintenance measures contained in the updated 2021 Biological Opinion are referenced, analyzed, and appended to the Final Supplemental EIS and all future actions proposed under the Folsom Dam Safety and Flood Damage Reduction Project, as appropriate.

The EPA appreciates the opportunity to review this Draft Supplemental EIS. When the Final Supplemental EIS is released for public review, please email one copy to dailey.hannah@epa.gov. If you have any questions, please contact me at (415) 947-4167, or contact Hannah Dailey, the lead reviewer for this project, at 415-972-3832.

Sincerely,

Jean Prijatel
Manager, Environmental Review Branch

cc: Vincent Heim, Central Valley Flood Protection Board
Doug Weinrich, U.S. Fish and Wildlife Service

[5] This mitigation was included in the Corp's Lower Elkhorn Setback Levee Project EIS.

D

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

December 15, 2021

Flood Project Branch
Department of Water Resources
3310 El Camino Avenue Room 200
Sacramento, CA 95821
Email: Kalia.Schuster@water.ca.gov

Public Affairs Office
U.S. Army Corps of Engineers
1325 J Street Room 1513
Sacramento, CA 95814
Email: folsom-dam_Raise@usace.army.mil

Subject: 2021 Draft Supplemental Environmental Impact Statement/Environmental Impact Report for the Folsom Dam Raise Flood Risk Management Project (SAC200500806)

Attention Flood Project Branch and Public Affairs Office:

Thank you for providing the 2021 Draft Supplemental Environmental Impact Statement/Environmental Impact Report (DSEIS/EIR) for the Folsom Dam Raise Flood Risk Management Project to the Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) for consideration. The U.S. Army Corps of Engineers (USACE), Central Valley Flood Protection Board (Board), and Sacramento Area Flood Control Agency (SAFCA) propose to construct improvements to several features along the south and western sides of Folsom Lake, including construction of a new Dike 3, construction of concrete floodwall raises on Dike 1, Dikes 4-7, and the Mormon Island Auxiliary Dam (MIAD), onsite borrow and disposal at MIAD West, rock crushing operations at MIAD East, a project mitigation plan, and smaller scale actions, including but not limited to the replacement of a culvert under an access road north of Dike 1, and modification of the area of potential effects and staging areas for the dikes and dams under construction. These activities will take place in Placer, Sacramento, and El Dorado counties.

Sac Metro Air District staff reviews and provides comments through lead agency planning and environmental processes with the goal of reducing adverse air quality impacts and ensuring compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). In that spirit, Sac Metro Air District staff comments on the DSEIS/EIR follow.

D-1
- Sac Metro Air District recommends the DSEIS/EIR disclose the maximum pounds/day of criteria pollutants estimated for construction activities occurring in each air district, and then comparing the maximum emissions to each air district's thresholds of significance. Currently, tables 3-6 and 3-7 (page 104) include the average pounds/day, which will be much lower than the maximum pounds/day, and the project's total emissions are compared to each air district's thresholds rather than separating the emissions occurring in each air district.

D-2
- Tables 3-7 and 3-9 report mitigated criteria pollutant emissions (pounds/day and tons/year). Intuitively, the mitigated PM10 should not be higher than the unmitigated emissions (pages 104-105). Sac Metro Air District recommends checking the modeling inputs and ensuring full fugitive dust control mitigation is being included in the analysis (approximately 75% control), and that the results are being correctly reported in the tables.

D-3
- Mitigation measure AQ – 7 requires construction contractors to provide updated particulate matter (PM) emissions estimates for the project prior to construction and provide monthly reports to

ensure PM emissions exceeding air district thresholds after implementing all feasible on-site measures are mitigated to less than significant levels using a fee payment. Since the PM emissions are dominated by fugitive dust, not engine exhaust, Sac Metro Air District recommends the USACE, CVFPB and SAFCA provide clear direction to the contractor(s) on modeling tools and methods to estimate both fugitive dust and exhaust emissions from project construction activities (page 112).

D-4

- Table 3-10 presents estimated greenhouse gas (GHG) emissions for the project in Placer and Sacramento counties. Sac Metro Air District recommends including GHG emissions occurring in El Dorado County for full disclosure. Additionally, the table shows the mitigated scenario emissions are higher than the unmitigated scenario emissions in multiple years (page 117). Please check the modeling to determine the inputs are accurate and that the results are being correctly reported in the table.

D-5

- Mitigation measure CC – 1 requires contractors provide monthly estimates of GHG emissions and preparation then implementation of a GHG reduction plan if the project emissions are projected to exceed thresholds. Sac Metro Air District recommends the USACE, CVFPB and SAFCA provide clear direction to the contractor(s) on modeling tools and methods to estimate GHG emissions from project construction activities and require the contractor(s) to estimate GHG emissions prior to starting construction, similar to our recommendation for mitigation measure AQ-7, to determine if a GHG reduction plan would be needed (page 118).

D-6

- Mitigation measure CC – 2 includes the possible purchase of carbon credits if GHG emissions exceed thresholds after on-site mitigation and references a mitigation fee rate of $30,000/ton for Sacramento County (page 118). This fee rate is for criteria pollutant emissions and is not applicable to GHG emissions. Please remove the reference to this fee rate. The cost of carbon credits is determined by the entity/registry facilitating the credit purchase.

D-7

- Appendix C includes the Road Construction Emissions Model emissions summary sheet for each phase and year of construction activity. For full disclosure, Sac Metro Air District recommends Appendix C also include the data entry sheets for the Road Construction Emissions Model. This will ensure persons interested in the modeling can fully understand the assumptions included in the analysis (equipment number and types, hours of use, amount of material being imported/exported, phase lengths, mitigation selection in the model).

All projects are required to comply with Sac Metro Air District rules in effect at the time of construction. A list of the most common rules applicable to construction activities can be found on the Sac Metro Air District's website.[1]

Please contact me at 279-207-1131 or khuss@airquality.org if you have questions on these comments.

Sincerely,

Karen Huss

Karen Huss
Associate Air Quality Planner/Analyst

cc: Paul Philley, AICP, Sac Metro Air District CEQA and Land Use Program Supervisor
Yushuo Chang, Placer County Air Pollution Control District
Rania Serieh, El Dorado County Air Quality Management District

[1] http://www.airquality.org/LandUseTransportation/Documents/RulesAttachment10-2020Final.pdf

E

Watts, Kimberly J (Kim) CIV USARMY CESPK (USA)

From: Individual 1
Sent: Monday, December 27, 2021 1:14 PM
To: Kalia.Schuster@water.ca.gov; Folsom-Dam_Raise
Subject: [Non-DoD Source] Folsom Dam Raise Modification Project

I understand that part of this project is a reconfiguration of the traffic signal at Folsom Lake Crossing and E Natoma. Currently, this signal is a 3 way signal and that the Army Corp of Engineers is working with the City of Folsom to change it to a 4 way signal to tie into the parking lot the Army Corp has east of Folsom Lake Crossing. Can I get specifics on this? What is the timeline and who is paying for this change? What will the parking lot be used for and who will have access to it? Are there plans to turn this parking lot into public access to Folsom Lake? Living near this area, I would be opposed to such a plan and expansion of this signal and parking lot.

Thank you,

Individual 1

F

Watts, Kimberly J (Kim) CIV USARMY CESPK (USA)

From: Individual 2
Sent: Monday, December 20, 2021 7:22 PM
To: Folsom-Dam_Raise
Subject: [Non-DoD Source] Folsom Dam Raise Project, Dike 4 question

The EIR shows a modified trail to bypass dikes 4,5,and 6 during the closure of those dikes due to construction. What is not addressed in the plan is access by the public to the shoreline after the construction is completed. The northern end of Dike 4 for instance has a heavily used trail that heads down to the shoreline. Notably, the park staff has found it necessary to provide a large trash collection unit near to the northern gate due to the amount of traffic; an unusual accommodation.
What are the expected solutions to providing various access points to the lake that accommodate multiple types of users, walking, bicycling, horseback and so forth, and specifically this common area at the northern end of Dike 4?

Regards, Individual 2

Sent from Mail for Windows

G

Comments from Individual 3 during the Folsom Dam Raise Modifications Project Public Meeting on December 2, 2021.

G-1: Many have expressed concern over the concrete walls becoming a target of graffiti. A survey was taken asking if the community preferred walls or strictly earthen dikes. Everyone I've spoken with were opposed to concrete walls. Why are they in the project?

G-2: At the time the work on Dike 7&8 started KCRA3 reported this project would permanently add more capacity to the reservoir. You're indicating this is temporary storage. Please explain the temporary storage capacity in more detail. Then get the correct information to KCRA and other media and have them set the record straight.

G-3: USACE should let the public know about the closure of Dikes 4-6 for construction.

1. INTRODUCTION

This Appendix provides responses to public and agency comments on the Folsom Dam Raise Modifications Project Draft Supplemental Environmental Impact Statement/ Environmental Impact Report (Nov 2021) (Draft SEIS/EIR) received during the public comment period.

2. PUBLIC COMMENT SUMMARY

The Draft SEIS/EIR Notice of Availability was published in the Federal Register and in the Sacramento Bee on November 12, 2021. The Draft SEIS/EIR was filed with USEPA using eNEPA and was made available on the Sacramento District, U.S. Army Corps of Engineers (USACE) website, www.spk.usace.army.mil/Missions/Civil-Works/Folsom-Dam-Raise, and on the Central Valley Flood Protection Board (CVFPB) website, http://cvfpb.ca.gov/public-notices/. Hard copies of the Draft SEIS/EIR were available upon request. The document was circulated for 46 days (November 12, 2021, through December 27, 2021) for review by Federal, State, and Local agencies, organizations, and members of the public.

Following publication of the DSEIS/EIR, a public meeting was held virtually on December 2, 2021, using WebEx software. A virtual meeting was held instead of an in-person meeting due to restrictions on meeting sizes and health concerns during the COVID-19 pandemic. The purpose of the meeting was to update the public on the Proposed Action and to receive comments from the public on the DSEIS/EIR. Attendees were encouraged to use the chat function to ask questions or send comments to the meeting moderator. Following the prepared presentation, meeting attendees were invited to voice comments directly over the phone or through WebEx software. During the meeting, a few questions were asked by the attendees and addressed by the project partners. Formal Comments were submitted through surface mail or electronic mail. All comments received during the public review period were considered and incorporated into the Final SEIS/EIR, as appropriate.

Comments were submitted by one Federal agency, three local/regional agencies, and three private citizens, as follows:

- Federal agency - U.S. Environmental Protection Agency (USEPA)
- Local/regional agencies - Sacramento Municipal Utility District (SMUD); Central Valley Regional Water Quality Control Board; and Sacramento Metropolitan Air Quality Management District
- Private citizens – Two individuals and one couple.

3. COMMENTS

The following pages include all public comments received and the responses to those comments. The comments are annotated to refer to the corresponding responses that follow in Section 4.

4. RESPONSES TO COMMENTS

A. Letter from Sacramento Municipal Utility District (SMUD), dated December 16, 2021

A-1: The requested information is provided in the Draft SEIS/EIR in the following sections: 3.2 (Hydropower), 3.2.10 (Public Utilities and Services), 3.2.14 (Energy), 3.3.4 (Air Quality, including GHG), and 3.3.5 (Climate Change). Cumulative impacts are analyzed in Section 4, specifically sections 4.4.4 (Air Quality) and 4.4.5 (Climate Change). Sections 4.5 (Growth Inducing Effects) and 4.8 (Irreversible and Irretrievable Commitment of Resources) also discuss energy resources. Public utilities were not analyzed in detail in this SEIS/EIR because impacts remain as described in the 2017 Folsom Dam Raise Project EIS/EIR. A PUE will be obtained for any new construction, if needed. No changes to the Final SEIS/EIR are necessary.

A-2: The overhead powerlines at Folsom Lake Crossing and Dike 7 and at Green Valley Road and Mormon Island Auxiliary Dam are to remain in place because the facilities in question would not be modified by construction of the Project, these features have not been addressed in the project description. Instead, they are identified in Section 3.2.10, "Public Utilities and Services." This section has been revised to include the following text: "In particular, the 12kV overhead lines between Folsom Lake Crossing and Dike 7 and Green Valley Road and MIAD are to remain in place. There is a drop-down power pole that services a Reclamation facility that will be moved due to construction at Dike 7, but this impact is negligible."

A-3: Edits were made to the Final SEIS/EIR as recommended.

B. Letter from the Central Valley Regional Water Quality Control Board (CVRWQCB) dated December 17, 2021.

We acknowledge and thank the CVRWQCB for providing detailed guidance on surface and groundwaters of the state. Section 3.3.8 of the Draft and Final SEIS/EIR discuss potential effects on surface and groundwater. No change to the SEIS/EIR is necessary.

C. Letter from the U.S. Environmental Protection Agency, Region IX, dated December 27, 2021.

C-1: USACE has reviewed air emissions calculations and updated Tables 3-6 through 3-9. As a result of this reevaluation, it was shown that the unmitigated air emissions are greater than the mitigated air emissions. For Tables 3-8 and 3-9, the SO_x emissions remain the same under mitigated conditions due to the advancements in engine emission reduction technologies, thus reductions due to mitigation are too small to be noted within 2 decimal places. These changes do not alter the conclusions related to air quality.

C-2: The California Surface Water Ambient Monitoring Program has water quality data from 2013 to 2019. Section 3.3.8.1 has been updated to include these data. The updated

information does not change the baseline existing conditions or the significance determination for water quality.

C-3: Language has been added to Noise, Section 3.3.7, directing readers to Table ES-2 which provides the anticipated construction schedule. USACE will require that the construction contractor provide a coordinator for noise disturbance complaints as part of setting up the 24-hour telephone hotline, as stipulated in mitigation measure N-8. In accordance with Mitigation Measure N-6, USACE will require that the contractor provide written notice to residents at least 2 weeks in advance of any given project phase. Work will take place during weekdays, as feasible. Contractors must request USACE approval and must work with local agencies to meet local noise restrictions and any required permitting (N-1). Residences around the perimeter of Folsom Lake are located far enough away from construction areas to attenuate construction-related noise to below thresholds of significance due to trees and geographic features therefore, additional measures that residents could take to protect hearing are not necessary. Text has been added to Mitigation Measure N-6 to clarify that the notice to residents shall include the complaint hotline number, as specified by Mitigation Measure N-8.

C-4: In a letter, dated October 15, 2021, USACE requested to reinitiate Section 7 ESA consultation, for project effects on the valley elderberry longhorn beetle. USFWS responded to our request in an email, dated January 24, 2022, advising us that the Project remains in compliance with Conservation Measure 2 in the biological opinion (08ESMF00-2017-F-0043, dated October 13, 2016). The reduced buffer proposed by USACE for specific shrubs does not alter the analysis in the 2016 biological opinion or the incidental take statement provided with the biological opinion. This correspondence is provided in Appendix D of the Final SEIS/EIR.

D. Letter from the Sacramento Metropolitan Air Quality Management District (SMAQMD) dated December 15, 2021.

D-1: The Final SEIS/EIR provides updated air quality emissions in Tables 3-6 and 3-7. The tables have been edited to include the maximum pounds/day as recommended.

D-2: The Final SEIS/EIR includes updated air quality emissions in Tables 3-7 and 3-9. The unmitigated and mitigated PM_{10} discrepancy has been addressed following review of the model inputs.

D-3: The recommendations for USACE to provide direction to the contractor on PM modeling tools and methods has been incorporated into the construction specifications.

D-4: The Final SEIS/EIR includes updated greenhouse gas emissions in Table 3-10. The unmitigated and mitigated emissions discrepancy has been fixed after reviewing and fixing the model inputs as needed.

D-5: The recommendations for USACE to provide direction to the contractor on GHG modeling tools and methods has been incorporated into the construction specifications.

D-6: The GHG emissions fee rate has been edited to reflect that the cost of carbon credits is determined by the entity/registry facilitating the credit purchase. This is now reflected in the SEIS/EIR, as recommended.

D-7: Appendix C of the Final SEIS/EIR includes data entry sheets for the emissions model as recommended.

E. Comment from Individual 1 dated December 27, 2021.

E-1: Reconfiguration of this traffic signal is not part of the Project. USACE is not proposing to make any changes to this traffic signal. USACE is not proposing to turn the Dike 7 parking lot into a public access for Folsom Lake. Additionally, construction traffic will not be using this gate for access for the project. The parking area will be used for construction but will be accessed via the operations & maintenance road along the lake shore from Folsom Point Road.

F. Comment from Individual 2 dated December 20, 2021.

F-1: The impacts to designated State Parks trails would end when construction activities are complete. The existing designated State Parks trails that are impacted by the Folsom Dam Raise Project construction will be restored to preconstruction conditions, including placement of trash cans similar to current conditions.

G. Comments from Individual 3 dated December 2, 2021.

G-1: We are aware of the public's concern about concrete walls becoming a target of graffiti and took this into account during the design phase. Although we considered earthen dikes, concrete walls are necessary for cost-efficiency reasons. To mitigate the risk of graffiti, our contractor will apply an anti-graffiti coating shortly after the concrete cures, per Mitigation Measure AV-1 (Section 3.3.6.5 of the Draft and Final SEIS/EIR).

G-2: The Folsom Dam Raise Project will permanently increase the flood storage capacity of the reservoir. This increased capacity will be used to temporarily store water in the reservoir during significant flood events. The additional temporary storage capacity will allow dam operators to release water from the spillway more gradually, which helps keep the water within its intended channel downstream of the dam. This also reduces pressure on downstream levees and overall flood risk to the Sacramento area. This is described in Section 1.4 of the Draft and Final SEIS/EIR.

G-3: In accordance with the SEIS/EIR, Mitigation Measure R-1, found in Section 3.3.1.5 and Appendix A, we are notifying the public of closures and construction impacts related to the Folsom Dam Raise Project. These notifications are announced via our website, social

media pages, and press releases to local media. To get the most up-to-date information, bookmark the project webpage and follow us on social media at the links below.

Project webpage: https://www.spk.usace.army.mil/Missions/Civil-Works/Folsom-Dam-Raise/
Facebook: https://www.facebook.com/sacramentodistrict
Twitter: www.twitter.com/USACESacramento

5. Revisions to the Draft Supplemental Environmental Impact Statement/Environmental Impact Report

This appendix presents corrections and revisions made to the Draft Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR). This appendix does not identify administrative changes to the SEIS/EIR text which do not affect the analysis contained in the SEIS/EIR; for example, updates to the public review process. New text is indicated with an underline and text to be deleted is indicated by a ~~strike through~~. Text changes are presented in the page order in which they appear in the SEIS/EIR.

The changes identified below are clarification, amplifications, and updates of the information and analysis contained in the SEIS/EIR. None of the changes identified below results in a significant impact that was not already identified in the SEIS/EIR. Furthermore, none of the impacts identified in the SEIS/EIR were found to be substantially more severe as the result of the following changes. For these reasons, recirculation of the Draft SEIS/EIR is not warranted.

TITLE

The document title has been updated to appropriately incorporate the Project authority as follows:

American River Watershed, California Folsom Dam Raise ~~Modifications~~ Project: Updated Designs Final ~~Draft~~ Supplemental Environmental Statement/Environmental Impact Report

EXECUTIVE SUMMARY

Figure ES-1 has been added to the project area description.

The following language, under ES.4.1 Alternative 1 – No Action Alternative, has been deleted:

~~Under Alternative 1, no action, the USACE would not implement any of the following actions: 1) construction of a new Dike 3, 2) construction of Dike 1, Dikes 4-7, and MIAD as 3.5-foot concrete floodwall raises, 3) onsite borrow and disposal at MIAD West, 4) rock crushing operations at MIAD East, nor 5) disclose a comprehensive mitigation plan for the Folsom Dam Raise Modifications Project.~~

Table ES-2 is updated with the most recent anticipated construction schedule.

Project Activity	Starting Year	Ending Year	Duration
Main Dam & LRWD ~~Tainter Gates & related structural refinements~~	2022	2025	4 years
~~LWD, RWD, MIAD, and~~ Dikes ~~1, 4, 5 & 6~~ 1 - 6 – ~~concrete floodwall raises~~	~~2022~~ 2023	~~2024~~ 2025	2 years
MIAD	2023	2024	1 year
Dike 7 ~~Dikes 2 & 7 – earthen embankment raise~~ ~~New Dike 3 – earthen embankment~~	~~2022~~ 2023	2024	~~2 years~~ 1 year
Rock Crushing Operations	2022	2023	1 year

The first paragraph under Project Mitigation Plan has been edited to include the following:

At this time, the only expected impacts to waters of the US are to a seasonal wetland and perennial stream ~~an intermittent drainage~~ through the replacement of the culvert under Old County Road north of Dike 1 and a temporary haul route at the toe of Dike 1 that will be below the ordinary high-water mark (OHWM) of Folsom Lake.

CHAPTER 2.0 – ALTERNATIVES

Section 2.1.2.3 Hauling MIAD East Riprap Stockpile Offsite is revised as follows:

~~An agreement was made between the Bureau of Reclamation and USACE~~ The 2017 SEIS/EIR stipulated that the riprap stockpile at MIAD East would either be used as material for the Folsom Dam Raise or would be hauled off-site at the completion of the Folsom Dam Raise (2017 SEIS/EIR, page 25). Since the material is useable for the ~~Folsom Dam Raise Modifications~~ Project if processed, it was deemed more economical to use the existing material than to import new material and haul the riprap stockpile offsite.

The following language, under 2.2 Alternative 1: No Action Alternative, has been deleted:

~~Under the No Action Alternative, the Federal government would not implement the construction of a new Dike 3, the concrete floodwall raises of Dikes 1, 4-7 and MIAD, onsite borrow and disposal at MIAD West, rock crushing operations at MIAD East, nor a project mitigation plan.~~

Section 2.3.2 Modified Concrete Floodwall Elements is revised as follows:

Dike 2 is to remain an earthen raise (Figure 2-3) and the RWD and LWD will remain concrete floodwall raises of 3.5 feet (Figure 2-4) as described in the 2017 SEIS/EIR. However, differing from the 2017 SEIS/EIR, the current design will provide flood risk management for Dike 1, Dikes 4-7 (Figure 2-5 and Figure 2-6), and MIAD (Figure 2-7) to elevation 486.34 feet (a 3.5-foot raise) by constructing a concrete floodwall along the upstream (water) side of the crest. ~~The upstream and downstream fill slopes will match the existing respective fill slopes. The fill placed~~

~~on the crest would only be placed on the existing crest (i.e., does not continue down the slope on the water or land side).~~ The crest widths vary based on the existing crest widths and the space available after the concrete wall is placed. Additionally, the concrete floodwall designs vary at each site to account for differences in loading projected for flooding events at each site.

Figure 2-4 is updated with the most recent designs for the Left- and Right-Wing Dams.

Figure 2-5 is updated with the most recent design for Dikes 1, 4, 5, and 6.

Figure 2-6 is updated with the most recent design for Dike 7.

Figure 2-7 is updated with the most recent design for Mormon Island Auxiliary Dam.

Figure 2-9 is updated with the revised area of potential effects for the riprap processing area.

Section 2.3.5 Project Mitigation Plan is revised as follows:

One of the purposes of this Final SEIS/EIR is to define the anticipated mitigation requirements. Offsite mitigation will most likely be used for any impacted wetlands and elderberry shrubs (which provide habitat for the endangered Valley Elderberry Longhorn Beetle or VELB) as those impacts are expected to be minor. Any impacted elderberry shrub will be transplanted to a commercial mitigation bank within the service area as per U.S. Fish and Wildlife Service (USFWS) guidance~~. However, none of the elderberry shrubs within the project boundaries are expected to require transplantation at this time.~~ One elderberry shrub will be directly impact by construction at Dike 1 and will be transplanted per the 2016 Biological Opinion issued by USFWS (Appendix D of the 2017 SEIS/EIR). Impacts to wetlands will be mitigated by payments to commercial mitigation banks in the service area or USACE's Regulatory in-lieu fee program, in coordination with USFWS. At this time, the only expected wetland impact is the haul route at the toe of Dike 1 on the water side below the OHWM and the replacement of the culvert under Old Country Road north of Dike 1 which has a seasonal wetland and perennial stream running through it ~~is the replacement of the culvert under Old Country Road north of Dike 1 and the haul route at the toe of Dike 1 on the water side.~~

Trees removed for construction are estimated to require planting approximately ~~23.6~~ 19.6 acres oak woodland habitat for mitigation. This includes trees that have been removed for the construction of Dike 8, trees that are anticipated to be removed for clearing material stockpile and staging areas and the construction of Dikes 1-7, RWD, LWD, and MIAD, and any oak plantings disturbed at the MIAD West borrow site. These impacts will be mitigated by planting native oaks at approximately 10 separate locations within the Folsom Lake State Recreation Area (FLSRA) (figures are available in Section 3.3.2). ~~The acreage for all proposed oak planting sites equates to 23.6 acres plus an additional 1.2 acres (to account for the fact that a road, trails, and a few existing trees and shrubs are found within the proposed planting sites where trees would not be planted) for total of approximately 24.8 acres of oak tree plantings.~~ If any additional acreage for oak plantings is needed beyond the on-site locations mentioned, either additional onsite

planting areas will be identified, or credits will be purchased from a mitigation bank within the service area.

The second paragraph of the Dike 1 and Dikes 4-7 Concrete Floodwall Construction, under Section 2.3.6, is revised as follows:

Downstream side of the levee embankment and the crests of Dikes 1, 4, 5, 6, and 7 will be raised with embankment fill to elevation 483.3 feet. Upstream of the concrete floodwalls, the ~~upstream~~ slopes of the existing dikes will be excavated to elevation 480.0 feet in order to accommodate the large riprap (D50 of 20 inches) and a riprap layer thickness of 40 inches ~~to accommodate a larger size of new riprap~~. The upstream slopes will be reconstructed with a 2~~4~~-foot bench at elevation 483.4~~3~~ feet~~, with a 2 horizontal:1 vertical (2H:1V) side slope~~ and a varying slope. The upstream slope varies to maintain the 2-foot bench width. The foundation subgrade under the floodwalls will be proof-rolled, and then covered with a 11 ~~10~~-inch-thick Controlled Low-Strength Material (CLSM) lean concrete pad, which has ~~two~~ three functions: 1) To cover the sand bedding in the existing embankment, so that new bedding will not be needed under the new riprap; 2) to provide a firm uniform base for the new floodwall; and 3) to protect the existing embankment subgrade from desiccation, saturation, and disturbance during construction. The top of the CLSM will be treated as a construction joint prior to wall placement. ~~In addition, it is proposed that a control crack in the lean concrete under the upstream heel of the floodwall be used so that wall loads are not transmitted to the existing sand bedding, which is believed to be not as firm as the existing dike fill.~~

The second to last paragraph under the same section is revised to:

The new concrete floodwalls will be keyed into the dike abutments. The upstream side of the abutment wall will be backfilled with clayey embankment fill as these are critical potential seepage locations ~~and protected with new riprap and two layers of beddings~~. The ends of the floodwall will be formed against the excavation face. The crest access roads at each abutment will be transitioned into existing roadways.

The second paragraph of New Dike 3 Construction, under Section 2.3.6, is revised as follows:

The new Dike 3 will be about ~~150~~ 75 feet longer than the existing dike, extending about 1525 feet further into the right abutment and about ~~135~~ 50 feet further into the left abutment. The nominal crest of the new Dike 3 will be at elevation ~~487.3~~ 486.4 feet. Above the nominal new crest elevation, aggregate base course will be placed on the crest as the surface material. The width of the new crest (i.e., top of road surface) will be 16 feet along the entire length of the dike crest. The crest of the new dike will have a 2 percent cross slope in the upstream direction for surface drainage. Based on available geotechnical data, it is expected that excavation will extend 2 to 3 ~~a few~~ feet below ground surface to remove surficial soils and highly decomposed rock and to provide a suitable foundation on which to place new compacted embankment fill.

The last sentence of that section is deleted.

~~The crest of the raised dike would have a 1 percent cross-slope in the upstream direction for surface drainage.~~

The second paragraph of RWD, LWS, Spur Dike, and Folsom Lake Crossing Concrete Floodwall Construction, under Section 2.3.6, is revised as follows:

A concrete floodwall will be constructed at the Spur Dike extending from the end of the LWD concrete floodwall to the Auxiliary Spillway Control Structure, approximately ~~310~~ 470 feet long. The top elevation of the Spur Dike concrete floodwall will be 486.34 feet. The portion of the Spur Dike along the alignment of the concrete floodwall will be excavated to construct the floodwall foundation and then restored to existing grade. The height of the Spur Dike concrete floodwall will range from approximately 2.5 to 3.5 feet. A ~~50~~ 35 to ~~50~~ 100-foot-wide earthen access ramp will be constructed across the concrete floodwall alignment to provide Reclamation access to the Spur Dike and overlook areas. The structural concrete floodwall will be continuous through the proposed ramp.

The last paragraph of Rock Crushing Operations at MIAD East, under Section 2.3.6, is revised as follows:

The 2017 SEIS/EIR stipulated that most of the stockpiled riprap will be used for the ~~Proposed~~ Project as necessary to accomplish raising the dikes, dams, and MIAD. Any riprap remaining afterward will be removed and disposed ~~off-site~~ by the end of the final phase of the ~~overall Folsom Dam Raise~~ Project. The Preferred Alternative ~~proposed plan~~ is to conduct rock ~~crushing~~ processing operations ~~at MIAD East~~, which will allow for the ~~crushed~~ material to be used for various portions of the ~~Folsom Dam Raise Modifications~~ Project. Water pumped from Folsom Lake may be required to wash the processed rock.

The first paragraph of Pumping Water from Folsom Lake for Construction, under Section 2.3.6, is revised to the following:

Water will be pumped from Folsom Lake for construction at various locations. The construction may require alternate pumping sites. In this event, sites for water pumping will not conflict with recreation or other resources and be approved by USACE and Reclamation. ~~One~~ Two pumping sites are identified between Dikes 1 & 3 (Figure 2-10) will serve the construction needs for Dikes 1, 2, and 3. Another two pumping sites are located at the south end of Dike 5 (Figure 2-11). Pumping sites will also be located at the water side ~~toes~~ of the RWD, LWD, and MIAD. Precautions associated with pumping water from Folsom Lake are detailed in Table 2-4 in Appendix A and Section 3.2.4.

Figures 2-10 and 2-11 are updated to indicate the locations of water pumping sites at Dikes 1 through 6.

The first paragraph of Access and Haul Routes, under Section 2.3.6, is revised as follows:

The haul routes external to FLSRA ~~remain the same as~~ are similar to those described in the 2017 SEIS/EIR (Figure 2-12). A few streets were added to allow for delivery of material from MIAD East and West to Dikes 1-6. Construction worker access during peak summer season is also included from Twin Rocks Road to Park Road, north of Dike 1. No large equipment or trucks will use this access. Construction access for light vehicles and smaller construction equipment to Dikes 1, 2, and 3 will enter from the north from Twin Rocks Road and use the dirt Old Country Road which connects to Park Road (see Figure 2-13 below). Old Country Road will need to be improved to accommodate construction vehicles and equipment. A culvert, which a seasonal wetland and perennial stream ~~drainage~~ runs through, will require replacement near Twin Rocks Road. Park Road will be used as the main access road to various locations along Dikes 1, 2, and 3.

Figure 2-12 is updated to include the revised haul routes for the Project.

The fourth paragraph of Access and Haul Routes is revised to the following:

There will be two construction access points for work on the LRWD (Figure 2-16 below). One access point will be off Folsom-Auburn Road at Folsom Dam Road. The construction access/haul route from this access point will follow some established roads within Reclamation's facilities. An access through a maintenance yard will be constructed to allow construction traffic access without disrupting the flow of traffic for Folsom Dam operations. The second access point will be off Folsom Lake Crossing through ~~at or near the existing Gate 1 construction access~~ the Auxiliary Spillway gate. The construction access/haul route from this access point will follow an existing haul road and passing over the control structure of the Auxiliary Spillway. During construction work on LWD and RWD, one lane of the existing road that runs from the LWD to the RWD (e.g., Folsom Dam Road) will be open to ~~other~~ all traffic allowable in that area.

The first paragraph of Staging Areas, under Section 2.3.6, is revised to the following:

~~The Main Dam would utilize a lane on top of the dam and a small staging area on the eastern side of the dam on the water side and would occupy roughly 1 acre (Figure 2-17).~~ Three construction staging areas will be utilized during the construction of the RWD and LWD floodwalls and Main Dam (Figure 2-~~18~~ 17). One staging area will be located along the southern leg of the RWD on its landward side (south side). This staging area will occupy a disturbed area within Reclamation's ~~CCAO~~ facilities and will occupy roughly 1.4 acres. The second construction staging area will be in the Overlook Area and will occupy roughly 3 acres. The third staging area will be located along the southern leg of the LWD on its landward side (south side) and will occupy roughly 12.3 acres. Two parking areas will be used by construction personnel. One area is on Reclamation CCAO facilities, just east of Folsom-Auburn Road and encompassing approximately 0.4 acres. The second parking area (approximately 0.75 acres) is adjacent to Folsom Lake Crossing and the access route to the Auxiliary Spillway and LWD.

Figure 2-17, Main Dam staging areas, from the Draft was removed and the subsequent figures are renumbered in the Final.

Figure 2-18, in the Draft, is now 2/17 and has been updated to show the revised staging areas and parking areas.

The second to last paragraph of Staging Areas, under Section 2.3.6, now includes the following:

The crest of MIAD may also be used for staging during MIAD construction.

Construction Workers and Schedule, under Section 2.3.6, is revised to the following:

The number of private construction employees present onsite each day will vary with scheduled construction activities. Up to 60 workers can be expected onsite any one day for the Tainter gate refinements work. Up to 50 workers can be expected onsite any one day for each portion of the earthen raise and concrete floodwall elements of the preferred alternative. The construction work schedule will consist of ~~10~~ 11-hour days over 5 ~~6~~ days per week throughout the entire year. Twenty-four-hour shift schedules and weekends may be requested ~~when the construction schedule cannot be met in any other way~~ at various stages of construction to meet construction schedule. However, the double-shift schedule will be temporary and short-term and the effects to wildlife and aesthetic/visual resources due to nighttime lighting will be minimized by implementing Mitigation Measure VW-13 in Table 2-4. Table ES-2 in the Executive Summary indicates the estimated schedule for the overall Project.

Table 2-3 also includes edits to the Preferred Alternative's environmental effects and mitigation that are included in other part of the document.

CHAPTER 3.0 – AFFTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

Section 3.2.7 Agriculture and Forestry Resources is revised to the following:

There is no farmland ~~or forestry land~~ within the Project area. Therefore, there will be no adverse effects on agricultural ~~and forestry~~ resources. Forestry resource, as defined under CEQA, is covered under Section 3.3.2 Vegetation and Wildlife.

Section 3.2.10 Public Utilities and Services is revised to the following:

See Section 3.2.11 in the 2017 SEIS/EIR. At the current level of design, construction will not access or realign the existing potable water supply, sanitary sewerage, or storm sewer systems. Existing haul routes will be used by construction vehicles to avoid overloading public roadways and causing delays to public services. In particular, the 12kV overhead lines between Folsom Lake Crossing and Dike 7 and Green Valley Road and MIAD are to remain in place. There is a drop-down power pole that services a Reclamation facility that will be moved due to construction at Dike 7, but this impact is negligible. If for any reason utilities would require a disruption in service, residents and businesses within the potentially affected area would be given notice of the anticipated time and duration of the disruption before starting construction.

Therefore, the effects on public utilities or services as a result of Project construction will be less than significant.

Section 3.2.13 Traffic and Circulation is revised to the following:

The impacts of the ~~Folsom Dam Raise~~ Project on traffic and circulation were analyzed in the 2017 SEIS/EIR, Section 3.9. External haul routes ~~remain unchanged~~ have been revised and the number of haul trucks and other construction equipment on surrounding public roadways will be reduced due to floodwall construction requiring fewer materials than earthen raises of dikes and dams as described in the 2017 SEIS/EIR. While the impacts will be temporary, ~~they would be~~ significant and unavoidable. The impacts of the selected alternative (Alternative 2) for this Final SEIS/EIR are anticipated to be similar to or less than those analyzed in the 2017 SEIS/EIR and therefore further analysis is not required.

The following revisions are included under Granite Bay in Section 3.3.1.4.

The existing public access to the northern half of the Granite Bay Recreation Area and the North Granite Area (Beeks Bight, Dotons Point, Oak Beach and Point) is via Park Road, a paved, two-lane road that runs parallel to Dikes 2 and 3 but runs along the crest of Dike 1. The portion of Park Road that runs along the crest of Dike 1 will be reduced to a signalized one-way one lane road for approximately 2 years during construction of Dikes 1 and 2 and construction of the new Dike 3. A ~~temporary detour~~ permanent relocation of the road will be built to serve as the entry to the Granite Bay Main Beach parking lot prior to closing the existing entry road for Project construction purposes (Figure 3-2 below). Temporary signs will be installed on Park Road and the relocated ~~detour~~ road to guide people to the ~~detour~~ relocated road. ~~At the conclusion of construction, the detour would be removed, and the area restored to pre-project conditions (see Mitigation Measures R-2 and R-4 in Table 2-4 in Appendix A).~~

In the same section, the following paragraph is removed as this detour is no longer needed.

~~The existing access road for the Granite Bay Activity Center runs along a portion of the crest of Dike 3 before turning eastward toward the Activity Center. Constructing a new Dike 3 and the south end of Dike 2 would temporarily close a portion of the Activity Center access road. However, a temporary detour road would be built prior to construction activities that force road closure. This detour road, shown in Figure 3-3 below, would extend from the south end of the Granite Bay Main Beach parking lot to the segment of the Activity Center access road that would not be disturbed (portion east of the south end of the detour). To reach the Activity Center, users would have to drive through the Main Beach parking lot to the subject detour road. Temporary signs would be installed at appropriate locations to help guide traffic to the temporary detour road/access route. Upon completion of raising Dike 2 and the new Dike 3, the detour road would be removed and restored to pre-project conditions (see Mitigation Measure R-2 and R-4 in Table 2-4 in Appendix A).~~

Figure 3-3, as reported in the Draft, has been deleted and the subsequent figures have been renumbered.

Figure 3-4 has been updated to indicate the extents of the detour trail for Dikes 4 through 6.

The second to last paragraph of Water of the United States under Section 3.3.2.1 includes the following edits:

More recently, USACE ~~is~~ performed ~~performing~~ a wetland delineation on both sides of Old Country Road near Twin Rocks Road for a culvert that will be replaced to ensure adequate access to the construction sites from Twin Rocks Road. The area around the culvert replacement is a seasonal wetland and perennial stream.

Table 3-1 is edited to indicate the updated oak woodland habitat impacts.

The second to last paragraph of Section 3.3.2.4 includes the following edits:

~~While the project could have temporary direct impacts to Folsom Lake, such impacts would be less than significant and BMPs (mitigation measures) discussed in Section 3.11.5 (Water Quality) would help avoid and minimize temporary impacts.~~ Impacts to wetlands and WOUS are discussed in more detail in Section 3.3.8, below.

Mitigation measure VW-6, from the 2017 SEIS/EIR, has been removed as it is repetitive of Section 3.3.3. The mitigation measures have not been renumbered to maintain continuity.

The first paragraph of the Project Mitigation Plan includes edits to the mitigation acreage.

The Project Mitigation Plan includes the following edits to the first few paragraphs:

Approximately ~~12.3~~ 9 acres of oak woodland will be eliminated due to construction and will be compensated for at a mitigation ratio of 1.2:1 as stipulated in Appendix B of the 2017 SEIS/EIR. In other words, for every acre impacted, 1.2 acres will be restored or created. That equates to approximately ~~14.8~~ 10.8 acres of compensatory oak plantings required for mitigation. Additionally, approximately 8.8 acres of oak plantings at MIAD West will be eliminated due to borrow and disposal operations there. Since all of the plantings at MIAD West are less than 1 inch in diameter, the mitigation ratio will be 1:1. The sum total of mitigation for the oak woodland habitat eliminated by construction and the oak plantings eliminated at MIAD West will be approximately ~~23.6~~ 19.6 acres. The ~~total acreage for all~~ proposed oak planting sites ~~equates to approximately 24.8 acres and~~ will be planted at a density of approximately 170 trees per acre. USACE ~~The contractor~~ responsibilities will include planting, watering, protecting, monitoring, and maintain areas for up to 5 years with an average density survival goal of at least 25 living native oak trees per acre planted. ~~The additional 1.2 acres beyond the mitigation acreage required accounts for the fact that a road, trails, and a few existing trees and shrubs are found within the proposed planting sites where trees would not be planted.~~

USACE has coordinated with Reclamation, State Parks, USFWS, DWR, and SAFCA to identify ~~10~~ 7 proposed oak planting mitigation sites within the FLSRA (Figures 3-5 ~~6~~ for an

overview and Figures 3-6 ~~7~~ to 3-10 ~~11~~ for individual sites). As a rule, planting areas that overlap with areas that will be disturbed for construction, such as staging areas, will be planted post-construction. Planting areas that will not interfere with construction will be planted as soon as possible.

The oak planting areas include four sites (Areas 1-4) near the northeast end of Dike 1. Areas 1-3 could be planted during construction and Area 4 will be planted post-construction (Figure 3-6 ~~7~~ below). Area 5 is northwest of Dike 2 and could be planted during construction (Figure 3-7 ~~8~~ below). Areas 6 and 7 are located ~~northwest of Dike 4~~ on the South side of the Lake near MIAD ~~(Figure 3-9 below)~~. Area 6 will be planted ~~during construction~~ after borrow and disposal operations are complete at MIAD West (Figure 3-8). Area 7 could be planted during post-construction (Figure 3-9). ~~Area 8 (Figure 3-10 below) is south of Dike 8 and could be planted during construction. Area 9 (Figure 3-10 below) is west of MIAD West and the western half could be planted during construction, but the eastern half would be planted after borrow and disposal operations are complete at MIAD West. Area 10 (Figure 3-111 below) is north of Green Valley Rd. near the intersection of Green Valley Rd. and Access Rd. which leads to the east end of MIAD. Area 10 could be planted during construction provided that planting operations do not interfere with construction access to MIAD.~~

The total acreage of all ~~10~~ 7 proposed oak planting mitigation areas is ~~24.8~~ 19.6 acres. ~~Therefore,~~ The proposed plan is to plant 19.6 ~~24.8~~ acres of native oaks within the FLSRA at ~~the 10~~ approximately 7 areas mentioned above.

Figures 3- through 3-10 have been updated to depict the changes of the planting areas as described above. Subsequent figures in the document have been renumbered accordingly.

Under the Existing Conditions of Section 3.3.3 Special Status Species, the following language has been included:

Since the publication of the Draft SEIS/EIR, the foothill yellow-legged frog (*Rana boylii*) has been proposed for listing under ESA (USFWS, Dec 2021). No suitable habitat is present in the Project area for foothill yellow-legged frog therefore, further analysis is not required.

The Valley Elderberry Longhorn Beetle biological surveys have been updated with the following survey effort:

- Additional elderberry shrubs were found while surveying an area by the RWD and Dike 6 on October 29, 2021. Elderberries 62 through 75 were found at this time.

Table 3-3 has been updated to indicate direct impact to shrub number 24 at Dike 1. The table has also been updated with the information for shrubs 62 through 75.

Under Section 3.3.3.4, the last paragraph under Effects to Valley Elderberry Longhorn Beetle (VELB) includes the following edited sentence:

Currently, ~~no~~ purchase of conservation credits for VELB impacts is anticipated due to the direct impact and transplanting of one elderberry shrub by construction at Dike 1.

Mitigation Measure LS-8, under Section 3.3.3.5, was edited to reflect the measures included in the USFWS Biological Opinion as follows:

The USACE will consult with USFWS prior to establishing any elderberry shrub buffer zones (setbacks) that extend less than 100 feet from the dripline of a particular shrub. Such buffer zones will not be established without first obtaining approval from USFWS. ~~As much as feasible, all activities that could occur within 50 meters (165 feet) of an elderberry shrub would be conducted outside of the flight season of the VELB (March–July).~~

Mitigation Measure LS-3 has been edited to reduce repetition and clarify compliance as follows:

~~Prior to beginning construction of the Proposed Project, USACE biologists would survey areas within approximately a 0.5-mile radius (2,640-foot radius) of construction areas to determine if Swainson's hawk nests or white-tailed kite nests are present.~~ Swainson's hawk surveys will be completed in compliance with the CDFW survey guidance (Swainson's hawk Technical Advisory Committee, 2000). Implementation of the CDFW survey guidance is inclusive of the avoidance of Swainson's hawk under MBTA.

Mitigation Measure LS-15 includes edits to the third bullet point as follows:

The buffer area must be a minimum of 100 feet from the tree containing the maternity roost. ~~The size of the buffer shall depend on the species, roost location, and specific construction activities to be performed in the vicinity.~~

LS-15 also includes the addition of the following bullet points:

- If it is not feasible to remove a tree using the two-phased approach, limbs containing habitat features should be removed and gently lowered to the ground in a location where they are not likely to be crushed or disturbed by the felling of the tree, and left undisturbed for the next 48 hours. If the vegetation cannot be left for 48 hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48 hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal).

- Standing dead trees or snags with habitat features should be removed over a single day by gently lowering the tree or snag to the ground. The tree or snag should be left undisturbed on the site for the next 48 hours.

- Removal and trimming of trees with potential roosting habitat, irrespective of time of year, shall be conducted in the presence of a biological monitor.

> If trimming results in the removal of vegetation that contains potential bat habitat, vegetation should be gently lowered to the ground and left near the tree for 48 hours prior to removal, if feasible. If the vegetation cannot be left for 48 hours, the biological monitor shall survey the vegetation for presence of bats. If any bats are found within the vegetation, the vegetation must be left for 48 hours (or CDFW should be called for guidance regarding relocation of the bat dependent on urgency for removal).

In Section 3.3.4.3, Tables 3-6 through 3-9 have been edited to reflect updated air quality analysis.

In Section 3.3.5.4, Table 3-10 has been edited to reflect updated air quality analysis.

In Section 3.3.5.5, the second to last paragraph of the section was edited per a comment from Sacramento Metropolitan Air Quality Management District as follows:

For SMAQMD, ~~the cost of reducing one ton of CO2e emissions as of July 1, 2017 (no change in 2018, 2019, 2020, or 2021) is $30,000; however, this fee is typically adjusted every year~~ the cost of carbon credits is determined by the entity/registry facilitating the credit purchase. For PCAPCD, the cost of reducing one ton of CO2e emissions ~~as of January 1, 2018 (no change in 2019, 2020, or 2021) is $18,790~~ will be determined in coordination with PCAPCD.

Per a comment from the Environmental Protection Agency (EPA), the following language has been included in Section 3.3.7.1, in the paragraph under Table 3-11. This language is also included in Mitigation Measure N-1.

Any work outside of these hours, including nighttime or weekend work, will need to be approved by USACE.

A reference to Table ES-2 has been included in Section 3.3.7.4, in the paragraph following Figure 3-21, per a comment from the EPA.

Table ES-2 describes the anticipated schedule for construction and therefore, the noise duration that residences can expect depending on the construction location.

Mitigation Measure N-6 has the following language included per a comment from the EPA.

Notification materials will also identify a mechanism to register complaints if construction noise levels are overly intrusive, including the hotline phone number, detailed in Mitigation Measure N-8.

Water quality data in the Existing Conditions of Section 3.3.8.1 has been updated per an EPA comment. Edits to the fourth paragraph of the section, are as follows:

The applicable CVRWQCB water quality standards are listed in Table 3-15. The water quality values measured within Folsom Lake from ~~1992 to 1998~~ 2013 to 2019 are presented in

Table 3-16. All the data were collected over a six-year period from ~~1992 to 1998~~ 2013 to 2019; ~~104 samples were taken for both pH and turbidity; 47 samples were taken for TOC; 101 samples were taken for electric conductivity~~ (~~Larry Walker Associates 1999~~ California Surface Water Ambient Monitoring Program, 2022). The existing condition information has been updated since the 2017 SEIS/EIR. The water quality baseline is not considered significantly different from that reported in the 2017 SEIS/EIR.

Table 3-16 has been updated to reflect more recent data collected between 2013 and 2019.

Table 3-17, as reported in the Draft, and the preceding paragraph have been deleted as that information is not relevant anymore. Subsequent tables have been renumbered.

Table 3-18, renumbered to 3-17 in the Final, and the preceding paragraph have been edited to reflect more recent data as follows:

Fecal coliform bacteria levels within Folsom Lake are presented in Table 3-~~17~~ 18. ~~The values for Granite Bay and Beal's Point represent data collected over a five-month period (May 2003 to September 2003); 19 samples were taken at each location.~~ The values for Folsom Dam represent data collected over a ~~13-month~~ 4-year period from ~~February 2001~~ January 2013 to ~~February 2002~~ December 2017; ~~5~~ 122 samples were taken (~~Reclamation 2003; Wallace, et al. 2003~~ Starr, 2018).

Table 3-17 ~~18.~~ Folsom Lake Fecal Coliform Sampling – ~~2001~~ 2013 to ~~2002~~ 2017, Fecal Coliform Concentrations (MPN/100mL).

Site	Minimum	Maximum	~~Geometric Mean~~ Average	Median
~~Granite Bay~~	~~2~~	~~300~~	~~9~~	
~~Beal's Point~~	~~2~~	~~900~~	~~18~~	
Folsom Dam	~~2~~ 0	~~30~~ 920	~~12.24~~ 42.1	8.6

The last paragraph in Section 3.3.8.1 includes the following addition:

USACE determined that a seasonal wetland and perennial stream is present on either side of Old County Road, between Dike 1 and Twin Rocks Road.

Section 3.3.8.4 includes the following edits. Also, Figure 3-22 has been added to 3.3.8.4 to depict the seasonal wetland and perennial stream and the location of the culvert replacement, as indicated in the below edits.

The Project will necessitate the replacement of a culvert along Old Country Road near Twin Rocks Road to facilitate the use of Old Country Road by construction vehicles. The culvert replacement is anticipated to temporarily impact 110 square feet of seasonal wetland. Under Section 404 of the Clean Water Act (CWA), temporary impacts total less than 0.001 acres to seasonal wetland and perennial stream habitat while the permanent impact is 0.003 acres. Per USACE CWA guidance, compensatory mitigation is not required due to permanent impacts occurring under 0.10 acres in a non-special aquatic site. These impacts will be less than

significant with mitigation (WW-1 through WW-17). Figure 3-22 shows the mapped seasonal wetland and perennial stream around Old County Road.

A section of haul route at the toe of Dike 1 will be below the OHWM of Folsom Lake. The 415 feet of a temporary road is anticipated to directly impact 0.5 acres of reservoir impounded waters. However, this haul route is in the dry and will be restored to its original condition post-construction. Under Section 404 of the CWA, temporary impacts to features subject to federal jurisdiction with the Preferred Alternative totaling 0.5 acres may occur to non-wetland waters via temporary fill. Permanent impacts are not anticipated for this activity. Compensatory mitigation under 404 is not required due to no permanent loss of waters. This impact will be less than significant with mitigation (WW-1 through WW-17).

Under Section 3.3.8.5, mitigation measure WW-12 has been deleted as it repeats WW-11. The mitigation measures are not renumbered to maintain continuity from the 2017 EIS/EIR.

CHAPTER 4.0 – CUMULATIVE IMPACTS, GROWTH-INDUCING IMPACTS, AND OTHER REQUIREMENTS

The first paragraph has been edited as follows to reflect updated NEPA regulations that were implemented in May 2022.

CEQA requires the consideration of cumulative effects of the proposed action and closely related past, present, and foreseeable probable future projects, combined with the effects of the projects. The CEQA Guidelines define cumulative effects as "two or more individual effects, which, when considered together, compound or increase other environmental impacts" (Section 15355). ~~This Draft SEIS/EIR was started before Army implementation of the Council on Environmental Quality's (CEQ) updated NEPA regulation 40 CFR 1500-1508 (September 14, 2020) therefore, this document adheres to prior NEPA regulations. Prior~~ NEPA regulations define~~d~~ cumulative effects as an effect on the environment that results from the incremental effects of an action when combined with other past, present, and reasonably foreseeable future actions, regardless of the agency (Federal or non-Federal) or person undertaking such other actions (40 CFR ~~1508.7, prior to July 2020~~ 1508.1(g), May 20, 2022).