Appendix A

Air Quality Assessment

Air Quality Assessment for the NISL Coyote Creek Bank Repair Project

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This report addresses the air quality impacts associated with the proposed Newby Island Landfill (NISL) Coyote Creek Bank Repair Project (Project). The Project's goal is to stabilize the creek channel, arrest bank retreat, and provide limited localized habitat improvements along 138 feet of Coyote Creek at the north end of the NISL property. The areas temporarily impacted by the Project (15,000 square feet or 0.35 acres) includes the access road and staging areas (7,750 square feet or 0.18 acres) and the areas impacted by grading and bank work (7,250 square feet or 0.17 acres). Over the 3-week construction period, the Project will move 240 cubic yards of material and place 170 cubic yards of rock and soil in the channel.

The Project will not include new operational sources of air pollutants (e.g., no additional use of motor vehicles for maintenance activities, no additional stationary equipment, such as pumps or generators, etc.). So, the analysis and discussion below focus on Project construction emission, health risk, and odor impacts following the guidance provided by the Bay Area Air Quality Management District (BAAQMD) in their *CEQA Air Quality Guidelines* (May 2017).

The construction emission model spreadsheets to support the assessment are also appended below.

Sincerely,

Geoffrey H. Hornek

A. Setting

The US Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) oversee the enforcement of national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively. The major air pollutants so regulated are: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM) (the latter in two size classes - PM less than 10 microns in diameter [PM_{10}] and PM less than 2.5 microns in diameter [$PM_{2.5}$]).

Many other chemical compounds, generally termed toxic air contaminants (TACs), pose a present or potential hazard to human health through airborne exposure. In California, most of the estimated carcinogenic/chronic/acute health risk can be attributed to relatively few TACs, the most important being particulate matter emitted from diesel-fueled engines (DPM, which is also a form of $PM_{2.5}$). The CARB has identified DPM as being responsible for about 70 percent of the cumulative cancer risk from all airborne TAC exposures statewide.

The Project site is located in the Santa Clara County, which is one of the nine counties that make up the San Francisco Bay Area Air Basin, where the BAAQMD has responsibility for regional air quality planning and stationary source regulation. The Bay Area meets all NAAQS/CAAQS for major air pollutants with the exception of ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). TACs have no ambient air quality standards; their health impacts are evaluated based on the specific circumstances of the sensitive receptors exposed to particular TAC emissions from identified local sources

The primary sources and adverse health/welfare effects of ozone, PM and TACs are described below:

Ozone. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infection, impairs lung defense mechanisms, and with prolonged exposure can lead to emphysema and chronic bronchitis. Ozone is also harmful to vegetation, and can damage many common materials such as nylon, rubber, dyes, and paints. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). Ozone levels in the Bay Area are highest during late spring through early summer when meteorological conditions (i.e., high temperatures, strong sunlight, etc.) are favorable for the photochemical reactions that produce it.

Particulate Matter. Scientific studies have identified links between exposure to PM and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more

susceptible to the health risks of PM because their immune and respiratory systems are still developing. Very small particles of certain substances (e.g., sulfates and nitrates) can also cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing transportation, industrial, and agricultural sources. Some sources of particulate matter (i.e., mining, demolition and construction activities) are more localized, while others (i.e., motor vehicular traffic) have a wider regional distribution.

Toxic Air Contaminants. A wide variety of sources, stationary (e.g., dry cleaning facilities, gasoline stations, emergency diesel-powered generators, etc.) and mobile (e.g., motor vehicles, construction equipment, etc.), emit TACs. The health effects associated with TACs are quite diverse. TACs can cause long-term health effects (e.g., cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage) and/or short-term acute effects (e.g., eye watering, respiratory irritation, running nose, throat pain, and headaches). CARB identified DPM as a TAC in 1998 and subsequently developed *the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. The Plan's goal is to reduce DPM emissions and associated health risks statewide by 85 percent by 2020 through the use of diesel particulate filters (DPFs) and ultra-low sulfur diesel fuel.

In the Bay Area, CEQA air quality issues are typically addressed using the methodologies and significance thresholds specified in the BAAQMD *CEQA Air Quality Guidelines*. According to the *Guidelines*, any project would have a significant potential for causing a local air quality standard violation, exceeding a TAC health risk threshold, or making a cumulatively considerable contribution to a regional air quality problem if its pollutant/TAC emissions would exceed any of the thresholds presented in **Table 1** during construction or operation.

Table 1
Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
Fugitive Dust	Dust Control Best Management Practices	None	
	Construction and Operational Thresholds		
Health Risks and Hazards	**From Project Sources on Sensitive Receptors within 1,000 feet of Project Site**	**From Combined Sources on Sensitive Receptors within 1,000 feet of the Project Site**	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
Odors	5 confirmed complaints per year averaged over 3 years		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less.

B Potential Impacts

Estimation of Air Pollutant/DPM Emissions

Since the Project does not fit any of CalEEMod's standard land use classifications (i.e., residential, commercial, industrial, etc.), Project construction emissions were calculated using the list of equipment provided by the applicant's engineers (Questa Engineering) and Appendix D of the CalEEMod model (Version 2016.3.2), which lists all the emission rates of the statewide construction equipment fleet by type and year. The CARB's EMFAC 2014 motor vehicle emission model was used for Project trucks and worker

commute vehicles. They were processed as shown in the Excel spreadsheet at the end of this report to get the total Project construction emissions.

Impact 1 – Project construction would generate less-than-significant amounts of criteria and would therefore not conflict with the air quality plan.

As depicted in Table 2, construction-related exhaust emissions would be below the BAAQMD construction thresholds, resulting in a less than significant impact. However, BAAQMD recommends the implementation of the Basic Construction Measures to reduce fugitive dust emissions. These measures are included in the City of San Jose's Standard Permit Conditions. Therefore, additional mitigation is not required.:

Table 2
Average Daily Unmitigated Construction-Related Emissions (lbs./day)

Emission Source	**ROG**	**NOx**	**Exhaust PM10**	**Exhaust PM 2.5**
Off-Road Construction Equipment	0.75	8.65	0.34	0.32
Haul Trucks	0.03	0.56	< 0.01	< 0.01
Delivery Trucks	< 0.01	0.03	< 0.01	< 0.01
Worker Commutes	< 0.01	0.01	< 0.01	< 0.01
Total	**0.77**	**9.24**	**0.35**	**0.32**
BAAQMD Construction Threshold	**54**	**54**	**82**	**54**
Significant Impact?	**No**	**No**	**No**	**No**
Appendix D to the User's Guide of CalEEMod (Version 2016.3.2) lists all the numerical values in the model database used to calculate development project criteria pollutant emissions. Diesel-powered construction equipment emission factors and on-road motor vehicle emission rates from EMFAC 2014 (the CARB's EPA-approved motor vehicle emission model) for haul/delivery trucks and worker commute vehicles, both from the model database, were used along with project-specific equipment type/number and truck/worker commute trips to estimate project construction emissions by Excel spreadsheet.				

Impact 2 – Project-generated emission would not expose sensitive receptors to substantial pollutant concentrations.

There are no sensitive receptors (e.g., residences, schools, etc.) within 1000 feet of the active area proposed for Project construction, which the BAAQMD considers the relevant zone of influence for an assessment of air pollutant impacts or health risks. The nearest sensitive land use is a residential complex located approximately 0.6 miles southeast of the Project site, east of I-880 and south of Dixon Landing Road (refer to Figures 1-2). The existing San Francisco Bay Trail (ending on Fremont Boulevard to the north of the Project site) comes to within approximately 0.5 miles of the Project site.

Thus, short-term construction-related PM levels and health risks associated with the proposed Project would be less than significant.

The proposed Project would have no operational air pollutant or health risk impacts.

Impact 3 - The project would not generate odors.

Odors are typically associated with industrial projects involving the use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes. New operations associated with the proposed Project would be limited to very minimal vehicle use by staff for visual inspections. Thus, the proposed Project operation is not expected to create objectionable odors and the odor impact associated with the proposed Project would be less than significant.

Greenhouse Gas Emissions

GHG emissions from the Project would occur only during the short construction phase**. The CO2 emissions table presented below shows the amount of CO2 that would be generated during this construction phase.**

The BAAQMD has neither adopted nor recommended GHG thresholds for construction emissions in their CEQA Air Quality Guidelines. The City's GHG Strategy does not include measures to reduce emissions from construction equipment. Consequently, construction emissions from the proposed Project are expected to be consistent with the GHG Strategy. Therefore, the proposed Project would have a less-than-significant impact associated with construction-related GHG emissions.

Newby Island Bank Stabilization - Construction Emissions (2019)

Pollutant: NOx

									On- Site		Off-Site				Total	
EQUIPMENT	hp	LoadFac*	NOxFac*		Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis
Excavator	163	0.38	2.53264		1	21	work days	8.00	hours/day	1255	26354					1255	26354
Loader	200	0.36	3.74452		1	21	work days	8.00	hours/day	2157	45294					2157	45294
Skip Loader	65	0.37	2.66		1	21	work days	8.00	hours/day	511	10731					511	10731
Delivery Truck	1	1	63.114031		0.3	21	work days	1	day	3	55	4.8877	7.3	12	250	15	305
Haul Truck	1	1	63.114031		1.0	21	work days	1	day	8	166	4.8877	50.0	244	5132	252	5298
Worker Commute					4.5	21	work days	2	trips/day	0	0	0.0526	10.8	3	54	3	54
		* Equipment: CalEEMod Appendix D					Tot (grams)			3,933	82,600			259	5,435	4,192	88,035
		Truck: EMFAC 2014 HHD Idle					Tot (lbs)			8.7	182.1			0.6	12.0	9.2	194.1 **0.10 tons**
							Avg. Day (lbs)										9.2
												Truck: EMFAC2014 HHDT 35 mph					
												Worker Commute: EMFAC2014 LDT2 35 mph					

Pollutant: ROG

									On- Site		Off-Site				Total	
EQUIPMENT	hp	LoadFac*	ROGFac*		Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis
Excavator	163	0.38	0.2462		1	21	work days	8.00	hours/day	122	2562					122	2562
Loader	200	0.36	0.3094		1	21	work days	8.00	hours/day	178	3743					178	3743
Skip Loader	65	0.37	0.20		1	21	work days	8.00	hours/day	38	806					38	806
Delivery Truck	1	1	2.05281209		0.3	21	work days	1	day	0	2	0.1684	7.3	0	9	0	10
Haul Truck	1	1	2.05281209		1.3	21	work days	1	day	0	7	0.1684	50.0	11	236	12	243
Worker Commute					4.5	21	work days	2	trips/day	0	0	0.0165	10.8	1	17	1	17
		* Equipment: CalEEMod Appendix D					Tot (grams)			339	7,119			12	261	351	7,380
		Truck: EMFAC 2014 HHD Idle					Tot (lbs)			0.7	15.7			0.0	0.6	0.8	16.3 **0.01 tons**
							Avg. Day (lbs)										0.8
												Truck: EMFAC2014 HHDT 35 mph					
												Worker Commute: EMFAC2014 LDT2 35 mph					

Pollutant: PM10

									On- Site		Off-Site				Total	
EQUIPMENT	hp	LoadFac*	PM10Fac*		Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis
Excavator	163	0.38	0.1221		1	21	work days	8.00	hours/day	61	1271					61	1271
Loader	200	0.36	0.1255		1	21	work days	8.00	hours/day	72	1518					72	1518
Skip Loader	65	0.37	0.12		1	21	work days	8.00	hours/day	23	492					23	492
Delivery Truck	1	1	0.08950842		0.3	21	work days	1	day	0	0	0.0247	7.3	0	1	0	1
Haul Truck	1	1	0.08950842		1.3	21	work days	1	day	0	0	0.0247	50.0	2	35	2	35
Worker Commute					4.5	21	work days	2	trips/day	0	0	0.0067	10.8	0	7	0	7
		* Equipment: CalEEMod Appendix D					Tot (grams)			156	3,281			2	43	158	3,323
		Truck: EMFAC 2014 HHD Idle					Tot (lbs)			0.3	7.2			0.0	0.1	0.3	7.3 **0.004 tons**
							Avg. Day (lbs)										0.3
												Truck: EMFAC2014 HHDT 35 mph					
												Worker Commute: EMFAC2014 LDT2 35 mph					

Pollutant: PM25

									On- Site		Off-Site				Total	
EQUIPMENT	hp	LoadFac*	PM25Fac*		Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis
Excavator	163	0.38	0.1124		1	21	work days	8.00	hours/day	56	1170					56	1170
Loader	200	0.36	0.1155		1	21	work days	8.00	hours/day	67	1397					67	1397
Skip Loader	65	0.37	0.11		1	21	work days	8.00	hours/day	22	452					22	452
Delivery Truck	1	1	0.08563633		0.3	21	work days	1	day	0	0	0.0236	7.3	0	1	0	1
Haul Truck	1	1	0.08563633		1.3	21	work days	1	day	0	0	0.0236	50.0	2	33	2	33
Worker Commute					4.5	21	work days	2	trips/day	0	0	0.0064	10.8	0	7	0	7
		* Equipment: CalEEMod Appendix D					Tot (grams)			144	3,019			2	41	146	3,060
		Truck: EMFAC 2014 HHD Idle					Tot (lbs)			0.3	6.7			0.0	0.1	0.3	6.7 **0.003 tons**
							Avg. Day (lbs)										0.3
												Truck: EMFAC2014 HHDT 35 mph					
												Worker Commute: EMFAC2014 LDT2 35 mph					

Pollutant: CO2

										On- Site		Off-Site				Total	
EQUIPMENT	hp	LoadFac*	CO2Fac*		Quantity	T DURATION	UNIT	D DURATION	UNIT	DayEmis	TotEmis	Emfac	Length	DayEmis	TotEmis	DayEmis	TotEmis
Excavator	163	0.38	482.6838		1	21	work days	8.00	hours/day	239179	5022769					239179	5022769
Loader	200	0.36	480.0997		1	21	work days	8.00	hours/day	276537	5807286					276537	5807286
Skip Loader	65	0.37	482.38		1	21	work days	8.00	hours/day	92811	1949026					92811	1949026
Delivery Truck	1	1	12267.1696		0.3	21	work days	1	day	511	10723	1759.1414	7.3	4276	89802	4787	100525
Haul Truck	1	1	12267.1696		1.3	21	work days	1	day	2044	42924	1759.1414	50.0	117247	2462182	119291	2505107
Worker Commute					4.5	21	work days	2	trips/day	0	0	332.8596	10.8	16177	339717	16177	339717
		* Equipment: CalEEMod Appendix D					**Tot (grams)**			**611,082**	**12,832,728**			**137,700**	**2,891,701**	**748,782**	**15,724,429**	**15.7** metric tons
		Truck: EMFAC 2014 HHD Idle					**Tot (lbs)**			**1347.2**	**28291.0**			**303.6**	**6375.0**	**1650.8**	**34666.1**	**17.3** tons
							Avg. Day (lbs)					Truck: EMFAC2014 HHDT 35 mph					**1650.8**	
												Worker Commute: EMFAC2014 LDT2 35 mph						

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Education

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Professional Affiliations

American Physical Society
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Mr. Hornek is an environmental scientist with more than 20 years of experience in environmental and occupational air quality and noise analysis. He has prepared many technical reports for a wide variety of industrial, commercial, transportation, and urban development projects and is well-versed in the federal, state, and local regulatory framework that guides development. He has excellent working relationships with public agency contacts and environmental professionals in urban and transportation planning, and in a wide variety of government and industry sectors.

Mr. Hornek's technical capabilities include measuring ambient air pollutant and noise levels, performing computer-based air dispersion and noise attenuation modeling, conducting air toxic health risk assessments, and designing environmentally superior alternatives to mitigate air pollutant and noise problems and their related health impacts. He has completed study towards a master of public health degree in environmental health from the University of Minnesota School of Public Health. His thesis research involved methods for reconstructing occupational air pollutant exposure histories using computer models and statistical techniques.

Much of his most recent work has been on CEQA/NEPA studies in northern California for a variety of lead agencies, including:

- **Albany Beach Restoration and Public Access Project** (East Bay Regional Parks District)
- **Patterson Ranch Public Access and Habitat Project** (East Bay Regional Parks District)
- **Lower Marsh Creek Stream Corridor Restoration Program** (Contra Costa County Flood Control and Water Conservation District)
- **Marsh Creek Road Bridge Replacement Project** (Contra Costa County Public Works Department)
- **Berkeley Tuolumne Camp Permit** (City of Berkeley)
- **Pinole Creek Fish Passage Improvement Project** (Contra Costa Resource Conservation District)
- **Floodwall Improvement Project Zone 3A/Line D** (Alameda County Flood Control District
- **Bryant-Habert Ecological Restoration Project** (Resource Conservation District of Santa Cruz County)
- **Western Dublin Recycled Water Distribution System Expansion Project** (Dublin San Ramon Services District)
- **Dublin Trunk Sewer Rehabilitation Project** (Dublin San Ramon Services District)
- **McInnis Park Master Plan Implementation Project** (Marin County Parks and Open Space Department)
- **Lower Miller Creek Chanel Maintenance and Flood Study Project** (Las Galinas Valley Sanitary District – Marin County)
- **Georgia-Pacific Antioch Gypsum Plant Wharf Replacement Project** (California State Lands Commission)
- **Mission Creek Restoration Project** **(**Alameda County Flood Control District)