KD Anderson & Associates, Inc.
Transportation Engineers

January 20, 2020

Mr. Bryan Stice, Director
City of Colusa
Community Development Department
425 Webster Street
Colusa, CA 95932

Subject: ***Cheney-Wilson Subdivision Project Air Quality Analysis***

Dear Mr. Stice,

On behalf of KD Anderson & Associates (KDA), I am pleased to submit this letter report presenting the results of air quality analysis of the Cheney-Wilson Subdivision project. This report presents a description of the project, the methods used in the air quality analysis, and the results of the air quality analysis.

PROJECT DESCRIPTION

The Cheney-Wilson Subdivision project is proposed for an approximately 13 acre site in the City of Colusa. As shown in the enclosed **Figure 1**, the project site is located on the east side of Fifth Street approximately 0.25 miles south of Sioc Street. As shown in the enclosed **Figure 2**, the project is a 35-lot residential subdivision including one existing home.

SIGNIFICANCE THRESHOLDS

Implementation of the Cheney-Wilson Subdivision project would result in short-term construction activity, which would generate air pollutant emissions. Construction activities such as grading, excavation and travel on unpaved surfaces would generate dust, and could lead to elevated concentrations of inhalable particulate matter smaller than 10 microns in diameter (PM_{10}). The operation of construction equipment would result in exhaust emissions. A substantial portion of the construction equipment would be powered by diesel engines, which produce relatively high levels of nitrogen oxide (NO_x) emissions. The use of architectural coatings (e.g., paint) results in the release of reactive organic gas (ROG) emissions. Construction activity could also potentially entrain naturally occurring asbestos (NOA), if present in the soil.

Implementation of the Cheney-Wilson Subdivision project would also result in long-term operational activity, which would generate air pollutant emissions. The residential land uses would generate motor vehicle trips, which would result in ROG, NO_x, and carbon monoxide (CO) emissions. In addition, household activities (e.g., use of aerosols and landscaping equipment) would result in ROG and NO_x emissions.

Criteria Pollutant Emissions

The Colusa County Air Pollution Control District (CCAPCD) does not specify criteria pollutant emissions significance thresholds for use in California Environmental Quality Act (CEQA) environmental documents. However, CCAPCD staff has recommended that CEQA documents use CCAPCD Rule 3.6 (New Source Review) Best Available Control Technology (BACT) thresholds as CEQA significance threshold for criteria pollutant emissions (Kitamura pers. comm.). These thresholds are listed below and shown in the enclosed **Table 1**.

- 25 pounds per day (ppd) of ROG,
- 25 ppd of NO_x,
- 80 ppd of sulfur oxides (SO_x),
- 80 ppd of PM_{10}, and
- 500 ppd of CO.

Greenhouse Gas Emissions

The CCAPCD does not specify greenhouse gas (GHG) significance threshold for use in CEQA environmental documents. However, For GHG emissions, CCAPCD staff has recommended use of a significance threshold adopted by the Sacramento Metropolitan Air Quality Management District (Kitamura pers. comm.). This threshold is 1,100 metric tons per year (MT/yr) of carbon dioxide equivalent (CO_2e) emissions and is also shown in **Table 1**.

Naturally Occurring Asbestos

Naturally occurring asbestos has been identified as a toxic air contaminant (TAC) by the California Air Resources Board (ARB). No quantitative significance thresholds have been set for NOA. However, the California Department of Conservation provides a map that may be used as a screening-level indicator of the likelihood of NOA being present on the proposed project site . The map, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (California Department of Conservation 2000) shows the locations considered to be subject to elevated risk of containing NOA.

If a project site is located outside of areas considered to be subject to elevated risk of containing NOA, it may be considered to have a relatively lower probability of containing NOA and, in this report, will be considered to have a less-than-significant impact.

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If a project site is located within an area considered to be subject to elevated risk of containing NOA, it may be considered to have an elevated probability of containing NOA and, in this report, will be considered to have a significant impact. Implementation of mitigation measures to reduce asbestos emissions during construction activities will be considered to reduce significant impacts to a less-than-significant level.

METHODOLOGY

The following describes methods used to assess project-related air quality impacts.

Criteria Pollutant and Greenhouse Gas Emissions

Criteria pollutant and GHG emissions associated with implementation of the Cheney-Wilson Subdivision project were estimated using the CalEEMod emissions modeling program (California Air Pollution Control Officers Association 2016).

CalEEMod is a land use emissions computer model designed to provide a platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operation of a variety of land use projects. The model quantifies direct emissions from construction and operation (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

The CalEEMod emissions model contains default data characterizing the construction and operation of projects. The CalEEMod default values were used except where:

- project-specific data are available, and
- updated technical data are available.

More detailed information on the CalEEMod model is available at the internet website http://caleemod.com/. Output files from the CalEEMod model, as applied to the Cheney-Wilson Subdivision project, are presented in the enclosed technical appendix.

Naturally-Occurring Asbestos

As noted above, the map *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (California Department of Conservation 2000) is used in this report as a source of information on the potential for NOA to be present on the project site.

AIR QUALITY ANALYSIS RESULTS

The following describes the results of the air quality analysis and the significance of air quality impacts of the Cheney-Wilson Subdivision project.

Construction-Related Criteria Pollutant Emissions

Construction of the Cheney-Wilson Subdivision project would result in the generation of criteria pollutant emissions. The enclosed **Table 2** shows construction-related emissions. The project would be constructed during two different years, during different seasons, and the amounts of the various pollutants would vary over that time with different levels and types of construction activity. Detailed information showing the amount of pollutants for each period and the CalEEMod emissions model input values are presented in the enclosed technical appendix.

During the Cheney-Wilson Subdivision project construction period, construction activity would generate a maximum of:

- 48.10 ppd of ROG,
- 50.27 ppd of NO_x,
- 0.06 ppd of SO_x,
- 20.41 ppd of PM_{10}, and
- 32.68 ppd of CO.

Construction-related emissions of SO_x, PM_{10} and CO would not exceed the significance thresholds. Therefore, the impact of these types of emissions is considered less than significant and no mitigation measures are required.

Construction-Related Reactive Organic Gas Emissions

As shown in **Table 2**, construction-related ROG emissions would be 48.10 ppd. This value exceeds the 25 ppd significance threshold and is therefore considered a significant impact. The highest levels of ROG emissions would occur during the architectural coatings construction phase. Implementing the following mitigation measure will reduce this impact to a less-than-significant level.

> **Construction Period Reactive Organic Gas Mitigation Measure - Apply Architectural Coatings with Reduced Volatile Organic Compound (VOC) Content.** During the construction period, apply architectural coatings with reduced VOC content. The project-wide average VOC content should be 60 grams per liter (g/L) or less. As shown in the enclosed **Table 3**, implementation of this mitigation measure would reduce construction-related ROG emissions to 23.20 ppd. This amount of ROG emissions is considered a less than significant impact.

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Detailed information showing the amount of emissions with this mitigation measure and the CalEEMod emissions model input values are presented in the technical appendix.

Construction-Related Nitrogen Oxides Emissions

As shown in **Table 2**, construction-related NO_x emissions would be 50.27 ppd. This value exceeds the 25 ppd significance threshold and is therefore considered a significant impact. The highest levels of NO_x emissions would occur during the site preparation and grading construction phases. Implementing the following mitigation measure will reduce this impact to a less-than-significant level.

Construction Period Nitrogen Oxides Mitigation Measure – Use Construction Equipment that Comply with Tier 4 Emissions Standards During the Site Preparation and Grading Phases. During the site preparation and grading phases of the construction period, construction equipment that complies with Tier 4 emission standards should be used. As shown in **Table 3**, implementation of this mitigation measure would reduce construction-related NO_x emissions to 14.61 ppd. This amount of NO_x emissions is considered a less than significant impact.

Detailed information showing the amount emissions with this mitigation measure and the CalEEMod emissions model input values are presented in the technical appendix.

Operational Criteria Pollutant Emissions

Operation of the Cheney-Wilson Subdivision project would result in the generation of criteria pollutant emissions. The enclosed **Table 4** shows operational emissions. Operation of the project would result in:

- 54.44 ppd of ROG,
- 3.22 ppd of NO_x,
- 0.14 ppd of SO_x,
- 11.01 ppd of PM_{10}, and
- 74.90 ppd of CO.

Operational emissions of NO_x, SO_x, PM_{10} and CO would not exceed the significance thresholds. Therefore, the impact of these types of emissions is considered less than significant, and no mitigation measures are required.

Detailed information showing the amount of operational pollutants and the CalEEMod emissions model input values are presented in the technical appendix.

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Operational Reactive Organic Gas Emissions

As shown in **Table 4**, operational ROG emissions would be 54.44 ppd. This value exceeds the 25 ppd significance threshold and is therefore considered a significant impact. The highest levels of ROG emissions would result from wood-burning fireplaces. Implementing the following mitigation measure will reduce this impact to a less-than-significant level.

> **Operational Reactive Organic Gas Mitigation Measure – Limit the Number of Units with Wood-Burning Fireplaces.** Limit the number of units in the project with wood-burning fireplaces. Some of the units may include natural gas-burning fireplaces. Some of the units will not include fireplaces. The following limits will be applied:
>
> - five units with wood-burning fireplaces,
> - 26 units with natural gas-burning fireplaces, and
> - three units with no fireplaces.
>
> As shown in the enclosed **Table 5**, implementation of this mitigation measure would reduce operational ROG emissions to 24.79 ppd. This amount of ROG emissions is considered a less than significant impact.
>
> Detailed information showing the amount of emissions with this mitigation measure and the CalEEMod emissions model input values are presented in the technical appendix.

Greenhouse Gas Emissions

Construction and operation of the Cheney-Wilson Subdivision project would result in the generation of GHG emissions. The enclosed **Table 6** shows construction-related and operational GHG emissions that would be generated by the project. Detailed information showing the amount of GHG emissions and the CalEEMod emissions model input values are presented in the technical appendix.

As shown in **Table 6**, construction of the Cheney-Wilson Subdivision project would generate:

- 272.31 MT/yr of construction-related CO_2e emissions in the year 2020,
- 231.83 MT/yr of construction-related CO_2e emissions in the year 2021, and
- 494.78 MT/yr of operational CO_2e emissions.

None of the above values would exceed the significance threshold. Therefore, this impact is considered less than significant and no mitigation measures are required.

Naturally Occurring Asbestos

The map, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* shows areas more likely to contain NOA. Soil-disturbing construction activity in these areas would result in an elevated risk of entraining NOA. The asbestos map shows the project site is located approximately 25 miles away from the nearest area considered more likely to contain NOA – in the area near the border between Colusa County and Lake County.

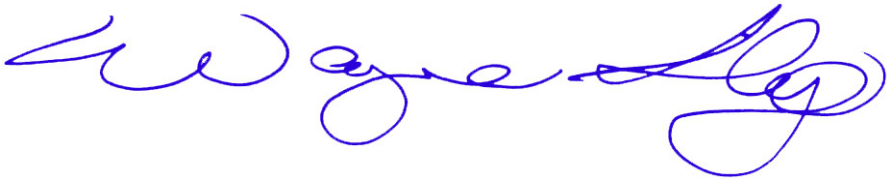
Because of the distance between the project site and the nearest area considered more likely to contain NOA, this impact is considered less than significant. No mitigation measures are required.

CLOSING

Thank you for providing KDA with this opportunity to provide you with air quality analysis services on the Cheney-Wilson Subdivision project. Please let me know if you have any questions about this letter report.

Sincerely,

KD Anderson & Associates, Inc.



Wayne Shijo
Project Manager

enclosures

Bibliography

Publications Cited

California Air Pollution Control Officers Association. 2016. CalEEMod – California Emissions Estimator Model User's Guide – Version 2016.3.1. Sacramento, CA.

California Department of Conservation. 2000. A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos. Sacramento, CA.

Pacific Gas and Electric. 2015. Greenhouse Gas Emission Factors: Guidance for PG&E Customers – November 2015.

Personal Communications

Kitamura, Donald. Deputy Air Pollution Control Officer. Colusa County Air Pollution Control District. September 24, 2019 E-mail message to Wayne Shijo, KD Anderson & Associates.

Musallam, George L. PE, LS. North Valley Engineering and Surveying. November 29, 2019 E-mail message to Bryan Stice, City of Colusa.

VICINITY MAP

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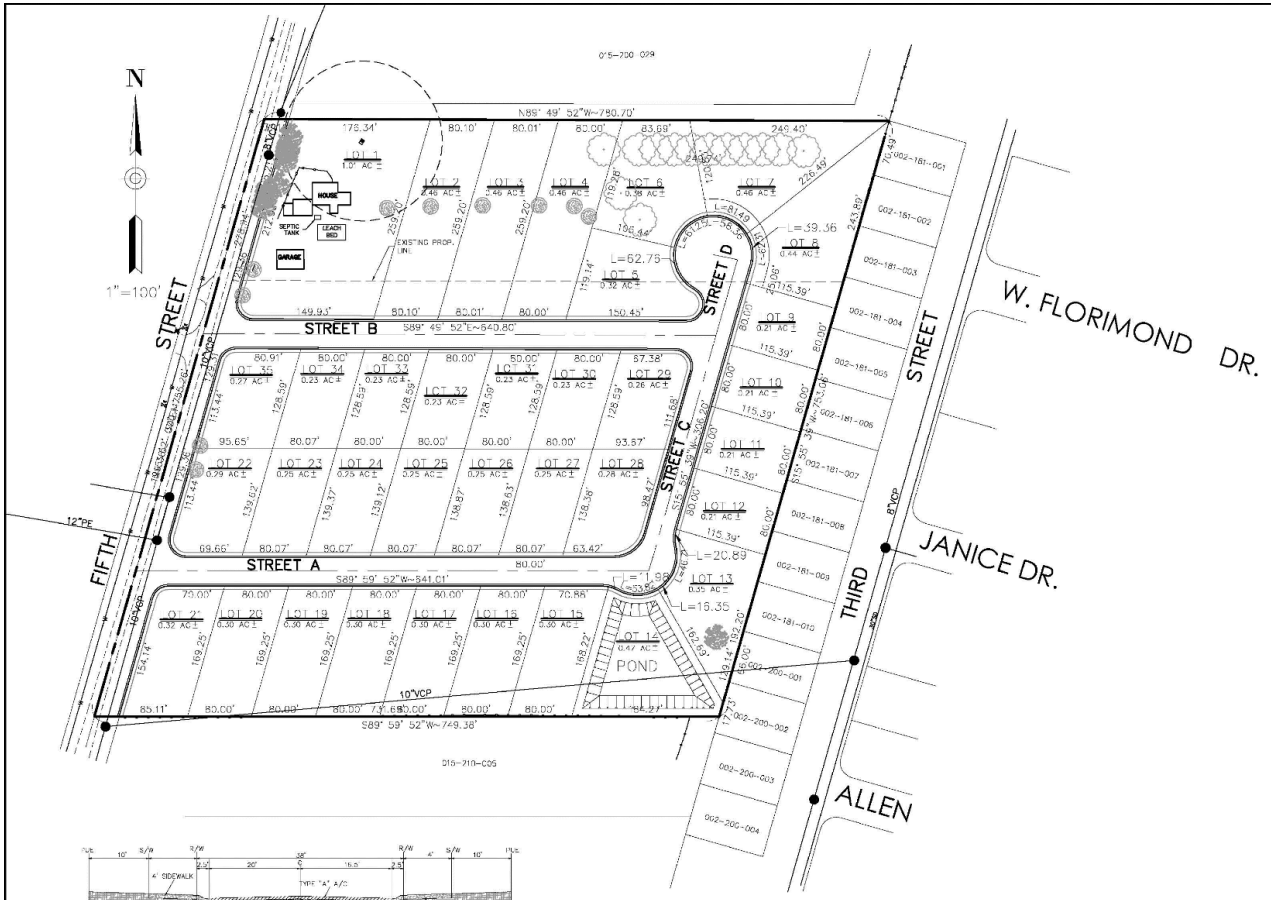
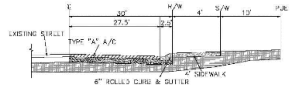
1635-001 RA 9/16/2019

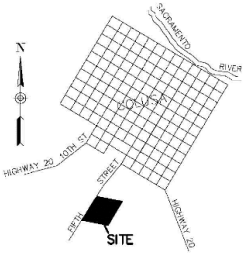
figure 1



STREETS A, B, C & D
NOT TO SCALE



FIFTH STREET
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

PREPARED BY:
NVES
NORTH VALLEY ENGINEERING AND SURVEYING
1547 STARR DRIVE SUITE "J"
YUBA CITY, CA 95993
(530) 713-0417

APPLICANTS

JONATHAN & JULIANN CHENEY
JEFFREY WILSON
1425 FIFTH STREET
YUBA CITY, CALIFORNIA 95932
(530) 635-2832

OWNERS

JONATHAN & JULIANN CHENEY
JEFFREY WILSON
1425 FIFTH STREET
YUBA CITY, CALIFORNIA 95932
(530) 635-2832

ENGINEER

GEORGE L. MUSALLAM
NORTH VALLEY ENGINEERING AND SURVEYING
1547 STARR DRIVE SUITE "J"
YUBA CITY, CALIFORNIA 95993
(530) 713-0417

GENERAL NOTES

WATER
EXISTING: CITY OF COLUSA

SEWER
EXISTING: CITY OF COLUSA

STORM DRAIN
EXISTING: CITY OF COLUSA

PROPERTY USE:
EXISTING: OPEN FIELD
PROPOSED: RESIDENTIAL

ZONING
EXISTING: R1
PROPOSED: R1

GENERAL PLAN
EXISTING: R1
PROPOSED: R1

ASSESSOR PARCEL MAP (ACRES)
015-210-014 (3.47)
015-210-015 (9.36)

UTILITIES
ELECTRICITY AND GAS: P G & E
TELEPHONE: AT&T
CABLE: COMCAST

LOT DIMENSIONS
LOT AND BOUNDARY DIMENSIONS ARE APPROXIMATE AND SUBJECT TO REVISION WITH THE FILING OF THE FINAL MAP.

SIZE AND LOCATION OF UTILITIES ARE APPROXIMATE, AND WILL BE DETERMINED AT THE TIME OF PREPARING THE IMPROVEMENT PLANS FOR THE SUBDIVISION

TENTATIVE SUBDIVISION MAP
CHENEY-WILSON SUBDIVISION

BEING A PORTION OF LOT 14 OF THE JOHN C. MOGK SUBDIVISION NO. 4 AS RECORDED IN BOOK 1 OF MAPS, PAGE 49 COLUSA COUNTY RECORDS
CITY OF COLUSA, STATE OF CALIFORNIA.
SCALE: 1"=60' OCTOBER, 2018
PAGE 1 OF 1

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SITE PLAN

figure 2

Table 1. Colusa County Air Pollution Control District
Criteria Pollutant and Greenhouse Gas Emissions
Significance Thresholds

Pollutant	Significance Thresholds
Reactive Organic Gases (ROG)	25 Pounds per Day
Nitrogen Oxides (NO_x)	25 Pounds per Day
Sulfur Oxides (SO_x)	80 Pounds per Day
Inhalable Particulate Matter (PM_{10})	80 Pounds per Day
Carbon Monoxide (CO)	500 Pounds per Day
Greenhouse Gas (GHG) Emissions	1,100 Metric Tons of Carbon Dioxide Equivalent (CO_2e) per year

Source: Kitamura pers. comm.

Table 2. Construction-Related Emissions

Pollutant	Significance Thresholds	Year 2020		Year 2021	
		Emissions	Significant Impact?	Emissions	Significant Impact?
Reactive Organic Gases (ROG)	25	4.54	No	48.10	Yes
Nitrogen Oxides (NO_x)	25	50.27	Yes	17.90	No
Sulfur Oxides (SO_x)	80	0.06	No	0.03	No
Inhalable Particulate Matter (PM_{10})	80	20.41	No	1.09	No
Carbon Monoxide (CO)	500	32.68	No	17.09	No

Source: Kitamura pers. comm., CalEEMod emissions model, and KD Anderson & Associates 2020.
Note: All values are the larger of summer and winter season. All values are expressed in pounds per day.

Table 3. Construction-Related Emissions With Mitigation Measures

Pollutant	Significance Thresholds	Year 2020		Year 2021	
		Emissions	Significant Impact?	Emissions	Significant Impact?
Reactive Organic Gases (ROG)	25	1.75	No	23.20	No
Nitrogen Oxides (NO_x)	25	14.61	No	13.36	No
Sulfur Oxides (SO_x)	80	0.06	No	0.03	No
Inhalable Particulate Matter (PM_{10})	80	18.28	No	0.81	No
Carbon Monoxide (CO)	500	33.72	No	17.31	No

Source: Kitamura pers. comm., CalEEMod emissions model, and KD Anderson & Associates 2020.
Note: All values are the larger of summer and winter season. All values are expressed in pounds per day.

Table 4. Operational Emissions

Pollutant	Significance Thresholds	Emissions	Significant Impact?
Reactive Organic Gases (ROG)	25	54.44	Yes
Nitrogen Oxides (NO_x)	25	3.22	No
Sulfur Oxides (SO_x)	80	0.14	No
Inhalable Particulate Matter (PM_{10})	80	11.01	No
Carbon Monoxide (CO)	500	74.90	No

Source: Kitamura pers. comm., CalEEMod emissions model, and KD Anderson & Associates 2020.
Note: All values are the larger of summer and winter season.
All thresholds are expressed in pounds per day.

Table 5. Operational Emissions With Mitigation Measures

Pollutant	Significance Thresholds	Emissions	Significant Impact?
Reactive Organic Gases (ROG)	25	24.79	No
Nitrogen Oxides (NO_x)	25	3.00	No
Sulfur Oxides (SO_x)	80	0.09	No
Inhalable Particulate Matter (PM_{10})	80	6.53	No
Carbon Monoxide (CO)	500	42.23	No

Source: Kitamura pers. comm., CalEEMod emissions model, and KD Anderson & Associates 2020.
Note: All values are the larger of summer and winter season.
All thresholds are expressed in pounds per day.

Table 6. Greenhouse Gas Emissions

Emissions Category	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide Equivalent
Construction-Related Emissions				
Year 2020 Construction Related Emissions	270.54	0.07	0.00	272.31
Year 2021 Construction Related Emissions	230.49	0.05	0.00	231.83
Operational Emissions				
Area Source	50.26	0.03	0.00	51.91
Energy	86.62	0.00	0.00	87.24
Mobile Source	332.48	0.01	0.00	332.82
Solid Waste Generation	7.09	0.42	0.00	17.56
Water Consumption	2.92	0.07	0.00	5.25
Total Operational Emissions	479.37	0.54	0.01	494.78

Source: Emissions values are from the CalEEMod Emissions Model (http:/www/caleemod.com)
Notes: Unless noted, all values are in metric tons (MT/yr).
Total may not equal sum of components due to rounding.

Technical Appendix Presented in Separate Electronic File