APPENDIX H

NOISE REPORT

ENVIRONMENTAL NOISE ASSESSMENT
UPPER ROAD RESIDENTIAL LAND DIVISION
ROSS, CALIFORNIA
FEBRUARY 22, 2013

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INTRODUCTION

This section presents the environmental noise assessment conducted for the Upper Road land Division proposed on a 36 (+/-) acre parcel of vacant hillside land on the southeastern flank of Bald Hill, which in turn lies on the northern slopes of Mount Tamalpais, in the western area of the Town of Ross in Marin County, California. The site abuts Marin Municipal Water District (MMWD) lands and Natalie Coffin Greene Park on the west and southerly sides. Private lands, which are mostly developed with single-family homes on large lots, abut the site to the north and easterly sides.

The project proposes to subdivide the site into three residential parcels. Access to the three home sites would be via a 20 wide private road and 12 foot wide common driveways. The major issues evaluated in this noise assessment include the compatibility of the proposed site development with the noise environment at the site and the potential long-term and short-term impacts on existing sensitive development near the site due to construction noise and increased traffic noise. The Setting Section of the report presents a discussion of the fundamentals of environmental acoustics, regulatory background information, and a discussion of the existing noise environment on and around the site. The Impacts and Mitigation Measures Section evaluates the noise and land use compatibility and construction noise impacts of the development, presenting mitigation measures for identified significant impacts.

SETTING

FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL ACOUSTICS

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound may be caused by either its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. *A decibel (dB)* is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA.* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative indoor and outdoor noise levels in units of dBA are shown in Table 2.

TERM	DEFINITIONS
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, L_{dn}, DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Definitions Of Acoustical Terms **Table 1**

ILLINGWORTH & RODKIN, INC.*/Acoustical Engineers*

Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration. The scientific instrument

used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

At a Given Distance From Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')	100		Very Loud
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80		
Freeway (100')		In Kitchen With Garbage	
Vacuum Cleaner (10')	70	Disposal Running	Moderately Loud
	60	Data Processing Center	
Light Traffic (100')	50	Department Store	
Large Transformer (200')			
	40	Private Business Office	Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

Typical Sound Levels Measured In The Environment And Industry — **Table 2**

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Day/Night Average Sound Level, L_{dn},* is a measure of the cumulative noise exposure in a community, with a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity, above 35 dBA, and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn}. At an L_{dn} of about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent of the population. There is, therefore, an increase of about 1 percent per dBA between an L_{dn} of 60-70 dBA.

REGULATORY BACKGROUND

The State of California and the Town of Ross have established regulations, plans, and policies that are designed to limit noise exposure at noise sensitive land uses. These include: (1) the State CEQA Guideline, Appendix G and (2) the Town of Ross' General Plan Noise Element and Municipal Code Zoning Ordinance.

State CEQA Guidelines

The California Environmental Quality Act (CEQA) has established guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. CEQA asks the following questions:

Would the project result in:

- → Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies?
- → Exposure of persons to or generation of excessive groundborne vibration or noise levels?
- → A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- → A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

CEQA does not define what noise level increase would be considered substantial. Typically, in noise environments, where the existing L_{dn} is below that considered acceptable for the affected land use, an increase of 5 dBA or more at noise-sensitive receptors would be considered a significant impact.

Town of Ross

General Plan Noise Standards

The Noise/Land Use Compatibility Standards contained in Part IV section 5.7 of the Town of Ross' 2007-2025 General Plan Noise Element contains noise performance standards for outdoor use areas (i.e. backyards and patios) in residential areas of 55 dBA L_{dn}. Section 5.8 Part IV of the General Plan limits interior noise levels due to exterior sources to an L_{dn} of 45 dBA and recommends that an interior noise level due to exterior sources of 40 dBA L_{dn} be maintained in bedrooms of new residences. Section 5.10 Part IV of the General Plan requires mitigation of construction and traffic noise impacts on the ambient noise level in the Town limits

Municipal Code Noise Standards

The Town of Ross Municipal Code, Title 9, Chapter 9.20 Section 9.20.035 Construction states that:

> It is unlawful for any person or construction company within the town limits to perform any construction operation before eight a.m. or after five p.m., Monday through Friday of each week and not at any time on Saturday, Sunday, or the other holidays listed in Section 9.20.060; except that:
>
> (1) Work done solely in the interior of a building or structure, the performance of which does nor create any noise which is audible from the exterior of the

building or structure; or

(2) Work actually physically performed solely by the owner of the property, on Saturday between the hours of ten a.m. and four p.m. and not at any time on Sundays or other holidays.

EXISTING NOISE ENVIRONMENT

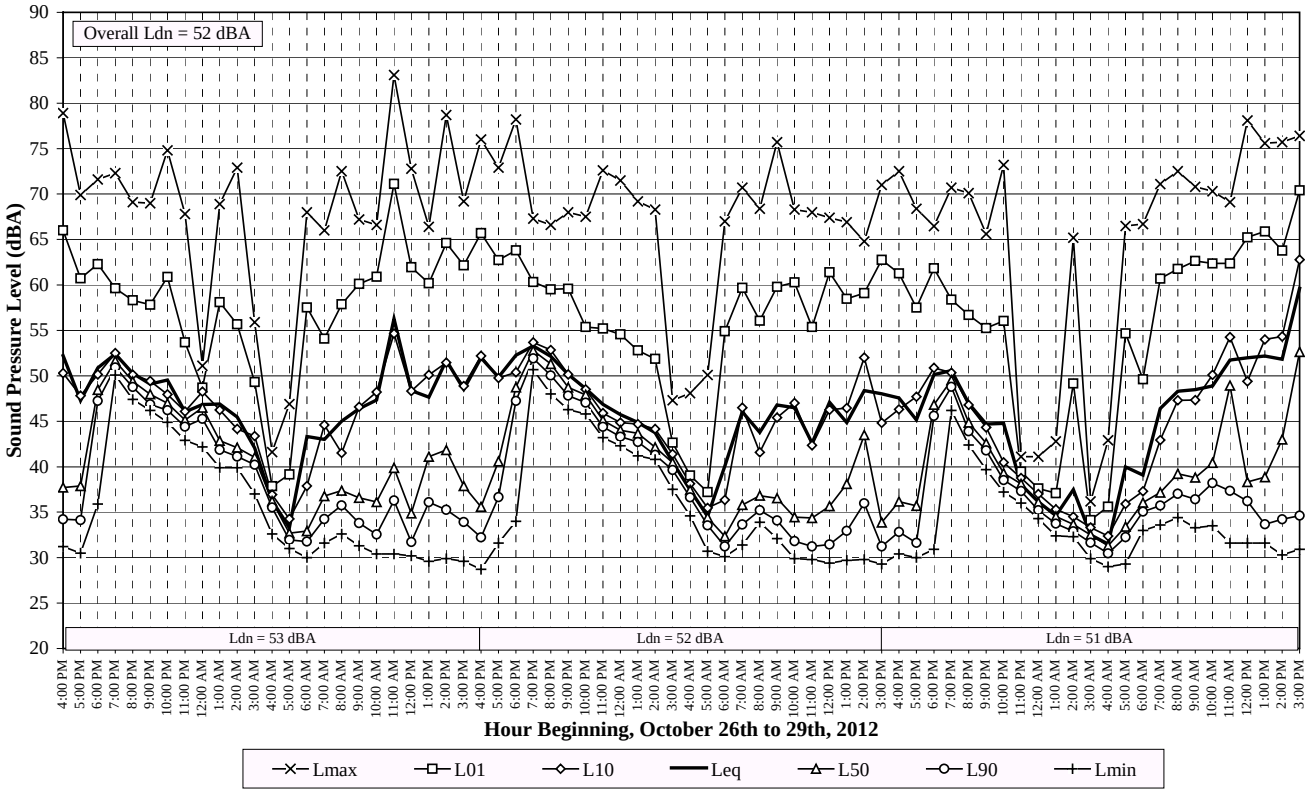
The project is located in the southwestern portion of the Town of Ross. Access to the site is via Upper Road from Glenwood Avenue. Four residential lots border the site. Three of the four adjacent residential lots are accessed by a private road, which gives access to Upper Road. These are identified in the Vesting Tentative Map for the project as the Wais, Greenberg and Stuart lots. The fourth residential lot, identified as the Weisel lot, is accessed directly from Upper Road. Along most of its eastern boundary, the site abuts Natalie Coffin Greene Park. The southwestern and northwestern sides of the park border MMWD lands and an open space parcel owned by the Town of Ross.

Illingworth & Rodkin, Inc. (I&R) previously studied the noise environment on the project site and in the surrounding environs in September of 1990, and in November 2002 for noise studies of previously proposed residential uses of the project site. For these previous studies, continuous 24-hour noise measurements, and a shorter-term (15 minute) spot noise measurement was made at the same location. The long term measurement during both studies was made at 25 feet from the centerline of Upper Road in front of the Weisel residence, and the 15 minute spot noise measurements was made at the end of the existing access road on the project site near the end of the currently proposed 20-foot wide private road. The results of our 1990 measurements at the average L_{dn} was 56 dBA at the long term location, varying from a high of 60 dBA L_{dn} during weekdays when a fair amount of construction traffic was present on Upper Road to 55 dBA on weekends and other days when construction and other traffic diminished. The average noise level at the short-term measurement location was 37 dBA. The results of our 2002 measurements indicated that the L_{dn} at 25 feet from the centerline of Upper Road in front of the Weisel residence was slightly lower than during the 1990 measurement (54 dBA in 2002 vs. 56 dBA in 1990) and the average noise level at the short-term measurement location was 36 dBA.

A review of the 1990 and 2002 sound level data indicated that the only significant variation in the measured levels was due to the presence of insect noise in the evening and late night hours in the warm month of September 1990 measurements versus the colder month of November 2002. The average sound level at the short-term measurement location was also very similar between 1990 and 2002 (37 vs. 36 dBA). Because the differences in these measured levels is within the typical margin of error for environmental noise measurements (see the discussion of sound level meters in the Setting Section, page 4) and may also be the result of increase insect and other woodland noises in September vs. November the noise environment at the residences adjacent to the site was considered to have remained essentially unchanged from 1990 to 2002.

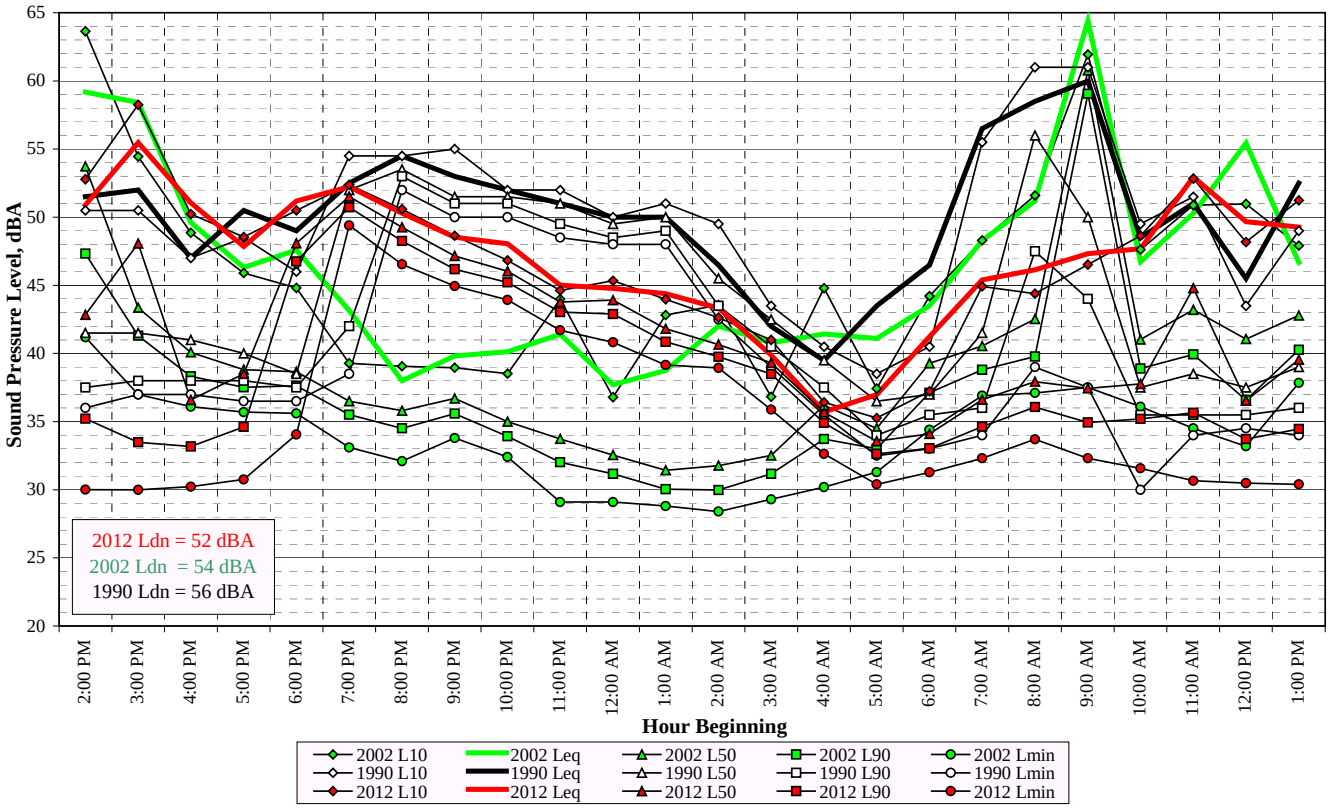
To update the results of our noise measurements and analysis for the current, existing, noise environment in the project vicinity, I&R conducted another continuous 72-hour noise measurement between October 26th to 29th, 2012 and a spot noise measurement at the same locations as in our previous study. The result of this survey shows that the average L_{dn} at 25 feet from the centerline of Upper Road in front of the Weisel residence was 52 dBA, with the daily L_{dn} varying from 51 to 53 dBA. The average noise level at the short-term measurement location on October 29th, 2012 was 36 dBA. These long term measurement results are shown in Chart 1.

Chart 1: 2012 Measured Noise Levels at Location LT-1



The 2012 overall levels are slightly lower than either the 1990 or 2002 measurements (52 dBA average L_{dn} in 2012 vs. 54 dBA in 2002 vs. 56 dBA in 1990). A comparison of the variation in average hourly sound levels at the long-term position for the 2012, 2002, and 1990 measurements is shown in Chart 2, following:

Chart 1: Comparison of 2012, 2002 and 1990 Long-Term Environmental Noise Levels



A review of Chart 2 shows that while the 1990 and 2002 sound levels only significantly vary between 7 p.m. and 2 a.m., the 1990 and 2012 measurements during this period were similar. As discussed above the variation between 7 p.m. and 2 a.m. is likely due to the presence of insect noise during warmer weather (September & October in 1990 and 2012) versus the colder month of November 2002. The average sound level at the short-term measurement location during all measurements was very similar at 37 dBA in 1990, 36 dBA 2002, and 36 dBA in 2012. The difference in these measured levels is within the typical margin of error for environmental noise measurements (see the discussion of sound level meters in the Setting Section, page 4).

Based on a comparison of the current (2012) measurement results and the previous (2002 & 1990) measurements and analysis, we would consider the noise environment at the residences adjacent to the site to have remained essentially unchanged from 1990 to 2012. Therefore, the existing L_{dn} noise exposure is considered to be an average L_{dn} of 40 to 41 dBA at the Weisel property and an L_{dn} of 45 to 46 dBA at the Wais property, with the Ldn noise exposure at the existing lots further from the road at below 40 dBA due to Upper Road traffic. This average L_{dn} of less than 40 dBA is also representative of the existing sound levels at the residential lots proposed by the project.

By utilizing the long and short term data and taking into account the distance from Upper Road to the residential lots bordering the project site, the L_{dn} noise exposure resulting from Upper Road traffic was calculated at the lots bordering Upper Road. The measured levels were found

to correlate to an average L_{dn} of 41 dBA at the Weisel property and an L_{dn} of 46 dBA at the Wais property, with the L_{dn} noise exposure at the existing lots further from the road (identified as the Greenberg and Stuart lots) at below an L_{dn} of 40 dBA due to Upper Road traffic.

SIGNIFICANCE CRITERIA

A significant impact would be identified for a proposed land use if it would be exposed to noise levels exceeding the City's established guidelines for noise and land use compatibility. For the proposed project, a significant impact would be identified if the project would be exposed to noise levels exceeding the City's established guidelines for "satisfactory" noise and land use compatibility.

1. According to CEQA, a significant noise impact would result if noise levels increase substantially at noise-sensitive land uses (e.g., residences). A substantial increase to noise levels would occur if the project resulted in an increase of 5 dBA or greater at noise-sensitive outdoor use areas where noise levels are currently less than 55 dBA L_{dn}.
2. Construction noise levels would be treated somewhat differently because they are temporary. Significant noise impacts would result from construction if noise levels were sufficiently high to interfere with speech, sleep, or normal residential activities. Construction-related hourly average noise levels received in outdoor use areas of noise-sensitive land uses above 55 dBA during the daytime and 45 dBA at night would be considered significant.

PROJECT IMPACTS AND MITIGATION MEASURES

Noise impacts resulting from the proposed development of the site fall into three major categories:

(1) The potential effects of environmental noise on the developability of the proposed residential lots,
(2) Potential increases in noise on surrounding residences resulting from project-generated traffic on the access road,
(3) Short-term noise impacts on surrounding residences resulting from construction of the project.

Impact 1: Noise and Land Use Compatibility for the Proposed Residences

The existing and foreseeable future noise exposure on all building sites would be significantly less than an L_{dn} of 55 dBA, meeting the Town of Ross' noise performance standards for outdoor use areas in residential areas. Noise impacts resulting from the existing and future environmental noise exposure on all building sites would therefore be considered to be less-than-significant and no mitigation is required.

Impact 2: Noise from the operation of the project access road and increased traffic on Upper Road on adjacent residences.

When the project is completed the access road is projected to carry a 30 daily vehicles trips with an hourly morning and evening peak hour volumes of 3 to 4 vehicles. With consideration of the grade, maximum noise levels generated by individual vehicles climbing up the access road will typically range from 70 to 75 dBA at 25 feet. When vehicles are descending the access road

maximum noise levels would be expected to diminish by 6 to 10 dBA. Given the distance and topographical characteristic of the area, these levels will be significantly lower at the nearest existing residences. Noise modeling using Version 7.0 of the SoundPLAN computer model was employed to calculate noise levels resulting from vehicle operations on the access road at the surrounding uses. SoundPLAN is a three-dimensional ray-tracing program that takes into account the characteristics of the noise source, including its location, size and shape, sound level, and frequency spectrum. The program also accounts for conditions that affect the sound propagation between a noise source and receiver including absorption by the ground and air, effects of intervening barriers (such as buildings) or topography, and reflections from the ground and other surfaces. Model inputs also included the massing of the intervening structures between the noise sources and adjacent residential uses. Neutral atmospheric conditions were assumed for the modeling. The model results indicate that the two existing homes closest to the access road, Wais and Weisel, would be exposed to maximum sound levels due to climbing vehicles of 73 and 66 dBA, respectively. When vehicles are descending the access road maximum noise levels would be between 63 and 68 at the Wais residence and between 56 and 61 at the Weisel residence. The noise levels due to ascending and descending vehicles would be no higher than the daily maximum noise levels that currently exist at these homes.

The model results also show that morning and evening peak hour traffic on the access road (3 to 4 vehicles per hour) equally entering and exiting the site, (climbing and descending) would produce an hourly Leq of 48 dBA at 25 feet from the roadway centerline. In reality the morning peak hour would likely be composed of descending trips and the afternoon peak hour ascending trips. If this were the case the morning peak hour Leq would be about 42 dBA at 25 feet while the afternoon peak hour would be about 52 dBA at 25 feet. Based on these peak hour levels, the L_{dn} resulting from access road use would be below 45 dBA at the existing residences bordering the project site. This is considered to be a less-than-significant noise impact and no mitigation is required.

The daily addition of 30 vehicular trips on Upper Road from the proposed project would result in a less than one (1) dBA increase in sound levels at residences along Upper Road. This is considered to be a less-than-significant noise impact and no mitigation is required.

Impact 3: Construction Noise Impacts

Access Road and Driveways

Construction of the access road and driveways will temporarily increase noise levels at nearby noise-sensitive receptors by trucks delivering and recovering materials at the site, grading and paving equipment, saws, hammers, the radios and voices of workers, and other typical provisions necessary to construct the access road, driveways and homes on the three residential lots. High noise levels will be generated intermittently when the site is cleared to make room for the access road, driveways and residential pads. The highest construction noise levels would be generated during the grading and paving of the access road and driveways, and lower noise levels occurring during home construction and finishing. Table 3, below, gives typical average noise levels at 50 feet from the center of work activity for roadway construction and home building

activities.

Table 3: Typical ranges of Leq levels at 50 feet for construction phases				
	Home Building		Roads, Sewers, and Trenches	
Work Phase	I	II	I	II
Ground Clearing	83 dBA	83 dBA	84 dBA	84dBA
Excavation	88 dBA	75 dBA	88 dBA	78 dBA
Foundations	81 dBA	81 dBA	88 dBA	88 dBA
Erection	81 dBA	65 dBA	79 dBA	78 dBA
Finishing	88 dBA	72 dBA	84 dBA	84 dBA
Notes: I - All pertinent equipment present at the site. II - Minimum required equipment at the site.				

Source: U.S.E.P.A., Legal Compilation on Noise, Vol.1, p.2-104, 1973

Using the source levels given in Table 3 the noise levels produced during the excavation, grading and road base placement of the access road and driveways at the adjacent residential uses were modeled using line source inputs into the SoundPLAN model. The results of this modeling indicate that during construction of the northern portion of the access roadway (nearest Upper Road) the average (L_{eq}) noise levels at the Wais, Weisel, Greenberg and Stuart Residences will, respectively, be 89 dBA, 89 dBA, 79 dBA, and 69 dBA. Construction of the central portion of the access road will result in respective average (L_{eq}) noise levels at these residences of 79 dBA, 78 dBA, 78 dBA, and 71 dBA and construction of the southern portion of the access road will result in respective average (L_{eq}) noise levels at these residences of 75 dBA, 72 dBA, 90 dBA, and 77 dBA. Noise levels at other, non-adjacent residences in the area (#4, #29, and #37 Upper Road), would also be somewhat elevated during roadway constuction, with average noise levels ranging from 72 to 82 dBA during construction of the northern portion of the access roadway, 71 to 75 dBA during construction of the central portion of the access roadway, and 74 to 78 dBA during construction of the southern portion of the access road.

Based on current project information construction of the access road and driveways is estimated to take up to six months with up to two months of this period involving the noisiest excavation, grading and paving activities. The construction access road and driveways is considered to constitute a significant, unavoidable, short-term noise impact.

Home Construction on the Residential Lots

Sound PLAN modeling was also employed to evaluate noise levels at the adjacent residences during the construction of the individual homes on the three lots proposed by the project. The results of this modeling indicate that construction on Parcel One (nearest the Weisel Residence) would produce average (L_{eq}) noise levels at the Wais, Weisel, Greenberg and Stuart Residences will, respectively, be 48 dBA, 60 dBA, 51 dBA, and 61 dBA. Construction on Parcel Two (the central parcel) would produce respective average (L_{eq}) noise levels at the Wais, Weisel, Greenberg and Stuart Residences of 52 dBA, 54 dBA, 62 dBA, and 67 dBA, and construction on Parcel Three (nearest the Wais, Greenberg and Stuart Residences) would produce respective average (L_{eq}) noise levels at the Wais, Weisel, Greenberg and Stuart Residences of 53 dBA, 58 dBA, 62 dBA, and 71 dBA. Noise levels at other, non-adjacent residences in the area (#4, #29, and #37 Upper Road), would also be somewhat elevated, with average noise levels ranging from

46 to 50 dBA during Parcel One construction, 51 to 64 dBA during Parcel Two construction, and 57 to 67 dBA during Parcel Three construction.

The timing of individual home construction at the residential parcels is unknown due to the fact that the individual property owners may have different schedules and goals. While it is possible for all homes to be constructed during the same building season, this is considered unlikely considering the expected size and complexity of the individual building projects and differing timetables and objectives of the parcel owners. This would constitute a significant, unavoidable, short-term noise impact.

Construction Noise Mitigation Measures:
Noise impacts due to construction activities would be reduced by implementing the restrictions on construction operations in the Town's Municipal Code, which prohibits construction activities between the hours of 5:00 PM and 8:00 AM on weekdays and no work on weekends. Because of the proximity to existing residences, it is recommended that construction activities be further restricted by incorporating the following conditions in related construction contract agreements.

1. *Additional Restrictions on Construction Hours.* The following measures are recommended to limit construction and related activities to the portion of the day when the number of persons in the adjacent residential uses is lowest.
   A. There shall be no start up of construction related machinery or equipment prior to 8:00 a.m. Monday through Friday.
   B. The delivery of materials or equipment to the site shall be limited to weekday (Monday through Friday) non-holiday hours between 8:00 a.m. and 5:00 p.m.
   C. Machinery shall not be cleaned past 6:00 p.m. or serviced past 6:45 p.m. Monday through Friday.

2. *Posted Construction Hours.* Clearly post construction hours on assign at the entrance to the construction site.

3. *Construction Equipment Mufflers and Maintenance*. Muffle and maintain all equipment used on-site. All internal combustion engine-driven equipment shall be fitted with mufflers that are in good condition. Good mufflers shall result in non-impact tools generating a maximum noise level of 80 dB when measured at a distance of 50 feet.

4. *Idling Prohibitions.* Prohibit unnecessary idling of internal combustion engines. Equipment shall be turned off when not in use.

5. *Worker Radio Noise.* Prohibit audible construction workers' radios on adjoining properties.

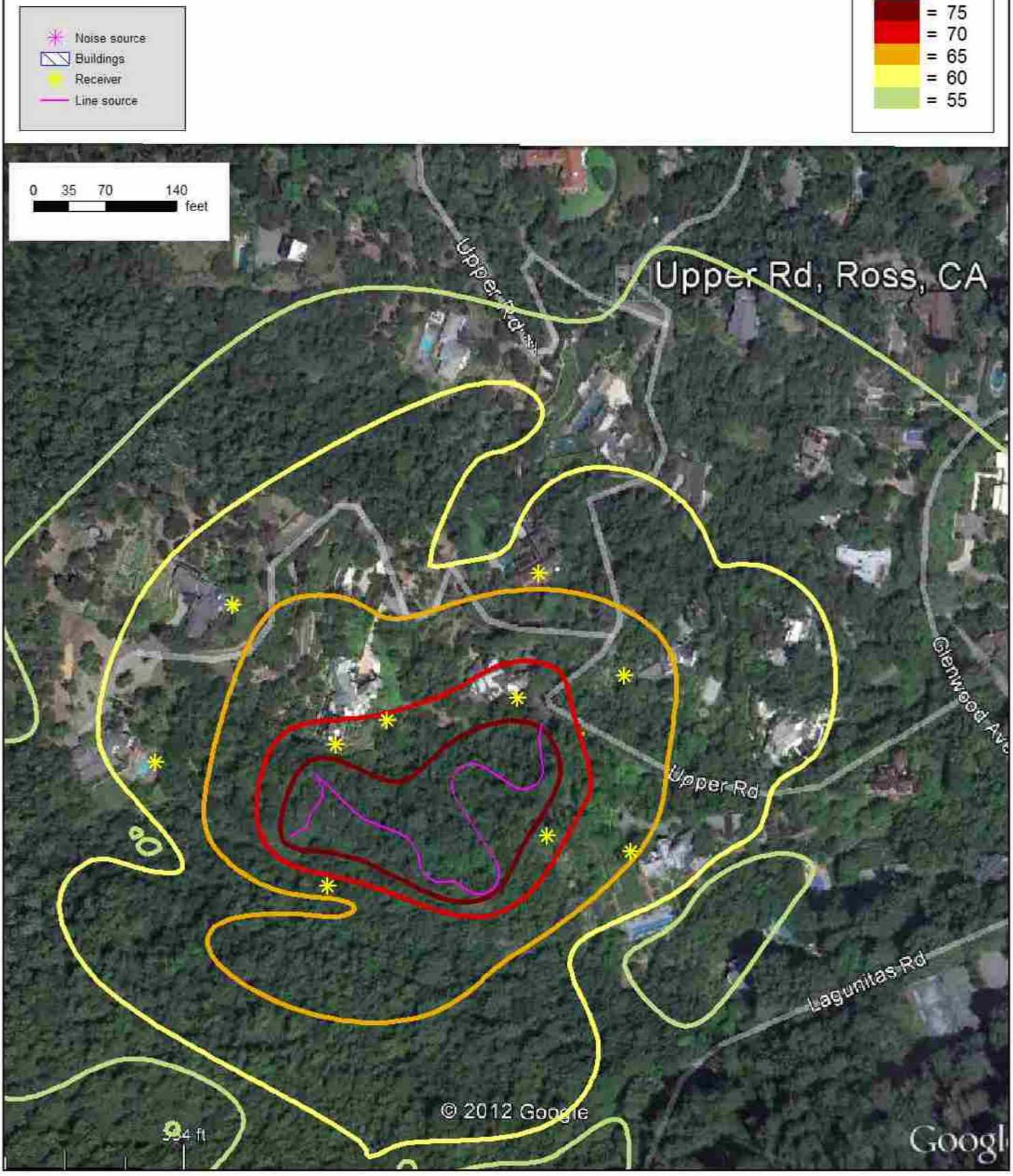
6. *Equipment Location and Shielding.* Locate all stationary noise-generating construction equipment such as air compressors as far as practical from existing nearby residences and other noise-sensitive land uses. Acoustically shield such equipment.

7. *Quiet Equipment Selection.* Select quiet construction equipment, particularly air compressors, whenever possible. (Fit motorized equipment with proper mufflers in good working order.)

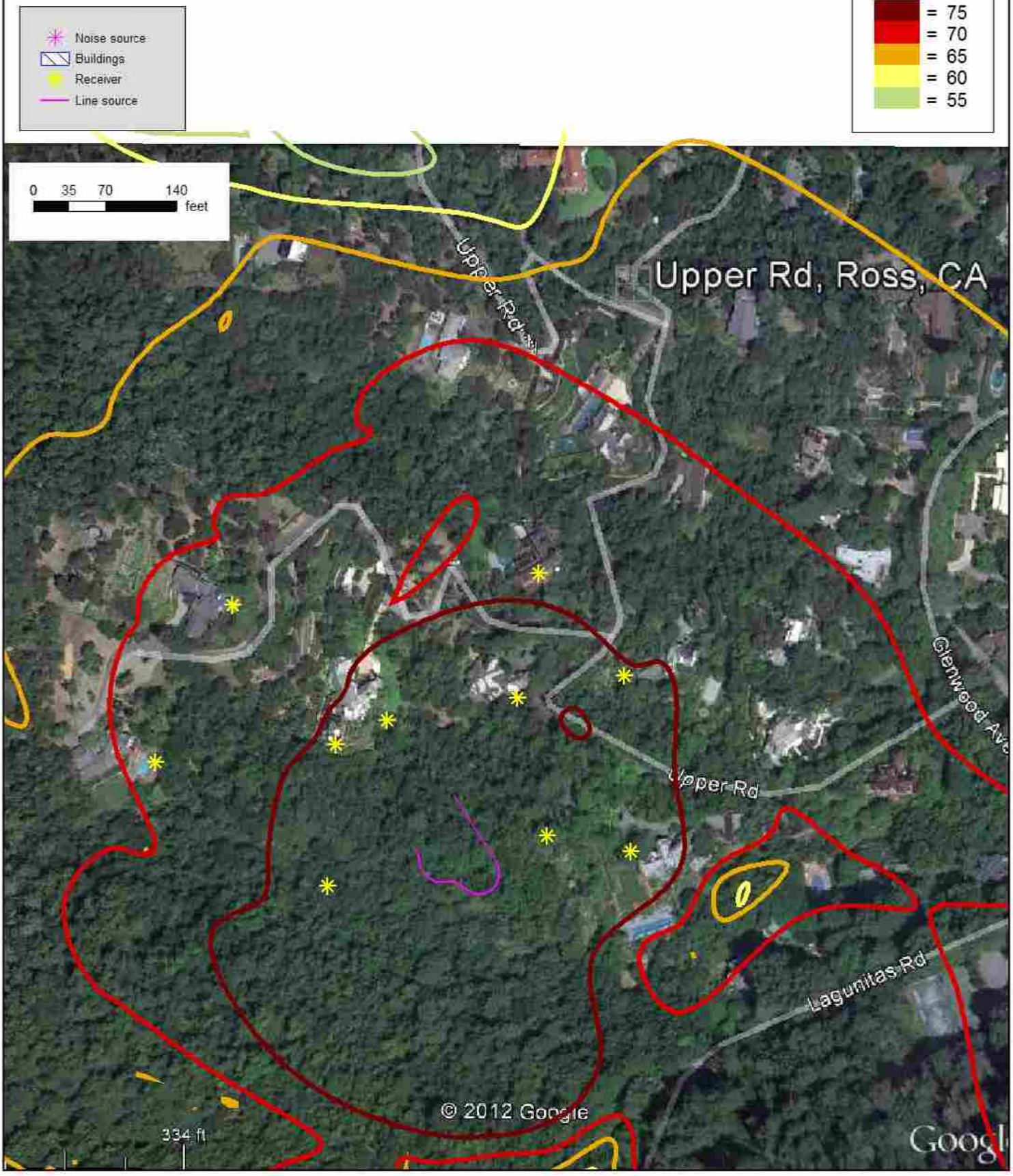
8. *Noise Disturbance Coordinator*. Designate a "noise disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. This individual would most likely be the contractor or a contractor's representative. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the disturbance coordinator at the entrance to the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Implementation of the above measures will limit the overall noise level and contain construction activities to a specified time frame, while also giving any persons disturbed by occasional loud noises an identifiable method of recourse. However, significant unavoidable adverse noise impacts will remain during project construction.

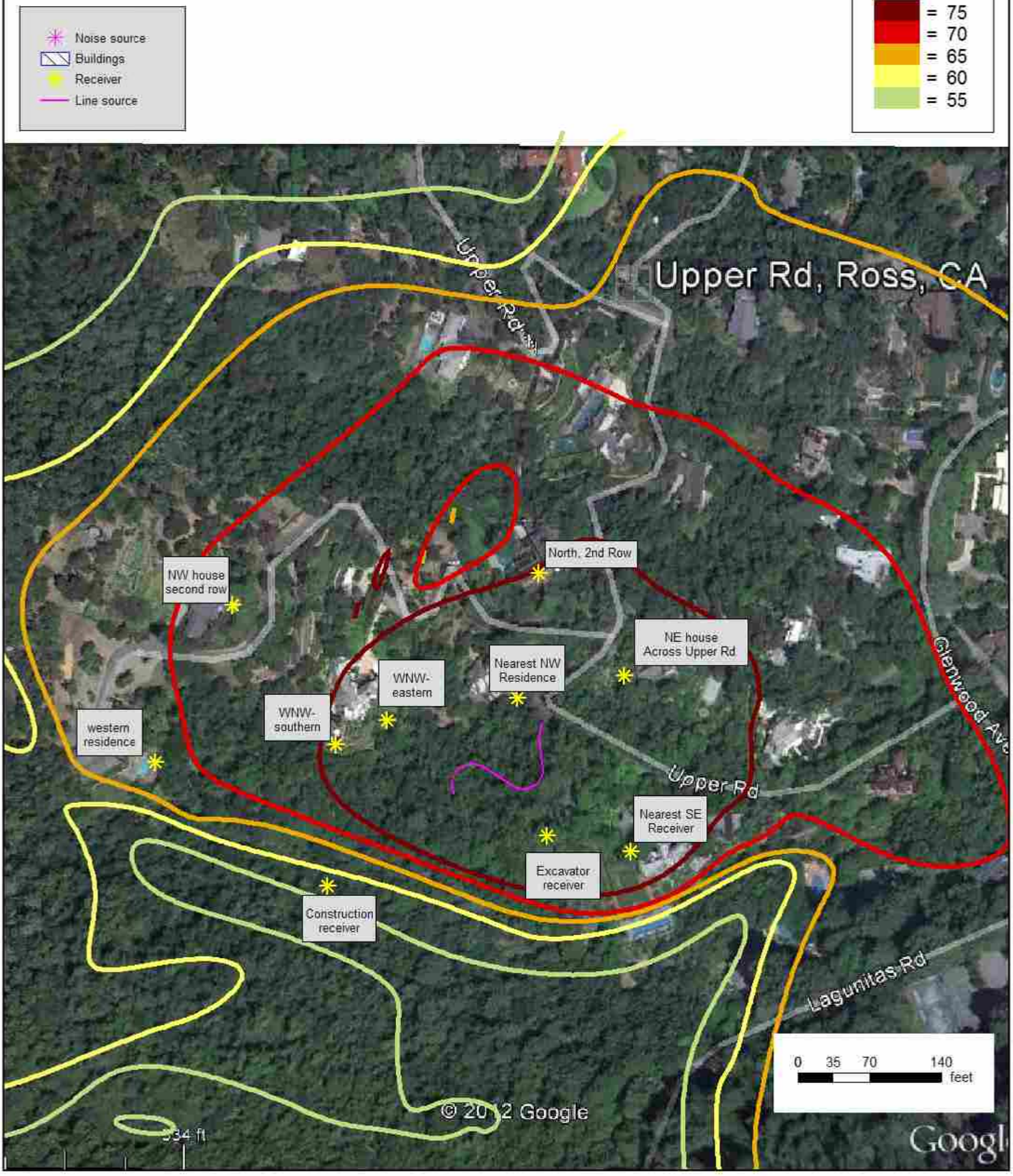
Noise Contours from Future Automobile Traffic on Upper Road in Ross, CA



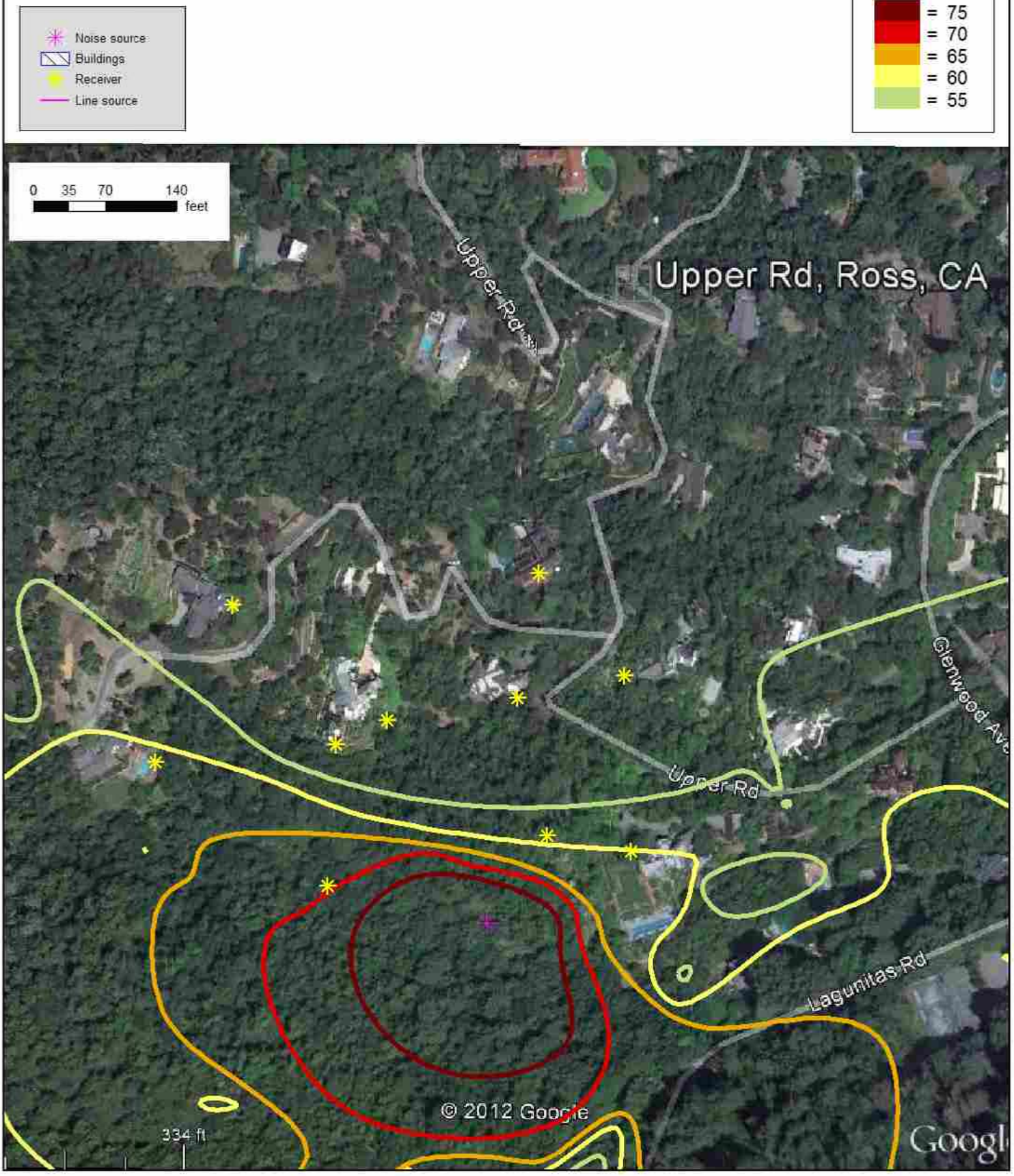
Noise Contours from Proposed Grading and Excavating for the central portion of Upper Road in Ross, CA



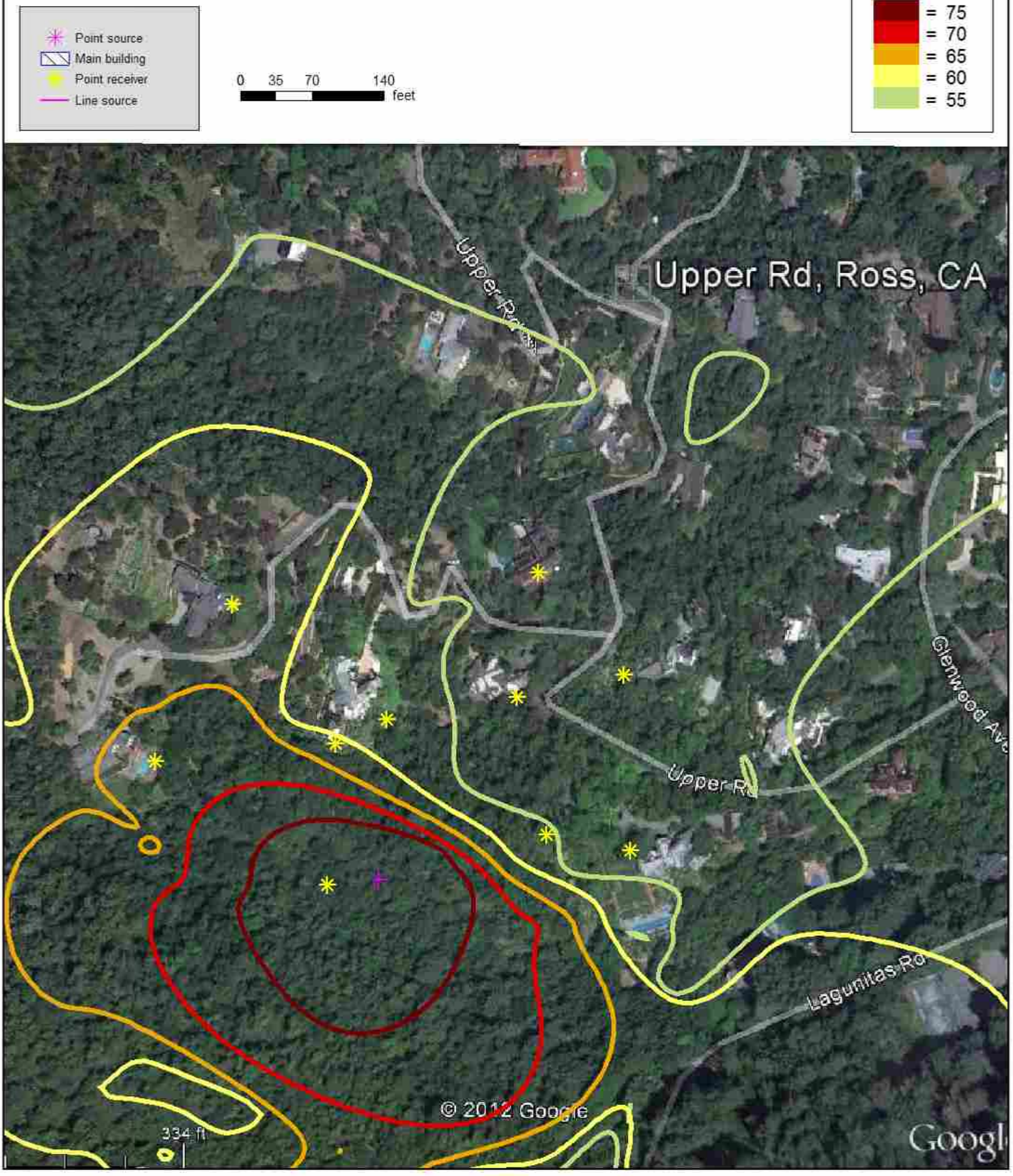
Noise Contours from Proposed Grading and Excavating for the northern portion of Upper Road in Ross, CA



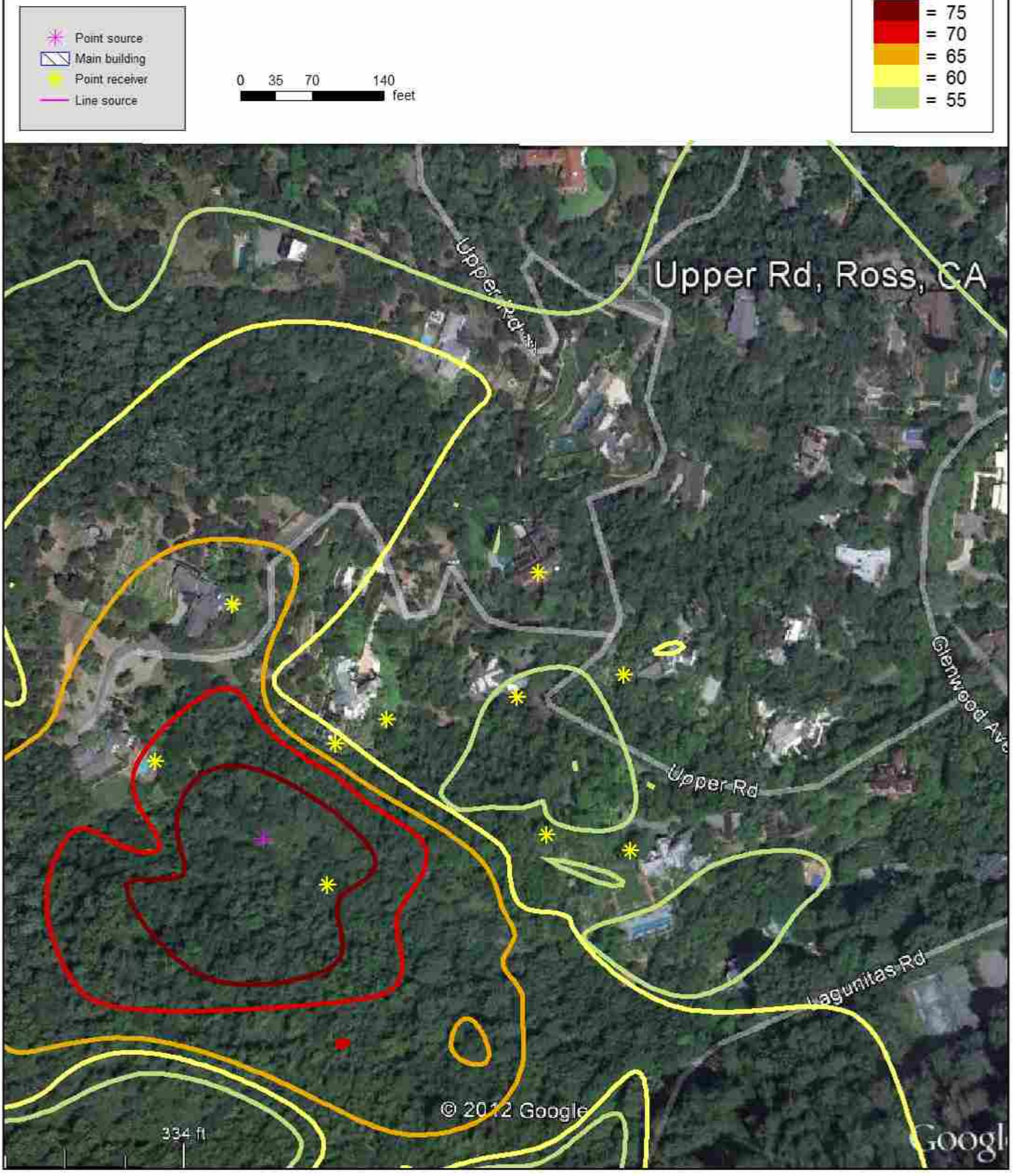
Noise Contours from Future Construction of Parcel 1 near Upper Road in Ross, CA



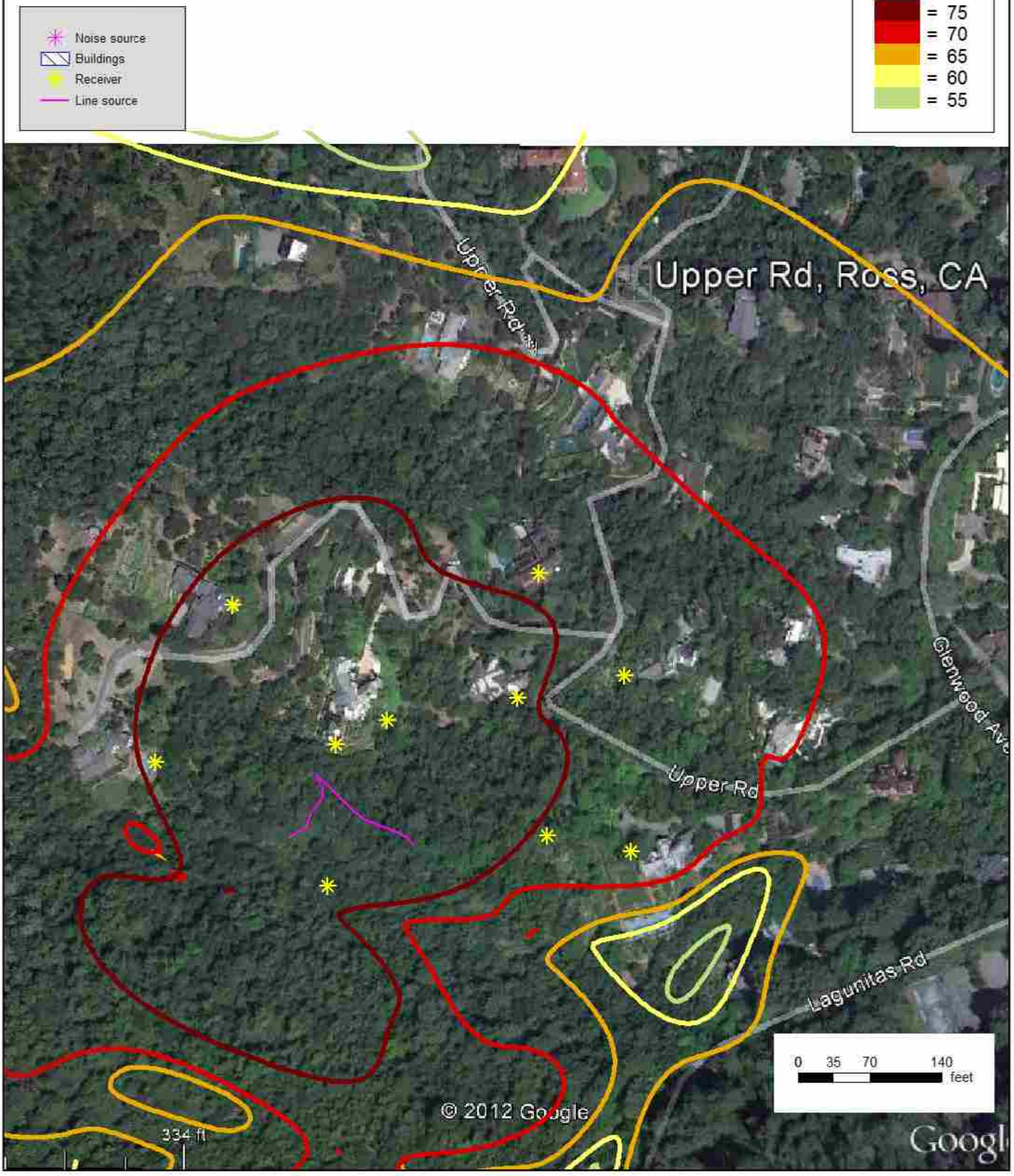
Noise Contours from Future Construction of Parcel 2 near Upper Road in Ross, CA



Noise Contours from Future Construction of Parcel 3 near Upper Road in Ross, CA



Noise Contours from Proposed Grading and Excavating for the southern portion of Upper Road in Ross, CA



Noise Contours from Proposed Dump Truck Traffic on Upper Road in Ross, CA - 3 trucks per hour