APPENDIX D
NOISE ASSESSMENT

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NOISE IMPACT ANALYSIS

CHINO SPHERE GENERAL PLAN EIR – SUBAREA 2

CITY OF CHINO, CALIFORNIA

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters which describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The unit of sound pressure ratioed to the faintest sound detectable by a keen human ear is called a decibel (dB). Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic decibel scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity (middle A and its higher harmonics) are factored more heavily into sound descriptions in a process called "A-weighting" written as dB(A). Any further reference to decibels written as "dB" should be understood to be A-weighted.

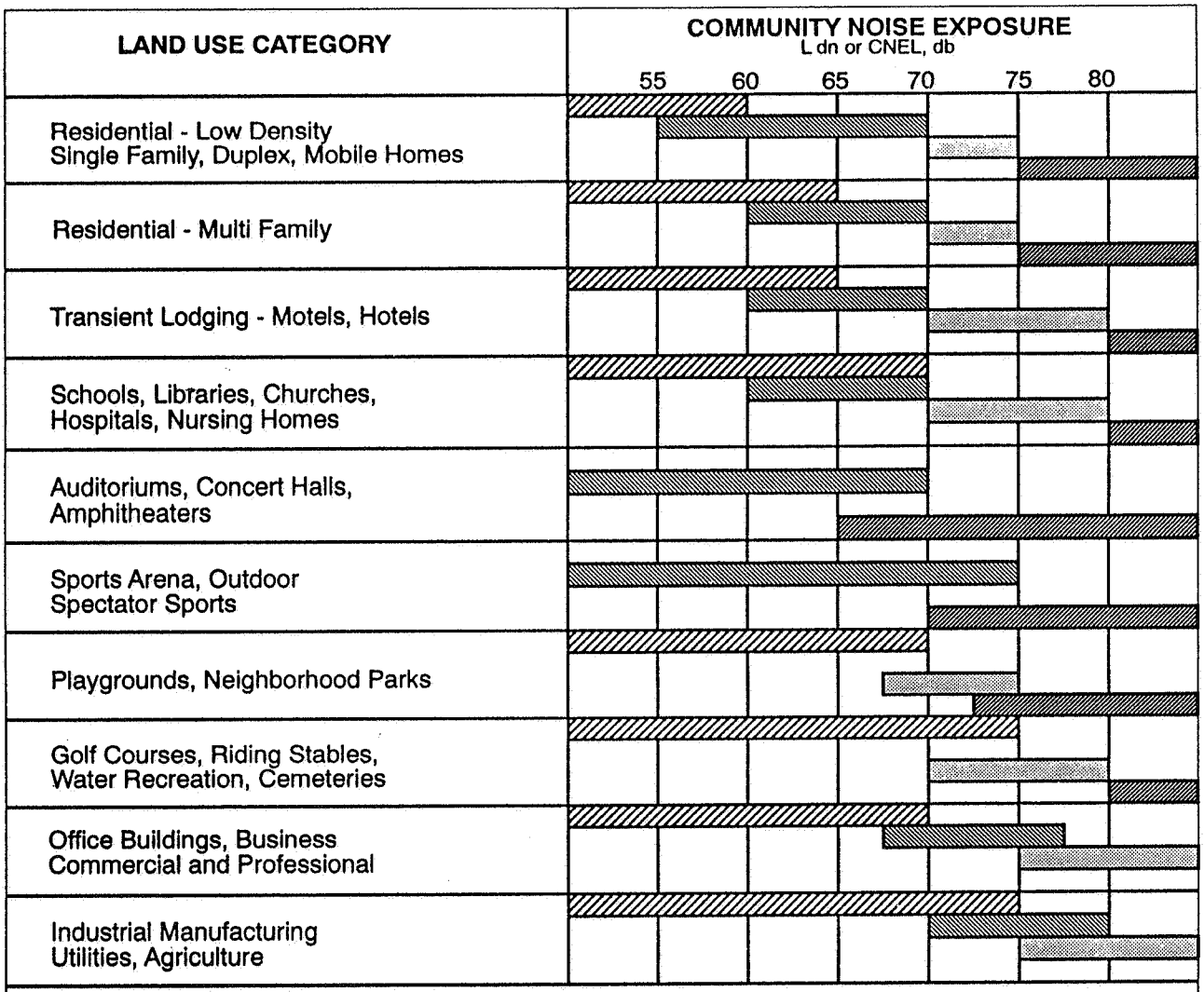
Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

An interior CNEL of 45 dB(A) is mandated by the State of California Noise Insulation Standards (CCR, Title 24, Part 6, Section T25-28) for multiple family dwellings and hotel and motel rooms. A weighted noise exposure of 45 dB CNEL is also the guideline level for single family interiors used in most California jurisdictions. Since normal noise attenuation within residential structures with closed windows is about 20-25 dB, an exterior noise exposure of 65 dB CNEL is generally the noise land use compatibility guideline for new residential dwellings in California. Because commercial or industrial uses are not occupied on a 24-hour basis, the exterior noise exposure standard for less sensitive land uses generally is somewhat less stringent.

In many communities where a quiet environment is considered an important asset that enhances the natural scenic values, a somewhat more stringent land use compatibility guideline has often been adopted. In the Noise Element of the City of Chino General Plan, a noise exposure of 50 dB by day and 45 dB at night is shown as most desirable for noise sensitive uses. The City's Noise Element was adopted verbatim from the San Bernardino County Element in effect in 1975. The City's element is outdated. Current noise/ land use planning within the City of Chino uses more realistic noise/land use compatibility standards less stringent than the noise standards shown above. Current/recent noise impact assessments use the State of California Office of Noise Control model element guidelines. Figure A shows the recommended State of California noise/land use compatibility guidelines for land use planning.

FIGURE A

Land Use Compatibility for Community Noise Environments



INTERPRETATION

NORMALLY ACCEPTABLE
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

SOURCE: State of California, Governor's Office of Planning and Research, *General Plan Guidelines*, 1990

Figure A shows a range of noise compatibility from "normally acceptable" to "clearly unacceptable." Because there is often too much discretion/interpretation in these ranges (with some overlap), the tendency in many noise level standards has been to assign a more clear-cut threshold of acceptability. Figure B shows the noise/land use compatibility criteria for new development in the City of Chino exterior standards for noise-sensitive land uses are 60 dB CNEL, with a possible maximum exposure of 65 dB CNEL if optimal mitigation has been implemented. These levels are consistent with standards used in most other communities in Southern California.

Because of the proximity of Subarea 2 to Chino Airport, aircraft noise is a concern in any sphere of influence development study. Aircraft noise concerns are similar to traffic noise impacts except:

1. Title 21 of the California Code of Regulations contains specific prohibitions against development within noise impact areas that allows for no discretionary variance on the part of any land use planning agency.

2. Aircraft noise propagates downward rather than more horizontally as does traffic noise. Perimeter noise walls to mitigate exterior areas are therefore not effective in noise impacted areas.

Title 21 at Section 5012 defines a noise impact area as one where noise sensitive land uses have more than a 65 dB annual average CNEL noise exposure. Noise sensitive uses which are prohibited inside a 65 dB CNEL airport noise contour include:

a. Residences (except for certain limitations)
b. Public and private schools
c. Hospitals and convalescent homes
d. Churches and other places of worship

The 65 dB CNEL contour has been calculated for future Chino Airport air traffic projections. The current airport noise "footprint" as a basis for future development planning decisions is for the year 2005. Figure C shows the 65 dB CNEL contour as shown in the Chino Airport Comprehensive Land Use Plan (CLUP; 1991).

Figure C shows that Subarea 2 is not noise-constrained by State law. However, the CLUP points out that experience has shown that the single-event character of aircraft noise creates noise complaints at levels well below 65 dB CNEL. The complaint area extends as far as the 55 dB CNEL contour. Extrapolation of the contour in Figure C suggests that noise complaints could extend to almost two miles from the airport if noise sensitive uses are built within the primary flight tracks. A noise related development constraint may exist within the northern portion of Subarea 2 even if adopted noise contours would not prohibit development of noise-sensitive uses anywhere within Subarea 2.

Interior/Exterior Noise Level Standards - Mobile Noise Sources

LAND USE		Ldn (or CNEL), dB	
Categories	**Uses**	**Interior***	**Exterior****
Residential	Single and multi-family, duplex, mobile homes	45	60***
Commercial	Hotel, motel, transient lodging	45	60***
	Commercial retail, bank, restaurant	50	n/a
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	n/a
Institutional/Public	Hospital, nursing home, school classroom, church, library	45	65
Open Space	Park	n/a	65

*Indoor environment excluding: bathrooms, kitchens, toilets, closets and corridors.

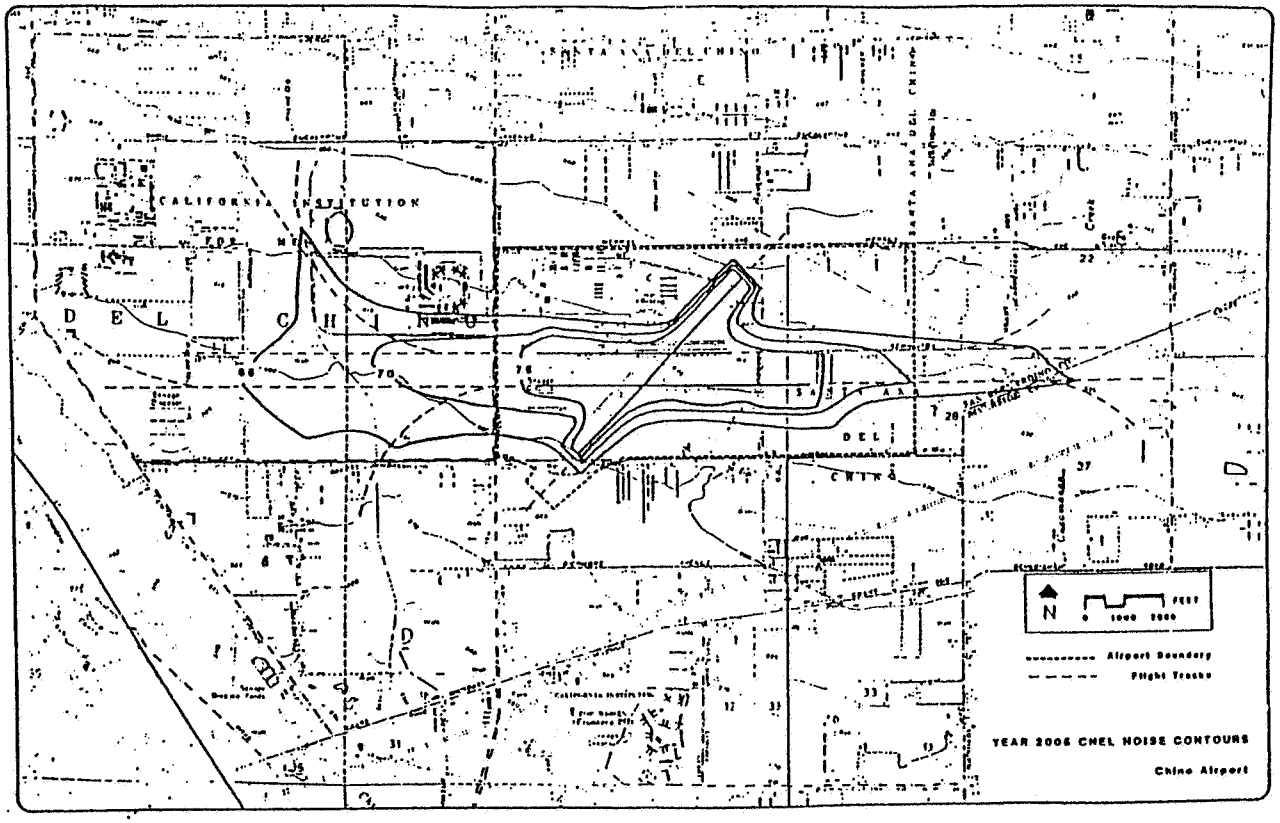
**Outdoor environment limited to:

- Private yard of single-family dwellings
- Multi-family private patios or balconies
- Mobile home parks
- Hospital/office building patios
- Park picnic areas
- School playgrounds
- Hotel and motel recreation areas

***An exterior noise level of up to 65 dB (or CNEL) will be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB Ldn (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level will necessitate the use of air conditioning or mechanical ventilation.

NOISE EXPOSURE STANDARDS FOR MOBILE SOURCES

FIGURE B



CHINO AIRPORT NOISE CONTOURS

FIGURE C

The adopted noise contours in Figure C do not accurately reflect the scope of airport growth currently envisioned. The greater anticipated future volume of jet aircraft traffic is expected to create some expansion of the 65 dB CNEL contour. The 65 dB CNEL contour is the noise-sensitive land use exclusion boundary (except under special circumstances). While land use decisions regarding airport noise are required to be based upon adopted noise contours, there may be future liabilities if those decisions are made upon contours known to not be adequately representative. Even if there is no legal liability, the potential for land use conflict looms large if residential uses are approved in an environment where future airport noise is likely to exceed 65 dB CNEL.

The aircraft fleet mix and associated "noise footprint" from Chino Airport have been changing in conjunction with the addition of more business jets and the extension of Runway 8R-26L. The Airport Master Plan update is currently in progress. The update will evaluate airport expansion, use of surplus airport properties, projected changes in fleet mix, and potential growth in flight and passenger activity. A revision of the adopted noise and safety "exclusion" contours is likely to result from this study. Because the results of the update process are unknown, any constraints analysis would be speculative. The anticipated release of the revised Master Plan is December, 2002.

Preliminary evaluation of noise contour changes suggests that a noise constraint to sensitive development may occur in the future in the northernmost portion of Subarea 2. In the absence of any definitive information on the likely extent of any possible constraint, use of an airport activity overlay is suggested for the northern portion of Subarea 2 that would require additional analysis for proposed future noise-sensitive development when revised noise contours will likely have been adopted.

Mobile (aircraft and vehicular traffic) noise generation discussed above is generally preempted from local control. Discretionary actions to control such impacts are in terms of land use decisions. Stationary sources (industrial plants, etc.) are governed by local ordinance. The City of Chino does have specific noise standards in its municipal code that regulate non-preempted (stationary equipment, off-road traffic, commercial activities, etc.) noise sources. The noise ordinance governs the noise exposure of any residentially zoned properties. Ordinance criteria are stated in terms of allowable noise for a given period of time. Noise standards at night, and those consisting of impulse, simple tone, music or speech noises are more heavily penalized. Table 1 shows the acceptable levels at residential land uses during the daytime and nighttime. If the ambient noise level exceeds the Table 1 standards, the ambient becomes the standard for that exposure period.

Existing noise levels throughout Subarea 2 derive mainly from vehicular sources on the highways and secondary roads in the area. Chino Airport aircraft noises constitute an occasional short-term noise intrusion, but the integrated contribution of aircraft flight activities over a 24-hour CNEL exposure period is small except in close proximity to the airport. Agricultural activity noise and dairy operations sometimes have audible noise, but again only in close proximity to each individual activity. Large swarms of birds near dairy farms can be unusually noisy, but their noise generation seems less intrusive than mechanical equipment such as cars, planes or tractors.

Table 1

City Of Chino Exterior Noise Ordinance
Criteria for Residential Properties

		Noise Levels Not to Exceed	
Maximum Time of Exposure	**Noise Metric**	**7 a.m. to 10 p.m. (dBA)**	**10 p.m. to 7 a.m. (dBA)**
30 min/hr	L50	55	50
15 min/hr	L25	60	55
5 min/hr	L8.3	65	60
1 min/hr	L1.7	70	65
Any period of time	Lmax	75	70

Source: Ordinance 95-10, Section 9.40.040.

Short-term noise level measurements were conducted on April 25, 2000 at four locations in the project area. Table 2 summarizes the results of these measurements. Although the data in Table 2 are short-term (20 minute) Leqs while the noise compatibility standard is for CNEL, daytime Leq and weighted 24-hour CNEL are often seen in measurement data to be almost identical. Table 2 shows that roadway noise is in the mid-60 dB range at the edge of several area roadways. Increase in noise is to be expected from anticipated growth. Some offset will occur as the number of trucks declines, and travel speeds become constrained from signalized intersections and greater volumes. Almost no aircraft activity was observed during these measurements. Any constraints on development imposed by the current noise environment are confined to a fairly narrow corridor near local roadways. Traffic growth and a change in flight activities at the airport may expand the noise incompatibility zone in the future.

The measurements were made in April, 2000. No substantial growth has occurred since then that would have measurably changed the existing noise environment. Noise is logarithmically proportional to source activity (cars, airplanes, etc.). A clearly perceptible noise increase for humans is around +3 dB. It requires a doubling of noise generators to create a +3 dB increase (= 10 X log (2) = 3.0). There has been no development activity that would have caused such a doubling since the noise data were taken.

Three of the four measurement sites were near existing dairy operations. The low noise levels generally found in agricultural areas of Chino are reflected in the generally low "L50" or "L90" levels. Dairies are not substantial noise generators except for early morning truck activities to deliver feed or haul away milk. Noise is generally not a constraint to siting residential uses near ongoing dairies because traffic noise mitigation is generally a greater issue, in developing residential communities in formerly semi-rural environments.

Table 2

On-Site Noise Monitoring Survey

	Leq	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
Frontera Women's Colony	68	75	49	72	58	50
Kimball Avenue/Sultana	66	82	50	68	62	56
Bickmore/Grove	64	80	50	62	54	52
Pine/Hellman	58	74	50	64	52	49

Source: Larsen-Davis Labs Model 700B Noise Dosimeter; April 25, 2000, 1430-1635 (20 minutes/site).

NOISE IMPACTS

Two characteristic noise sources are typically identified with land use intensification such as that proposed for Subarea 2. Construction activities, especially heavy equipment, will create short-term noise increases near the project site. Such impacts may be important if project development occurs near the interface with an off-site, noise-sensitive land use.

Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout western San Bernardino County. Traffic noise impacts are generally analyzed both to insure that the project will not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting upon the project.

The adopted airport land use compatibility plan shows no airport activity noise constraint upon Subarea 2, but that plan is subject to future revision. Noise complaints may arise due to single-event noise nuisance even if the integrated 24-hour weighted average (CNEL) is within acceptable limits. The proposed Subarea 2 land use development plan places least noise-sensitive land uses closest to the airport even though residential use is currently not prohibited anywhere within the developable area because of noise. Creation of a noise overlay within the area of possible noise constraint is recommended so that noise issues are revisited in the future if/when specific development proposals are finalized.

Standards of Significance

Noise impacts are significant if:

1. they cause noise standards to be exceeded where they are currently met, or,

2. they cause noise levels to measurably worsen in an environment already exceeding standards.

"Measurably worsen" is not defined in CEQA guidelines. Most people can not distinguish noise level differences of less than 3 dB. However, because of the logarithmic nature of noise, it requires a doubling of traffic volumes to increase noise levels by 3 dB. Few projects of themselves would cause traffic volumes to double where existing volumes are already high enough to cause elevated noise levels. The threshold of accuracy for monitoring or modeling of ambient noise is + 1 dB. A 1 dB increase in noise levels, even if not perceptible by people under ambient conditions, is therefore a more appropriate significance threshold if noise levels already exceed established compatibility guideline levels and noise-sensitive land uses are directly exposed to project-related impacts.

Construction Noise Impacts

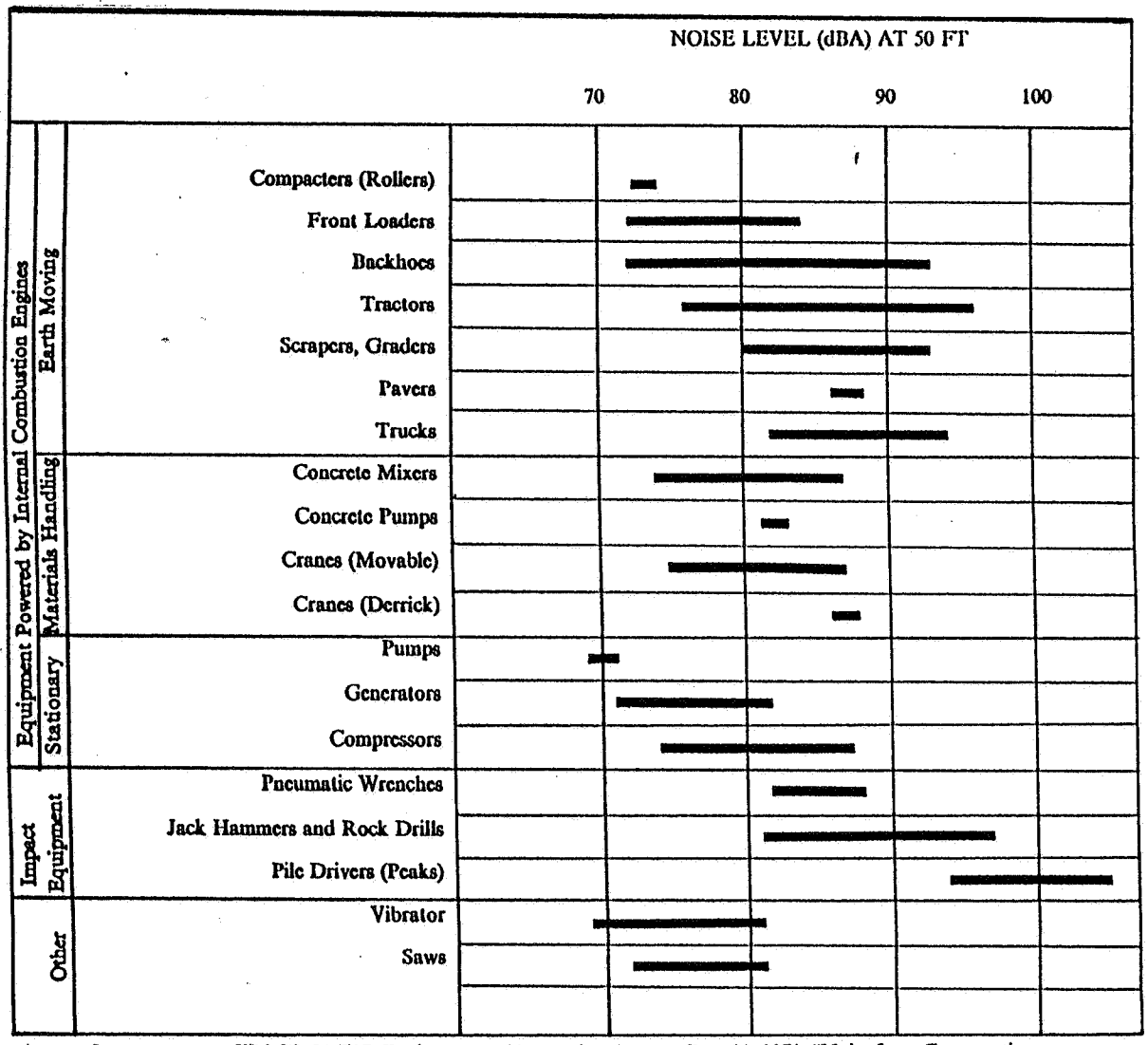
Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by earth-moving sources, then by foundation and roadway construction, and finally by finish construction. Figure D shows the typical range of construction activity noise generation as a function of equipment used in various building phases. The earth moving sources are seen to be the noisiest with equipment noise ranging up to about 90 dB(A) at 50 feet from the source.

Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance, or about 25 dB in 1000' of propagation. The loudest earth-moving noise sources will therefore sometimes be as high as 65 dB(A) out to a distance of 1000' from the construction area. A detectability radius of 1000' or more pre-supposes no other machinery or equipment noise that would mask project construction noise. As intensification of the project vicinity increases, the assumption of a "clean" baseline may not be realized. An extensive noise impact envelope also requires a clear line of sight from source to receiver that will not be realized as various project parcels have completed structures. Both the masking effects of other noise sources (cars and trucks or Chino Airport aircraft) and screening effects of completed structures will reduce the zone of construction noise audibility. Construction noise could at times be perceivable at sensitive receptors at an adjacent parcel to a given construction project, but the noise envelope around any construction site will generally be confined to the immediate vicinity of any individual construction area. Any construction activity noise nuisance potential is therefore generally localized and temporary.

Construction noise sources are not strictly relatable to a noise standard because they occur only during selected times and the source strength varies sharply with time. Further, noise-intensive construction of any individual development is limited in duration to a period of a few months. If construction activities occurred at night, they could create a short-term significant impact because of sleep disturbance at sensitive receivers beyond the construction site. If noise-sensitive uses are located near a construction area, then time limits on grading and other equipment operations are established to minimize nuisance potential. For construction near (within 500') of scattered existing residences, the hours from 7 a.m. to 7 p.m. on weekdays should be the times allowed for construction activities. With such time limits, and with the relatively low noise sensitivity of proposed project development most likely exposed to construction noise on an adjacent parcel, construction activity noise impacts are anticipated to be less than significant.

Project-Related Vehicular Noise Impacts

Long-term noise concerns from the increased urbanization of the project area center primarily on mobile source emissions on area roadways. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal roadway noise model (the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108). The model calculates the LEQ noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.



Source: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

TYPICAL CONSTRUCTION EQUIPMENT NOISE GENERATION LEVELS

FIGURE **D**

Traffic noise levels will change substantially for future conditions versus existing levels on several roadways. These changes are due to cumulative growth independent of development within Subarea 2. This same growth of traffic and associated noise will generally mask any project-related contributions except within Subarea 2 itself where traffic growth would not occur without project implementation.

Traffic noise was calculated along 137 roadway segments throughout the City of Chino, within and surrounding Subarea 2 for existing and interim years 2010 and 2020, (no-project and future with-project) conditions. The additional post-2020 traffic growth of 27 percent will increase noise levels by an additional 1.0 dB. Such a difference is imperceptible from Year 2020 data. Since the traffic study did not project ADT on the Chino roadway system for post-2020 conditions (required for noise impact calculations), the 2020 data, adjusted upward by +1 dB for additional growth, was assumed to be an accurate project impact characterization. The results of the traffic noise analysis are included in the appendix to this report. Potential significance was previously defined as noise increase that was clearly perceptible (+3 dB) in an area of noise sensitive land uses, or a +1 dB increase if there were noise sensitive uses adjacent to the roadway and "no project" exposures already exceeded 65 dB CNEL without the proposed action. Because of substantial forecast area growth, a large number of area roadways will experience a potentially significant noise level increase from existing conditions. Such increases are primarily due to cumulative growth, especially outside Subarea 2. Increases of +3 dB CNEL are forecast to occur along 17 roadway segments, with another 8 experiencing a measurable (+1 dB CNEL) increase where existing levels already exceed 65 dB CNEL as far away as 100 feet from the roadway centerline.

However, these substantial increases from existing conditions are primarily due to cumulative growth (2020 no-project versus existing), except within Subarea 2 or near the planning area perimeter. Potentially significant noise level differences between the no-project and project are predicted to occur along the following roadway links:

Perceptible Increase (3 dB CNEL)	**"Measurable" in already noisy conditions (1 dB if CNEL already 65 dB)**
Merrill Avenue: E of Euclid Ave. Hellman Ave. – Eucalyptus	Edison Ave: W of Mountain Archibald-Haven Avenue
Kimball Avenue: E of El Prado Rd. Euclid - Archibald Ave.	Cloverdale Road: Milliken Avenue - I-15
Cloverdale Road: Archibald Ave.-Milliken Ave.	Euclid Avenue: SR-60 - Eucalyptus Avenue N of SR-71
Bickmore Avenue: E of Euclid Avenue W of Grove Avenue	Grove Avenue: SR-60 - Walnut Avenue
Pine Avenue: SR-71 - W of Archibald Ave.	River Road: Corydon Street - 2nd Street

Perceptible Increase (3 dB CNEL)	"Measurable" in already noisy conditions (1 dB if CNEL already 65 dB)
Schliesman Road: Archibald Ave.-Haven Avenue	Haven Avenue: SR-60 - Riverside Drive
Chandler Street: Hellman Ave.-Archibald Ave.	
Euclid Avenue: Eucalyptus Ave.-Kimball Ave.	
Grove Avenue: Schaefer Ave. - Edison Ave. Eucalyptus - Pine Avenue	
Walker Avenue: Edison Ave. - Cloverdale Rd.	
Hellman Avenue: Cloverdale Rd. - S of Chandler St.	
Archibald Avenue: Edison Ave.- Eucalyptus Ave.	
River Road: N of Archibald Ave,-Corydon St.	

Aircraft Noise Exposure

The currently adopted land use compatibility plan shows no airport activity noise constraint upon Subarea 2, but that plan is subject to future revision. The Specific Plan includes an airport overlay zone to assure compatibility with any adopted Airport Comprehensive Land Use Plans. Residential use is currently not prohibited anywhere within the developable area because of noise. Although the proposed Subarea 2 land use development plan places least noise-sensitive land uses closest to the airport, noise complaints may still arise due to single-event aircraft noise nuisance even if the integrated 24-hour weighted average (CNEL) is within acceptable limits.

Near airports, even at noise exposures well outside the 65 dB CNEL contour, there may be single flyover events that are perceived as intrusive even if the 65 dB CNEL standard is met with a large margin of safety. Although the airport pre-dates future development, the complaint frequency will rise as more homes are developed. Buyer/resident awareness through notification during real estate transactions (purchase or lease) can somewhat reduce future noise complaints, but not eliminate them. Buyer notification is suggested for any Subarea homes within one mile of the airport boundary that an airport is nearby and that aircraft may occasionally be audible even though the property is well outside the airport noise impact zone as defined by the State of California.

MITIGATION

Potential construction noise nuisance was identified as a possibly adverse impact. This potential impact will be mitigated to a less than significant impact as follows:

- All construction activities conducted within 500 feet of any occupied dwelling, hotel or other noise-sensitive land use shall not occur from 7 p.m. to 7 a.m. the following day, and at any time on Sundays or universally observed holidays.
- All construction equipment will use properly operating mufflers.
- All staging areas shall be located away from occupied dwellings where feasible.
- The City of Chino will approve construction truck access routes that minimize noise intrusion into sensitive areas.

Roadway noise may exceed 65 dB CNEL along a number of area roadways in usable exterior spaces such as yards or patios. If exterior levels exceed 65 dB CNEL, then typical structural attenuation of 10 dB with open windows or 20 dB with windows closed would be insufficient to meet interior standards of 45 dB CNEL in habitable rooms. A supplemental noise impact analysis will this be required at the tentative tract level to insure that:

- Usable exterior space meets noise standards of 65 dB CNEL through a combination of setback or barriers.
- Habitable interior rooms along any project perimeter near noise-impacted roadways meet the interior standard of 45 dB CNEL through dual-paned windows, central air conditioning and other structural upgrades.

Future aircraft noise exposure is currently uncertain because the adopted airport land-use compatibility plan is under revision, but no new plan has been adopted. A revised plan will likely be adopted by the end of 2002. The proposed project places less noise-sensitive land uses close to the airport as a buffer use for residential and other sensitive uses farther away from the airport boundary. In order to insure that noise exposure be considered in final design plans, and in acknowledgement of possible single-event audibility even if standards are not exceeded, the following mitigation is recommended:

- A noise overlay shall be created within one-fourth mile south of the Kimball Avenue centerline.
- All real estate transactions within Subarea 2 within 1.0 mile of the airport boundary will contain advisory language that aircraft may be periodically audible even though the subject property is exposed to noise levels due to aviation activities that are well within State guidelines.

APPENDIX

Subarea 2 Traffic Noise Impact Analysis

Traffic Noise Analysis Detail
(CNEL in dB[A] at 100 feet to roadway centerline)

	2002	Year 2010		Year 2020	
	Existing	No Project	With Project	No Project	With Project
Walnut Ave.					
Benson Ave.-Mountain Ave.	64.0	64.0	64.0	64.0	64.0
Mountain Ave.-San Antonio	64.1	64.1	64.1	64.1	64.1
San Antonio Ave.-Euclid Ave.	64.3	64.8	64.8	65.3	65.3
Euclid Ave-Campus Ave.	65.0	65.4	65.4	65.4	65.7
Riverside Dr.					
Benson Ave.-Mountain Ave.	66.0	66.7	66.9	67.7	67.7
Mountain Ave.-San Antonio Ave.	65.5	66.4	66.9	67.2	67.3
San Antonio Ave.-Euclid Ave.	64.7	65.8	65.9	66.8	67.0
Euclid Ave-Campus Ave.	65.2	65.7	65.7	66.1	66.2
Vineyard Ave.-Archibald Ave.	65.7	66.4	66.4	67.1	67.1
Archibald Ave.-Haven Ave.	65.6	66.0	66.0	66.3	66.4
Edison Ave.					
Monte Vista Ave.-Central Ave.	64.9	67.0	67.1	68.4	68.7
East of Central Ave.	65.7	67.4	67.5	68.6	68.9
West of Mountain Ave.	65.3	66.2	67.0	66.9	68.3
Mountain Ave.-San Antonio Ave.	64.4	66.1	66.3	67.5	67.8
Fern Ave.-Euclid Ave.	64.0	65.5	65.8	66.3	67.2
East of Euclid Ave.	62.2	64.9	64.9	66.9	66.7
West of Grove Ave.	60.9	63.8	64.3	65.5	66.4
Grove Ave.-Walker Ave.	60.9	64.4	64.4	65.6	66.4
Walker Ave.-Vineyard Ave.	59.1	63.9	64.4	64.9	66.4
Vineyard Ave.-Archibald Ave.	61.5	64.3	64.3	65.9	65.9
Archibald Ave.-Haven Ave.	60.8	63.2	63.9	63.1	65.9
Galena St.					
West of I-15	-	-	66.7	68.6	68.8
East of I-15	-	-	63.6	65.7	65.7
Chino Hills Parkway					
Peyton Dr.-Pipeline Ave.	68.8	68.8	68.8	68.8	68.8
Pipeline Ave. - SR-71	68.7	69.0	69.0	69.4	69.4
SR-71 - Ramona Ave.	65.1	68.0	68.2	69.9	70.2
Monte Vista Ave.-Central Ave.	63.3	65.3	65.5	66.6	67.0
Merrill Ave.					
East of Euclid Ave.	58.7	59.7	60.9	59.2	62.4
West of Grove Ave.	58.1	60.5	60.5	62.3	62.3
Grove Ave.-Hellman Ave.	57.9	58.4	59.8	60.5	61.2
Hellman Ave.-Eucalyptus Ave.	58.1	58.5	61.9	59.3	64.1
Eucalyptus Ave.-Archibald Ave.	58.1	58.5	61.9	61.9	61.9
Archibald Ave.-Sumner Ave.	-	-	-	59.1	59.1

	2002	Year 2010		Year 2020	
	Existing	No Project	With Project	No Project	With Project
Kimball Ave.					
East of El Prado Road	55.3	60.0	61.6	60.9	64.2
West of Euclid Ave.	58.5	61.4	62.5	62.0	64.8
East of Euclid Ave.	54.4	54.8	62.4	54.8	66.3
West of Grove Ave.	55.3	55.9	62.1	55.9	64.8
Grove Ave.-Hellman Ave.	54.1	54.4	63.4	54.4	66.6
Hellman Ave.-Archibald	-	-	62.6	56.7	67.1
Cloverdale Road					
Archibald Ave.-Sumner Ave.	61.2	61.8	64.0	61.6	65.9
Sumner Ave.-Milliken Ave.	61.4	62.3	64.5	62.2	66.6
Milliken Ave. - I-15	63.1	64.1	65.9	65.1	67.8
I-15 - Wineville Ave.	66.2	66.6	66.8	66.9	67.4
Bickmore Ave.					
West of Euclid Ave.	43.3	43.3	43.3	43.3	43.3
East of Euclid Ave.	43.3	43.3	60.5	43.3	63.6
West of Grove Ave.	48.1	48.1	60.5	48.1	63.6
Pine Ave.					
West of SR-71	59.1	64.6	66.3	67.7	68.4
SR-71 - El Prado Road	48.1	60.6	66.1	64.6	68.4
East of El Prado Road	56.9	60.0	63.6	57.3	66.4
West of Euclid Ave.	58.7	61.6	64.9	59.2	67.6
East of Euclid Ave.	62.8	63.3	66.2	63.3	68.3
West of Grove Ave.	61.8	62.2	65.4	62.2	67.5
East of Grove Ave.	62.3	62.7	64.7	62.7	66.3
West of Hellman Ave.	61.8	62.2	64.5	62.2	66.3
East of Hellman Ave.	60.2	60.7	64.9	61.4	67.0
West of Archibald Ave.	61.2	61.6	64.5	61.9	66.5
Schleisman Road					
Archibald Ave.-Haven Ave.	56.9	57.3	61.2	57.3	63.6
Haven Ave.-Hamner Ave.	57.1	61.2	62.5	63.3	65.0
East of Hamner Ave. 58.1	58.1	61.9	62.4	63.9	64.7
Chandler St.					
Hellman Ave.-Archibald Ave.	54.8	55.1	60.6	55.1	63.2
Corydon Street					
West of River Road	63.6	64.4	64.6	64.9	65.5
East of River Road	60.2	60.6	60.6	61.2	61.2
2nd Street					
River Road-Parkridge Ave.	63.7	64.4	64.7	64.9	65.6
Hamner Ave. - I-15	67.6	68.6	68.6	69.4	69.6
East of I-15	65.7	66.3	66.3	66.3	66.9
Pipeline Ave.					
North of Chino Hills Parkway	67.4	67.4	67.4	67.4	67.4
South of Chino Hills Parkway	67.1	67.2	67.2	67.2	67.2

	2002	Year 2010		Year 2020	
	Existing	No Project	With Project	No Project	With Project
Central Ave.					
Schaefer Ave.-Edison Ave.	66.3	67.3	67.3	68.2	68.2
Edison Ave.- Eucalyptus Ave.	65.8	66.7	66.7	67.6	67.6
Eucalyptus Ave.-Chino Hills Pkwy.	65.5	66.7	66.9	67.6	68.0
Chino Hills Pkwy-El Prado Road	63.2	65.3	65.7	66.5	67.4
El Prado Road - SR-71	62.2	64.6	64.8	67.5	67.8
South of SR-71	64.9	66.5	66.5	67.7	68.0
El Prado Road					
South of Central Ave.	60.2	62.8	63.7	63.7	65.8
North of Kimball Ave.	59.5	62.4	63.4	63.4	65.6
South of Kimball Ave.	57.6	60.9	60.9	62.8	62.8
North of Pine Ave.	56.5	58.1	60.0	59.3	62.1
Mountain Ave.					
Philadelphia Street- SR-60	69.0	69.3	69.3	69.6	69.6
SR-60 - Walnut Ave.	68.0	68.6	68.7	69.1	69.4
Walnut Ave.-Riverside Dr.	66.9	67.6	67.7	68.1	68.4
Riverside Dr.-Chino Ave.	66.0	66.7	66.9	67.3	67.7
Schaefer Ave.-Edison Ave.	61.3	62.2	62.7	62.7	63.8
Euclid Ave.					
Philadelphia St. - SR-60	67.7	68.1	68.4	68.4	69.0
SR-60 - Walnut Ave.	67.8	68.3	68.9	68.3	69.8
Walnut Ave. - Riverside Dr.	66.4	67.1	68.0	66.8	69.3
Riverside Dr. - Chino Ave.	66.0	66.6	67.6	66.5	68.8
Schaefer Ave.-Edison Ave.	65.6	66.0	66.9	66.0	68.1
Edison Ave.-Eucalyptus Ave.	64.9	65.3	66.5	65.3	67.8
Eucalyptus Ave.-Merrill Ave.	64.4	64.8	66.5	64.8	68.0
Merrill Ave.-Kimball Ave.	64.3	64.8	66.6	64.8	68.2
Kimball Ave.-Bickmore Ave.	63.9	64.3	65.5	64.3	66.8
Bickmore Ave.-Pine Ave.	63.6	64.0	65.2	64.0	66.3
South of Pine Ave.	64.2	64.6	65.5	64.2	66.6
North of SR-71	64.6	65.1	66.5	65.1	67.9
South of SR-71	60.8	61.2	61.2	61.2	61.6
Grove Ave.					
Philadelphia Street- SR-60	68.6	69.0	69.2	69.3	69.8
SR-60 - Walnut Ave.	67.1	67.5	68.1	67.6	68.9
Schaefer Ave.-Edison Ave.	57.6	58.2	62.8	59.5	65.3
Edison Ave.-Eucalyptus Ave.	54.4	56.1	59.2	61.6	61.6
Eucalyptus Ave-Kimball Ave.	53.3	53.7	56.9	53.7	59.0
Kimball Ave.-Bickmore Ave.	55.9	56.3	61.4	60.1	64.2
Bickmore Ave.-Pine Ave.	55.1	55.6	63.1	55.6	66.1

	2002	Year 2010		Year 2020	
	Existing	No Project	With Project	No Project	With Project
Walker Ave.					
Edison Ave.-Eucalyptus Ave.	48.1	59.4	59.4	54.1	62.5
Eucalyptus Ave-Merrill Ave.	-	-	-	55.6	63.7
Merrill Ave-Cloverdale Road	-	-	63.7	43.3	67.0
Hellman Ave.					
Cloverdale Road-Pine Ave.	-	43.3	62.2	43.3	65.4
South of Pine Ave.	57.8	58.2	61.8	58.2	64.0
North of Chandler Street	58.2	58.6	62.1	58.6	64.3
South of Chandler Street	58.1	59.4	62.6	58.5	64.9
Vineyard Ave.					
Philadelphia Street - SR-60	65.0	65.0	65.0	67.0	67.0
SR-60 - Walnut Ave.	66.5	67.8	67.9	68.7	69.0
Schaefer Ave.-Edison Ave.	-	-	-	62.9	65.4
Archibald Ave.					
Philadelphia St. - SR-60	65.7	66.1	66.1	66.1	66.6
South of SR-60	66.8	67.2	67.3	67.4	67.9
North of Riverside Drive	65.9	66.6	66.8	67.1	67.7
Riverside Drive-Chino Ave.	64.8	65.1	65.1	65.2	65.3
Schaefer Ave.-Edison Ave.	62.0	62.4	62.7	62.4	63.5
Edison Ave.-Eucalyptus Ave.	62.1	64.1	65.2	63.5	67.2
Eucalyptus Ave.-Merrill Ave.	62.4	63.5	65.4	64.7	67.3
Merrill Ave.-Cloverdale Road	63.4	65.3	65.3	65.2	65.2
South of Cloverdale Road	63.2	64.0	64.7	65.4	65.9
North of Schliesman Road	62.4	62.8	64.0	64.0	65.3
Schliesman Road-Chandler St.	62.3	62.7	62.7	62.7	63.1
Chandler Street-River Road	62.3	63.4	63.7	64.1	64.8
River Road					
North of Archibald Ave.	60.0	62.2	64.6	61.9	66.7
Archibald Ave.-Bluff St.	64.1	65.6	66.8	65.5	68.6
Bluff Street-Corydon St.	64.3	65.4	66.6	65.2	68.2
Corydon Street-2nd St.	65.0	65.9	66.7	65.7	68.0
2nd Street-Lincoln Ave.	64.3	64.9	65.6	64.9	66.8
Haven Ave.					
Philadelphia Street - SR-60	67.7	67.7	67.7	70.6	70.6
SR-60 - Riverside Drive	66.1	68.0	68.6	69.2	70.3
Milliken Ave.					
Merrill Ave.-Cloverdale Road	62.3	63.8	63.8	64.9	64.9
South of Cloverdale	61.8	64.0	64.3	65.9	65.9
North of Schliesman Road	61.8	64.0	64.3	66.0	66.0
South of Schliesman Road	63.1	65.4	65.6	66.8	67.3

- = Does not exist.