



**ABC ACOUSTICS,
INC.**

? Architectural ? Environmental ?
? Industrial ? Legal ?

October 23, 2006

Mr. Allen Carlisle
Padre Dam Municipal Water District
9310 Fanita Parkway
Santee, CA 92071

**Re: Santee Lakes Water Sports project, City of Santee, CA.
Draft Acoustical Analysis Report (ABC Project No.: 2012; Report No.: 2012D)**

Allen:

This Acoustical Analysis Report addresses the noise impacts associated with the Santee Lakes Water Sports project. It is intended to assess the cumulative noise impacts due to operation of the main motor which powers the system and people who use the facilities. It is our understanding that the operations would include no music and that they would be limited to daytime hours of 8 a.m. to 7 p.m..

We have surveyed the ambient noise levels at the project site. We have also had the motor and operational noise levels monitored at two similar sites. Using such information, we have assessed the significance of project-related noise impacts upon noise-sensitive land uses in the area. The following includes a brief description of the project's background, applicable standards, and the results of our findings.

A. BACKGROUND:

The proposed Santee Lakes Water Sports project would be located within Lake #1 area of Santee Lakes, within the City of Santee, California. The project would make use of a cable system supported by 5 Stanchions which would be located around Lake #1. Each stanchion would be approximately 35 feet high. The main cable would move around pulleys located on each stanchion. The motion would be powered by a motor located on one of these stanchions. This stanchion (i.e., Stanchion #1) would be located at the northwestern corner of Lake #1. Additional cables would be connected to the main cable for skiers to hold and ski around the lake. Approximately 100 skiers are anticipated to use the water sports facilities each day. The ski park would be operational daily from about 8 am to 7 pm.

The only noise source of potential significance associated with the project is the noise from the only motor used to power the system (i.e., the motor located atop Stanchion #1). This motor is the only “noisy” mechanical equipment used by the project. The only other noise associated with the project is the sound of water splashing under skies and the sound of spectators. This report is intended to assess the significance of motor as well as cumulative (i.e., motor + people) noise impacts upon noise-sensitive land uses in the vicinity.

The closest noise-sensitive (residential) land uses to Lake #1 are located west of the project site. There exists a 200-foot-wide natural buffer in the form of an open space (river bed) which is located between the project site and the existing residential units located west of the site. This increased setback helps reduce the project-related noise impacts on the sensitive areas to the west.

Additionally, there are existing landscaping within the intervening topography between the project site and residential areas to the west. These trees which are fairly mature and as tall as 50 feet at some locations obstruct the line-of-site from the residential units to the west to future operations within the proposed water park. As a result, they act as a noise barrier and further reduce project-related noise impacts.

The only other noise-sensitive residential land use in the area is located east of the Lakes, across Fanita Parkway. The ambient noise levels impacting these residential units are dominated by traffic along Fanita Parkway. Because of the lower ambient noise levels at the residential units to the west, they are considered to be the worst-case noise sensitive uses. If the project-related noise impacts do not exceed the applicable standards at the residential units to the west, they would not exceed at the residential units east of the site.

The cable system at Santee Lakes Water Sports Park is designed to handle a maximum of 8 skiers at any given time. The skiers would line up at starting point and wait for their turn to ski. The proposed project is anticipated to generate 50-100 average daily traffic (ADT). Considering the existing traffic volume of thousands within Santee Lakes and Lake #1, the increased noise due to an increased traffic volume of 50-100 ADT would be less than 1 dB and could be neglected.

B. METHODOLOGIES:

The existing average hourly equivalent (Leqh) noise levels at the project site were measured at several locations within the site and its perimeter. Noise measurements were also conducted along the eastern side of the existing noise-sensitive residential units located immediately west of the project site and the western side of residential units along Fanita Parkway.

All noise measurements were conducted using a Brüel and Kjær (B&K) Hand-Held Analyzer Type 2250 which is equipped with a Type 1 Precision Integrating Sound Level Meter. Units of measurements are expressed as decibels (dB) and the "A"-weighted noise scale is used because it closely approximates the perception of loudness by humans, hence, dB-A.

The noise due to subject motor was determined by using the data collected at a similar operation using the same motor. The noise report with such data was provided by the motor's manufacturer.

The cumulative motor plus people noise levels were determined by measuring the noise levels at Texas Ski Ranch, a similar cable ski facility currently in operation in Texas. ABC Acoustics retained the services of Dickensheets Design Associates, an acoustical engineering firm in Austin Texas to collect such data.

This report also makes use of the information provided by Mr. Karsten Krey of the International Cableways Association, Mr. David Cornwall, a world champion skier who has personally skied in numerous such facilities throughout the world, and input from other experts in the field of cable ski operations.

C. APPLICABLE STANDARDS:

A motor or a water sports park is a stationary (i.e., point) sound/noise source. Point (stationary) noise sources are usually regulated by Noise Ordinance of the subject jurisdiction. Noise Ordinance of the City of Santee is included in Chapter 8.12 of the City's Municipal Codes. The City of Santee's Noise Ordinance was used in this analysis. Section 8.12.040 of the Noise Ordinance includes the "Sound Level Limits" which apply to various types of land uses. Subsection A and B of Section 8.12.040 of the City of Santee Noise Ordinance read as follows:

A. Unless a variance has been applied for and granted pursuant to this chapter, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth (in Table 1) below except that construction noise level limits shall be governed by Section 8.12.290 of this chapter.

B. For all other zones, the sound level limit on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts....

TABLE 1

ALLOWABLE HOURLY SOUND LEVELS

CITY OF SANTEE NOISE ORDINANCE

| <u>Zone</u> | | Applicable Limit One -Hour Average Sound Level (Decibels) |
|---|-------------------|--|
| A-70, A-72, R-S, R-V, R-R, R-MH, S-87, S-88, S-90 | 7 a.m. to 7 p.m. | 50 |
| | 7 p.m. to 10 p.m. | 45 |
| | 10 p.m. to 7 a.m. | 40 |
| R-U, R-C, and C-31 | 7 a.m. to 7 p.m. | 60 |
| | 7 p.m. to 10 p.m. | 55 |
| | 10 p.m. to 7 a.m. | 50 |
| All other commercial zones | 7 a.m. to 7 p.m. | 60 |
| | 7 p.m. to 10 p.m. | 55 |
| | 10 p.m. to 7 a.m. | 55 |
| M-50, M-52 | Anytime | 70 |
| | | |
| All other industrial zones | Anytime | 75 |
| The sound level at the location on the boundary between an industrial zone and a residential zone | 7 a.m. to 7 p.m. | 60 |
| | 7 p.m. to 10 p.m. | 55 |
| | 10 p.m. to 7 a.m. | 55 |

Notes:

Source: City of Santee Noise Ordinance.

As presented above, the daytime hourly average noise limit (Leqh) applicable at the common property line between two residential zones is 50 dB-A Leqh at most residential zones. The project site itself is zoned open-space/park. However, the open-space/park zones are not included in Table 1. Therefore, this report is based on the worst-case assumption that the limit applicable to the project site is the same as residential zones, or 50 dB-A Leqh. As a result, the project-related noise impacts shall not exceed 50 dB-A Leqh during daytime hours of 7 a.m. to 7 p.m. at the closest residential property lines.

D. AMBIENT NOISE LEVELS AT THE PROJECT SITE:

The ambient noise levels at the project site were measured to be between 52 and 58 dB-A Leqh around Lake #1. The lower noise level of 52 dB-A Leqh was measured at areas away from vehicular traffic while areas abutting local roadways and parking areas had the higher noise of 58 dB-A Leqh. The only areas around Lake #1 with higher noise levels were at the southwestern corner of the lake, at the existing garage and service area, and the northeastern corner of the lake, at the “Spray Ground”.

The highest noise recorded at the existing garage and service area was 66 dB-A Leqh which was recorded along the western property line, outside the gate to the existing service area during busy morning hours of operations within the service area.

The existing noise levels were also higher at the existing “Spray Ground” (i.e., children’s water playground). The existing average sound levels around the perimeter of this water playground were recorded at 67-68 dB-A Leq when there was no other sound or noise but the sound of water falling to the ground. The cumulative noise levels at the spray ground were measured at 70 dB-A Leqh when 5 kids were playing in this playground.

The existing noise levels were also measured along the east side of the residential units located west of project site. The existing noise levels impacting these residential units are dominated by noise due to traffic along Mast Boulevard. Noise from traffic on other roadways in the area and an occasional overfly also contribute to the ambient noise at these houses. The existing noises from Santee Lakes are not audible at residential units to the west except for an occasional noise or beeping from the garage/service area.

The existing cumulative noise levels at residential units to the west of Lake #1 range between 60 dB-A Leqh at areas close to Mast Boulevard to 52 dB-A Leqh at areas abutting south of Lake #1.

The existing ambient hourly noise levels were also measured to be between 63-65 dB-A Leqh at the residential units located along Fanita Parkway, east of project site. Because of such relatively high ambient noise levels along these houses, the houses located west of the site are considered to be the worst-case noise-sensitive land uses in the area.

For comparative purposes, Table 2 is included to show sound and noise levels of common sounds and noises. Existing noise levels at the project site and its vicinity could be characterized as moderate to noisy.

TABLE 2
SOUND PRESSURE LEVELS OF COMMON SOUNDS AND NOISES

| <u>Sound Quality</u> | <u>Decibels</u> | <u>Sound Source</u> |
|--|-----------------|---|
| Threshold of Feeling Pain | 150 | Rocket engine, Ram jet |
| Deafening | 120 | Propeller aircraft, Boiler factory, Nearby riveter, Drop hammer |
| Very Loud | 90 | Loud street noises, Noisy factory, Pneumatic drill |
| Loud | 80 | Police whistle, Sander |
| Noisy | 70 | Normal radio, Noisy office |
| | 60 | Average traffic Noisy home |
| Moderate | 50 | Average office, Ordinary conversation, Quiet radio |
| Quiet | 40 | Quiet home, Private office |
| Faint | 30 | Rustle of Leaves, Quiet auditorium |
| Very Faint | 20 | Whisper |
| Threshold of Good Hearing | 10 | Soundproof room |
| Source: ABC Acoustics and Compendium of Material for Noise Control, US Department of Health Education and Welfare, June 1975. | | |

E. PROJECT-RELATED NOISE IMPACTS:

The only noise source of potential significance associated with the project is the motor located on Stanchion #1 which runs the cable system. It is our finding that the older engines used for such purposes produce approximately 55 decibels at ground level (i.e., at 30-35 feet from the engine). A typical motor has a 380 Volt engine between 30 and 45 kilowatts on 50 Hertz (AMY80L4; N327; IEC 34-5). Such an engine would produce approximately 55 dB-A Leq at ground level.

The newer cable systems have frequency controlled engines which results in lower noise levels. For example, they operate at only 33 Hz to produce the regular speed of 30 kilometers per hour. The resulting noise levels are barely audible at ground level or 40-45 dB-A Leq. Such noise levels would be audible only when ambient noise levels are very low. According to Mr. Karsten Krey, the president of International Cableways Association, the newer motors produce noise levels which are barely audible. A letter from Mr. Krey is included in Attachment "A" of this report.

In consultations with Mr. David Cornwall, who is a local San Diego resident and a world champion skier, he also reiterated that he has not heard the motor noise at any of the parks he has skied. Mr. Cornwall has skied in numerous cable ski facilities located throughout the world and his opinion is respected by everyone in the field. A letter from Mr. Cornwall is included in Attachment "A" of this report.

The motor noise was also recorded by Occupational Hygiene and Environmental Monitoring Company at a cable ski facility using the same motor which will be utilized at Santee. It is not clear from this noise report if the noise data includes people noise as well or only motor noise. To present a worst-case condition, it is assumed that the data presented in this report is that of the motor only.

The entire noise report prepared by Occupational Hygiene and Environmental Monitoring Company is presented in Attachment "B" of this report. As presented in Attachment "B", data from the motor was collected at an environment with an ambient noise of approximately 50 dB-A Leq. The cumulative motor plus ambient noise level was measured to be as high as 53 dB-A Leq at 45 feet. This results in a motor noise of between 48-50 dB-A Leq at 45 feet.

Operational noise levels were also measured at Texas Ski Ranch by Dickensheets Design Associates. The operational noise report prepared by Dickensheets Design Associates is included in Attachment "C" of this report. As presented in this report, the motor noise was barely audible over the ambient noise levels. The ambient noise level at 100 feet from the edge of the lake at Texas Ski Ranch was measured to be 52-53 dB-A Leq. The operational noise levels were measured to be 53-54 dB-A Leq at the same location.

It must be noted that the operational noise levels were measured when six (6) skiers were being towed by the cable, approximately fifteen (15) skiers were in line waiting their

turn, and another two dozens or so either sitting at the side of the lake, under a lounge canopy or on an outdoor lounge balcony, all observing the skiers. With the music off, the operational noise levels inside the park, at the edge of the lake, were measured to be between 56 and 61 dB-A Leq.

Considering a worst-case operational noise level of 53-54 dB-A Leq at 100 feet and a sound decay of 6 dB per doubling the distance, the operational noise levels would be 47-48 dB-A Leq at 200 feet from the lake. Therefore, the operational noise levels at the existing residential units to the west of the project site would be barely audible and lower than 50 dB-A Leq since these units have a setback of more than 200 feet from the edge of the lake. Additionally, the above noise data was collected with direct line-of-sight to skiing operations. As a result, noise levels at residential units to the west would be even lower because of the large trees and landscaping at the intervening topography which block the line-of-sight and provide for additional noise screening.

F. CONCLUSION:

The anticipated cumulative (i.e., motor plus people) noise levels from operations at Santee Lakes Water Sports Park are not anticipated to exceed 50 dB-A Leq at the existing residential units located west of the site. Similarly, the cumulative noise levels from the operations would not be audible at the existing residential units located along Fanita Parkway, east of the park, because they would be masked by the existing traffic-related ambient noise levels.

G. RECOMMENDED NOISE TREATMENT MEASURES:

Since no significant project-related noise impacts are identified, no noise treatment measures are recommended.

Please do not hesitate to contact me if you have any questions.

Very sincerely,



Sharo T. Sanavi
Consulting Acoustical Engineer
Principal

Enclosures

STS: lm
r2012

ATTACHMENT “A”
LETTERS FROM EXPERTS

LETTER A-1
From: Mr. Karsten Krey
President: International Cableways Association

Subj: **AW: AW: Need Info on Cable Ski Lakes**
Date: 9/4/2006 1:47:02 P.M. Pacific Standard Time
From: info@wasserski.de
To: Sanavi@aol.com

Hello Sharo
sorry for my late response. I was out of office a few days.
Our engine for example:
380 Volt engines between 30 and 45 kilowatt on 50 Hertz
AMY80L4
N327
IEC 34-5

That doesn't mean anything. For example all new build cables have frequency controlled engines, those are running not with the regular 50/60 Hz
For example with our regular speed of 30 kilometer /hour we have only about 33 hz
That means you even don't hear the engine. The noise of the riders on the water is even louder than the engine.

I think, your contact choosed RIXEN as the supplier. You should ask Rixen then for all technical details. He can give you for sure all informations, you need. Probably he already has made an acustical expertise.

You can also check on www.sesitec.de That's another manufacture. He's got his website also in english with several interesting downloads.

The guy, who we met here is named "Trevor Sudweeks". He only spoke with one of my employees.

have a nice day
best regards
Karsten Krey



International Cableways Association

Baumberger Straße 88
D-40764 Langenfeld

Office
fon +49(0)2173/62038
fax +49(0)2173/64411
cell +49(0)171/3108368

info@wasserski.de
www.wasserski.de

LETTER A-2
From: Mr. David Cornwall
World Champion Skier/Wake-Boarder

Sent from the Internet (Details)

Hi Sharo,

My apologies for not answering sooner. I've just returned from a business trip and I'm now answering the mountain of email. :/

I have two solutions for you that addresses the question of noise:

You and/or the owner need to take a short trip to ANY of the cable parks in the USA, such as OWC in Orlando, Rixen in Ft Lauderdale, or Texas Ski Ranch outside Austin, or ANY cable park ANYWHERE in the world, and take your video camera with you and take videos of a typical day there. You will CLEARLY find that there IS NO NOISE WHATSOEVER! NONE! That's just one of the many environmental advantages of cable systems. Unlike a crowded lake, there are NO LOUD MOTORS ANYWHERE! It's electric, so no noise at all there.

As for people, there is basically NOTHING in the way of noise there, either, since only ten skiers can be on at the same time, and as such an insignificant number of people will be at the park at any one time. Plus, by it's nature, it's not the kind of place where large numbers of people collectively create even the slightest noise occurrences or events. There will never be thousands of people there at any one time...only scores or perhaps a hundred at best on any typical day. It's definitely NOT like a roller coaster ride at some amusement or theme park. There's more noise at a local municipal swimming pool.

The other solution, is to contact Bruno Rixen in Munich, Germany. He invented the cableski system. His info is at www.rixen-seilbahnen.com. IF there are any studies available on the issue of noise at these parks anywhere, he would know, since he probably conducted them himself.

If no such studies exist, then the video solution I mentioned should be convincing enough for people with noise concerns. As simple video should do MORE than enough convincing. These parks are the quietest, most environmentally friendly such facilities anywhere.

I've been to MANY cable parks all over the world, and they are ALL the same with regard to noise.....there is basically NONE.

Also, I will be updating the website with more FAQs regarding cable systems, and noise is just one of several items I've already had on the list to address.

I live in San Diego, so please do not hesitate to contact me if you have any questions.

Best regards,
David Cornwall

ATTACHMENT “B”

**Motor Noise Report from:
Occupational Hygiene and Environmental Monitoring CC
Blue Rock Cable Water Ski**

Occupational
Hygien and
Environmental
Monitoring CC

(Reg. No. CK 95/2073/23)

WORKPLACE HEALTH FIRST

Telephone/Fax : 27 (0) 21 551-1379
Cell : 27 (0) 82 579-0396

PO Box 376
Minterton, Cape Town
7435, South Africa

Our Ref : BLROCKREP2

Your Ref :

16 February, 2004

Blue Rock Cable Water Ski
SOMERSET WEST
7130

For Attention : Mr. Lucas Reichmuth

Sir

NOISE MONITORING REPORT

We have pleasure in submitting the attached noise monitoring report for work conducted on 13 and 16 February, 2004 at Blue Rock Cable Water Ski, Somerset West. A COD tax invoice for R 991,80 was submitted to yourself on 13/02/04.

We trust that the information supplied is to your satisfaction and look forward to being of further service to you in the future. Please do hesitate to contact us should any additional information be required.

Yours Faithfully
OUE MONITORING

L.J VAN RENSBURG
MEMBER

Member : L.J van Rensburg

| | | | |
|-------------|----------------------|------------------|--|
| <u>Date</u> | <u>Monitoring by</u> | <u>Signature</u> | <u>Ref. No. BLROCKREP2/Page 1 of 5</u> |
| 16/02/04 | LJ van Rensburg | _____ | |

NOISE MONITORING AT BLUE ROCK CABLE WATER SKI, SOMERSET WEST

MONITORING CONDUCTED BY WHOM

The monitoring was conducted by Mr. LJ van Rensburg, member of OHE Monitoring CC (DoL Approved Inspection Authority Certificate No. CI 038 OH), PO Box 376, Milnerton, Cape Town 7435.

MONITORING CONDUCTED FOR WHOM AND WHERE

The monitoring was conducted on 13 and 16 February, 2004 at Blue Rock Cable Water Ski, Somerset West 7130.

NOISE MONITORING

Purpose

The purpose of the monitoring was to determine noise levels at locations in the immediate vicinity of the Blue Rock Cable Water Ski facility, this to ascertain what the noise exposure will be at those locations.

Description of Noise Test Environment

The noise test environments are outside areas in the immediate vicinity of Blue Rock Cable Water Ski facility, Somerset West. The water ski cable operates on a mechanical continuously moving pulley system that is suspended approximately ten metres above the surface of an artificial lake's surface. The cable passes around five pulleys located on the artificial lake, which is some three hundred metres long and one hundred metres wide. Patrons are pulled along across the water on boards and skis by ropes that are attached to the continuously moving cable. The normal cable speed is 30 km/h.

There are no residential or other buildings in the vicinity of the Blue Rock Cable Water Ski facility.

During the monitoring period on 13/02/04 there was an approximately 15 km/h westerly wind blowing, the drybulb temperature was 24,0 degrees celsius (°C) and the humidity was 65 %. During the monitoring period on 16/02/04 there was an approximately 15 km/h westerly wind blowing, the dry bulb temperature was 26,0 degrees Celsius (°C) and the humidity was 70 %.

| | | | |
|-------------|----------------------|------------------|--|
| <u>Date</u> | <u>Monitoring by</u> | <u>Signature</u> | <u>Ref. No. BLROCKREP1/Page 3 of 5</u> |
| 16/02/04 | LJ van Rensburg | _____ | |

| LOCATION | NOISE RATING LEVEL ($L_{Aeq,rep}$) (dB(A)) |
|---|---|
| 1 - On embankment directly above operator station, on restaurant deck level, +/- 10 metres direct line of sight to water's edge | 53,4 |
| 2 - On embankment west of restaurant, +/- 15 metres direct line of sight to water's edge | 53,3 (49,9) |
| 3 - On embankment east of restaurant, +/- 10 metres direct line of sight to water's edge | 53,1 |
| 4 - On embankment north-west of restaurant, +/- 5 metres direct line of sight to water's edge | 55,1 |
| 5 - On embankment east of restaurant, +/- 15 metres direct line of sight to water's edge | 52,9 |
| 6 - On embankment east of restaurant, +/- 15 metres direct line of sight to water's edge | 53,3 (51,2) |
| 7 - On embankment north-east of restaurant, +/- 40 metres direct line of sight to water's edge | 52,1 (49,8) |

It should be noted that noise levels given in the above table are average representative levels at the locations monitored, applicable during normal moving cable, pulley wheel and motor vehicle on N2 operation.

GRAPHS, SKETCHES, PHOTO'S

The sketch submitted with report ref. no. BLROCKREP1, dated 13/02/04 is also applicable to this report, as the monitoring locations were the same as those given in that report.

| <u>Date</u> | <u>Monitoring by</u> | <u>Signature</u> | <u>Ref. No. BLROCKREP1/Page 4 of 5</u> |
|-------------|----------------------|------------------|--|
| 16/02/04 | L.J van Rensburg | _____ | |

INSTRUMENTATION USED

Noise Monitoring

Quest model 1500 Impulse and Integrating Sound Level Meter, serial no. QL 3080028, microphone serial no. 4936 2064205 (calibration certificate attached).

SAMPLING PROCEDURES

Noise Monitoring

Conducted according to the requirements of the South African Bureau of Standards (SABS), Standards South Africa, South African National Standard (SANS) Code 10103 : 2003 : The Measurement and Rating of Environmental Noise with respect to Land Use, Health, Annoyance and to Speech Communication.

There were no deviations from, additions to or exclusions from the above standard monitoring procedures.

RELEVANT INFORMATION

Climatic conditions on the days when the reported monitoring was conducted (13 and 16 February, 2004) had no effect on the noise monitoring conducted.

ESTIMATED UNCERTAINTY OF RESULTS

There is no uncertainty of the results obtained.

| <u>Date</u> | <u>Monitoring by</u> | <u>Signature</u> | <u>Ref. No. BLROCKREP1/Page 5 of 5</u> |
|-------------|----------------------|------------------|--|
| 16/02/04 | LJ van Rensburg | _____ | |

NB The results given in this report relate only to the item monitored for, viz. noise.

NB This report may only be reproduced in full. The monitoring conducted and this report are in accordance with the requirements of SABS Code 10103 : 2003 : The Measurement and Rating of Environmental Noise with respect to Land Use, Health, Annoyance and to Speech Communication.

OHE MONITORING CC
DoL APPROVED INSPECTION AUTHORITY CERTIFICATE NO CI 038 OH

LJ VAN RENSBURG
MEMBER

ATTACHMENT “C”

**Operational Noise Monitoring Report from:
Dickensheets Design Associates
Texas Ski Ranch**



dickensheets
DESIGN ASSOCIATES

e - LETTER

DATE: October 21, 2006
TO: ABC Acoustics
ATTN: Sharo T. Sanavi
FROM: Ken Dickensheets
RE: Texas Ski Ranch

At your request we visited the Texas Ski Ranch to take noise measurements. We were able to take two measurements off of the property and correlate them to observations in the property.

The property sits adjacent to the frontage road of IH-35, a few miles north of New Braunfels, Texas.

Measurements were taken mid afternoon on October 21, 2006 under clear skies with an ambient temperature of 85°F and a light breeze using a Larson-Davis model 824 recording Type I sound level meter/real time analyzer. Calibration to a known and traceable standard within 0.05dB was accomplished immediately before and again immediately after the measurement session. Tabular results of the two measurements immediately follow this narrative.

Upon entering the lake side of the property we observed six skiers being towed by the cable system, approximately fifteen in line waiting their turn and another two dozen or so either sitting at the side of the lake, under a lounge canopy or on an outdoor lounge balcony, all observing the skiers. Background music was playing so we requested that it be turned off during our observation.

With the music on, ambient noise levels in the park were estimated to be 60-65dbA. With the music off, levels were estimated to be about 4dBA lower.

We first went to the cable system stanchion that supports the driving mechanism and motor for the cable and include the cable tether engage and retrieve system. Sitting at the base of the stanchion (which stanchion is approximately 30' high and angled out over the water edge at about 25° and supports a twenty-five foot horizontal member at the end of which the cable is supported) we noted that the noise from the cable and tether mechanism was barely audible over the ambient noise of the park.

Other observations were made around the perimeter of the lake including near a "trick wall" where, at the skier's option, the cable pulls the skier over the top edge of a narrow but long wall. At that location, even the increased noise level from the wall/skier action was estimated to increase only 10dBA above the ambient levels at that location.

hymeadow square office park 12335 hymeadow suite 200 austin, tx 78750 ph 512.331.8977 fax 512.331.8947
consultants and designers in ACOUSTICS, NOISE CONTROL, IT, AUDIO & VIDEO SYSTEMS
www.dickensheets.com



dickensheets DESIGN ASSOCIATES

Mr. Sharo Sanavi
October 21, 2006
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Texas Ski Ranch Noise Evaluation

We observed as we walked around the lake that the system is very quiet with the cable noise being almost inaudible and the skier noise limited to that produced by water spray as a skier would pass. Even at the launch location where there were a dozen or more skiers waiting for their turn and where music was playing, the background noise levels were remarkably low. Noise from this location was inaudible at either the property line behind the location (approximately 100' away) due primarily to the shielding of the dressing room/concession building at that location and was totally inaudible on the far shore of the lake.

As a reference, we measured background noise at an adjoining side street at the property line of the park and approximately 100' from the lake shore to have an Leq of 52.2dBA and noise from the freeway at the setback line of the park's main entry building to have an Leq of 62dBA.

Yours truly,

DICKENSHEETS DESIGN ASSOCIATES, LLC
Consultants In Acoustics, IT System and
Electronic Media System Design

Kenneth Dickensheets
Principal Consultant

Data Attached

hymeadow square office park 12335 hymeadow suite 200 austin, tx 78750 ph 512.331.8977 fax 512.331.8947
consultants and designers in ACOUSTICS, NOISE CONTROL, IT, AUDIO & VIDEO SYSTEMS
www.dickensheets.com



dickensheets DESIGN ASSOCIATES

Mr. Sharo Sanavi
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Texas Ski Ranch Noise Evaluation

AMBIENT FROM FREEWAY AT BUILDING FRONT SETBACK

SLM & RTA Summary

| | | |
|-------------------|-----------|----------|
| Translated: | 21-Oct-06 | 19:49:39 |
| Model Number: | 824 | |
| Serial Number: | A0224 | |
| Firmware Rev: | 4.1 | |
| Software Version: | 3.12 | |

| | |
|-----------|---|
| Name: | Dickensheets |
| Descr1: | Design |
| Descr2: | Austin, Texas |
| Setup: | 1.800.545.5734 |
| Location: | SLM&RTA.ssa |
| Note 1: | Texas Ski Park |
| Note 2: | Freeway Noise Building Front Setback |

Overall Any Data

| | | |
|---------------|-----------|----------|
| Start Time: | 21-Oct-06 | 15:29:19 |
| Elapsed Time: | 00:27.6 | |

| | A Weight | C Weight | Flat |
|-------|----------|----------|----------|
| Leq: | 62.0 dBA | 77.1 dBC | 78.5 dBF |
| SEL: | 76.4 dBA | 91.5 dBC | 92.9 dBF |
| Peak: | 85.6 dBA | 92.7 dBC | 94.9 dBF |

| | 10/21/2006 15:29 | 10/21/2006 15:29 | 10/21/2006 15:29 |
|-----------------|------------------|------------------|------------------|
| Lmax (slow): | 65.5 dBA | 83.8 dBC | 87.7 dBF |
| Lmin (slow): | 57.8 dBA | 71.3 dBC | 73.1 dBF |
| Lmax (fast): | 69.2 dBA | 84.2 dBC | 85.4 dBF |
| Lmin (fast): | 56.5 dBA | 69.8 dBC | 71.5 dBF |
| Lmax (impulse): | 72.3 dBA | 85.8 dBC | 87.7 dBF |
| Lmin (impulse): | 57.1 dBA | 72.3 dBC | 74.5 dBF |

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Texas Ski Ranch Noise Evaluation

FREEWAY AMBIENT (CONT)

| Spectra Start Time: | 21-Oct-06 Leq 1/3 Oct | 15:29:19 Leq 1/1 Oct | Run Time: Max 1/3 Oct | 00:27:6 Max 1/1 Oct | Min 1/3 Oct | Min 1/1 Oct |
|---------------------------|-----------------------------|----------------------------|-----------------------------|---------------------------|----------------|----------------|
| Freq Hz | | | | | | |
| 12.5 | 67.2 | | 69.5 | | 52 | |
| 16 | 65.6 | 71.2 | 71.1 | 77.7 | 53 | 59.1 |
| 20 | 66.2 | | 75.7 | | 56.6 | |
| 25 | 65.5 | | 74.8 | | 54.5 | |
| 31.5 | 67.1 | 70.5 | 71.3 | 76.8 | 58 | 61.6 |
| 63 | 65 | 75.6 | 71.1 | 83.2 | 59.1 | 64.1 |
| 80 | 74.8 | | 82.7 | | 60.9 | |
| 100 | 66.3 | | 67.7 | | 59.3 | |
| 125 | 63.1 | 69.6 | 68.1 | 74.1 | 57.3 | 62.7 |
| 160 | 64.4 | | 71.3 | | 56.7 | |
| 200 | 59.6 | | 63.5 | | 51.8 | |
| 250 | 57.8 | 62.4 | 60.9 | 66.1 | 48.6 | 54 |
| 315 | 53.8 | | 57.7 | | 44.8 | |
| 400 | 54.2 | | 58.6 | | 46.8 | |
| 500 | 54.6 | 58.4 | 58.7 | 63.1 | 48.4 | 51.7 |
| 630 | 51.5 | | 57.7 | | 45.1 | |
| 800 | 50.3 | | 54.1 | | 44.2 | |
| 1000 | 51.6 | 55.9 | 53.7 | 58.7 | 46.7 | 50.3 |
| 1250 | 51.4 | | 54.1 | | 45.4 | |
| 1600 | 49 | | 52.5 | | 42.5 | |
| 2000 | 46.2 | 52 | 49.2 | 55.2 | 38.9 | 44.6 |
| 2500 | 45.9 | | 48.4 | | 35.2 | |
| 3150 | 44.4 | | 47.6 | | 33.2 | |
| 4000 | 44.5 | 48.2 | 47 | 51.3 | 31.3 | 36.3 |
| 5000 | 39.9 | | 44.3 | | 29.2 | |
| 6300 | 37.8 | | 41 | | 27.2 | |
| 8000 | 36.4 | 41.2 | 41.8 | 47 | 25 | 30.5 |
| 10000 | 34.6 | | 43.4 | | 24.3 | |
| 12500 | 31.4 | | 42.1 | | 21.9 | |
| 16000 | 30.5 | 34.7 | 48.9 | 50.2 | 22.6 | 27.4 |
| 20000 | 26.3 | | 40.3 | | 23.3 | |

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Texas Ski Ranch Noise Evaluation

FREEWAY AMBIENT (CONT)

Detector: Slow

Weighting: A

Current Any Data

| | A Weight | C Weight | Flat |
|-----------------|------------------|------------------|------------------|
| Leq: | 62.0 dBA | 77.1 dBC | 78.5 dBF |
| SEL: | 76.4 dBA | 91.5 dBC | 92.9 dBF |
| Peak: | 85.6 dBA | 92.7 dBC | 94.9 dBF |
| | 10/21/2006 15:29 | 10/21/2006 15:29 | 10/21/2006 15:29 |
| Lmax (slow): | 65.5 dBA | 83.8 dBC | 87.7 dBF |
| Lmin (slow): | 57.8 dBA | 71.3 dBC | 73.1 dBF |
| Lmax (fast): | 69.2 dBA | 84.2 dBC | 85.4 dBF |
| Lmin (fast): | 56.5 dBA | 69.8 dBC | 71.5 dBF |
| Lmax (impulse): | 72.3 dBA | 85.8 dBC | 87.7 dBF |
| Lmin (impulse): | 57.1 dBA | 72.3 dBC | 74.5 dBF |

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Texas Ski Ranch Noise Evaluation

PARK LEVEL AT PROPERTY LINE APPROX 100' FROM LAKESIDE (Rear Side of Property)

SLM & RTA

Summary

Translated: 21-Oct-06 20:01:57
Model Number: 824
Serial Number: A0224
Firmware Rev: 4.1
Software Version: 3.12
Name: Dickensheets Design
Descr1: Austin, Texas
Descr2: 1.800.545.5734
Setup: SLM&RTA.ssa
Setup Descr: SLM & Real-Time Analyzer
Location: Texas Ski Park
Note 1: **Ambient @ Property Line Nearest to Lake**
Note 2: Nameless road on NE Side of Park

Overall Any Data

Start Time: 21-Oct-06 15:12:19
Elapsed Time: 00:03.6

| | A Weight | C Weight | Flat |
|-----------------|------------------|------------------|------------------|
| Leq: | 53.2 dBA | 67.2 dBC | 68.2 dBF |
| SEL: | 58.8 dBA | 72.8 dBC | 73.8 dBF |
| Peak: | 71.3 dBA | 79.4 dBC | 81.0 dBF |
| | 10/21/2006 15:12 | 10/21/2006 15:12 | 10/21/2006 15:12 |
| Lmax (slow): | 53.9 dBA | 68.1 dBC | 68.9 dBF |
| Lmin (slow): | 51.3 dBA | 65.5 dBC | 66.9 dBF |
| Lmax (fast): | 55.5 dBA | 70.4 dBC | 70.8 dBF |
| Lmin (fast): | 51.2 dBA | 65.4 dBC | 66.4 dBF |
| Lmax (impulse): | 56.1 dBA | 71.3 dBC | 71.7 dBF |
| Lmin (impulse): | 51.3 dBA | 65.5 dBC | 67.1 dBF |

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Texas Ski Ranch Noise Evaluation

PARK LEVEL AT PROPERTY LINE (CON'T)

| Spectra | | | | | | |
|-------------|-----------|----------|-----------|---------|---------|---------|
| Start Time: | 21-Oct-06 | 15:12:19 | Run Time: | 00:03.6 | | |
| | Leq 1/3 | Leq 1/1 | Max 1/3 | Max 1/1 | Min 1/3 | Min 1/1 |
| Freq Hz | Oct | Oct | Oct | Oct | Oct | Oct |
| 12.5 | 52.6 | | 51.7 | | 51.2 | |
| 16 | 54.3 | 58 | 53.4 | 58.4 | 51.5 | 55 |
| 20 | 52.7 | | 55.1 | | 46.4 | |
| 25 | 55.9 | | 55.3 | | 50.3 | |
| 31.5 | 56.3 | 60.2 | 54.6 | 59 | 50.4 | 55.8 |
| 40 | 53.8 | | 52.3 | | 52.2 | |
| 50 | 55.6 | | 52.7 | | 52.7 | |
| 63 | 52.8 | 59.4 | 48.6 | 59.6 | 48.6 | 56.4 |
| 80 | 55 | | 58.1 | | 52.5 | |
| 100 | 56.9 | | 56.9 | | 51.5 | |
| 125 | 63.7 | 65.5 | 67.7 | 68.6 | 57.1 | 59.2 |
| 160 | 58.4 | | 59.2 | | 52.4 | |
| 200 | 54.9 | | 56.9 | | 50.9 | |
| 250 | 48.5 | 56.3 | 49.6 | 58.5 | 45.8 | 52.4 |
| 315 | 47.1 | | 51.3 | | 41.5 | |
| 400 | 43.3 | | 44.9 | | 40.9 | |
| 500 | 40.2 | 46.1 | 41.1 | 46.8 | 37.6 | 43.1 |
| 630 | 39.5 | | 36.2 | | 33.6 | |
| 800 | 37.6 | | 37.1 | | 34.5 | |
| 1000 | 38.3 | 43.2 | 37.2 | 42.2 | 35.8 | 40.5 |
| 1250 | 39.3 | | 37.9 | | 36.6 | |
| 1600 | 39.8 | | 36.4 | | 34.1 | |
| 2000 | 38.1 | 42.6 | 33.3 | 39 | 32.8 | 37.5 |
| 2500 | 33.6 | | 31.7 | | 30.7 | |
| 3150 | 32.4 | | 31.3 | | 30.8 | |
| 4000 | 30.3 | 35.5 | 29.8 | 34.7 | 28.2 | 33.7 |
| 5000 | 28.7 | | 28 | | 26.7 | |
| 6300 | 27 | | 28.2 | | 25.4 | |
| 8000 | 27.9 | 32.6 | 28.5 | 33.4 | 25.5 | 30.4 |
| 10000 | 28.4 | | 29.2 | | 25.9 | |
| 12500 | 24.6 | | 24.7 | | 23.3 | |
| 16000 | 24 | 28.9 | 24.4 | 29.1 | 23.2 | 28.1 |
| 20000 | 23.9 | | 23.7 | | 23.4 | |

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