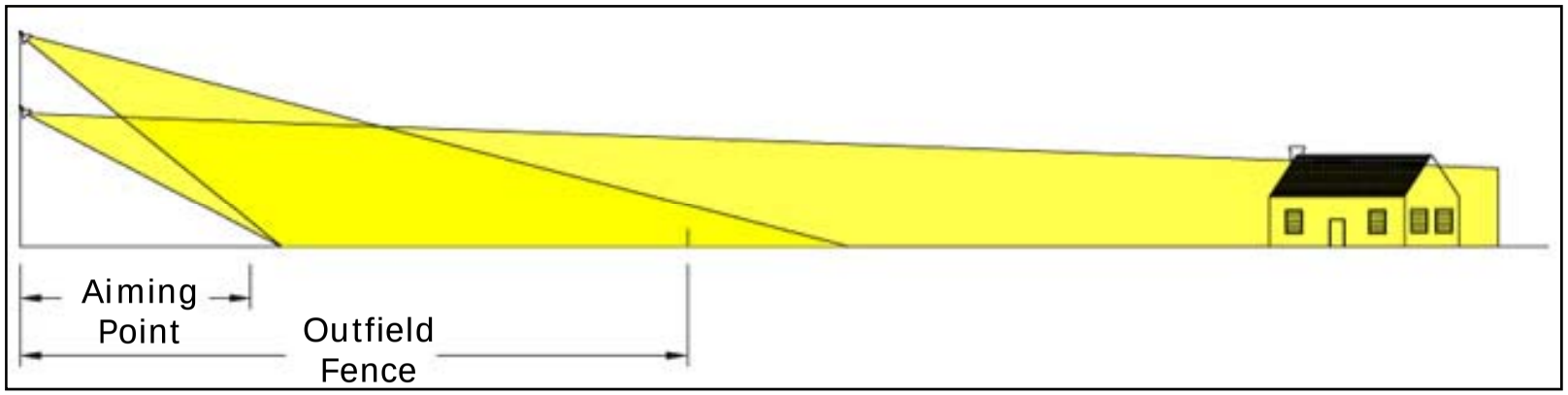
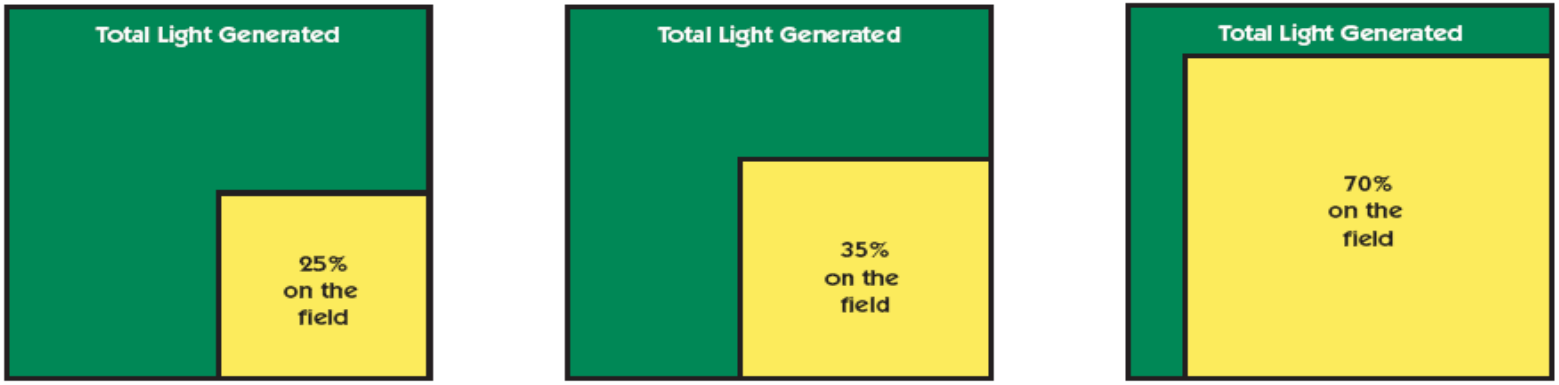
Big Finn Hill Field Conversion

PHOTOMETRICS and LIGHTING DETAIL

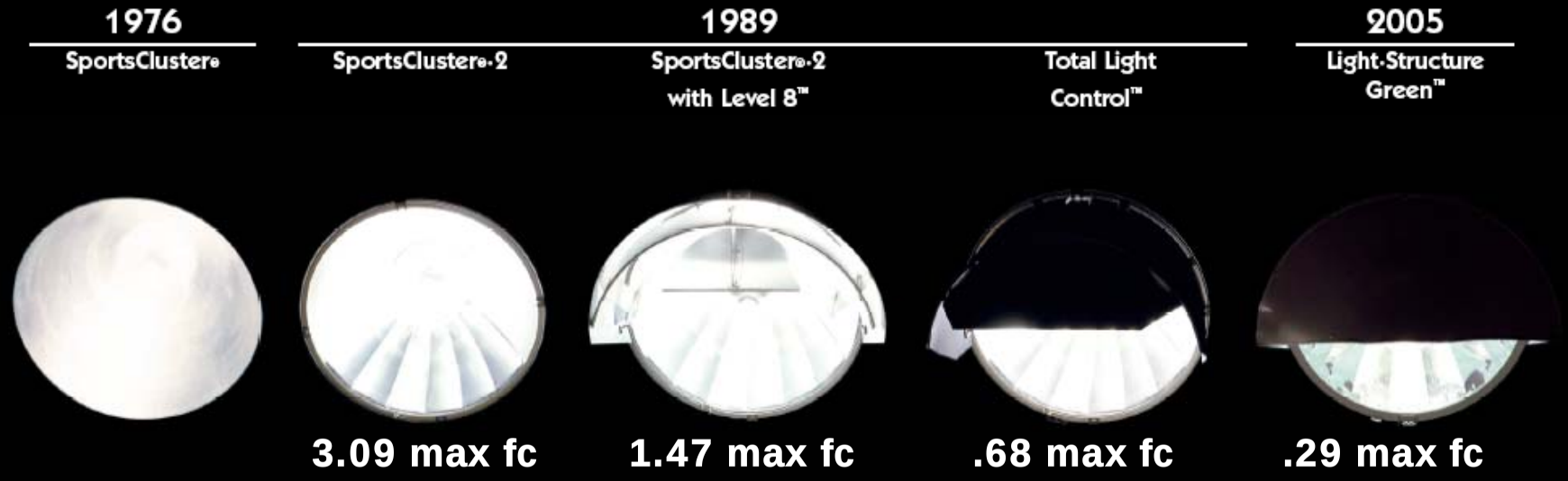
Taller poles ensure proper aiming angles, decrease glare for players, and decrease off-site spill light.





Musco's technology has developed over 29 years to utilize on the field 70% of the available light energy.

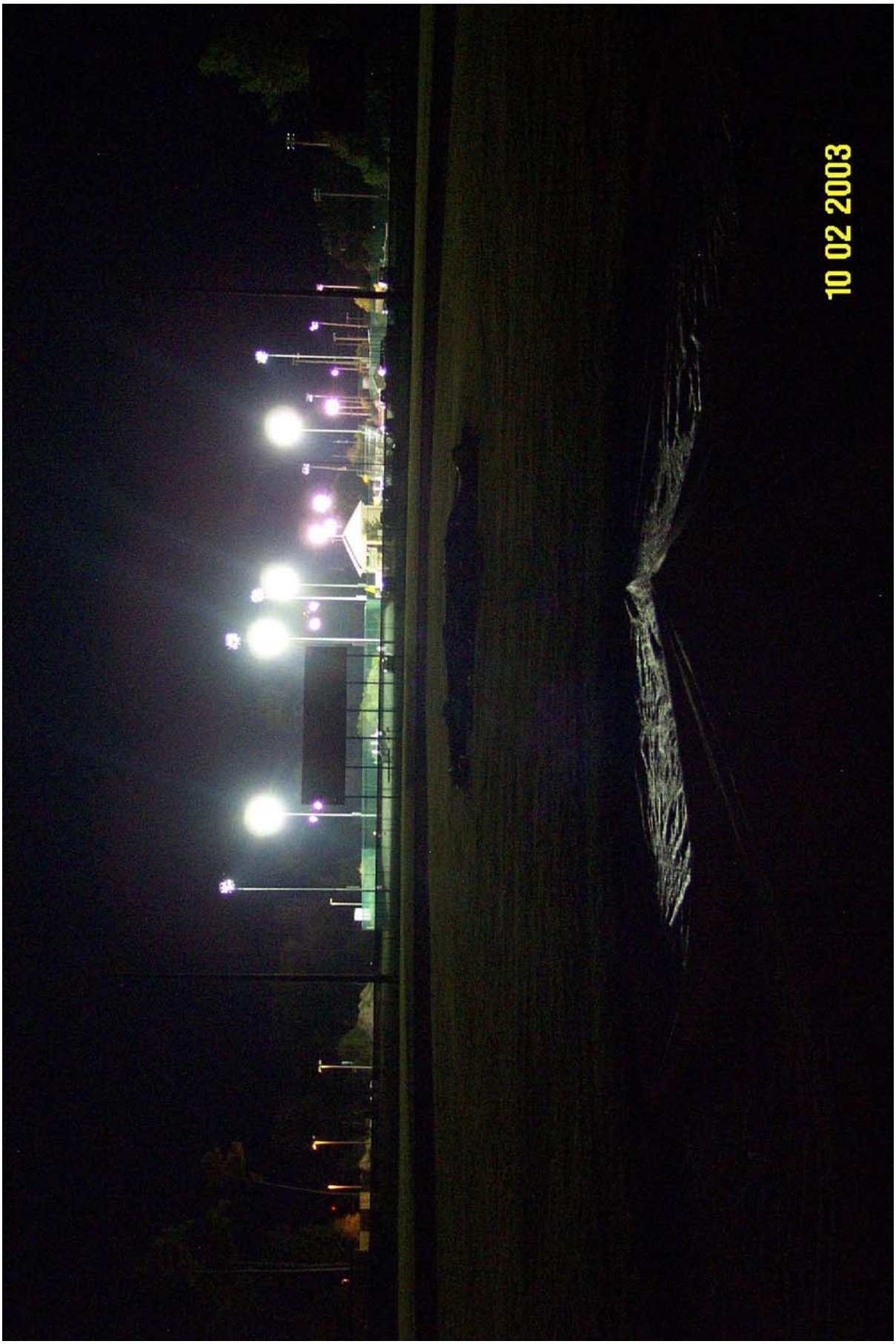
Evolution of Light Control



Maximum vertical footcandles at 150'

53% **53%** **57%**

Total Reduction from SC2 to LSG – 90%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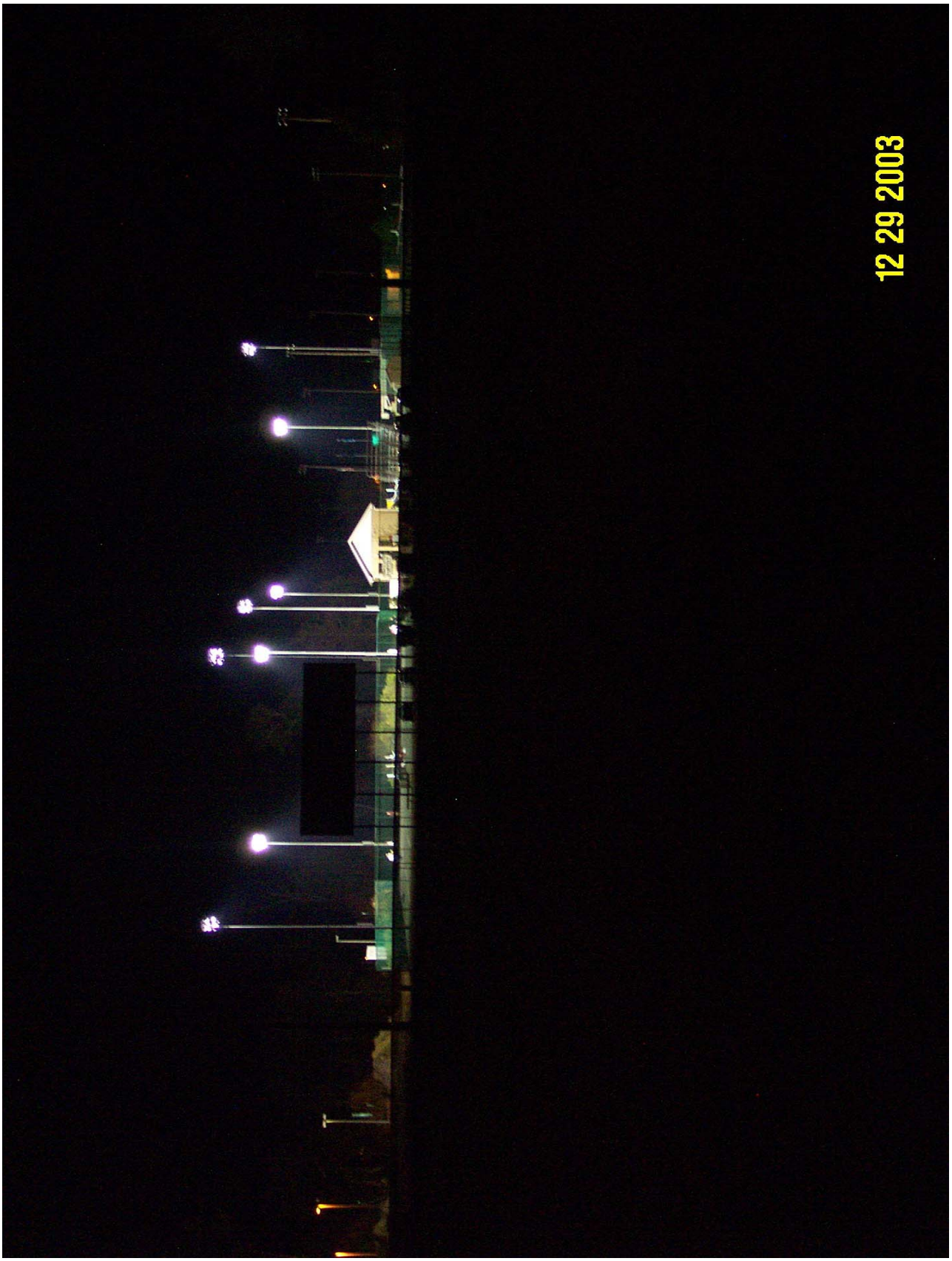

12 29 2003

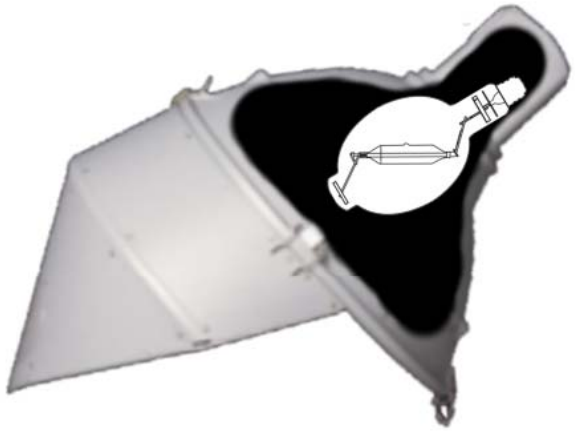
How does Light Structure Green reduce spill & glare?

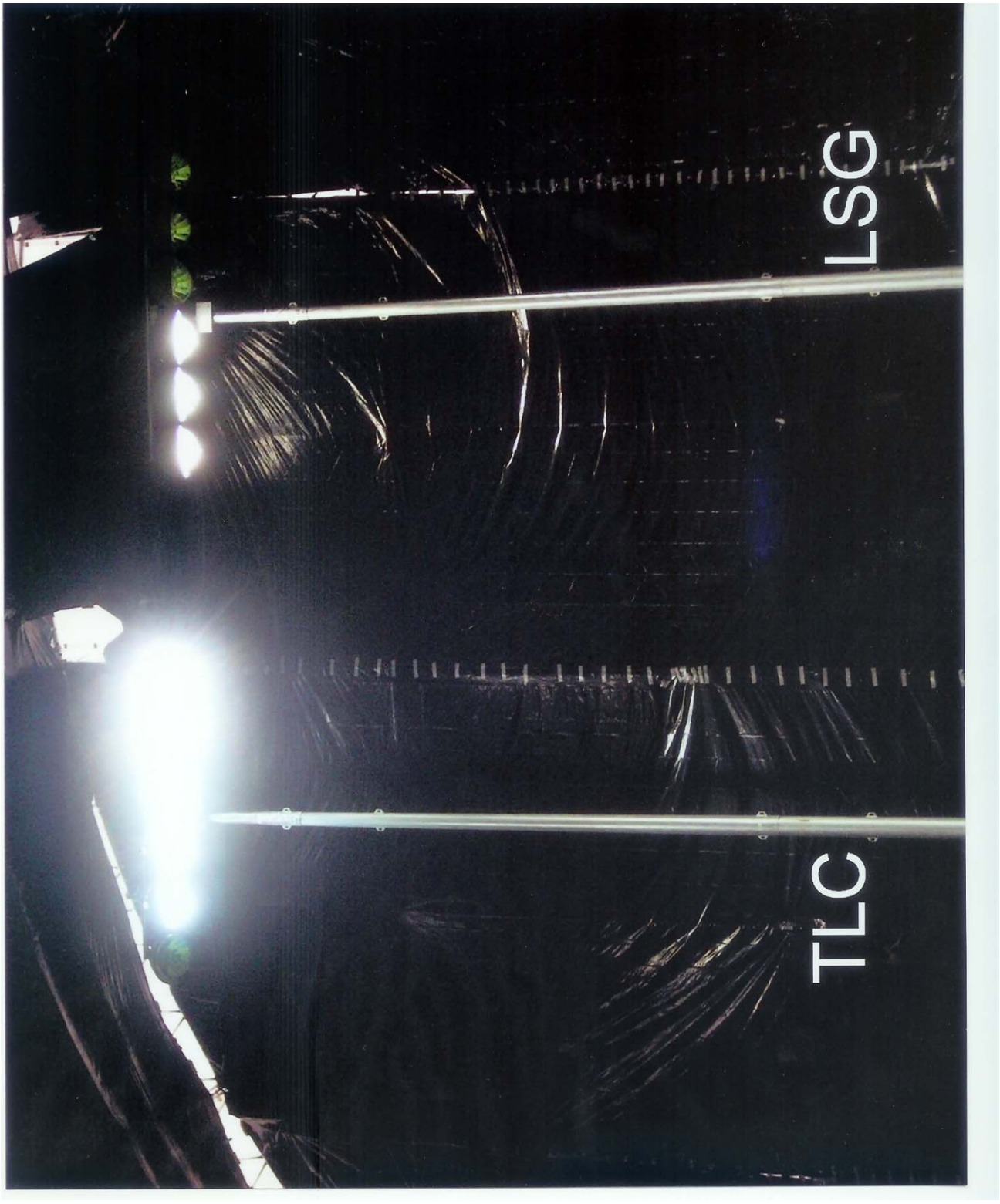
1. Internal optics allow for project specific photometric distribution
2. Improved optics shields the players & neighbors from excess glare

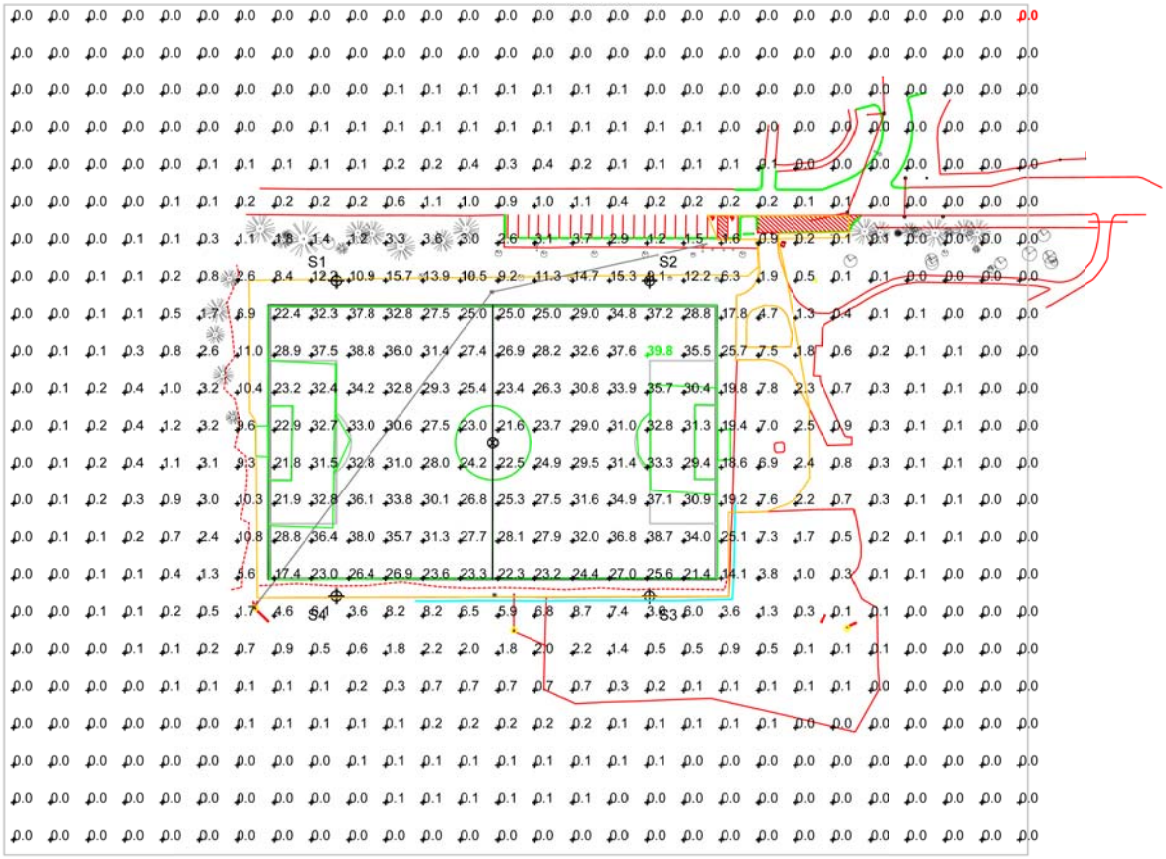
How does Light Structure Green reduce energy cost?

40% Energy Savings

- Improved fixture efficiency
- New aerodynamic visor with beam control
- Geared Tilt adjustment
- 2000 Photometric patterns
- Improved gasketing
- Smart Lamp Technology




LSG
TLC



MUSCO
GREEN GENERATION LIGHTING™

GUARANTEED PERFORMANCE

ILLUMINATION SUMMARY

Blanket
Big Finn Hill Park Soccer Lacrosse
Kirkland,WA

Blanket
- Grid Spacing = 30.0' x 30.0'
- Values given at 3.0' above grade

- Luminaire Type: Green Generation
- Rated Lamp Life: 5,000 hours
- Avg Lumens/Lamp: 134,000

CONSTANT ILLUMINATION
HORIZONTAL FOOTCANDLES

	Entire Grid
No. of Target Points:	644
Average:	5.4
Maximum:	40
Minimum:	0
Avg/Min:	868.36
Max/Min:	6354.41
UG (Adjacent Pts):	13.14
CV:	1.98

Average Lamp Tilt Factor:	1.000
Number of Luminaires:	28
Avg KW over 5,000:	43.79
Max KW:	47.6

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Averages shall be +/-10% in accordance with IESNA RP-6-01 and CIBSE LG4. Individual measurements may vary from computer predictions.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

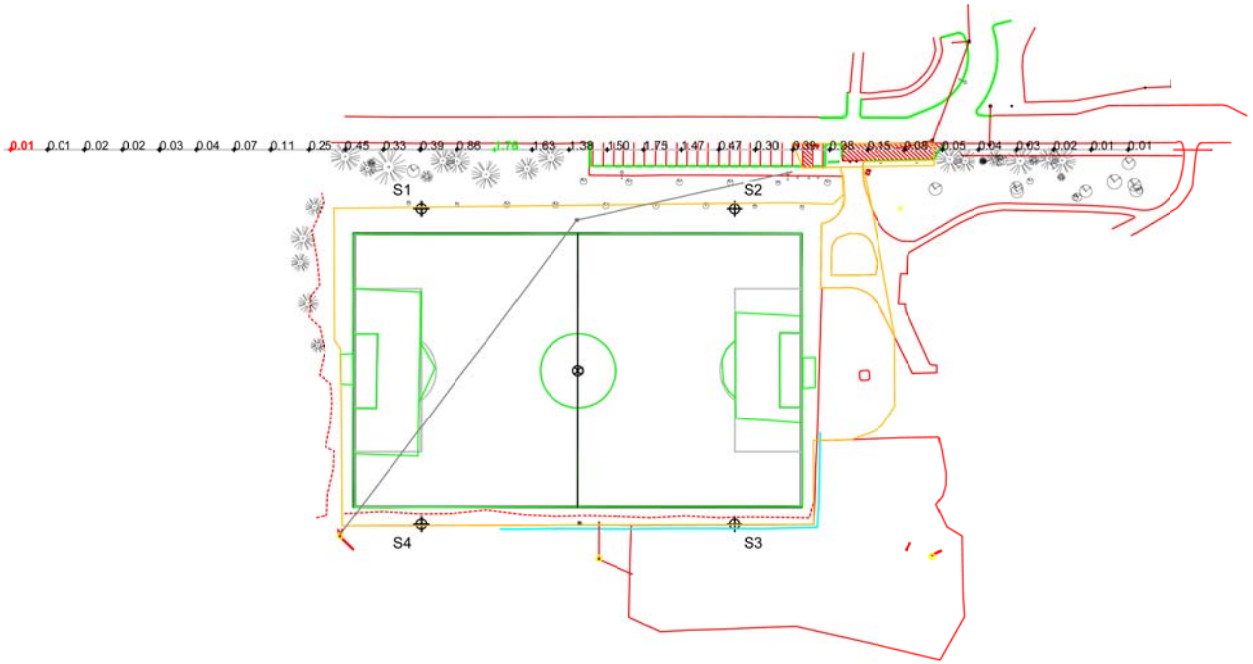
Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

Rounded to nearest 10th.

SCALE IN FEET 1 : 100
0' 100' 200'

Pole location(s) + dimensions are relative to 0,0 reference point(s)

By: Eric Svenby
File #: 151955R3sp Date: 16-Nov-11



GREEN GENERATION LIGHTING™

GUARANTEED PERFORMANCE

ILLUMINATION SUMMARY

Spill @ NE 138th ST
Big Finn Hill Park Soccer Lacrosse
Kirkland,WA

Spill @ NE 138th ST
- Grid Spacing = 30.0'
- Values given at 3.0' above grade

· Luminaire Type:	Green Generation
· Rated Lamp Life:	5,000 hours
· Avg Lumens/Lamp:	134,000

CONSTANT ILLUMINATION HORIZONTAL FOOTCANDLES

	Entire Grid
No. of Target Points:	31
Average:	0.452
Maximum:	1.76
Minimum:	0.01

Average Lamp Tilt Factor:	1.000
Number of Luminaires:	28
Avg KW over 5,000:	43.79
Max KW:	47.6

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Averages shall be +/-10% in accordance with IESNA RP-6-01 and CIBSE LG4. Individual measurements may vary from computer predictions.

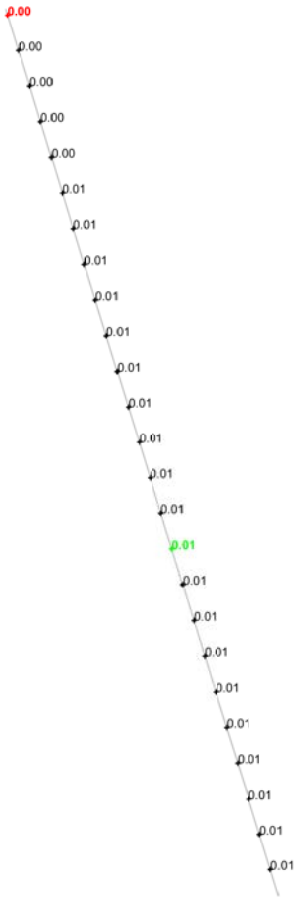
Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100
0' 100' 200'

Pole location(s) ✚ dimensions are relative to 0,0 reference point(s) ⊗

By: Eric Svenby
File #: 151955R3sp Date: 16-Nov-11



MUSCO GREEN GENERATION LIGHTING™

GUARANTEED PERFORMANCE

ILLUMINATION SUMMARY

Spill @ Juanita Drive
Big Finn Hill Park Soccer Lacrosse
Kirkland,WA

Spill @ Juanita Drive
· Grid Spacing = 30.0'
· Values given at 3.0' above grade

· Luminaire Type:	Green Generation
· Rated Lamp Life:	5,000 hours
· Avg Lumens/Lamp:	134,000

CONSTANT ILLUMINATION
HORIZONTAL FOOTCANDLES

	Entire Grid
No. of Target Points:	25
Average:	0.008
Maximum:	0.01
Minimum:	0.00

Average Lamp Tilt Factor:	1.000
Number of Luminaires:	28
Avg KW over 5,000:	43.79
Max KW:	47.6

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Averages shall be +/-10% in accordance with IESNA RP-6-01 and CIBSE LG4. Individual measurements may vary from computer predictions.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100
0' 100' 200'

Pole location(s) ✚ dimensions are relative to 0,0 reference point(s) ⊗

By: Eric Svenby
File #: 151955R3sp Date: 16-Nov-11

Big Finn Hill Field Conversion

LETTER FROM TSI

re: TRAFFIC

TSI
Transportation Solutions, Inc.
8250 - 165th Avenue NE
Suite 100
Redmond, WA 98052-6628
T 425-883-4134
F 425-867-0898
www.tsinw.com

August 30, 2011

Steve Lytle, Treasurer
Kirkland Youth Lacrosse
8251 NE Juanita Drive
Kirkland, Washington 98034

Subject: Big Finn Hill Park Traffic Study

Dear Mr. Lytle,

This report summarizes our evaluation of potential transportation related impacts associated with the proposed improvements to the soccer/lacrosse field at Big Finn Hill Park in Kirkland, Washington. The soccer/lacrosse field along with a softball field and playfield are located at the west-end of Big Finn Hill Park. The west-end of the park is accessed via NE 138th Street off Juanita Drive NE. A gated fire lane separates the east and west-ends of the park.

We understand that you are proposing to replace the existing grass field with artificial field turf, add 8 parking spaces, and convert one of the existing accessible spaces to a van accessible space.

Currently there are 21 parking spaces, including 2 accessible spaces, adjacent to the soccer/ lacrosse field and another 40 spaces, including 2 accessible spaces, to the north of the soccer/lacrosse field near the playfield. With the improvements the west-end of the park will include a total of 65 vehicle parking spaces and 4 accessible spaces, including 1 van accessible space.

With the installation of field turf, the field will be able to accommodate play for a greater number of weeks in the year. Nevertheless, on an hourly or peak demand basis, traffic volumes and parking utilization should remain similar to existing conditions since the size and layout of the field will remain the same.

In conclusion, the proposed improvements at Big Finn Hill Park will:

- Increase the total parking supply by 8 vehicle spaces
- Increase annual use of the field
- Not increase peak hourly demand at the soccer/lacrosse field

It is our professional opinion that the installation of field turf at Big Finn Hill Park will not result in additional peak hour parking demand or increased traffic volumes.

I trust that this letter-report meets your needs. Please feel free to contact TSI at your earliest convenience should you have any questions or need additional information.

Thank you and sincerely,
Transportation Solutions, Inc.

Jeffrey P. K. Hee
Project Engineer

CITY OF KIRKLAND

123 FIFTH AVENUE ● KIRKLAND, WASHINGTON 98033-6189 ● (425) 587-3000

DEPARTMENT OF PUBLIC WORKS
MEMORANDUM

To: Jon Regala, Senior Planner

From: Thang Nguyen, Transportation Engineer

Date: November 2, 2011

Subject: Big Finn Hill Park Renovation

This memo summarizes my review of the traffic impact analysis (TIA) for the proposed Big Finn Hill Park renovation.

Project Description

The applicant is proposing to improve Big Finn Hill (BFH) Park to include the following:

- Replace the natural turf with artificial turf
- Increase the total parking supply by 8 vehicle spaces

Project Trip Generation

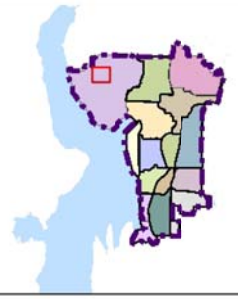
Staff agrees with the traffic analysis. The improvements to BFH park are considered to be cosmetics. The improvements will Increase annual use of the field but not increase peak hourly demand at the soccer/lacrosse field. With increasing parking supply the existing parking impact on the neighborhood would be less. Thus, it is not anticipated that the improvement will generate significant traffic impact to the surrounding neighborhood.

Staff Recommendations

Staff recommends approval of the project .

cc: Advantage
File

GIS MAPPING PORTAL ~ City of Kirkland, Washington ~ Department of Information Technology



Legend
- Streets
- Parcels
- Buildings
- z_Image09
  - Red: Band_1
  - Green: Band_2
  - Blue: Band_3

1:4,710

0.1 0 0.07 0.15 Miles

NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet

Notes

Big Finn Hill Park - Lighting Info

ENCLOSURE 3
BFHP SEPA APPEAL

ATTACHMENT 10
FILE SEP11-00020

3.6 NOISE

3.6.1 Affected Environment

3.6.1.1 Introduction to Noise Terminology and Descriptors

Noise can be characterized as excessive or unwanted sound. Noise, as perceived by humans, is commonly measured on a weighted logarithmic scale (A-scale) in decibels (dBA). Using this scale, humans perceive an increase of 10 dBA as a doubling of loudness; for example, a 70-dBA noise level sounds twice as loud as a 60-dBA noise level. Under ideal listening conditions, people generally cannot detect differences of 1 dBA, while people with normal hearing can usually detect differences of 2 or 3 dBA . In the outside environment, and especially near complex noise sources such as roads, sound level changes of 2 or 3 dBA might not be noticeable to most people, while a 5-dBA change would likely be perceived as a clear and noticeable change.

Because of the logarithmic scale used to describe noise, a doubling of a noise source strength produces a 3-dBA increase in average noise. For example, two adjacent, discrete noise events occurring simultaneously would result in a 3-dBA increase over the sound level produced by only one event. Such an increase would not be perceived as a doubling in noise *loudness*, which requires a 10-dBA increase.

Noise levels are decreased by distance, by obstructions such as buildings or terrain, by atmospheric absorption, and by absorption by the ground and vegetation. Sounds from line sources (e.g., fairly continuous roadway traffic) decrease by approximately 3 dBA for each doubling of the distance from the source. Sounds from point sources (i.e., discrete events such as a cheering sports spectator) decrease by 6 dBA when the distance from the source is doubled.

Many regulatory agencies use the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}) to evaluate noise impacts. The L_{eq} is the level of a constant sound that has the same sound energy as the actual fluctuating sound. As such, it can be considered an energy-average sound level. In discussing sound level measurements and predictions, it is important to identify the time period being considered, because most sound-energy criteria address sound-energy averages over some time period. The L_{dn} is a 24-hour L_{eq} with a 10 decibel penalty added to sound levels that occur between 10 p.m. and 7 a.m. in consideration of potential disturbance of people trying to sleep. The L_{90} is the level exceeded 90% of the time during a measurement, and this level can be used to represent the background level that is almost always present during a given period of time.

3.6.1.2 City of Seattle Noise Limits

Noise generated by the operation of the project would be governed by the timing restrictions and the noise limits included in the Seattle noise rule (Municipal Code, Chapter 25.08). This rule defines maximum permissible sound levels based on the zoning of the noise source and receiving properties.

Unlike many local noise codes in Washington State, the Seattle noise rule does not exempt noise produced during construction and demolition activities. Using the maximum permissible sound levels as a base, the Seattle rule sets maximum levels and durations of allowable daytime construction noise. If nighttime construction were to occur, it would not be allowed to exceed Seattle's maximum permissible sound levels thereby being held to the strict nighttime noise limit (daytime limit minus 10 dBA). In the

absence of a project-specific variance, this effectively limits all except the quietest construction activities to daytime hours.

A summary of the Seattle noise rule limits for operational and construction noise is displayed in **Table 3.6-1**.

Table 3.6-1
Seattle Maximum Permissible Levels and Construction Noise Limits (dBA)

Zoning District of Noise Source [25.08.410 & 420]	Zoning District of Receiving Property		
	Residential Day / Night	Commercial	Industrial
Operational Noise Limits			
Residential	55 / 45	57	60
Commercial	57 / 47	60	65
Industrial	60 / 50	65	70
Daytime Construction Noise Limits - at 50' or a real property line, whichever is greater, construction noise is limited to the higher levels listed below **during daytime hours only**, which are defined as 7 A.M. to 10 P.M. weekdays and 9 A.M. to 10 P.M. weekends.			
On-site sources like dozers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, and pneumatic equip (**maximum+25**) [25.08.425 A.1]			
Residential	80	82	85
Commercial	82	85	90
Industrial	85	90	95
Portable equip used in temporary locations in support of construction like chain saws, log chippers, and powered hand tools (**maximum+20**) [25.08.425 A.2]			
Residential	75	77	80
Commercial	77	80	85
Industrial	80	85	90
Impact types of equipment like pavement breakers, pile drivers, jackhammers, sand-blasting tools, or other impulse noise sources - may exceed maximum permissible limits between 8 a.m. and 5 p.m. weekdays and 9 a.m. and 5 p.m. weekends, but may not exceed the following limits [25.08.425 B]: Leq(1 hr) 90 dBA Leq(30 minutes) 93 dBA Leq(15 minutes) 96 dBA Leq(7.5 minutes) 99 dBA			

The noise criteria in **Table 3.6-1** can be exceeded by a total of not more than 15 minutes in any one-hour period by the following: 5 dBA for no more than 15 minutes in any hour, or 10 dBA for no more than 5 minutes of any hour, or 15 dBA for no more than 1.5 minutes of any hour. Sometimes these exceptions are described in terms of an hourly percentile, or the percentage of time a certain level is exceeded. For example, L_{25} represents a sound level that is exceeded 25 percent of the time, or 15 minutes in an hour. Similarly, $L_{8.3}$ and $L_{2.5}$ are the sound levels that are exceeded 5 and 1.5 minutes in an hour, respectively. At no time can the allowable sound level be exceeded by more than 15 dBA.

The Seattle noise ordinance allows various exceptions to the general noise limits for specific types of noise sources. For example, noise from motor vehicles traveling on public roadways is exempt from the

noise limits (SMC 25.08.480). Noise from *individual* motor vehicles is subject to noise limits specified in the Washington Administrative Code.

The ordinance also provides for variances that can permit noise levels higher than those specified.

The Seattle Municipal Code also includes some special noise allowances for parks, specifically for officially sanctioned musical events held outside in public parks and places. SMC 25.08.520 restricts noise from these events in these outdoor venues to a one minute Leq of 95 dBA at a distance of 50 feet. Indoor events are not subject to this restriction. If it is likely either through the expected power and type of amplification required for the event or through past experience with the permittee that noise from the event could exceed the above level, then noise monitoring of the event will be required.

Finally, the Seattle Municipal Code in SMC 18.12.170 restricts the use of any public address system, loudspeaker or other sound-amplifying device in any park, unless authorized by the Superintendent for specific events and times or if necessary for the preservation of public peace or safety.

3.6.1.3 Existing Sound Environment

The nearest residences to the proposed project site are multi-family transitional housing units at the Sand Point Community Housing Association, directly west of the existing Sand Point athletic fields. The area to the west and south of the park is predominantly a residential neighborhood characterized by a mixture of single-family homes and multi-family buildings.

The predominant sources of existing noise on and near the project site include traffic on local streets, aircraft flyovers and watercraft on Lake Washington (largely a warm-weather occurrence). Traffic related to existing organized sporting activities within Sand Point Magnuson Park represent a minor contribution to local traffic noise. Participants and spectators at sporting events produce noise (cheers, whistles, etc.) that can dominate the noise environment within the park and at the nearest Sand Point Community Housing facility west of the existing sports fields and is occasionally audible beyond the park boundaries. These sources of noise contribute to the acoustic environment in the project area that varies somewhat depending on the time of day and duration of the noise event(s).

Vehicle traffic on Sand Point Way NE is the largest source of existing noise in the local area, and background noise levels tend to decrease with distance away from Sand Point Way. Noise measurements taken for the Sand Point Reuse Project indicated an average day/night noise level of 70 dBA at a location on Sand Point Way near NE 80th Street (City of Seattle, 1996). Noise levels at another location off and somewhat west of Sand Point Way on NE 70th Street averaged 60 dBA. On the park property itself, past noise monitoring indicated average day/night sound levels of 53 dBA near the southeastern corner of Sand Point Magnuson Park (near Promontory Point) and 60 dBA on NE 65th Street near the intersection with Sportsfield Drive (City of Seattle, 1996).

Additional long-term sound levels were measured at several representative areas in the project vicinity to more fully characterize the existing sound environment. These measurements were taken over several days in May 2002 using three Larson Davis 820 Type I integrating sound level meters. The microphones were placed on tripods in acoustically neutral environmental shrouds approximately 5 feet above the ground and connected to the sound level meters with extension cables, and the meters were field-calibrated prior to and immediately following the measurements.

Weather conditions during the measurement period varied dramatically and included partly cloudy days with light winds on Thursday and Friday, May 9th and 10th, sunny and warm days with light winds on Saturday and Sunday, May 11th and 12th, and cooler, cloudy days with some rain and winds on Monday and Tuesday, May 13th and 14th. Although the meters were not attended for the entire measurement, noise sources were noted during setup and retrieval of the meters. A summary of the sound level measurement (SLM) results is displayed in **Table 3.6-2**, and detailed information regarding the measured levels is included in **Appendix E**.

3.6.1.4 Noise Complaint History

Several review comments on the Draft EIS alluded to a substantial history of resident complaints about noise in Sand Point Magnuson Park that the reviewers claimed was well documented, and requested that this information be reported in the Final EIS. In response, the Department of Parks and Recreation conducted a review of the various records of noise complaints made to the Seattle Department of Parks and Recreation, Seattle Department of Construction and Land Use (DCLU), and the Seattle Police Department. The results of this review indicate that past activities (both sports field activities and community events) at the Sand Point Magnuson Park facility have resulted in occasional, but relatively few noise complaints.

Discussions with staff from the Sand Point Magnuson Park Division of the Department of Parks and Recreation indicated that noise complaints from the View Ridge neighborhood on the hillside west of the site are typically made in response to activities occurring in the buildings at the north end of the Sand Point site, particularly Buildings 2 South and 27 in the community campus portion of the site. These activities tend to include live, amplified music and/or voices. One event in the large parking lot near the north end of the project site involved noise from a "fire pipe" that created a sonic boom type noise that elicited several complaints. The Parks Department has responded in the past by disallowing certain types of activities or equipment, or by closing doors of venues. The former events coordinator for the Sand Point Magnuson Park facility does not recall receiving noise complaints associated with athletic activities at either the Sand Point or Magnuson Park fields.

Seattle Police Department (2002) response records for the dispatch location of Magnuson Park date back to February 1998. SPD staff provided a summary of all calls for the call type "noise" with a dispatch location of 6500 or 7400 Sand Point Way NE, the two official addresses for Sand Point Magnuson Park. The records indicate that 6 noise complaints were received in 1998 (February to December), 4 in 1999, 7 in 2000, 2 in 2001, and none so far in 2002 (January to May). These records are kept according to the general location of dispatch (Magnuson Park), and do not reveal the specific location within the park or the specific type or source of the noise occurrence. Therefore, the actual number of complaints regarding noise emanating from the Sand Point Magnuson Park, or more specifically from the existing sports fields, is unknown; this number could be somewhat lower than the total number of noise complaints reported. Even so, these records indicate that relatively few noise complaints concerning Sand Point Magnuson Park have been registered with the Seattle Police.

Table 3.6-2
Range of Measured Sound Levels (dBA)

Location	Days	Time	Leq	Lmax	L2	L8	L25	L90	Ldn
SLM1	5/9/02-5/13/02	Daytime	45-61	56-90	49-68	47-65	45-64	43-50	56
		10–11 pm	46-55	60-74	51-64	47-62	45-48	43-46	
		Nighttime	44-55	48-81	45-64	45-62	44-49	43-47	
SLM2	5/9/02-5/13/02	Daytime	44-65	63-89	50-71	46-68	43-59	37-48	53
		10–11 pm	43-44	63-69	52-53	46-47	41-43	37-39	
		Nighttime	36-53	48-85	38-56	36-50	34-44	32-41	
SLM3	5/11/02-5/14/02	Daytime	44-64	66-87	53-75	46-64	43-56	39-49	60
		10–11 pm	46-47	69-72	54-56	48-50	43-44	37-39	
		Nighttime	36-60	57-86	44-70	38-64	35-58	30-45	
Seattle Noise Limit		Daytime	NA	70	65	60	55	NA	NA
		Nighttime	NA	60	55	50	45	NA	

Notes:
Daytime hours are between 7 a.m. and 10 p.m. weekdays, 9 a.m. and 10 p.m. weekends. Nighttime hours are between 10 p.m. and 7 a.m. weekdays, 10 p.m. and 9 a.m. weekends. The periods between 10 and 11 p.m. are included in this tabulation because of particular interest in this period of time related to the proposed project.
Ldns were computed for the entire measurement period.

SLM1: Taken at the Sand Point Community Housing Association (SPCHA) Building 224. This location represents the SPCHA transitional housing units nearest the project site. Existing noise sources observed during visits to the measurement location included exterior ventilation noise from equipment in Building 224, park athletic activities, traffic on local roads, aircraft flyovers, birds, and residential activity. On Saturday and Sunday, May 11th and 12th, the SPMP fields were experiencing close to maximum use with 6 youth ultimate Frisbee games and a little league baseball game happening concurrently. The ultimate tournament was scheduled to last from 9 a.m. to 5 p.m. each day.

SLM2: Taken at the southwestern corner of Promontory Point, adjacent to 6118 65th Ave NE and across 65th Ave NE from the Radford Court student housing. This location represents residences on the hillside south of the park. Observed noise sources included light aircraft, jets, traffic on local roadways, children playing, wind in trees, birds, distant voices from SPMP, and distant construction noise. During a visit to the meter on Saturday May 11th, light aircraft appeared to cause many of the maximum levels. In general, the sound levels at this location were fairly low for an urban residential location.

SLM3: Taken at 7221 56th Avenue NE. This location had line of sight to many of the athletic fields at SPMP and represents residences in the View Ridge neighborhood west of SPMP and distant from Sand Point Way NE. Noise sources observed during several visits to the measurement location included traffic on Sand Point Way NE and other local roadways, aircraft, and local residential activity (e.g., lawn maintenance). Although the measured levels at this location are generally consistent with levels expected in dense, urban residential locations, sound levels at night, primarily between 1 and 3 a.m. are dramatically lower.

Source: Sound level measurements by MFG, Inc., May 2002

Discussions with staff from the Department of Design, Construction and Land Use indicate that they have no records of noise complaints from activities at the Sand Point Magnuson Park site (D. George, personal communication, Seattle Department of Design, Construction and Land Use, March 2002). DCLU code compliance staff were aware of only one complaint and action in the vicinity of the project site, which involved the USGS Western Fisheries Research Center on NE 65th Street.

3.6.2 Environmental Impacts of the Proposed Action

3.6.2.1 Construction

The proposed action would create temporary, intermittent noise associated with construction and demolition activities. The primary sources of construction noise would be heavy equipment used for grading and excavating the site to prepare for developing the sports fields and wetland/habitat area, and for installing utility improvements. Construction workers and equipment would also generate noise associated with travel to and from the site. These activities would typically occur during daylight hours.

The proposed action would be constructed in four phases over a period of approximately 10 years. Within each of the four phases, heavy earthmoving equipment would be used for approximately 3 consecutive months. The remainder of time during each phase would see less intensive levels of construction, with much lower levels of construction noise.

The phasing of the proposed project would result in highly varying levels of construction noise received at the closest residential receivers (i.e., SPCHA Building 224). In terms of distance from this building, construction activities in Phase 1 would vary from 1,600 to 2,600 feet, Phase 2 would vary from 120 to 2,300 feet, Phase 3 would range from 400 to 3,500 feet, and Phase 4 would range from 350 to 1,800 feet. **Table 3.6-3** displays ranges of noise produced by typical construction equipment at 100, 400, and 2000 feet to indicate the range of construction noise that may be received at Building 224 during the construction period. Off-site residential locations would be further from the nearest construction activities and would receive lower overall levels of construction noise.

Table 3.6-3
Typical Construction Equipment Noise (dBA)

Activity	Range of Hourly Leqs		
	At 100’	At 400’	At 2000’
Clearing	77	65	51
Grading	69-82	67-70	43-56
Paving	66-82	64-70	40-56
Erection	66-78	64-66	40-52
Source: EPA, 1971			

Construction activities for the proposed project would be subject to regulation under the City's noise ordinance. As indicated previously, daytime construction activities in general are allowed to exceed the underlying use-based noise limits by 25 dBA for the louder mobile equipment; therefore, maximum permissible sound levels for project construction noise could be as high as 80 dBA in adjacent residential areas and still comply with the noise ordinance. As can be seen in **Table 3.6-3**, the potential exists for heavy equipment in operation 100 feet from the nearest residences to exceed Seattle's noise limits for construction. Therefore, attention would have to be given during the construction planning process to ensure that Seattle's noise limits are met. Construction noise at more distant locations would easily meet Seattle's construction noise limits, and at very distant locations would fall within or below the existing range of noise levels.

It is likely that construction noise would be audible at times in the residential areas near the project site. However, it is unlikely that noticeable construction noise from the project would be extensive throughout the surrounding area, or that project-related construction noise would be intrusive much or most of the time in the off-site residential areas closest to the project site. As a starting point for this conclusion, it is assumed that project construction activities would be monitored to ensure compliance with the City's noise ordinance and therefore would not result in a significant impact.

3.6.2.2 Operation

The proposed action would result in new and increased ongoing noise sources created by a variety of uses of the new park resources. The primary potential sources of operational noise impacts would be seasonal programmed activities, such as participant and crowd noise associated with outdoor sports. The proposal would also lead to increases in traffic noise on local roadways. Both sorts of noise are addressed in the following sections.

Sports Field Noise

During the sports season in 2001 (as in previous years), seven soccer fields and four softball diamonds were in operation (but not concurrently, given the overlapping of the present field configurations) at Sand Point Magnuson Park. Athletic activities on the fields generated the same types of noise that would be expected with the proposal.

The sports field component of the proposed action is focused on recreational sports, as opposed to competitive or spectator sporting events; bleacher seating for spectators would be limited, so large crowds of spectators would not be present on the fields. Sports field use would produce intermittent noise during some portions of the day (primarily late afternoon and evening hours on weekdays, plus more daytime hours on weekends), rather than on a constant basis.

Sound level measurements were taken of various sports events to characterize the types and levels of noise associated with these events. Events measured included an ultimate Frisbee tournament, a youth baseball game, a youth baseball practice, an adult softball game, and an adult soccer game. Because some events were not available for sound level measurements during the period of this noise analysis, the measured events were used to estimate sound levels of similar activities. For example, the youth ultimate games were assumed to be similar to the types and levels of noise associated with youth soccer games and practices. Also, adult softball and baseball games were assumed to be similar.

The source sound level measurements were taken so as to include measurement statistics that correspond to the sound level limits defined in the Seattle noise ordinance. Specifically, the Seattle noise limits are based on the L_{25}, $L_{8.3}$, $L_{2.5}$, and L_{max} corresponding to the level exceeded 15 minutes of an hour, 5 minutes of an hour, 1.5 minutes of an hour, and a level "never to be exceeded." Noise from all of the athletic activities must meet these limits. The L_{25} and L_{max} generally encompass the levels most likely to be exceeded and are, therefore, the descriptors used in this analysis to assess potential future compliance with the Seattle Noise Code.

The source noise measurement results shown in **Table 3.6-4** would likely vary from game to game. This seems particularly true for the adult baseball/softball game measurement, because the game measured for this analysis was at 7 p.m. and had relatively more spectators, including numerous children. Games occurring between 10 and 11 p.m. are unlikely to have as many spectators, and the measured L_{25} is anticipated to be somewhat lower than indicated. Also, all of the measurements were somewhat "contaminated" by other nearby human activities, traffic, and airplane noise. To the degree possible, these extraneous sources were removed from the measured levels of the activity noise, but it was not possible to completely remove all the extraneous noise. Therefore, the measured source noise levels displayed in **Table 3.6-4** are somewhat higher than would be likely.

Table 3.6-4
Athletic Source Noise Events at 100 feet (dBA)

Event	L_{25}	Lmax
Youth Baseball Practice	52	68
Youth Baseball Game	52	75
Adult Baseball/Softball Game	56	79
Youth Soccer/Ultimate Practice	55	75
Youth Soccer/Ultimate Game	55	75
Adult Soccer Game	48	69

Noise calculations at various "receptor locations" were based on distance attenuation alone. Additional noise reduction would likely occur from atmospheric absorption, structural or topographic obstructions, and absorption from soft intervening ground. These reductions would be greatest for the more distant receivers, on the hillsides west and south of SPMP. However, these additional reductions have not been included in the noise level calculations. Therefore, it is likely that the levels estimated at the hillside residences would be much lower than indicated by this conservative approach results.

Predicted noise from each of the activities anticipated to occur during each season, time of day, and day of week were added together to estimate the overall sound level with all of the anticipated activities occurring simultaneously. The level of activity can generally be grouped into a fall/winter season (October through March) and a spring/summer season (April through September). The results shown are for the loudest hour during each of those seasons before 10 p.m. and from 10 to 11 p.m., according to current Seattle sports field scheduling practices.

Receiver locations considered in the noise calculations include the following:

- The nearest existing residences to the athletic fields, the existing transitional housing units of the Sand Point Community Housing Association (SPCHA) in Building 224. This building is located on the western side of Sportsfield Drive.

- Residences on the hillside south of Sand Point Magnuson Park, in the vicinity of NE 61st Street

- Residences on 57th Avenue NE, on the hillside west of Sand Point Magnuson Park and overlooking the site. Residences west of 57th Avenue NE are further from the athletic fields and would experience somewhat lower sound levels. No obstructions were assumed for residences on 57th Avenue NE, although some obstructions exist between at least some of the athletic field areas and almost all of the residences on the hillside.

- The base of the hill west of Sand Point Magnuson Park, representing residences in the Park Point condominium complex and on 58th Avenue NE. Again, the noise predictions/reductions were based on distance attenuation alone. For residences near the base of the hill, numerous obstructions exist between the athletic fields and the residences, and the sound levels received at these residences would likely be much lower than the predicted levels.

Predicted maximum sound levels for these locations are listed in **Table 3.6-5**.

Table 3.6-5
Predicted Sound Levels with Proposed Action (dBA)

Time Period		SPCHA Bldg 224		Hillside South of SPMP		57th Ave NE (West)		Park Point (Base of Hill West)	
		L25	Lmax	L25	Lmax	L25	Lmax	L25	Lmax
Fall and Winter									
Daily	<10 pm	50	66	41	54	40	51	43	54
	10-11 pm	37	54	32	48	29	44	32	48
Spring and Summer									
Daily	<10 pm	50	70	41	54	39	55	42	56
	10-11 pm	49	70	38	53	38	55	40	56
Seattle Limits	<10 pm	55	70	55	70	55	70	55	70
	10-11 pm	45	60	45	60	45	60	45	60

Scheduling assumptions for the analysis were as follows: (1) primary fall and winter use for all fields (including Fields 7-11) on weekdays before 10 PM would be practice for soccer, rugby and ultimate Frisbee, with adult soccer games on the soccer fields and rugby on the rugby pitch up to 11 PM; (2) spring and summer use would include soccer, rugby and ultimate Frisbee only on the soccer and rugby fields, with adult games until 11 PM, and adult and youth baseball and softball on Fields 7-11 with games lasting until 11 PM.

The shaded cell indicates a predicted sound level that exceeds the Seattle noise limits. The limits are 55 dBA L_{25} and 70 dBA L_{max} during daytime hours, and 45 dBA L_{25} and 60 dBA L_{max} during nighttime hours. Daytime hours are 7 a.m. to 10 p.m. weekdays and 9 a.m. to 10 p.m. weekends. Nighttime hours are all others.

As is shown in **Table 3.6-5** anticipated sound levels from sports field events during the winter and fall months would easily meet Seattle's noise limits during daytime and nighttime hours at all residential locations. Also, the predicted sound levels are generally lower than the existing sound levels measured in the project vicinity, and are much lower than the existing measured levels on the hillsides south and west of SPMP. The primary use of the athletic fields during the fall and winter would be for youth and adult soccer, rugby, or ultimate Frisbee games.

The spring and summer months are assumed to entail somewhat heavier use of the sports fields and include activities (baseball and softball) capable of producing higher maximum sound levels. Predicted spring/summer sound levels from sports field events continue to meet Seattle's *daytime* noise limits at all nearby residential locations. The predicted sound levels also easily meet Seattle's nighttime limits at all off-site residential locations south of NE 65th Street and west of Sand Point Way NE. In addition, predicted worst-case sound levels associated with park uses are lower than measured existing levels in off-site residential areas (see **Table 3.6-2**). For these reasons, noise associated with the proposed action, although at times clearly audible, would not be expected to result in significant noise impacts at off-site locations.

At the nearest residential use to the project site, the existing SPCHA Building 224, Seattle's nighttime noise limit of 45 dBA L_{25} could be exceeded by a predicted level of 49 dBA. The main contributors to this predicted level are spectator and/or participant noise from adult baseball games played on Fields 7 and 11. The existing measured L_{25} levels between 10 and 11 p.m. range from 45-48 dBA, and the addition of the future predicted sound could result in up to a 5-dBA increase over the existing level. Also, Seattle's nighttime maximum sound level limit (L_{max}) of 60 dBA could be exceeded by a predicted L_{max} level of 70 dBA due to adult baseball/softball games played on Fields 7, 8, 10, and 11. Although the potential exists to exceed Seattle's L_{max} noise limit, the measured L_{max} levels currently experienced by residents of Building 224 between 10 and 11 p.m. range from 60 to 74 dBA, indicating that these residences are currently exposed to similar maximum events from existing noise in the area (see **Table 3.6-2**). Because the maximum noise events with the proposed action would be similar to those under existing conditions, this would reduce the potential for significant noise impacts. However, it is clear that noise from the proposed sports activities would be audible, might occasionally be intrusive, and would occasionally be the source of maximum noise levels at this location.

Traffic Noise

The proposed project would result in an increase in traffic on area roadways. This is particularly true for nighttime games, when the SPMP currently generates little traffic and other traffic on area roadways decreases. Therefore, the greatest potential for traffic noise impacts would occur during nighttime hours, after 10 pm. To estimate the traffic noise levels during this hour, it was assumed that all the fields would be in use, and all participants and spectators would exit during a one-hour period.

Traffic noise on public roadways is exempt from the Seattle noise limits. Public roadways include Sand Point Way NE, NE 65th Street, NE 70th Street and NE 74th Street. However, Sportsfield Drive is considered a park road, and traffic on this roadway would not be exempt from meeting the limits. Traffic noise from Sportsfield Drive would primarily affect the residents of Building #224. Potential traffic noise impacts for off-site residential uses adjacent to Sand Point Way NE, NE 65th Street, and NE 70th Street are discussed separately from the on-site residential uses.

On-site Traffic

Traffic noise impacts at on-site residential receivers in Building 224 were estimated by calculating the traffic noise levels on Sportsfield Drive and comparing these to Seattle's noise limits. The greatest potential for traffic noise impacts is expected to occur after 10 p.m., and this traffic noise analysis considers the later evening hours.

To ensure the traffic noise analysis is conservative, it was assumed all traffic from nighttime games would exit the site in a one-hour period between 10:30 and 11:30 p.m. This would include five baseball games and up to four soccer games. According to the traffic noise study, each baseball game would involve approximately 30 vehicles and each soccer game approximately 35 vehicles, for a total of 290 vehicles exiting in a one-hour period. In determining how many vehicles might pass Building 224 between 10:30 and 11:30 p.m., the following assumptions were applied:

- Approximately 80 vehicles were assumed to use the North Fields parking lot (all vehicles from players on Field 6 and half of the vehicles from Fields 7, 8, and 9). All but 10 percent of these vehicles were assumed to exit via the nearest exit at NE 74th Street.

- Approximately 70 vehicles were assumed to use the South Fields parking lot (all vehicles from Field 14 and half of the vehicles from Fields 12 and 13). All but 10 percent of these vehicles were assumed to exit via the nearest exit at NE 65th Street.

- The remaining 140 vehicles were assumed to use the Sportsfield Drive parking lot, with 50% traveling north to exit and 50 percent traveling south to exit.

- Vehicles traveled at 20 mph on the site.

- Because of the configuration of Building 224, each receiving residential window would have only a partial view of the roadway.

The previous assumptions result in an estimated 77 vehicles traveling north on Sportsfield Drive past Building 224 and 8 vehicles traveling south to exit the Sand Point Magnuson Park facility. Traffic noise levels were calculated using the FHWA NOISE model. The resulting traffic noise level (L_{eq}) at the nearest residences in Building #224 was 39 dBA. Adding this to the predicted sound level (L_{25}) of 49 dBA from all athletic activities results in an overall sound level of 49 dBA. This level would exceed Seattle's noise limit of 45 dBA after 10 p.m. if all previous assumptions were correct. Please note that adding the predicted traffic noise L_{eq} to the predicted athletic field noise L_{25} does not necessarily result in an accurate prediction of the overall L_{25}. Unfortunately, the noise prediction tool for traffic noise does not calculate an L_{25}. Therefore, the predicted overall level of 49 dBA is simply the best estimate of the overall L_{25} using the available tools. Also, the athletic events would end at staggered times, with only a portion of games still in play while some of the vehicles exit the site. Unfortunately, this scenario is too complicated to allow for noise predictions and the scenario presented should be considered "worst-case" with somewhat overstated overall sound levels.

Off-site Traffic

Because the Seattle noise limits do not apply to traffic traveling on public roadways, traffic noise impacts at off-site residential receivers were estimated by calculating the potential increases in traffic noise on area roadways. For example, a doubling of traffic noise would be expected to cause a 3-dBA increase in the hourly L_{eq} due to traffic noise sources. If other noise sources were substantial contributors to the existing noise environment, the increase in overall noise would be somewhat lower than the increase in traffic noise. A 2 to 3 dBA increase in an existing noise source may be just discernable in an active outdoor noise environment. An increase of 5 dBA is likely to be clearly noticed.

To determine the existing conditions in the project vicinity, 15-minute sound level measurements and traffic counts were taken on NE 65th Street and NE 70th Street between 10:30 and 11:30 p.m. on Monday, June 3, 2002. Counts of traffic on Sand Point Way NE were also taken during this period.

A sound level measurement and traffic count were taken just off of NE 70th Street between 10:36 and 10:51 p.m. The measured L_{eq} of 60 dBA was dominated by aircraft noise. The 15-minute traffic count indicated that 20 vehicles used the road, corresponding to an hourly count of 80 vehicles. The worst-case scenario assumes that 290 vehicles would exit the Sand Point Magnuson Park site between 10:30 and 11:30 p.m. According to the traffic study, approximately 20% of these vehicles are expected to travel on NE 65th Street, resulting in an additional 58 cars using this road between 10:30 and 11:30 p.m. and an anticipated traffic noise increase of just over 2 dBA. However, because the main noise contributors to the existing environment during this period are jet aircraft, the actual increase would be somewhat lower than 2 dBA and barely discernible.

Similarly, a sound level measurement and traffic count were taken just off of NE 65th Street between 10:55 and 11:10 p.m. Several Metro buses driving on NE 65th Street during the measurement dominated the measured L_{eq} of 59 dBA. During the 15-minute traffic count, 14 cars and 2 buses used the road corresponding to an hourly use of 56 cars and 8 buses. According to the traffic study, approximately 25% of the 290 vehicles leaving SPMP are expected to travel on NE 65th Street. This would result in an additional 73 cars using this road between 10:30 and 11:30 p.m. Because the existing buses dominate the noise environment and bus usage is not expected to increase due to the proposed project, the estimated traffic noise increase is 1 dBA and would be unlikely to be discernible.

Existing traffic volumes and noise on Sand Point Way NE are considerably higher than on NE 65th Street and NE 70th Street. A traffic count taken of traffic on Sand Point Way between 10:36 and 10:51 indicated existing volumes of 50 cars and 1 medium truck, corresponding to hourly volumes of 200 cars and 4 medium trucks. According to the traffic study, vehicles from the park could exit the area via several routes, with the maximum percentage of vehicles on any one portion of Sand Point Way NE estimated to be 30%. Assuming that 290 vehicles exit between 10:30 and 11:30 p.m,, the additional 87 vehicles on Sand Point Way NE would result in a less than 2 dBA increase in traffic noise, which would barely be discernable.

3.6.3 Impacts of the Alternatives

3.6.3.1 Lesser-Capacity Alternative

Construction Noise

Construction activities for the lesser-capacity alternative would be expected to produce intermittent noise impacts that would be similar in nature, duration, magnitude and extent to those described for the proposed action. Again, these construction-related impacts would be regulated by the City of Seattle's noise ordinance. Due to the large distances between them, it is unlikely that construction noise from this alternative would be intrusive much or most of the time in the residential areas on the hillsides overlooking the project site. Although construction noise would be audible and at times intrusive at the nearest residential uses to the project site in SPCHA Building 224, construction activities would be intermittent, would move throughout the fairly large project site, and would occur only during daytime hours. Because of these factors, if construction noise levels comply with the noise limits applied to construction activities by the City of Seattle, construction noise is not anticipated to cause a significant noise impact even at these nearest residential receivers.

Operational Noise

Operational noise associated with the lesser-capacity alternative would be similar to conditions under the proposed action, but the noise would likely be somewhat less in magnitude, extent and duration. This alternative would result in a significant increase in aggregate use of the park, primarily in conjunction with operation of the sports field complex, but the level of increased use would be less than for the proposed action. Traffic produced by sports field users would still increase, but by a smaller volume.

Sports Field Noise

With the lesser-capacity alternative, noise from the sports field activities during evening hours would be less extensive because only 3 fields (compared to 11 fields with the proposed action) would be lit and used in the evenings. During daylight hours, noise of athletic activities is expected to be similar to the proposed action. One less field would be developed (i.e., Field 9), which is anticipated to contribute little difference to the overall noise from the park. The fields that would be lit in this case are Fields 7, 11, and 12.

Even with the lesser-capacity alternative, sound levels from baseball or softball games on these fields between 10 and 11 p.m. continue to have the potential to exceed Seattle's nighttime noise limits at the nearest SPCHA residential units (**Table 3.6-6**). This is because with either the proposed action or the lesser-capacity alternative, adult baseball games on Fields 7 and 11 are the primary contributor to the predicted noise levels at the SPCHA housing west of Sportsfield Drive.

Table 3.6-6
Predicted Sound Levels with Lesser-Capacity Alternative (dBA)

Time Period		SPCHA Bldg 224		Hillside South of SPMP		57th Ave NE (West)		Park Point (Base of Hill West)	
		L25	Lmax	L25	Lmax	L25	Lmax	L25	Lmax
Fall and Winter									
Daily	<Sunset	50	66	41	54	40	51	43	54
	Sunset-11 pm	33	54	25	45	23	44	32	48
Spring and Summer									
Daily	<Sunset	48	70	40	54	39	55	42	56
	Sunset-11 pm	48	70	33	53	34	55	39	56
Seattle Limits	<Sunset	55	70	55	70	55	70	55	70
	Sunset-11 pm	45	60	45	60	45	60	45	60

Seasonal scheduling assumptions for this analysis are essentially the same as reported in **Table 3.6-5** for the proposed action.

The shaded cell indicates a predicted sound level that exceeds the Seattle noise limits. The limits are 55 dBA L25 and 70 dBA Lmax during daytime hours and 45 dBA L25 and 60 dBA Lmax during nighttime hours. Daytime hours are 7 a.m. to 10 p.m. weekdays and 9 a.m. to 10 p.m. weekends. Nighttime hours are all others.

Traffic Noise

The lesser-capacity alternative would also result in increases in traffic volumes on area roadways, but would result in much fewer vehicles during the late evening hours when traffic noise impacts would likely be greatest.

On-site Traffic

Similar to the Proposed Action, traffic noise impacts at on-site residential receivers in Building 224 were estimated by calculating the traffic noise levels on Sportsfield Drive and comparing these to Seattle's noise limits. With the lesser-capacity alternative, only two baseball fields and one soccer field would be scheduled for use between 10 and 11 p.m. Therefore, only 95 vehicles would be exiting during the late evening compared to 290 with the Proposed Action. All of the vehicles were assumed to use the Sportsfield Drive parking lot, with 50 percent exiting north and 50 percent exiting south. The resulting traffic noise level of 37 dBA, added to the predicted athletic noise level of 48 dBA, results in an overall sound level from the park of 48 dBA. Although traffic noise would not be a major contributor to the overall level, noise from the athletic fields is not anticipated to meet Seattle's nighttime noise limits of 45 dBA, so noise from traffic plus the athletic fields is also not anticipated to meet the limit. Again, because

most of the vehicles would likely be exiting after a cessation of the athletic activities, this estimated sound level is anticipated to be somewhat overstated.

Off-site Traffic

The lesser-capacity alternative would result in far fewer vehicles exiting the Sand Point Magnuson Park site between 10:30 and 11:30 p.m. than the proposed action. Because there would be no impact with the proposed action, no off-site traffic noise impacts are expected with the lesser-capacity alternative.

3.6.3.2 No Action Alternative

A few minor improvements to Sand Point Magnuson Park would likely occur under this alternative, which could produce some limited, short-term construction noise. The most likely source of noise in this case would be the planned demolition of several existing buildings on the site, including the former Navy Commissary complex. Construction or demolition activities under this scenario would be much less extensive and would generate much less noise than either action alternative. Organized use of the existing sports fields would continue, with resulting intermittent noise from participants and spectators; this noise source would be limited to daylight hours, as at present. Overall, considering both construction and operational sources, potential noise impacts under the no action alternative would not likely be significant.

3.6.4 Cumulative Impacts

There is little potential for the increase in noise (relative to the current condition) from the proposed action to result in significant cumulative noise impacts in the surrounding community. Existing sources of noise in the local area are typical, common sources such as traffic on Sand Point Way and other local streets. There have not been other major construction projects of the scale of the proposed action in the Sand Point neighborhood in recent years, and no planned major projects have been announced. Construction activity for a new Children's Hospital office facility at the southwest corner of NE 70th Street and Sand Point Way NE began in November 2001and is expected to be complete by January 2003. This facility has required a construction project of relatively modest scale that has produced recent, localized construction noise, but this project should be completed before the anticipated start of construction for the proposed action. Projects elsewhere on the Sand Point Magnuson Park site undertaken to implement the Sand Point Reuse Plan have generally taken place indoors, as existing buildings have been renovated to accommodate new activities. Outdoor construction for current or near-future projects such as the dog Off-Leash Area and the North Shore Recreation Area will not involve extensive activities that will produce significant and/or ongoing construction noise in the local area (City of Seattle, 1996).

The incremental increase in ongoing noise from operation of the proposed park facilities, primarily the sports fields, is not expected to comprise a significant impact. Intermittent noise from increased park use resulting from the proposed action is not likely to substantially increase the existing background noise sources in the local area, or potential new sources associated with other projects at Sand Point Magnuson Park, and thereby result in cumulative noise impacts.

3.6.5 Mitigation Measures

3.6.5.1 Construction

Construction activities for the proposed action or lesser-capacity alternative would be subject to the noise-control requirements of the City's noise ordinance. Specific measures that would be required by the ordinance, or would otherwise be incorporated into the proposal, include:

- Limit construction vehicle access to the project site to one designated route, to limit the off-site area affected by project construction traffic
- Limit the hours of construction activity to daytime hours, per the City's Noise Ordinance
- Monitor construction activities for compliance with the noise ordinance
- Transport fill materials that must be imported to the project site by barge, to minimize construction hauling traffic on local streets

3.6.5.2 Operation

Based on the level of neighborhood concern over potential operational noise impacts from the proposed sports fields, a monitoring program would be a key component of the mitigation measures for the proposed action or the lesser-capacity alternative. Department or contractor staff would monitor actual noise levels, particularly at night, under different game scenarios to determine the sound levels produced by sports events and their compliance with the Seattle noise ordinance.

The use of loudspeakers, air horns, and similar devices is already prohibited at all athletic events in City parks, particularly between 10 and 11 p.m., by the Seattle Municipal Code (Section 18.12.170), unless authorized for specific events and times. Signs detailing this restriction would be placed at key locations near the fields.

Because predicted sound levels from the athletic fields, under either the proposed action or the lesser-capacity alternative, were shown to be capable of exceeding Seattle's nighttime noise limits at the SPCHA Building 224, several mitigation measures for operational noise were analyzed for their effectiveness. These mitigation measures included:

- Rotate fields 7, 8, 9, 10 and 11 counterclockwise by 90 degrees to increase the distance between spectators and SPCHA residences
- Switch fields 14 and 15 to increase the distance between field 14 and residences south of NE 65th Street since this field may be used more often and/or later than field 15 (the rugby/football field)
- Install resilient material on the baseball field backstops to eliminate high maximum sound levels that occur when the ball hits the backstop

The predicted sound levels with these mitigation measures included are displayed in **Table 3.6-7**

Table 3.6-7
Predicted Mitigated Sound Levels with Proposed Action (dBA)

Time Period		SPCHA Bldg 224		Hillside South of SPMP		57th Ave NE (West)		Park Point (Base of Hill West)	
		L25	Lmax	L25	Lmax	L25	Lmax	L25	Lmax
Fall and Winter									
Daily	<10 pm	47	60	41	54	40	51	43	54
	10-11 pm	37	54	32	48	29	44	32	48
Spring and Summer									
Daily	<10 pm	46	64	41	54	39	54	42	56
	10-11 pm	45	64	38	53	37	54	40	56
Seattle Limits	<10 pm	55	70	55	70	55	70	55	70
	10-11 pm	45	60	45	60	45	60	45	60

The shaded cell indicates a predicted sound level that exceeds the Seattle noise limits. The limits are 55 dBA L25 and 70 dBA Lmax during daytime hours, and 45 dBA L25 and 60 dBA Lmax during nighttime hours. Daytime hours are 7 a.m. to 10 p.m. weekdays and 9 a.m. to 10 p.m. weekends. Nighttime hours are all others.

Mitigation included in these calculations include:

1) Rotate fields # 7, 8, 9, 10 and 11 counterclockwise by 90 degrees (i.e., move homeplate further east on each field)
2) Switch fields #14 and #15 since the soccer field may be used more often or later than the rugby/football field, and field #14 is further from potentially affected residences.
3) Line the baseball field backboards with resilient material to eliminate high maximum levels that occur when the ball hits the backboard. This results in a higher maximum with baseball than slowpitch softball.
4) Place bleachers for fields 12 and 13 between the two fields, to place observers further to the east relative to Building 224.

These potential mitigation measures result in somewhat lower predicted sound levels, particularly during the spring and summer months at the SPCHA Building 224. The effect of implementing these specified measures would be to reduce the predicted L25 levels by 3 or 4 dBA, and the Lmax levels by 6 dBA. The resulting predicted L25s at Building 224 meet Seattle's nighttime noise limit of 45 dBA. However, although it would be substantially lower, the predicted Lmax at Building 224 would still exceed the nighttime limit of 60 dBA.

Among the mitigation measures addressed in **Table 3.6-7**, the use of resilient material on the baseball/softball backstops has been incorporated into the plans for the proposed action (see **Section 2.2.4**). The feasibility and desirability of the potential field configuration changes is still being evaluated, and need to be discussed with the respective sports organizations. (Rotating the baseball/softball fields 90 degrees would result in a northwesterly homeplate-centerfield directional alignment that is not consistent with the preferred orientation to the northeast, for example.)

A potential additional mitigation measure not included in the analysis of predicted noise levels is the possible restriction of the hours of sports field operation, to avoid the potential exceedances of the Seattle noise limits. The decisionmakers for this proposal (the Mayor and the Seattle City Council) can evaluate the potential mitigation measures that are not included in the proposed action when they consider final action on the proposal.

Other available, practical measures to mitigate potential noise from use of the proposed sports fields are limited.

3.6.6 Significant Unavoidable Adverse Impacts

Construction activities associated with the proposed action would result in unavoidable intermittent noise impacts within the neighboring community. While the total duration of the construction period would be long (approximately 10 years), intensive construction activity and associated noise levels would be concentrated in relatively short periods within four of the construction phases. Based on required compliance with the City's noise ordinance and the large distances between much of the construction site and the affected residences, these impacts would not likely be significant.

Predicted noise levels at all off-site residential locations would easily meet Seattle's noise limits, both the daytime and more stringent nighttime limits, and would generally be below or within the range of existing noise levels. Therefore, operational noise impacts from the proposal are not anticipated at off-site residential receivers.

Operation of the new park resources resulting from the proposed action could create long-term, intermittent noise impacts at on-site residential receivers that would be unavoidable. Between 10 and 11 p.m., Seattle's noise limits might be exceeded at the nearest residential units to Fields 7 and 11 (i.e., Building 224). , Because the predicted L_{25} sound level under maximum usage would result in a moderate increase in noise (i.e., 5 dBA or less) when compared to the range of existing L25s between 10 and 11 p.m., and because existing maximum noise events louder than the predicted L_{max} level currently occur at Building 224, these noise impacts are not expected to be significant. With the potential additional mitigation measures discussed in the analysis, the predicted L25s and L_{max}s could be reduced further.