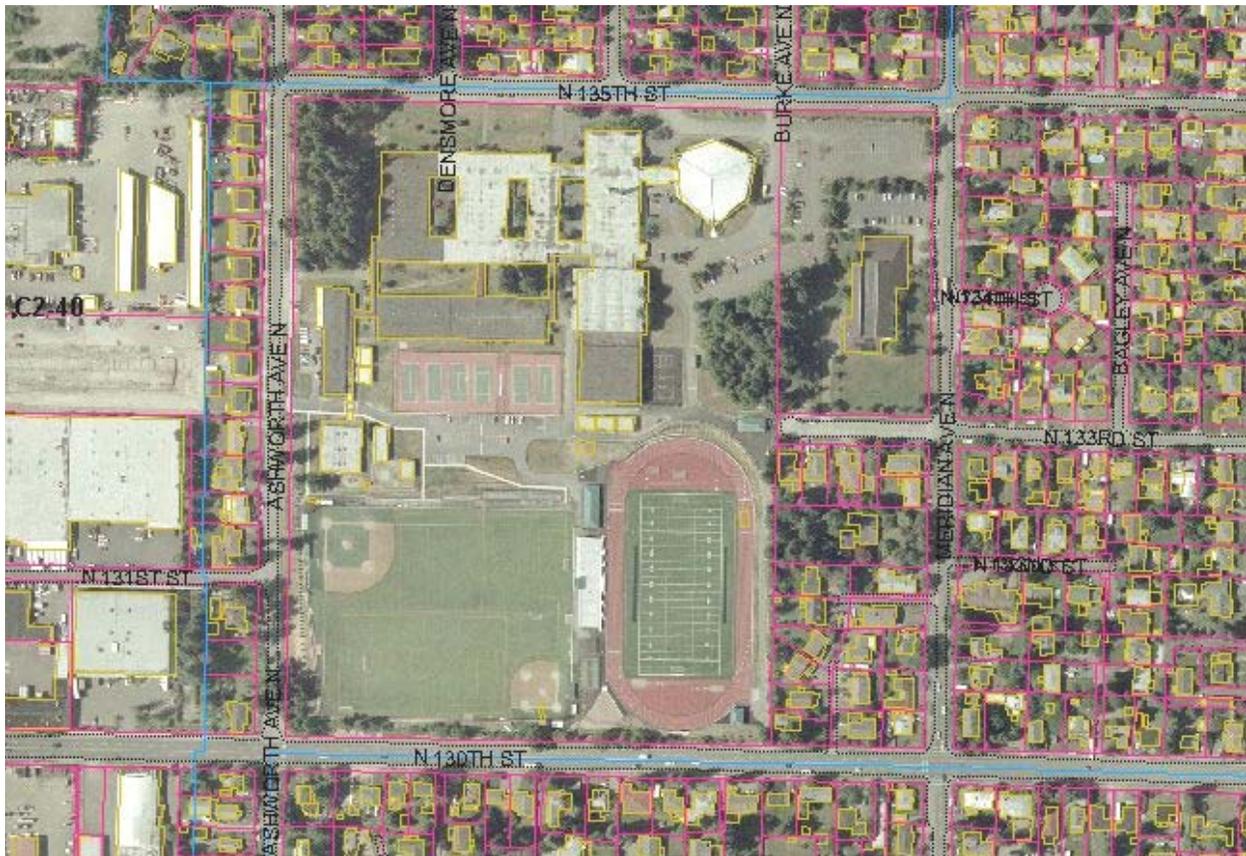


BACKGROUND DATA

Site Description

The proposal site is located on the 28.8 acre site of Ingraham High School. The site is in north Seattle, approximately seven blocks east of Bitter Lake, and approximately four blocks east of Aurora Ave. N. North 130th St. (an arterial) forms the south border of the site, and Haller Lake is located approximately two blocks south. The site is in or in proximity to the Bitter Lake/Broadview Thompson and the Haller Lake neighborhoods.

The site and properties across streets or adjacent to the site are all zoned SF 7200, a single family



residential zone. The field areas and tennis courts for which lighting is proposed are essentially level. The field areas, across the southern extent of the site, are approximately six feet below the level of the single family rear yards to the east and approximately 16 feet above the level of the intersection of N. 130th St. and Ashworth Ave. N. to the west of the site. Further north from the southern property line these elevations vary to some extent. At the north end of the football field it is approximately eight feet below the single family rear yards to the east and at the north end of the utility field it is approximately eight feet above street level to the west. Along the southern property line the field areas range from 16 feet above street level on the west to four feet above street level on the east. Across N. 130th St. to the south and across Ashworth Ave. N. to the west are single family houses with front yards facing those streets.

Two parking areas exist on the school site, one in the northeast corner and one central to the site, between the utility field and the tennis courts. Together there are approximately 298 vehicle parking spaces on the site. Access to the northeast lot is from N 135th St. and access to the central lot is from Ashworth Ave. N.

Project Description

The proposed lighting system at Ingraham High School would consist of arrays of 1,000 watt, shielded floodlights on steel poles surrounding the football field and the multi-purpose field. Lights for the tennis courts would consist of 1,000 watt, full cutoff floodlights mounted on concrete poles. The shielded floodlights would utilize reflector and lamp designs intended to better direct the light to the fields and reduce the amount of light transmitted off site and into the atmosphere. The lights would be located as close to the field as possible while not compromising player safety by being too close, or obstructing spectator views by being in front of the football grandstand on the west side of the football field.

The proposed lights would be on poles 70 to 90 feet tall at the football and multi-purpose fields. The height of the poles, above the 30 foot height limit in single family zones, is proposed to minimize light spillage outside the athletic fields. The tennis court poles are proposed to be approximately 40 feet in height; also to limit light trespass. The Seattle Land Use Code provides that light poles at public schools may be permitted by special exception to reach up to a maximum height of 100 feet.

Operation of the field and court lights is proposed in the application materials to observe fixed shutoff times; unless the fields are not being used, in which case the lights can be turned off early. The football field lights are proposed to turn off at 10:00 p.m. with low level security lighting extending an additional 15 minutes to allow participants and spectators to safely leave the area. Lighting of the multi-purpose field and the tennis courts is proposed to remain on until 10:30 p.m. with an additional 15 minutes of low level security lighting.

Public Comment

The period for comment to this Department ran from February 3, 2005 to March 2, 2005. Twenty-two comment letters are in the application file. Comment received was largely from residents in the vicinity of the school and in opposition to the lighting proposal. Concerns expressed were about light trespass into residential properties, noise disturbing residential activities including sleep, increased traffic on surrounding streets and increased parking on nearby streets.

On April 1, 2004 the School District held a public workshop that fulfilled a requirement of Seattle Land Use Code section 23.44.017.B. At this workshop, the District displayed exhibits of the proposal, held a general discussion of the environmental impacts and answered questions from the public before accepting comment on the project.

ADDITIONAL BACKGROUND INFORMATION

Joint Use with Parks

The SSD and the City's Parks and Recreation Department have a joint use agreement covering this and many other sites. Under that agreement the Parks Department is allowed to schedule the athletic facilities at Ingraham High School at times when it is not used by the School. The Parks Department is expected to schedule weekday evening and weekend league games. Although the fields could be used by the general public on a drop-in basis, it is anticipated that between Parks and the SSD, fields would likely be scheduled on a consistent basis.

Lighting Terms and Technology

In DPD's review of similar projects, questions and concerns have been raised regarding lighting impacts and the standards for measuring such impacts. The areas of concern are, generally, light trespass and glare.

Light trespass is the measurable amount of visible light that leaves the lighted area, in this case, the ball fields and tennis courts. This impact is typically a number expressed as a measurement of foot-candles. This can be measured horizontally, as in the number of foot-candles on the ground illuminating the ground outside of the project site. This can also be described in vertical foot-candles by describing the amount of illumination delivered outside the project area from the perspective of a viewer. Both of these measurements can be modeled on computer software or taken physically with a light meter laid on the ground or pointed towards the play surface perpendicular to the ground, usually at a height of five feet.

For this project, light trespass has been calculated using the second method, which models the amount of light escaping the fields at the adjacent residential property lines; this is expressed in vertical foot-candles, 5 feet above the ground to simulate the experience of a viewer. These calculations do not attempt to capture the amount of existing background light that may be expected in an urban residential environment nor do these predictions account for existing mitigation such as view obscuring shrubs and trees. Rather, this method produces a reasonable disclosure of the relative impact of light trespass from ball field lighting to allow an analysis of the proposal's impacts.

Glare is what the human eye experiences when viewing a bright light source against a dark backdrop. Glare impacts are somewhat subjective but are often experienced more acutely than impacts from light trespass. In severe instances, such as the lights of oncoming traffic, glare can cause disorientation and discomfort in the viewer. There are no engineering models that can fully quantify the experience of glare but typically, the most effective way to control glare is to provide shielding of the glare source; in the case of field lighting, minimizing direct view of the lamps.

Lighting manufacturers have created technologies to address impacts of light trespass and glare. Generally, there are two types of lighting systems that attempt to control light trespass and glare. The term "*full-cutoff*" generally refers to a specific type of lighting system composed of a lamp

contained within a box-like housing. This housing almost fully shields direct view of the lamp from off the field and delivers light only below the horizontal plane of the fixture. A properly designed full cutoff system is well suited to reducing glare impacts but may require a greater number of poles than for other lighting systems to achieve the desired on-field light levels.

A “*shielded aim able*” system employs conventional floodlights with hoods and louvers to direct light onto the field and reduce direct view the lamps. This type of system generally uses fewer poles and does an excellent job of controlling light trespass. Shielded aimable systems were recently approved for use at Lower Woodland Park, Rainier Beach and Nathan Hale High Schools and have been installed at the University of Washington soccer facility. Both systems are effective at controlling light trespass and glare; in some instances, given the proximity of residential properties, a shielded aim able system may be proposed over a full cutoff system in order to more fully reduce light trespass.

Both of these lighting systems rely on higher lamp mounting heights to direct light down onto playing surfaces.

ANALYSIS—SPECIAL EXCEPTION

The Seattle Land Use Code (SMC 23.44.017.B.6.b) provides that the Director may permit Light Standards to exceed the otherwise maximum permitted height up to a maximum of 100 feet as a Special Exception pursuant to the following criteria.

(1) When seeking a special exception for taller light standards, the applicant must submit an engineer's report demonstrating that the additional height contributes to a reduction in impacts from light and glare. When the proposal will result in extending the lighted area's duration of use, the applicant must address and mitigate potential impacts, including but not limited to, increased duration of noise, traffic, and parking demand. The applicant also must demonstrate it has conducted a public workshop for residents within one-eighth (1/8) of a mile of the affected school in order to solicit comments and suggestions on design as well as potential impacts.

(2) The Director may condition a special exception to address negative impacts from light and glare on surrounding areas, and conditions may also be imposed to address other impacts associated with increased field use due to the addition of lights, including, but not limited to, increased noise, traffic, and parking demand.

Light Trespass

The District has provided a document titled “Engineering Report Pole Height Exemption Ingraham High School Athletic Field Illumination” (“Report”) describing the proposal, the equipment to be used and an analysis of predicted spill light and of glare which would be generated under both 30 tall light pole and the proposed pole height alternatives.

As described in the Report, shielded aimable flood lights are proposed to be used on the athletic fields and full cutoff box lights are proposed for the tennis courts. All of the lights would be mounted on steel poles thereby avoiding possible warping of wood poles and resulting aiming errors. Shielded flood lights were chosen for the fields because they are best able to provide light at some distance from the poles on which they are mounted while still controlling light trespass well. In addition, full cutoff lights along the east property line would not control light trespass into adjacent yards as well as the proposed shielded aimable lights. The external visor of each light “will wrap a minimum of 170 degrees of the upper hemisphere of the floodlight. The visor will also wrap around the shades of the floodlight and extend into the lower hemispheres of the reflector. The external visor shall also have either a separate extension of the visor or a series of horizontal baffles. The visor is intended to reduce glare by minimizing direct view of the bulb and reflector from off site locations.”

In similar field lighting decisions DPD has established a guideline of 1.1 foot-candles vertical spill light at the property lines, measured at five feet, looking into the site.

The report concludes the additional height allows the proposed lighting system to achieve an 89% reduction along the east property line compared with lights mounted at a height of 30 feet. Along the N. 130th St. property line the increased mounting height of lights on the utility field would reduce spill light by approximately 85%. The Report also concludes the DPD 1.1 foot candle standard will be met by the proposed lighting system.

Glare

Glare too is reduced by increasing the pole heights. The Report is unable to quantify the amount of glare which would be expected to reach adjacent properties. Whenever a viewer is able to view a bulb or its reflector against a dark background glare is perceived. Under the proposal “a small portion of the luminaire reflectors and lamps will be visible from off site locations.” (Engineering Report). Shielding on the spot lights, as proposed, greatly reduces the amount of observed glare.

Raising the pole height reduces glare observed from surrounding properties, but it does not eliminate it. This is because the bulbs and reflectors will be directly observable from some locations. Full cut off light fixtures are better at preventing glare than are shielded spot lights, but, they are worse at controlling light spill. Both designs require additional height to be effective in the circumstance of this site.

Impacts of Proposal

Glare

As noted under the discussion of glare, glare impacts would be expected to be experienced on neighboring properties from the proposed lighting proposal. However, increasing the height of the poles generally would decrease the amount of these glare impacts because the lights could be pointed more downward and the shields will then block direct view of the bulbs and reflectors more completely. This principle, the higher the fully shielded spot lights the less the glare, is not universal. Because the shielding does not wrap entirely around the fixture, very high lights may

create visible glare impacts from locations increasingly far away as height increases. Glare, against a dark sky background, can be perceptible for many miles.

Glare impacts of the proposed lighting of the fields at Ingraham High School are lessened by increased pole height, but, are not fully eliminated.

Noise

Lighting the athletic fields and tennis courts at Ingraham High School allows activities in these areas to extend into twilight and dark periods; periods during which there otherwise would not be activity on them. These activities can conceivably continue during night time hours for as long as the lights are on. The perceived negative impact of noise, especially in residential areas, is greater during evening and nighttime hours than during the day. This is partly because the ambient noise level goes down during these periods. This increased negative perception of the same volume level is also likely because residents have expectations of a quieter environment during evening and night hours as their activities too take on a slower pace. This condition is recognized the Seattle Noise Ordinance which lowers the permissible level of sound at residential receptor sites after the hour of 10:00 p.m. to 45 dBA from 55 dBA in “daytime” hours.

The sound of unamplified human voices is not regulated by the Noise Ordinance.

At the football fields there are, and will continue to be, amplified announcers and also musical bands which will sometimes be amplified and sometimes not be. If the fields are lighted, athletic and other events will take place during evening times when they would previously not have. This represents a new noise impact which would be created by lighting the fields and tennis courts.

Traffic and Parking

Traffic and parking impacts of the expected increased use of the fields with the addition of lighting are expected to be measurable. They, with one exception, are not expected to be great enough in extent to warrant mitigation as part of this Special Exception review and permitting. These impacts are described in the SEPA documentation prepared by the District and included in the MUP file. Comment received has indicated that the vehicle exits from the site are not controlled and that some drivers leave the site without exercising reasonable caution. Because the lighting of the athletic facilities is expected to create new traffic leaving the site in dark hours it is important to require stop sign and pavement stop lines to be installed on the site at the vehicle exits.

Conditioning

SMC section 22.55.017.B.1.2 allows conditioning of impacts created by the addition of lighting and those created by increased field use as a result of the addition of lights, including but not limited to, increased noise...”

Measures to be imposed as conditions to limit the negative impacts of this action include the following.

1. Plant additional evergreen trees with mature heights of at least 30 feet around the perimeter of the lighted sports areas in strategic locations wherever they will fit and be of benefit in controlling light and glare impacts beyond the site. The desired outcome is that these trees exist, to the greatest extent reasonably possible, on a line between each light tower facing residential structures adjacent to or across a street them so that, at maturity, they will help to shield those residences from light and glare impacts. The landscape shall be reviewed by DPD prior to issuance of the MUP.
2. Use of the football/soccer/track field in the eastern portion of the site by events not an integral element of the school mission, such as, but not limited to, athletic events and practices, marching band practices, large meetings, etc., after 9:00 p.m. and before 8:00 a.m. shall be prohibited. Activities of persons not related to the school are prohibited to use the lights on the football/soccer field or the field itself after 9:00 p.m. or before 8:00 a.m. on any day.
3. Amplification systems on all the athletic fields shall be designed to and be used in a manner so as to limit noise measured at the property lines to 60 dBA leq. 30 seconds. Amplified sound shall be used only for events which are an integral element of the school mission.
4. Install stop signs and paint stop lines at all vehicle exits from the site.
5. Place lighting control systems in place which can be easily managed by both the District and the Seattle Department of Parks and Recreation to turn the lights on and off as scheduled events dictate.
6. Place a manual shut off switch on the lights at each field to allow users to turn lights off early when appropriate. Do not allow this over ride switching to allow members of the public to turn lights on.

Conclusion

Based on the foregoing analysis, the Director finds that the additional pole height contributes to a reduction in impacts from light and glare on surrounding properties. Impacts from the extended hours of operation have been addressed and appropriately conditioned as outlined below. This proposal, as conditioned, meets the letter and intent the Special Exception criteria of 23.45.112A6.

DECISION – SPECIAL EXCEPTION

The project to install field lighting over the 30 foot height limit at Nathan Hale High School, depicted in Master Use Permit drawings for this application is **CONDITIONALLY GRANTED.**

ANALYSIS – SEPA

The Seattle School District issued a Determination of Non-significance on September 1, 2004.

Many environmental concerns have been addressed in the City’s codes and regulations. These codes/regulations include, but are not limited to, the Stormwater, Grading and Drainage Control Code (storm water runoff from additional site coverage by impervious surface); Puget Sound Air Pollution Control Agency regulations (increased airborne emissions); and the Seattle Energy Code (energy consumption in the long term). The SEPA Overview Policy (SMC 23.05.665) discusses the relationship between the City’s code/policies and environmental review. The Overview Policy states, in part, “Where City regulations have been adopted to address an environmental impact, it shall be presumed that such regulation are adequate to achieve sufficient mitigation” subject to some limitations. It may be appropriate to deny or mitigate a project based on adverse environmental impacts in certain circumstances as discussed in SMC 23.05.665 D1-7.

No additional SEPA conditions are warranted as impacts are adequately mitigated by the Special Exception conditions of approval.

CONDITIONS – SEPA

None required.

CONDITIONS – SPECIAL EXCEPTION

Prior to Issuance of MUP

1. Plant additional evergreen trees with mature heights of at least 30 feet around the perimeter of the lighted sports areas in strategic locations wherever they will fit and be of benefit in controlling light and glare impacts beyond the site. The desired outcome is that these trees exist, to the greatest extent reasonably possible, on a line between each light tower facing residential structures adjacent to or across a street them so that, at maturity, they will help to shield those residences from light and glare impacts. The landscape plan shall be reviewed and approved by DPD.

Prior to Final Inspection

2. Install stop signs and paint stop lines at all vehicle exits from the site.
3. Place lighting control systems in place which can be easily managed by both the District and the Seattle Department of Parks and Recreation to turn the lights on and off as scheduled events dictate.

4. Place a manual shut off switch on the lights at each field to allow users to turn lights off early when appropriate. Do not allow this over ride switching to allow members of the public to turn lights on.

For the Life of the Project

5. Use of the football/soccer/track field in the eastern portion of the site by events not an integral element of the school mission, such as, but not limited to, athletic events and practices, marching band practices, large meetings, etc., after 9:00 p.m. and before 8:00 a.m. shall be prohibited. Activities of persons not related to the school are prohibited to use the lights on the football/soccer field or the field itself after 9:00 p.m. or before 8:00 a.m. on any day.
6. Amplification systems on all the athletic fields shall be designed to and be used in a manner so as to limit noise measured at the property lines to 60 dBA leq. 30 seconds. Amplified sound shall be used only for events which are an integral element of the school mission.

Signature: (signature on file)
Scott Kemp, Senior Land Use Planner
Department of Planning and Development

Date: October 24, 2005