

Roger Kadeg

From: "Roger Kadeg" <rkadeg@comcast.net>
Date: Thursday, February 02, 2017 8:43 PM
To: <safecorridor@portseattle.org>
Cc: "City Council" <CityCouncil@ci.seatac.wa.us>; "Scorcio Joseph" <jscorcio@ci.seatac.wa.us>; "Albro Tom" <tom.albro@portseattle.org>; "Felleman Fred" <felleman@comcast.net>; "Gregoire Courtney" <Courtney.Gregoire@portseattle.org>; "Bowman Stephanie" <stephanie.bowman@portseattle.org>; "Creighton John" <john.creighton@portseattle.org>
Subject: Comments RE: Tree Removal

Gentlemen:

Following are additional comments for your consideration as a follow-up to the Port's Open House meeting at SeaTac Community Center Feb. 1st Re: flight Safety Corridor.

1. A copy of comments previously submitted to the Port Commissioners on November 2nd, 2016 was provided to one of the information officers. Unfortunately, it appears they may have been missing a page. Hence, I have reproduced them in entirety at the end of this e-mail (Attachment 1). The rationale for resubmittal is that in many instances, the comments may not have not been fully addressed or seen by the appropriate individuals.
2. We greatly appreciate the Port hosting this meeting. We look towards the future when the residents and the adjacent cities can forge a positive, mutually beneficial working relationship as opposed to the adversarial relationship that has too often occurred in the past. Hence, if any comments seem critical, they are given in the spirit of improving/enhancing the overall project objectives. Although I did not get a chance to personally speak with them, I also took notice and greatly appreciated the presence of several of our Port Commissioners at the meeting.
3. I also appreciate the time the project manager, Mr. St. Louis, took to personally discuss a wide range of project aspects. I agree with his assessment that in many cases, he is faced with what he termed as "catch 22" situations. However, I would hope that he and his team would continue to work with residents/cities on resolving these conflicts before proceeding with on-ground activities. Once the trees are removed, there is no do-over or replacement.
4. Some specifics from the conversation:
 - a. I believe there is disagreement over the application of the LIDAR results. It is a subtle but important difference between precision and accuracy. I do not disagree with the high precision of the LIDAR itself, but question in application the accuracy of the overall method. Mr. St. Louis acknowledged that in tree clusters, one cannot distinguish individual trees; hence the need for arborist ground truthing of the data. He indicates that GPS was used to locate for the arborist, and then the arborist used standard angle techniques on the ground. However, although requested, I have never seen the documentation for the specific arborist's protocols, or any associated field notes. Such information is not appended to the Anchor reports. Thus, it is impossible to verify/peer review the work, and for all the money spent, the Port is still essentially relying on the work of one individual to "estimate" which specific trees are of concern. Given this, at a minimum the work should receive a peer review.
 - b. In conjunction with point a., there does not appear to be any documentation or field notes that distinguish which specific trees presently exceed the theoretical FAA height exclusions, vs. those that are projected at some time to exceed but are presently not a theoretical obstruction, or how such determinations were made (best guess?).
 - c. Given the above, several have attempted to reconcile the "dots" (targeted trees) on the graphics contained in the Anchor reports with the tree counts presented in the same reports. Unfortunately, the

figures do not appear to add up. One could not in good conscience contract out any tree removal based on the present identification presented in these reports.

d. Mr. St. Louis indicated that the Port is being proactive in its actions, as opposed to waiting for the FAA to dictate a removal effort. As a widow exists, and the Port does have a response underway, the FAA is not going to immediately interdict. Thus, it behooves the Port to take additional time before proceeding, to reconcile a number of issues (the need for this will become apparent in comments below).

e. I am in contact/friends with several very senior training pilots who fly out of SeaTac. They all think the tree removal effort is a waste of money and a completely unnecessary effort; in their professional opinion there is no risk or safety concern, even in the event of a lost engine or emergency situation. Mr. St. Louis indicated that while the pilots have one view, the FAA still has "this rule" that airports must follow for certification. My question is simple – rather than removing thousands of trees, could someone approach the FAA for an exemption, or better yet, amend a rule that appears to make no sense to these experts? Has anyone even asked? My associates have been unable to determine who precisely within the Port actually initiated this entire effort in the first place, and there is a distinct impression that the effort is driven by bureaucracy (as Mr. St. Louis termed – "strings") and robotic response to guidance rather than real safety issues.

f. There is no clear discussion/link in the Anchor reports between the FAA mandated zones/airspace and the tree location maps. The Anchor reports and additional supposed regulatory material provided to City Council member's request do not make a lucid, simple case for the action. Rather, the action appears presumed – "here are regulation references, so we are going to cut your trees" – disastrous public communication. Researching these regulations to some depth still leaves one unconvinced – underlying the "chapter and verse" are exceptions and conflicting mandates/guidance. Even in the previous presentation in December, the slides presented by the Port's expert were not clear nor effective to the general public. (Mr. St. Louis indicated the Port is working on a model that is approaching beta testing. Unfortunately, it is almost too late – it appears the Port will be removing some trees before it is even released. It does not appear the model will address the underlying guidance conflicts.)

5. Given points 4.e. and f. the Port must effectively demonstrate and communicate the NEED of the tree removal action in the first place. I have previously criticized the Anchor reports for lack of detailed discussions.

6. Most importantly, the University of Washington has recently performed groundbreaking research regarding ultrafine particulate matter emissions from jet engines. Related research has linked these particulates to a wide array of maladies, including respiratory illnesses and cancers. (Attachment 2 contains comments to state legislators on related SB 5225. I strongly urge the Port to support this legislation). The large conifer trees surrounding the airport not only serve as a practical noise barrier, they may be the only practical mitigation measure for this range of particulate matter emissions. It is highly likely that these taller trees serve to sequester these particulates before they disperse and reach near-ground level. Based on the UW research to date, this could become a major issue for airports around the country within the next several years. Note that the American Chemical Society just held a national webinar on renewable jet fuels, in part over concern over aircraft exhaust emissions. The Port could be facing lawsuits in the billions (not millions) of dollars should the work already done in San Diego be confirmed elsewhere; it should not be in an urgent rush to remove the trees. Current observed instances (e.g. the 18 out of 18 children example told to Mr. St. Louis) of maladies in the surrounding communities are real, experienced safety issues, not theoretical.

7. Given point 6., any replanting should be heavily biased towards evergreens (e.g. the noted pines) or other species known as an effective sequester of ultrafine particulates, rather than deciduous species that are bare up to 6 months of the year.

8. One suggestion provided at the meeting was to replant a portion with fir and cedar, realizing that it will take many years/generation before height concerns would become an issue. The intent would be to

remove/log these trees on an occasional basis, and replant, keeping a continual more desirable evergreen canopy as opposed to bare, deciduous trees for extended periods of the year. Perhaps some variation of such concept is worth consideration, given the particulate concerns.

The renewed efforts by the Port to interact with the residents is appreciated. Again, thank-you for your time and consideration.

Sincerely,

Roger Kadeg, M.S.; M.S.E.; Managing Scientist, Principal Environmental Chemist/Engineer (retired)

Attachment 1. Previous Comments:

From: Roger Kadeg

Sent: Wednesday, November 02, 2016 10:44 PM

To: Albro Tom ; Bowman Stephanie ; Felleman F. ; Gregoire Courtney ; Creighton John

Cc: City Council ; Orwall Tina ; Scorcio Joseph ; Keiser Karen ; Council Burien ; Council Des Moines ; Council Normandy Park

Subject: Port of Seattle, Seattle-Tacoma International Airport, Flight Safety Corridor Program – Additional Meeting Comments

November 2, 2016

Port Commissioners

Port of Seattle Headquarters

2711 Alaskan Way

Seattle, Washington 98121

P.O. Box 1209

Seattle, Washington 98111

Subject: Port of Seattle, Seattle-Tacoma International Airport, Flight Safety Corridor Program – Additional Meeting Comments

Dear Port Commissioners:

Thank-you for your time and presentation at the subject informational meeting at Bow Lake Elementary. Hopefully, this is a sign of a positive step in the relationship between the Port and the cities and residents that are adjacent to the airport. I would like to supplement my oral comments and previous written comments with the following written remarks for the record/consideration. (I am not the best in front of a microphone, and it is impossible to get into the technical details in a three minute time slot). As a result of extensive discussions with several of your technical experts during the pre-comment period, several very important critical facts also came to light or were confirmed.

Tree Identification Issues:

1.) The trees identified for removal – specifically the dots on the aerial photo – are at best only estimates, and infer an accuracy that does not exist. Hence, the figures and associated counts are misleading, and cannot be confirmed or reproduced. Here's why:

A.) As acknowledged by the Port's expert, the LiDAR survey DOES NOT pinpoint every tree. It provides

a general area estimate of approximate heights – it cannot target individual trees with any degree of accuracy, and was not used as such.

B.) As a consequence of point A, the arborist was retained to identify the trees. However, there are problems here as well.

a. Contrary to popular opinion, it can be difficult to ascertain precise tree heights working from the ground; especially within sloping or undulating terrain. This is further complicated when one has adjacent trees in a stand. If the LiDAR survey was used, one simply has circular reasoning; there is no measurement. There are smart phone applications that can provide crude estimates, again subject to several errors.

b. In all the Port reports and appendices provided, there is no documentation of 1. The specific steps or procedures the arborist used, 2. If established scientific protocols were followed, 3. Copies or documentation of any field notes taken, 4. Copies or documentation of associated calculations or worksheets.

c. To perform proper height determinations on the ground for approximately 3,000 trees is a major effort, and would typically be undertaken by an entire team. Yet, no credentials or information is provided that this was done. One is left to assume that all the work was done by a single arborist – which leads one back to point a.

d. There is no indication that any of the work was checked/peer reviewed by a second independent arborist, specializing in tree height estimates.

C.) There are problems with the estimates for trees that do not currently penetrate the theoretical airspace, but are determined will exceed within a time period.

a. The concerns of Point B. still apply.

b. Many of the trees are relatively mature in terms of height growth.

c. Growth is species dependent and it is very difficult to estimate precise rates of height growth (due to age, weather, soil conditions etc.).

d. There is 1. no documentation of procedures or how such estimates were determined, and 2. lack of associated field notes or calculations.

e. There is no way to distinguish in the reports (dots on photo or otherwise) trees that supposedly penetrate the theoretical airspace from those that do not but are projected to in the future.

2.) Given the above, one cannot:

A.) Link the dots on the aerial photo to a specific tree

B.) Hence reproduce or confirm/check the identification work.

3.) At this point, given what the Port has provided, it appears the entire program rests in part upon the undocumented opinion of a single arborist. It may or may not be correct, but it is not clear that proceeding at this juncture is in the best interest of either the Port or the surrounding residents.

4.) Given the above, the Port's implementation plan alone is not sufficient to provide a contractor appropriate directions as to which trees to remove. Bid specifications would have to be developed from additional studies or upon documentation not provided to the public. Again, assuming the trees have been marked (no documentation), one appears to be relying on the single arborist's opinion.

5.) There is no clear link (documentation or calculations) between the FAA mandated / Port managed airspace and the tree height study. A general 50:1 slope was illustrated (and as told in the presentation for illustration only – not for SeaTac), but according to pilots a 40:1 slope is more typical, and SeaTac's precise requirements and zones are not provided in the public documentation. Given the nearby valleys, hills, and undulating, sloping lands, it is very difficult to accurately reference or ascertain what is actual

penetrated airspace, let alone relate to individual trees.

Mitigation Issues:

1.) I have previously submitted comments regarding the destruction/loss of mitigation areas for Evergreen and Lora Lakes. In discussions with the Port's senior representative, he stated flatly "there is no mitigation". I immediately responded with a question "Do you know where Evergreen Lake was located?" He professed he did not know!! I ice skated one year on that lake with my late father, and have a very good idea of what the Port promised the local residents in terms of mitigation. The problem likely lies in timing. NEPA was enacted in 1969, and Washington's SEPA was not enacted until 1971. The Evergreen Lake project was well underway before 1971, and roughly about the same time as NEPA, if not earlier. Hence, the concepts of mitigation and associated documentation were likely not to the standards of these acts. This was well before the City of SeaTac was incorporated; any extant records likely reside somewhere in King County archives, or in local newspapers of that era. Again, another forgotten/lost promise by the Port to local residents. Many residents can verify there was such a lake, with nice surrounding homes. Part of it resides under SR 518, the rest under parts of the North Cargo area where perimeter road was relocated.

The Port really owes the residents mitigation for the loss of two residential lakes; I have suggested the clean-up/restoration/enhancement of Tub lake as one possibility, following on a previous suggestion by Deputy Mayor Fernald. This much smaller pond/lake lies within the North SeaTac Park area where homes were removed for airport clear zone. Trees and underbrush/blackberries have taken over, and there is little good access. Homeless individuals have periodically camped there, drug users leave waste, and volunteers have cleaned the area several times, followed by city actions to clean-up. We could certainly put the arborist to creative work in this area!

2.) The issue of proposed trees for replacement was raised by many. I have previously noted some of the issues/concerns, especially on habitat. There are several other problems under the current proposal:

A.) Although Shore Pine are included, the majority of trees are deciduous. For approximately half the year, the leaves are either no longer functional with regard to carbon sequestration, or off the tree. Is it possible to reconsider/reevaluate the mix towards more evergreen species, perhaps other alpiners?

B.) I too question the validity of the carbon dioxide processing capacity as stated by the staff. Accurate, complete literature searches are required, rather than reliance upon selected research.

C.) Again, in part due to tree species (and deciduous nature), there will be a significant loss of surface area for capture of particulates and associated aerosol toxics affiliated with the airplane engine emissions.

D.) Noise. The canopy height and species selected (mainly deciduous) of replacement trees will not mitigate noise as the present trees identified for removal do. It was acknowledged at the meeting that the Port has not considered noise issues as part of this program, and no mitigation has been investigated/offered. To initially address this issue, it is suggested that the Port consider reevaluating and reinstating its homeowner noise mitigation/ sound proofing program it previously offered years ago. It made a significant improvement in my residence.

E.) As noted by many, the large trees provide a quality of life issue that is difficult to quantify in tangible terms. However, there was universal agreement that the proposed replacement trees do not offer a similar quality of life. There is something special about tall mature evergreens that draws residents to the area and is why some purchased their specific properties. It is not just the private lands, such trees also offer this value on Port property and other public lands. The Des Moines Creek trail was specifically identified.

F.) As previously noted, there will be a species shift, loss of songbirds, and the potential driving of

undesirable fauna species (raccoons, coyotes, etc.) into the surrounding neighborhoods.

G.) Even under the optimistic estimates presented at the meeting, it will take at least eight years, and more realistically at least a decade for the replacement trees to achieve the more mature size/height; again resulting in an even greater loss of carbon sequestration, greater air toxics and particulate exposure, and virtually no noise mitigation.

H.) The expected life-span of the replacement trees is far less than the trees designated for removal. The Port has committed to only an initial period of maintenance.

3.) Air quality and pollution issues were raised re: aircraft engine emissions. There is evidence suggesting increased incidents of cancers and other diseases surrounding airports, possibly associated with aircraft operations and emissions. Some observations of such effects near SeaTac airport were mentioned. The Port needs to sponsor an independent air quality study, including sampling and analysis for a range of toxics and particulates. It should be designed such that the data generated are suitable for subsequent evaluations/calculations by professional health and environmental risk assessors and for comparison with all regulatory standards. Several Port staff acknowledged this void in information.

Economic Mitigation Issues:

1.) The trees currently designated for removal have a significant commercial value (one commenter noted as much as \$20,000 for a large tree). However, value is also added to the real estate of private property owners. The details of the Port's compensation proposal/formulation need to be presented to the public.

2.) The trees, especially in stands, add significant value to the surrounding real estate of nearby/neighboring property owners as well as the owners of the property on which the tree stand. There is no indication of how these owners, or the city in general can be compensated for the loss of so many trees within or near its political boundaries.

Alternative Action Issues:

1.) As noted in my October 30 comments, the potential alternative actions were set up like "straw man" alternatives, rather than realistic. I have subsequently determined that a limited number of lights have been put on trees or on poles adjacent to trees and tree stands for the airport in Juneau, Alaska. In addition, the FAA has recently approved and the airport is installing/has installed similar lighting on or adjacent to trees for the airport in Sun Valley, Idaho. This information comes directly from a senior pilot for Alaska Airlines, and from an associate of Mr. Walter Bala. The associate is a key FAA person, responsible for the design of approaches and departures for the FAA Southwestern region and is familiar with all aspects of obstacle clearance and tall trees. He also worked with Mr. Bala in Seattle and is intimately familiar with SEATAC IAP, topography as well as the key FAA people in Seattle. Hence, it is clear that such an alternative for SeaTac may be viable. Contact Mr. Bala, who was at the meeting, for further details.

2.) As previously mentioned, Norfolk IAP VA has trees that have been topped off at the end of the runway to provide clearance. Topped trees near my residence have not experienced increased bird roosting or any of the diseases suggested; and another individual commented that they have had topped trees for an extended period without such issues. Again, especially with trees located in private residences, this appears to be an alternative to be reconsidered. Incremental topping or incremental removal was also suggested, as opposed to "clear cuts".

Regulatory Issues:

- 1.) The regulatory presentation was simply what was already provided to my Councilman, Mr. Kwon. Again, as indicated by late remarks from a knowledgeable individual in the audience, the specific details of the regulatory requirement for this action remain unclear and seem disputed. One can easily cite a reference in the Code of Federal Regulations (CFR), Revised Code of Washington (RCW), a Federal Aviation Regulation (FAR) or associated obscure engineering directives, but that is not sufficient. Context is important, and it is most important to understand how the Port personnel internally interpret and link these regulations and directives – the details are missing. The Anchor Regulatory Evaluation Memo, a large document, contains less than a page on this aspect, and does not even include several of the citations presented on the board at the meeting. One cannot verify if the Port's understanding/interpretation is how other similar airports and/or FAA personnel interpret/implement the directives and regulations, or interact with FAA for potential variances. The "dots remain unconnected" and the regulatory need for action has not been adequately presented or demonstrated.
- 2.) Based upon several comments and discussions, the decision to conduct the program in Phases seems artificial and appears to be more of an intentional effort to avoid conducting a full Environmental Impact Study by dividing the program into smaller pieces and achieving a mitigated determination of non-significance. However, the environmental effects of this program (and others such as the Ecology program for Lora Lake) are cumulative, and certain issues (e.g. noise and air quality) have not been addressed at all, let alone mitigated.

Conclusion:

There are many outstanding concerns and issues that remain unresolved with the program as it is now proposed. Hence, it is in the City's and Port's best interest that a full reevaluation be conducted before any implementations are initiated. I previously called for a full program Environmental Impact Study (EIS), because it would require a true and accurate demonstration of need, both regulatory and environmental, as well as an accurate evaluation of alternatives, and clearly defined mitigating actions. Such a study would address many of the concerns and issues noted above. Presently, the Port is opposing such a study. I hope that the Port in negotiations with the surrounding cities can reach a satisfactory resolution to these concerns and issues. I greatly appreciate the time and effort you as Commissioners put into the meeting, and the opportunity to meet several of you afterwards. Again, I seek win-win relationships, and believe this project has the opportunity for a fresh start. Alternatively, there is the way of the third runway and broken promises and commitments. You experienced just a fraction of how that project impacted the relationship with surrounding cities and residents. As you can tell, we in SeaTac have a special appreciation for our trees; they are a key factor in defining our quality of life. We are an officially nationally designated "Tree City". Let's avoid removing them if at all possible.

Thank-you for your consideration!

Sincerely,

Roger D. Kadeg, M.S.; M.S.E. Managing Scientist, Principal Engineer, retired

15248 29th Ave. So.
SeaTac, WA 98188-2008

Attachment 2 Comments to State Legislature RE: Ultrafine Particulate Matter Emissions

Dear Honorable Senators:

I am writing to solicit your full support of SB 5225 –2017-2018 directing the completion of a study of certain environmental impacts, including ultrafine particulate emissions, associated with aircraft traffic in areas impacted by airport operations. I am unable to attend the hearing scheduled for Wednesday (1st February), and want my views on record. My endorsement of this proposed legislation is based upon both my professional expertise and direct personal impact as a resident of the City of SeaTac.

As the Supervising Regional Environmental Chemist for Ebasco/Foster Wheeler/Tetra Tech, and subsequently a Managing Scientist at Integral Consulting, I have over 25 years experience in the field of environmental consulting. I interacted daily with a multi-disciplinary group of national experts, assessing the impacts of human activities and projects on atmospheric, terrestrial and aquatic environments. I frequently worked directly with a cadre of risk assessors to determine both qualitatively and quantitatively such impacts.

Without equivocation, the recent work by our local group of researchers at the University of Washington investigating ultrafine particle emissions by aircraft is groundbreaking and creates legitimate, urgent concerns. The current standard techniques used to measure air quality impacts do not capture or test for this range of particulates. Yet preliminary human health studies indicate the adverse impacts of these ultrafine particulates is extremely significant. The ultrafine particulate emissions appear to be responsible for a wide array of maladies, including respiratory illnesses and cancers. There is significant antidotal evidence that such health impacts are noticeably elevated in neighborhoods adjacent to SeaTac International Airport. Preliminary data and additional observations by the UW group and others suggest these effects are occurring at other airports nation-wide. Additional data are required to assess and accurately verify the impacts at SeaTac International Airport, for identification of emissions, source attribution, and associated health effects. The proposed effort in SB 5225 will go a long way to fill these crucial data gaps. It also supports related studies for needed mitigation measures to reduce adverse emissions, especially ultrafine particulates. Projects by the Port of Seattle at the airport (e.g. tree removal) may also adversely impact the environment, including the potential loss of ability to capture/sequester ultrafine particulate emissions. The proposed investigations will thus also assist in the assessment of the potential environmental impacts of these projects.

As to personal impact, I live diagonally just to the northeast of the airport (154th & 29th Ave. So.) and can see the tower and tails of the aircraft as they warm-up/power-down in the north cargo area, directing exhaust toward my house. Recently after tree and vegetation removal by a neighboring property, during quiescent/calm air days or inversions I can literally smell and taste the air (like uncombusted fuel organics and burnt rubber). Occasionally, it is so bad that I must retreat from outside activities into the house. Fortunately, I am not directly in the flight/landing path. In discussions with other neighbors within the path, a number have raised similar concerns and indicated or compiled information on health problems. Residents are indeed experiencing severe health problems, but more data are needed to make sound conclusions.

The state needs to protect the health of my neighbors and myself. Further reasonable action and mitigation cannot occur until the data necessary for decisions are collected and analyzed. These data must be developed using appropriate methodologies and techniques, as documented by UW researchers, and take time to collect and analyze. Impacts appear to be occurring at this moment; thus the need is urgent. Therefore, I request and encourage your full support of SB 5225. Thank-you for your consideration.

Sincerely,

Roger Kadeg, M.S.; M.S.E.; Managing Scientist, Principal Environmental Chemist/Engineer (retired)