Philadelphia International Airport

FAR PART 150

Noise Compatibility Study

FINAL

JUNE 2002

VOLUME II

Since 1949

Landrum & Brown Team

Appendix H

APPENDIX H
PUBLIC INVOLVEMENT

This appendix provides information related to the public involvement process undertaken during the Part 150 Study. Included are **Table H-1**, a Study Advisory Committee membership list, all working papers and technical reports, and public information workshop materials (meeting notices, sign-in sheets, handouts, and comment forms). The dates for all study meetings is listed below:

MEETING	DATE
Study Advisory Committee Meeting #1	December 8, 1999
Study Advisory Committee Meeting #2	February 29, 2000
Study Advisory Committee Meeting #3	April 17, 2001
Public Information Workshop #1	April 17, 2001
Noise Abatement Technical Conference	June 26, 2001
Land Use Technical Conference	June 26, 2001
Study Advisory Committee Meeting #4	August 7, 2001
Public Information Workshop #2	August 7, 2001
Public Information Workshop #3	October 25, 2001
Study Advisory Committee Meeting #5	December 12, 2001
Public Information Workshop #4	December 12, 2001
Public Hearing/Public Information Workshop #5	March 21, 2002 (see Appendix J)

Table H-1
SAC MEMBERSHIP LIST

NAME	TITLE	COMPANY/AFFILIATION
Scott Godfrey	Director	Air Transport Association, Eastern Region
Shari Phalan	Citizen	Brandywine Hundred, Delaware
Roger Moog	Manager	Delaware Valley Regional Planning Commission
Bill Allen	Noise Officer	DMJM Aviation/Philadelphia Int'l Airport
Michael S. Elabarder	Alternate	Delaware Valley Regional Planning Commission
Maggie Powell	Executive Director	Eastwick Project Area Committee
Jim Byers	Environmental Protection Specialist	FAA
LeRoy Johnson	Air Traffic Manager	FAA, ATCT Philadelphia International Airport
Tim Eastburn	Alternate	FAA, ATCT Philadelphia International Airport
Ed Masterson	Alternate	FAA, ATCT Philadelphia International Airport
Steve Rich	Alternate	FAA, ATCT Philadelphia International Airport
Eileen Young-Vignola	Executive Director	Fort Mifflin on the Delaware
Vincent Angelucci	Public Policy Analyst	Greater Philadelphia First
Dick Nugent	Refuge Manager	John Heinz National Wildlife Refuge at Tinicum
Collin McNeil	President	The Pennjerdel Council
Charles Isdell	Director of Aviation	Philadelphia International Airport
	Director of Aviation Facilities	Philadelphia International Airport
Mark Gale	Deputy Director of Aviation Operations and Facilities	Philadelphia International Airport
Jeff Lehrbaum	Manager of Planning and Environmental Services	Philadelphia International Airport
Thomas Joseph	Airport Planner	Philadelphia International Airport
Janis Pierce	Deputy Directory of Aviation – Marketing and Public Affairs	Philadelphia International Airport
Joe Wunder	Commissioner	Tinicum Township Commission
Wayne Lamar	Citizen	Tinicum Township Resident
Dick Lehman	Regional Manager / ATC & Airfield Operations	US Airways
Captain Don Matthews	Regional Director of Flying, Philadelphia	US Airways

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Study Advisory Committee Meeting #1

December 8, 1999

Letter of Invite
Meeting Minutes
Working Paper

CITY OF PHILADELPHIA

Philadelphia International Airport
Terminal E
Philadelphia, Pennsylvania 19153

(215) 937-6760
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ALFRED TESTA, JR.
Director of Aviation

November 23, 1999

Jerry Basco, Chief Pilot
US Airways
Philadelphia International Airport
Terminal D
Philadelphia, PA 19153

Dear Mr. Basco:

As I am sure you will recall from the November 5, 1999 meeting of the Study Advisory Committee for the Master Planning Program at Philadelphia International Airport (PHL) that we would assigning members to various subcommittees for the Program. You have been selected to be a part of the Subcommittee formed for PHL's Noise Compatibility Study (Part 150 Study).

In this capacity, you will be asked to provide feedback to the airport and its consultant team on various airport noise issues. Your input and thoughts are thoughts are essential in the development of the noise compatibility plan for PHL. You will also help provide a relationship between this committee and local communities and organizations concerned with airport noise issues. We greatly appreciate your participation on this very important committee.

There will be a series of meetings conducted over the next 18 months to provide members of the Sub-Committee with information on noise compatibility planning. The first meeting has been scheduled for December 8, 1999 at the Airport Marriott Hotel from 10:00AM until noon. The first meeting will begin with a visioning exercise wherein we will collect your input on what the Airport should look like in twenty years. This will be an unconstrained brainstorming session, so come prepared to share any and all ideas you may have. The meeting will then focus on what exactly a Part 150 Noise Compatibility Study is and the process which is required to develop it. We will also discuss the recent noise monitoring that was conducted in support of the study and some preliminary results.

Please contact Thomas Moore at the airport via telephone (215)937-6764, FAX (215)937-6959 or E-mail thomas.moore@phila.gov, to confirm your attendance. Thank you again for your assistance and we look forward to seeing you on December 8, 1999.

Sincerely,

Alfred Testa, Jr.

AIRPORT MASTER PLAN NOISE SUBCOMMITTEE MEETING

December, 1999

OPENING REMARKS

Greeting, by **Greg Wellman** of Landrum & Brown: " Welcome to the first Noise Subcommittee Meeting. Thank you for coming this morning. I'm going to start out by saying Fred, you have the opening remarks, if you'd like to begin with".

REMARKS – FRED TESTA

Fred Testa, Philadelphia International Airport: This is a very important process. I have been asked to explain it, and I have been asked to explain it in 30 words or less, and some of us will disagree right to the end of this committee in the recommendations that we will make. I want everyone to understand that what comes out of the consultancy is not prejudged and not predetermined, they're free to feel what they feel and everything you see what comes out of this whatever they investigated they found to be true. We may disagree on how they mitigate and what the end results will be and I believe this process will be open and honest. Don't feel strained to make your opinions known. I'll defend to my dying day my right to argue with you on your interpretation, but I will also defend your right to have all the information that is available here.

We're getting to that. Just give us a few minutes and we'll begin talking about that. Certainly five years in fifty studies and not far enough to look and we're going talk about **John(VanWoensel)** and **Tom's(Klin)** master plan in environmental work that they're going to be doing. We're going to talk about the issues surrounding the plan. Just back up a couple of pages with maps with all the nice spaghetti on it...We have several large maps, compliments **of Bill Allen**. We have a big map although it might be pretty small to see it from the back. For both the vitals and the picture, the nice green, what we'll see is about a day's worth of departure. Correct, Bill, or is it two days?

Bill Allen: About a day probably.

And just a couple of days to see the nice flow from the airport. If you were taking off on that day, that would probably the number you would see. From the vital strains, they are nice straight lines to the airport, runway. They would have to be. Yes, ma'am?

Q: Sir, on the maps, they don't include Delaware. They cut right off.

A: We're going to show you some land-use stuff and some county maps.

Q: [interrupts]: But…

A: We're going to look out a lot further, but to show a map like that of any scale, we're going to need a bigger room probably. We will be doing that. We absolutely will. We wanted to show you folks the airport first to show you what we're going first be looking at, and we're not going to stop there, but we're going to take the flight pattern as far out as it goes.

Q: How far does it go?

A: The model goes basically from the ground up to 10,000 feet. We're going to look up to 50 nautical miles from the airport. So yes, we're going to put a spot up in Delaware. We put a spotter out there. We did that. We're going to show what the levels are that we saw, and what we saw from the airplane, considering a whole year. We're going to show you the differences are. We didn't forget you, believe me. Flight tracks are readily available here. Bill will give us as much information as we need. We're looking to take samples from four quarters in the year, the previous year, and looking at them to see what variations what may have occurred based on the flow from the airport, weather, and whatever conditions at that time. And just trying to get the VM image. We're going to say "average" a lot, because that's what we're basing everything on. Average noise, average flight, average fleet mix. A lot of people don't like me to say that, but I have to. If you've got a problem with it, let's talk. I'm going to talk with you at length about that. We're kinda driven by the regulations. That's what we have to do. Yes?

Q: Why is it that a lot of airplanes at 2,000 to 3,000 feet, why is the pilot's decision which way to turn?

A: That's not the pilot's decision. Go ahead.

Q: What I don't understand is that you've got a heading of 27 right or 27 left, pointed in the direction the runway runs? Why don't they follow straight out like they're supposed to be until they get to 3,000 feet?

A: Well, actually, they actually tend to go straight out to the river. They tend to follow the river. No, I'll agree with you.

Q: I live in Tinicum.
A: Yes, I understand that. Tinicum gets hit hardest of all the communities. We saw the same thing. Well occasionally they would follow the runway straight out.

Q: Well, not occasionally, most of the time.
A: Well, we're not here 365 days of the year. I have to agree with you. If it happened a few times we were there, it happened a lot. I think the tower manager will tell you that you've got to do that sometimes to keep the airport operating.

Q: Once they're off the ground and in the air, what difference does the airport do down here? He's up in the air flying. What now? He makes the decision which way to turn. We're going to have a big problem during the summertime when we get rainstorms and stuff. Instead of them flying out and making a left-hand turn in New Jersey, they flew right out and make the turn right over Tinicum. What is the difference between Jersey and Tinicum?
A: Well, on those days you're talking about, the bad weather days, there may be a bad weather cell off the runway and he could've make way to avoid it.

Q: [interrupts]: Why not make the left-hand turn in Jersey? Why make it in Tinicum?
A: That's what I've told you. If the cell is sitting out there to the left....

Q [interrupts]: If he's coming in a westerly direction, the thunderstorms come in a westerly direction…on the left-hand side of him, you see nothing. Why do they have to make the turn in Tinicum?

A: You may not see anything but he may see something in his radar.

Q [interrupts]: …Not just one time, all the time.

A: Well, I can't address that issue with you. I assume you're correct. The pilots have to fly where it's safest. These guys must fly…

Q: I can see that. We have two directions you can fly. You can go right and come over Tinicum or you can fly to the left. Somehow they've been instructed by the terminal, the tower that--we've got politics involved. We don't fly your planes over Jersey.

A: I'll sit down on the politics. I can't address that issue at all.

Q: He knows how many times I've been up there in that tower, and talking to different people. Before he came in charge.

A: He's been over there a long time.

Q: He's been there since he hasn't been in charge of the tower.

A: Well, let me tell you this. That's what this process is about; the process is to determine what's happening today, what's said today and we're going to talk his people, and we're going to find out how many airplanes fly over New Jersey, and how many turn left or turn right over Delaware. We're going to model that. That's great. What are we going to do now to make it better?

Q: Get the politics out…

[Interchange]

Q: I'm telling you what I know. I'm telling you what I know and what I've been told. I'm telling you. I've seen airplanes that come over our place during thunderstorms and stuff. We're not lying.

A: I'm not saying that you were.

[**Q interrupts**] Let me finish. As awkward as it sounds, I wish you to succeed. I wish no politics were involved. But I also don't believe …

A: Well, as a former controller, I can tell you something. It's a day to day event. Well, they rehearse it forever, but it's something different…

A: In 1999 to 2004...Just a second more on fleet mix. Right now, there are still some stationary airplanes flying now, but in three weeks from now, they won't be. That's basically what the rule says.

Q: Who controls them?

A: The federal government always control them. It's a congressional mandate. It's against the law. It's very important obviously, as John told you about the cops, spoons, and the eyedroppers. The types of airplanes here is very much a part of how much voice that's being generated. We have to look from 747s from the UPS and other airlines, the 767s, and so on. They will all be melded together. By the next meeting, we will have a list for you of the airplanes that fly here on a daily basis. We will talk to you about the specific types when we get there. We can tell you it's pretty much Boeing Industries, Airbus Industries from Europe, and McDonnell-Douglas which is part of Boeing, and regional jets from Canada and those types of planes that are flying here. Any questions about Fleetmac? Propeller-type aircrafts, American-type aircrafts and …aviation. Geographic Information Systems, let's talk about that.

Geographic Information Systems is going to tie together a map like you're seeing here. It's going to have noise contours and all that. Underneath the transparency, you will have list of databases; and in those databases, it deals with populations that lives within those noise contours, the numbers of houses—single-family, multi-family, apartment buildings, condominiums and so on, it contains churches, libraries, schools, and those buildings considered noise-sensitive, and

contains information on those facilities considered not noise-sensitive such as the shipyard. That's one of the best places to fly—the shipyard. Hopefully, nobody lives there 24 hours a day will be complaining. And all that information is tied in this map, and with a flip o f a switch, any noise contours that we produce, we can basically calculate what are the actual impacts on those noise-sensitive facilities. Any questions on that? Moving right along...

Let me tell you what's compatible or not. It's on page 14 to 15 on your handout. This is the Part 150 of the federal aviation regulations. It is part of the law. It is a federal mandate. At certain noise levels, certain things are compatible or incompatible with airports. As you can see, anything below 65 dBs in DNL is compatible. If you're in area that's 59 dBs of DNL, you're in an area that's compatible with the airport. If you are in area of 65 to 75 dB of DNL, you'll start things become incompatible such as residences. That's what the Ys and the Ns, that's what they indicate, the yes's and no's regarding compatibility with airports. There are some notes that go along with that. I'm going to tell you the numbers in there; 65 dBs of DNL to 25, that means that facility, schools and such, is compatible with the airport if you're able to reduce the interior noise levels by 25 dBs. So that says, if this hospital or school is right at 65 dB DNL, that means you have to make it 40 inside. Does that make sense to everyone?

Q: Can you sound-proof the building?
A: I don't like the word sound-proof. You can't really sound-proof the building. You can sound-insulate the building. That's the problem with sound-insulation. You can reduce the sound levels to 25 dBs inside the home, but you can't go outside and have a picnic, if it's a real bad area. Follow that? You will probably hear that from your constituents.

Q: In other words, in the spring and fall, you can't open your windows.
A: Then the sound insulation is gone. Isn't that correct? Now there's one thing the federal government will take into consideration is that the air-conditioning and heating systems...Correct me, if I'm wrong, Jim, that will help you contain the noise. But it's a new system for your home. It makes it more livable. A lot of things we have to deal with this. At

85 dBs or over, nothing is compatible with the airport at that point. Unless you got livestock in the fields, or you're doing mining or fishing. Yes, ma'am?

Q: Livestock. I have found when I sit on my deck, the animals seem very sensitive to the noise.
A: Some were, some weren't. I've had some instances we've had foxes living on the runway. They would burrow holes underneath the runway. They lived there. I don't understand it either. Birds love the runway. The FAA tells us that from airport operators, airports near dumps attract birds. Well, you messed up. In fact, there are places now where they train dogs that chases the birds. When it sees the airplane taxiing on the runway, the dog lays in the grass. There are other means, for those of you who are environmentally sensitive. Falcons and other hunting birds have been used by the Air Force. Racking guns are other means. Racking guns however are very ineffective.

On the converse of that, the FAA is very concerned about allowing landfills to be built within 5 miles of the airport. I'm going to meet up tomorrow in duBois on this issue. New York's garbage is being taken out there, and then they don't want to move it too close to the airport.

Birds are very adaptable but sensitive. I've seen bald eagles from the view from my office. They have learned to live with the jets going on and off. They are very smart birds. There's only a handful of shrikes with bald eagles. They would go off to the side, wait for the jet to take off, and get into the vortex. They do adapt. It's an amazing phenomenon.

Thank you for your time. Next, I'm going to talk about to you about potential noise problems. At this time, I would like to introduce **Rob Adams** again. I'm going to talk to you about Noise America. Don't throw rocks at us. I'm going to try to do it as best as we could.

Turn to page 16 of your handout. We've conducted a noise measurement program during the week of October 11th through 15th. There were a four-man team which included myself and Dave and two other of our colleagues from Landrum & Brown, and we came up with noise monitors and we had information that Bill provided us on radar data showing us where the aircraft

generally fly around the airport. We've also had noise complaint data which have been collected over the years which helped us identify the locations to monitor. There are a couple of reasons which we collected this data and performed this program. The first one is to verify the data that is collected in the noise models database for the aircraft. Like Dave was telling us, this clime profile in particular, we want to make sure that this model is accurately simulating the noise levels in the area and the way we do that we go out and on the map on page 17, the red dots located around. We would sit at a particular site for an hour or so, and make notes on the noise levels of the aircraft, time this aircraft was there, the type of aircraft, the airline company, and also we've also examined the different type of noise levels on our noise meters. What we would do is what would take the radar data on the same period that we were up there, and we will simulate in the noise model these varied events. So with the help of the noise model, we can determine the altitude of the aircraft, the location of where we were monitoring, simulate the distance from our monitoring site, and the noise model would produce those noise levels and we would compare them with what we've got in the field.

Q: What about the fact that the new runway wasn't in operation at the time?
A: That's a good point. That's something that the noise measurement program which will allow more monitoring. That's a good candidate for additional monitoring.

Q: You only did at various times during the day. Did you do it at night?
A: We did it all times during the day and the night. We were there at three in the morning when UPS were there. We were all over the place in terms of time of day. So basically we're going to look these 2 pieces of information and compare them and see if there's a significant difference what we've monitored to the noise model. I can tell you the model is very accurate. The areas that we found that there's less accuracy is when we're dealing with heavier aircraft such as cargo aircraft, for example. We're going to look at these in particular, and make sure the model accurately simulates these conditions. That gets to your question regarding time of day. We were real careful to be out there during the night. Where we did the monitoring was dependent upon where the aircraft were flying during the week we were there. As you can see, most of the monitoring...and we did have a few out in Delaware...Again, there may be an opportunity in the

future to see if we can monitor if the airport has a different flow. We're going to take advantage of that. We also are getting information from the noise monitoring system. We are also getting data from permanent monitors around the airport. We can do the very same type of exercises using that.

Q: One of my residents reported that someone put a box on the back of the home to monitor noise levels. Was it you guys?

A: I don't think so. We didn't leave any monitors. We were attending them the whole time.

Q: Do you know where the location is?

A: Monitoring is not just something we do. It is very precise process.

Remark: There's some monitoring along I-95. That goes back last year.

Remark: That goes back a few years.

Remark: It was right after the flood.

Remark: We were here right after the flood or saw signs of it. We do have one monitoring position in Eastwick. That's T-32. It may be that. Someone may have seen us, and they talked to us.

Q: Did you attach something [to a house]?

A: No, we wouldn't have done that. We have a handheld meter with a microphone and a windscreen. We generally stood there and attached it to a car antenna or something.

Q: Maybe it was some other monitor.

A: We know we were successful because we almost got arrested while in Aston.

Q: These triangles were where you monitored.

A: Yes. The purple dots are permanent sites.

Q: Were you there for a certain length of time?

A: We were there for a week, October 11th to 15th. We do have a site in Tinicum. We use a handheld meter with a windscreen and microphone, and we attach it to something.

Q: How can you determine from the handheld monitor to report just plane noise, instead of another noise?

A: We can calibrate the monitor so that it turns on when we hear the aircraft. And as the aircraft flies overhead and goes away, we turn the monitor off. In the event that occurs that's not an aircraft event, we take notations of that in our files so that we get an irregularity in our files, we can ascertain the irregularity. That's the most important reason why we do it. Making sure the information in the database is correct. The second reason is that we can become familiar with the surrounding communities as consultants. So we can have a flavor of the community despite being there a short-time. We have some first-hand experience so we have applicable standards to look at possible alternatives.

Q: Between Delaware and the first line?

A: Based on the information we were given from Bill about where the aircraft fly and where the noise complaints from...that sort of guided us where we were going to go.

Q: How much do complaints actually rectify the situation since you are monitoring dBs? I guess politics enters into that. Whether or not they meet that criteria and remedial work comes into play.

A: The complaints are areas are there to identify to us that there may be a situation. Maybe they're doing something out here with the aircraft, the air-traffic control that may be causing the problem although outside the area that can get mitigation.

Q: How do you handle that situation? Do politics enter into it?

A: We take into account the ambient noise level. We're looking at individual aircraft events. We're not here to determine the average noise level. This is to verify the database in the model is correct.

I think an explanation is required. The actual noise contours is done on computer-model basis. That model produces noise curves based upon all the data that's inputted, the type and number of flights, the flight tracks, the altitude, topography such as a bowl and other topographies, etc. What the noise monitoring does is to check the noise model contours validity because the model is made up on a grid. The model is made up of a lot of points and generates a curve based on the data. The model predicts 66 or 70 dBs, and the measurement is 85 dBs. There is something very wrong. But if it's 70.5 dBs, the model is accurate and fairly predicting the contours.

Q: You're basically ground-testing the radar. How do complaints enter into that? The comfort levels outside the sticks may be less than in say, Philadelphia.
A: True, the comfort level is at 55 dB, but if the federal government says 65 dBs and says you're compatible, there is nothing I can do about that.
Remark: If it's within the 65 contour, that's what makes it so important...

Q [interrupts]: But if they change the flights, won't it impact the community?
A: If you study the mitigation factors and how they study the changes...

Q: You were monitoring there yourself. Is this monitoring 24 hours a day?
A: We were at a particular site for about an hour to an hour and a half, and then we would relocate. There was a four-man team, and we were out there all periods during a given day.

Q: If the system doesn't work, shouldn't you be out there 24 hours a day?
A: Yes, that's true. There's two types of monitoring that's done, temporary and permanent. There's permanent monitors at the airport.

Q: That's what I was asking before.
A: If you look on page, the purple dots are the permanent monitoring systems.

Q: Sorry, I thought he was going to clarify that.

A: If there's no other questions, on page 18 and 19, there's a summary of the information collected during the measurement program. We had a site code which relates to your exhibit, showing you where we were at physically such as streets or addresses. The date, arrivals or departures or mixed operations, the time period, the SEL range in dBs, this is a way we calculate the noise energy, it's a technical way of measuring noise in the noise meter, it's a way we can directly relate the noise model, the L-Max levels, this is more of what you experience, and what you're seeing is a range; at site T-01, the maximum level ranged from 63.6, maybe that was a smaller, propeller-type aircraft, to 89.1, a larger aircraft; in fact the peak aircraft at that site is MP-80. So that information is available and that is the basis we're going to use to do our evaluation of the noise model.

If I can just add to that, we're going to segway to **Bill Allen's** showing you the monitoring system at the airport. We know we didn't get a thousand slides out. We're going to rely on Bill's extensive data. We're not going to stop at 41 slides. I mean, it's a big area, and 41 slides will not cover such an extensive area. **Bill Allen** is going to show you about the Philadelphia International Airport and its monitoring system.

Bill Allen: I'm going to talking from my seat so bear with me. Feel free to ask questions at anytime. You've heard a lot of different information that was used to create noise contours and validate noise contours. Since you've seen the contours and such, I thought it was reasonable to show you the system that it actually comes from. Several years ago, back in 1996, the city purchased this monitoring system and flight tracking system, and it became fully functional and operational in mid-1997. Since then, it's been collecting radar data from FAA ARC's system and seven permanent systems in Eastwick, Tinicum, Fort Mifflin, Gloucester City, etc. Site No. 3 does not exist. The site is located at a Navy shipyard but did not choose place one in there. The information that we get covers a 30 mile radius around the airport for the radar data that we collect. We have a geographic information system that encompasses the entire area around the airport including Delaware, New Castle County, Northeast Airport, counties in New Jersey, Philadelphia, and areas near Northeast Airport. We keep track of those planes that land and take off, and those flights in Philadelphia airspace called overflights, and are able to select them on a

particular day. We get the specific information for each flight, time of day, the flight I.D., the flight number, the specific type of aircraft, runway used, arrival or departure, etc. With the other part of the system, we can correlate each flight event with each noise event as it happens. We can also track altitude and flight path of each aircraft to correlate with noise event. With the direct connect with FAA, we get new data every 3 days, and the FAA has a 72 hour waiting period to filter confidential and critical information such as the DEA, military operations, etc. That's the same for every airport in the country. We can also examine airports, origins and destinations of flights, airspeed, noise contours, etc.

Q: Can you compare with the ground level data?
Bill Allen: With the system, we were able to get a 24-hour average or DNL average based on permanent monitor sites. Once Leonard Brown creates the contours, we compare the data with the computer monitoring, compared with the actual data monitoring, and we can actual see how accurate it is. So that's how we actually see the actual noise measurement as compared to the calculated noise measurements.

The new models are getting more sophisticated compared to the older models. We're now at the sixth version. When we look at topography, we realize that wavelengths and noise play important roles. The new versions take account of topographic information with more accuracy. We always check them though.

Bill Allen: Along side the seven permanent monitors, we also have four temporary monitors attached to homes especially in the Wilmington, Delaware area. Monitors are available to many citizens and there are agreements we enter with citizens, for a minimum of two weeks…

Remark: One of the most important things if at the time we produce noise levels, we should have the courage to say that it doesn't sound right, we check it to make sure it is accurate.
Bill Allen: Yes, we do have the capability to monitor if it is indeed an aircraft with a series of algorithms and with the flight tracks obtained by the FAA.

Q: What is right in the middle of the airport?
[Interchange]

Q: What you're hearing today…it's extraordinary.
Bill Allen: The airport maintains a 24 hour hotline in which you can voice your concerns over flight noise and we enter that information into the system where we can obtain geographic information and pinpoint exactly where your address is and what time and what may have caused your concerns.

Q: What is that number?
Bill Allen: The phone number is (215) 937-6350 and it's a voice mail system.

Q: You can't talk to anyone in particular in case of emergency? Does it solve any of the problems?
Bill Allen: It's a voice mail system, and we're working on that. Are there any other questions on the voice mail system, and you may ask me when you want to see the system.

Q: Are you going to change the system? Are you going to get any response back?
Bill Allen: That's something we can discuss in the future. You can see the call system first-hand.

Let's have **Allen A'Hara** take the floor at this time. Then you can have a question and answer period afterward. So let's wrap this up.

Allen A'Hara: We've actually talked a lot about the areas outside the immediate area of the airport. We talked with familiar faces and friends, some here, over on-going projects at the airport. We're working with them. The airport, for those of you that don't know, is effectively cut in half, with a fair amount of it in Delaware County whereby the remainder is in Tinicum Township.

Fred Testa: For those of you that are still present for the Noise Subcommittee, I'm sorry about that. That's the reason we made food available to you since it's long after lunch. We can either make it a serious and solemn occasion or a fun occasion. We don't have to agree or disagree on everything. We can, at least, treat each other well, smile once a while. Now the reason for the second half of the meeting. That second task of the subcommittee is the envisioning exercise. Some people come from resource agencies, etc. Everyone now has to get a different mindset. Now it's time to change your mindset. We are gathering what the airport means to the committee, the public, etc. Everybody who's been on the advisory subcommittee is taking part in this envisioning exercise. It's everybody's view point. Once an idea develops, we'll feed it to the master committee to see if something comes up.

Greg Wellman: Thank you, Fred. I think your opening statement is very important because in the morning, we talked about problems in the short-term. We're very focused on what's there for the short term. When we're talking about visioning, and we're trying to focus on a long-term time frame, 20 to 30 years. Why do we keep on talking about long-term, unconstrained? Why is there this need to do this? I already explained some terms. Unconstrained means we're not going to look at jurisdictions, political and local factors. Much more of a brain-storming initiation, we're looking at a large PHL on the map. Planning is another word and means different things to different people in different settings. The master plan which which comes a set of plans and drawings for the FAA for approval. Planning is a number of steps that demand warrant. That's probably most important. A plan means nothing if it's not going to be used. We want to create a blueprint for the future...One thing is that everything grows. The only constant of aviation is change. Deregulation of the industry meant that hubbing popped up. Low-budget airlines been around and have grown significantly in the last five to ten years, and that's changed dramatically. A lot of airports were caught unexpectedly. The most recent thing in the news is alliances. Major change in the airport function from the past to the present. The current condition is the absence of the long-term plan. The plans failed to anticipate these things, and those plans that did account for it did not take account for this dramatic change. Due to the rapid growth and short-term adjustments and additions, the long-term plan tends not be a big priority. This airport is an asset to the entire region. One needs to have goals, and one has to understand

how the airport should be used as an asset. We have looked at the potential demand on the airport, and also economic and financial resources available. So what are we planning for? The definition of envisioning is what to do, what to study, etc. for the sake of the entire region, and understand the region's expectations for the airport, and also take your input. Once we get through this session, there are three more sessions similarly to this one. One session with county representatives, a city group, and tenants of the city, and then it comes to the advisory committee at that point. We will finally produce a vision statement for the public, the airport, and the committee. These will be considered our marching orders. We have calculated the amount of traffic at the airport. We do know there's a lot of potential for growth. What does the region want to do? Meet demand? Cap demand? Increase demand? We can't proceed until we know what we want to do. That's the reason we're asking these questions.

So what we're going to do today, we're going to look 30 years down the road. We're going to organize into four areas: strengths, weaknesses, opportunities and threats or constraints. Strengths can vary according to people; a business traveler, for example, might consider that proximity of airport to their house is a strength. Weaknesses can be considered congestion at the gate. Opportunities may be applicable in other areas, ranging from stadiums and malls, for example, which to apply to the airport. Constraints, for example, are other airports. Fort Mifflin and other areas may be considered constraints. This is the real world, and there are some limits we have to consider. To get the creative juices flowing, we are going to do this simple exercise...What we're trying to do is to connect four lines...People are starting to give up...We all learn to automatically to do what you were programmed to do when you were three. Unconstrained thinking is about taking off the normal boundaries. There are only four issues we're going to talk about, and if there are other issues that are relevant, we're going to address them elsewhere so we don't get sidetracked. I'd like to start with strengths. The best way to ignore the boundaries of the airport is ignore the time restraints. Let's say after the director's retirement, and you become airport director in 2030. What do you do with the airport? If I were king, I would do...That's what we're thinking.

Various participants of meeting input:

Finding ways to take cars off the road. Opportunity would be increase public access via transportation there and to reduce car traffic at the airport. Highway 95 is a limitation. More economic sources of transportation for the airport as well via public transportation. More publicity to keep the public aware of events occurring at the airport. Communication is an important issue.

Strength is proximity to the city and close to events in the city. Only 15 minutes via car or train which makes easy access as compared to San Francisco Airport, which is 20 miles from town. The economic position of the airport is to generate jobs and such.
Strength is location in the middle of the mid-Atlantic seaboard, for tourism and such; close to cities such as New York, D.C., Philadelphia, etc. Weakness is that the airport staff is not very cooperative with passengers.

Another weakness is constant circling of cars since lack of "real estate." Congested parking is another weakness. Another weakness is the close proximity of car rentals and the flooding of shuttle buses that congest the highways. Furthermore, proximity of car rentals is also a strength. The airport is situated in suburban areas make it a weakness since flights over the area and heavy traffic congestion. A constraint is the inability to expand the airport from geographic constraints. It is also an opportunity to take advantage of other areas. The permitting process is another constraint. The airplane renewal plan is another constraint in that certain things are mandated. Politics is another constraint since multiple governing bodies on the airport if expansion of the airport. Different localities offer different laws governing the airport. The phone system in the parking lots are not working typically and is a weakness in the airport vicinity. However, that's more of a short-term problem.

An opportunity is ability to reclaim the land via landscaping for nature lovers. Establish certain green space. One constraint is the federal policies that consider the use of monies available to airport and use of land of and near the airport. An observation area is a great idea to watch airplanes. Security measures are a constraint against the observation areas or towers. However,

benches have been used in areas such as Austin. The landing fees are a big negative here. The airport itself is low-cost. Competition also leads to inadequate facilities and increased barriers. Further runways and better traffic control are potentially future and I-95 serves as a constraint. Runway space from an operational point of view may have served 20 years ago, but does not serve well now. More runway space decreases pollution such as oxides and such. As a constant, the physical layout poses problems for aircraft landing and taxiing. One of the strengths and opportunities is P & E. It is one of the biggest airports in the area. Potentially constant gridlock if not for other airports that relieve Philadelphia International; can serve as opportunity to get smaller planes to land at Philadelphia International Airport. One strength is that Philadelphia International serves as relief for other airports. There's a policy side to that as well.
The airport is also more convenient as compared to the Northeast Airport.

The river serves as a constraint in that potential conflicts with birds and airplanes. The FAA has already dealt with that in terms of policies and laws governing the airport. It's been a concern for the refuge that's nearby the airport. The refuge does serve as a natural barrier for the airport as opposed to the suburban areas. Restored habitats may hinder the airport's potential increased air traffic. In Cleveland, the alteration of the ecosystem can affect the environment and community since building of new airport. Also, in Pittsburgh, they have similar problems. The refuge may cause increased air space congestion. Conflicts exist between airport and refuge that may pose problems with both. Layout sketches will help with that aspect, in terms of construction of airport.

Q: What is your input regarding the airport and the birds and such?
A: What we're trying to do is how to envision it generally. We are not presently concerned with the practicality and financial resource availability.

Most of these additions are relatively cheap for the city. The airport site is nationally historic. The most fundamental environmental research has been performed at the refuge; research for ecologists have been done there from 30 years ago regarding environmental rehabilitation.

The architecture of the terminal is a weakness in its U-shaped form. Also in Fort Worth Airport. The major problem is derived from the additions added to airport. Consolidation of services or vertical construction of the airport may seem a better idea, or refurbish the entire airport from the ground up. However, land use will be minimal yet the airport will be much more efficient. The airport's economic stability is a weakness in that there's very little growth available presently. Demand and support are imbalance, and this issue is being addressed currently. Increased connection service is an opportunity that needs to be taken advantage of. Economic benefits of Philadelphia city is a benefit. The development of another commercial airport is another idea; however, in Washington and New York, all airports are shared by all the airlines. One cannot have constraints regarding the selections of airline service for a specific airport. Building a runway in the middle of the river is another option; however, in Japan or Hong Kong, these runways do sink. However, huge mitigation may be involved. Mayor Rendell assisted in marketing the city of Philadelphia, but the experience at the airport influences one greatly. The renown of the city and the malls of Philadelphia have increased its marketability. Also, security has been a weakness with every airport. The FAA and the airlines is their concern.

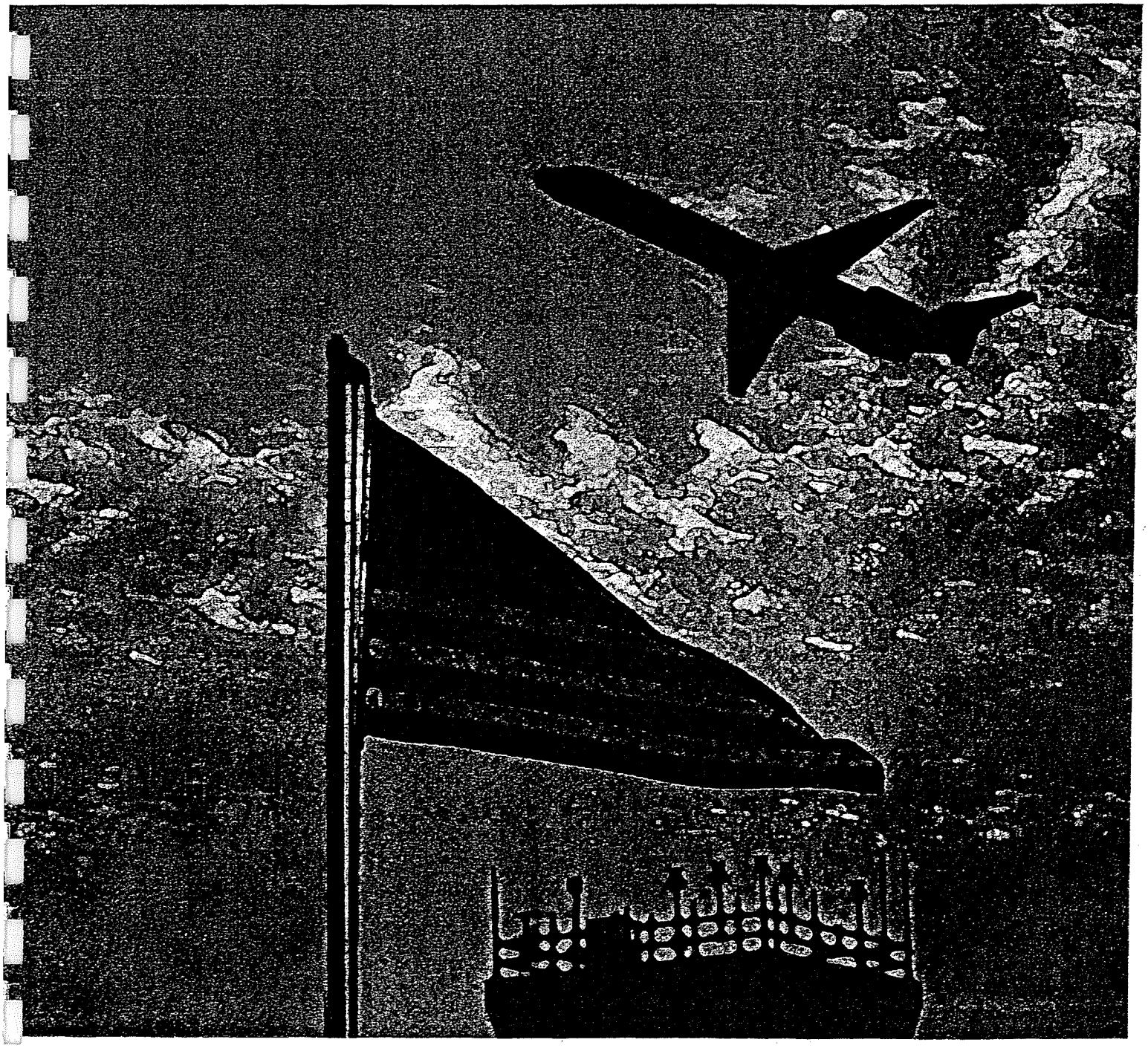
Q: When the airplanes taxiing out the runway when an airplane is flying overhead and has to circle around?

A: A lot of times it is not necessarily the air-traffic controller…one cannot land and take off planes in the same area at the same time.

END OF NOISE SUBCOMMITTEE MEETING

Philadelphia International Airport

NOISE COMPATIBILITY PROGRAM STUDY



Working Paper #1

Landrum & Brown

PHILADELPHIA INTERNATIONAL AIRPORT
NOISE SUB-COMMITTEE
AGENDA

December 8, 1999

I. Introductions

II. Purpose

a. Committee
b. Today's Meeting

III. What is Part 150?

a. ASNA
b. CFR 14
c. Stage II and Stage III

IV. Baseline Noise Conditions – 1999

a. Operations
b. Fleet Mix
c. Flight Tracks
d. Ground Noise and Special Conditions

V. Baseline Noise Conditions – 2004

a. Operations
b. Fleet Mix
c. Flight Tracks
d. Ground Noise and Special Conditions

VI. Noise Measurement Program

a. Dates and Conditions
b. Locations
c. Preliminary Results
d. Airport's Noise Monitoring System

VII. Land Use Planning

a. Baseline Land Use Map
b. Jurisdictions

VIII. Potential Noise and Land Use Abatement Alternatives

a. Potential Noise Abatement Measures
b. Current Noise Abatement Procedures
c. Potential Land Use Abatement Measures
d. Potential Program Management Measures

IX. Next Steps

a. Complete Baseline Noise for 1999 and 2004 (dependent upon forecasts)
b. Complete Baseline Land Use Analyses
c. Develop Preliminary Abatement Measures
d. Next Meeting will be in January or February of 2000

X. Question and Answers and Close Meeting

F.A.R. PART 150

The Aviation Safety and Noise Abatement Act of 1979 (Public Law 96-193), was enacted "...to provide and carry out noise compatibility programs, to provide assistance to assure continued safety in aviation." This legislation requires the establishment of single systems for measuring aircraft noise, determining noise exposure, and identifying land uses that are normally compatible with various noise exposure levels.

Federal Aviation Regulation (FAR) Part 150, the administrative rule which implements the Act, sets requirements for airport operators who choose to undertake an airport noise compatibility study with federal funding assistance. Part 150 provides for the development of two components, Noise Exposure Maps (NEMs) and a Noise Compatibility Program (NCP).

NOISE EXPOSURE MAPS

The Noise Exposure Maps component of a Part 150 document presents existing and future noise conditions at the airport. It includes maps of unabated noise exposure (noise contours) for the current year and a five-years in the future. Noise contours are developed in the Day-Night Average Sound Level (DNL) metric, which is an average of daily aircraft noise with a penalty of 10 decibels (dB) for nighttime operations. Nighttime is defined as the period between 10:00 p.m. and 7:00 a.m. **Exhibit 1** explains the DNL metric graphically. The noise contours are then superimposed on a map to show non-compatible land use.

Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes guidelines for the identification of land uses that are not compatible with noise of different levels. In Section 150.21(d), airport proprietors are required to update noise exposure maps when changes in the operation of the airport would create any new, substantial non-compatible use. A substantial non-compatible use is considered to be an increase in the yearly day-night average sound level (DNL) of 1.5 dBA or greater in either land areas which were formerly compatible but are made non-compatible, or in a land area which was previously determined to be non-compatible and whose non-compatibility is increased significantly. The Airport proprietor can gain limited legal protection through preparation, submission and publication of noise exposure maps. ASNA provides in Section 107(a) that:

"No person who acquires property or an interest therein...in an area surrounding an airport with respect to which a noise exposure map has been submitted shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless...such person can show that...

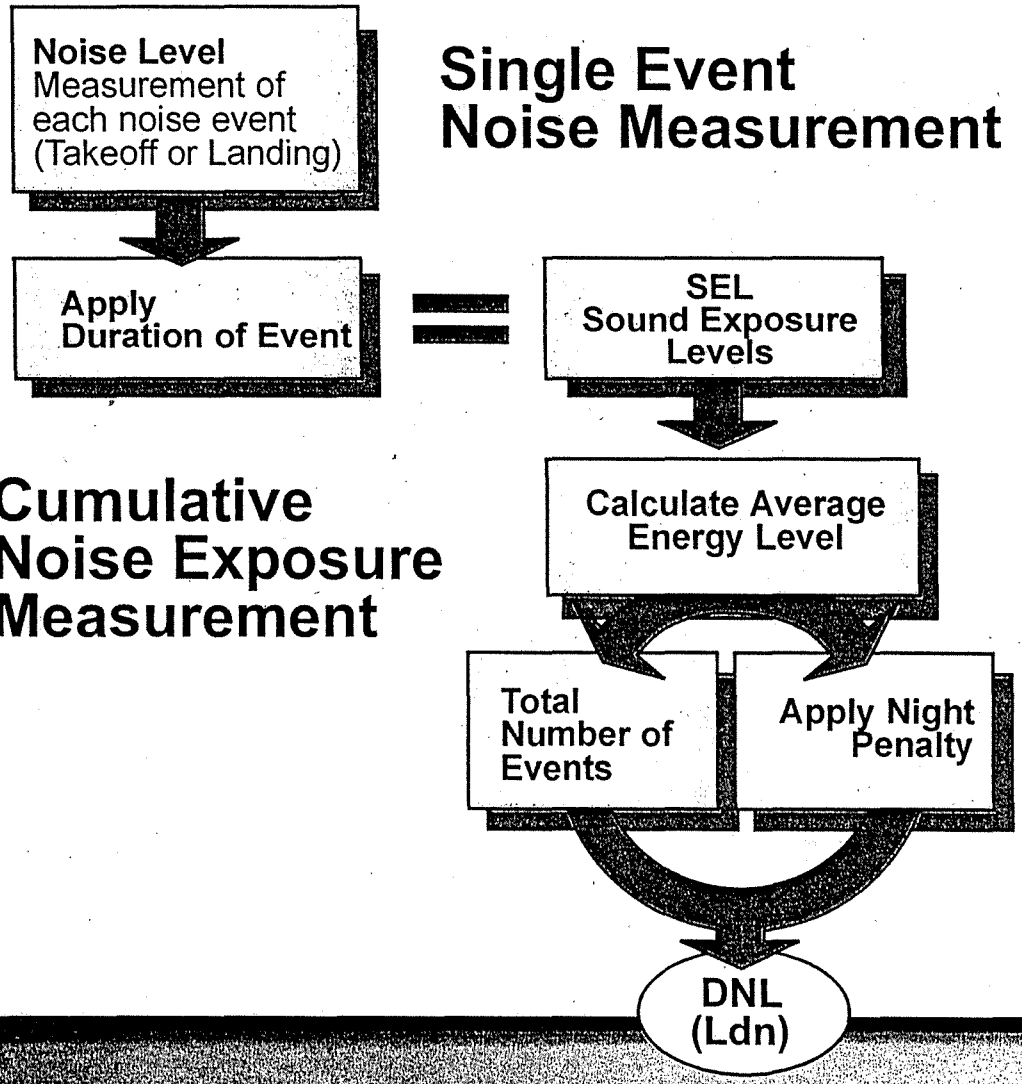
(i) A significant change in the type or frequency of aircraft operations at the airport; or

(ii) A significant change in the airport layout; or

(iii) A significant change in the flight patterns; or

(iv) A significant increase in nighttime operations; occurred after the date of acquisition of such property..."

What is DNL(Ldn)?



Part 150 defines "significant increase" as an increase of 1.5 dBA of DNL. For purposes of this provision, FAA officials consider the term "area surrounding an airport" to mean an area within the 65 DNL contour. (See F.A.R. Part 150, Section 150.21 (d), (f), and (g)).

The noise exposure maps must be found in compliance with the requirements of Part 150 before the FAA will approve the noise compatibility program for the airport.

NOISE COMPATIBILITY PROGRAM

A Noise Compatibility Program includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, airport regulations, or airport facility modifications. It also includes provisions for land use compatibility planning and may include actions to mitigate the impact of noise on non-compatible land uses. The program must contain provisions for updating and periodic revision.

FAR Part 150 establishes procedures and criteria for FAA evaluation of noise compatibility programs. Among these, two criteria are of particular importance: the airport proprietor may not take any action that imposes an undue burden on interstate or foreign commerce, nor may the proprietor unjustly discriminate between different categories of airport users.

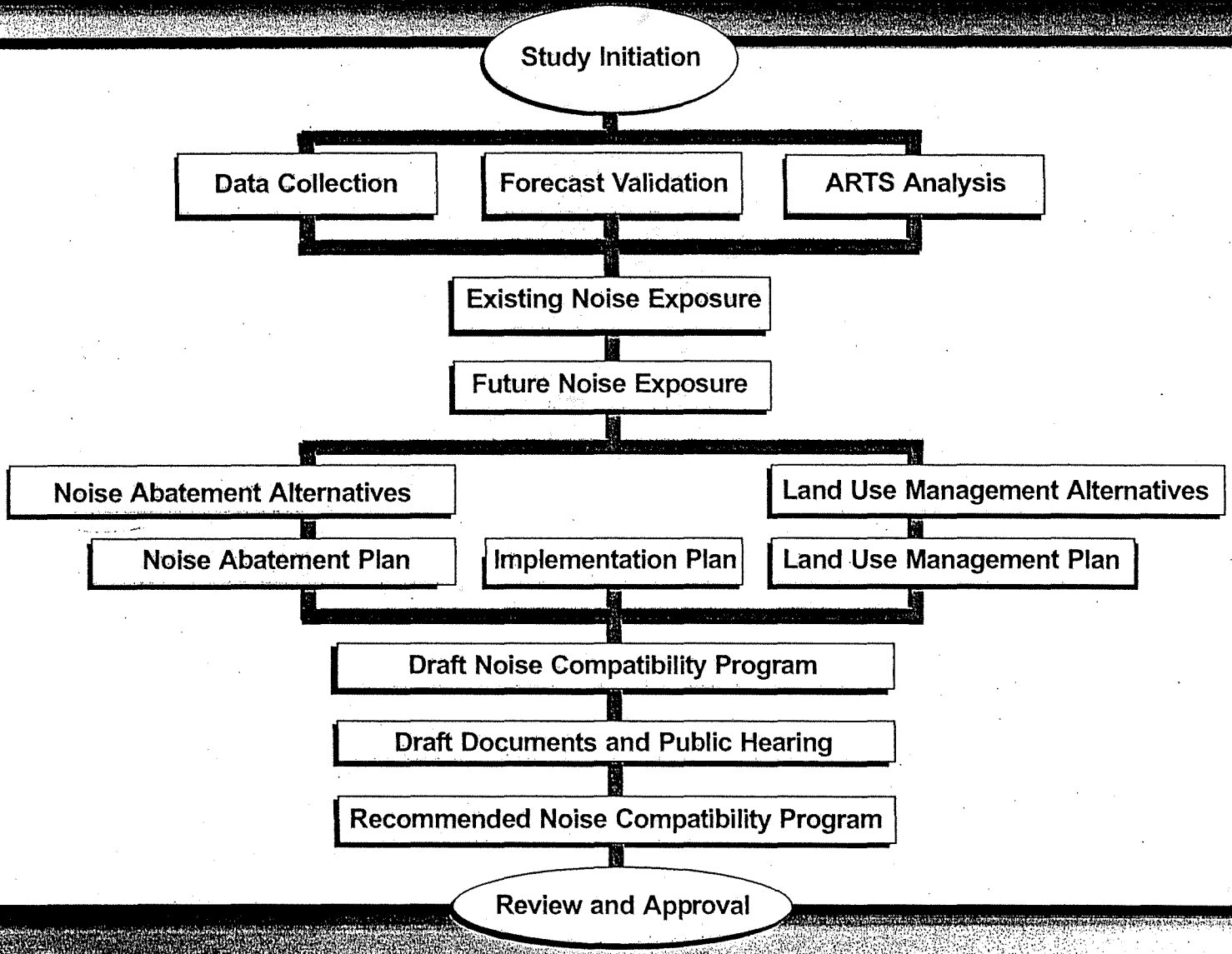
The FAA also reviews changes in flight procedures proposed for noise abatement on the basis of safety of flight operations, safe and efficient use of the navigable airspace, management and control of the national airspace and traffic control systems, effect on security and national defense and compliance with applicable laws and regulations. The Federal Aviation Act of 1958 and its successors state that the airspace of the United States is totally within the control of the Federal Government. The FAA implements or regulates flight procedures within this airspace. Any measures dealing with airspace issues are clearly within the FAA's purview and may not be implemented unilaterally by the airport proprietor.

With an approved noise compatibility program, an airport proprietor becomes eligible for federal funding to implement approved items of the program.

* * * * *

The Part 150 process for Philadelphia International Airport will include a review of current noise abatement and mitigation programs and recommended strategies reflecting any relevant changes to the operation of the airport. **Exhibit 2** shows the standard Part 150 process.

Noise Compatibility Planning Process

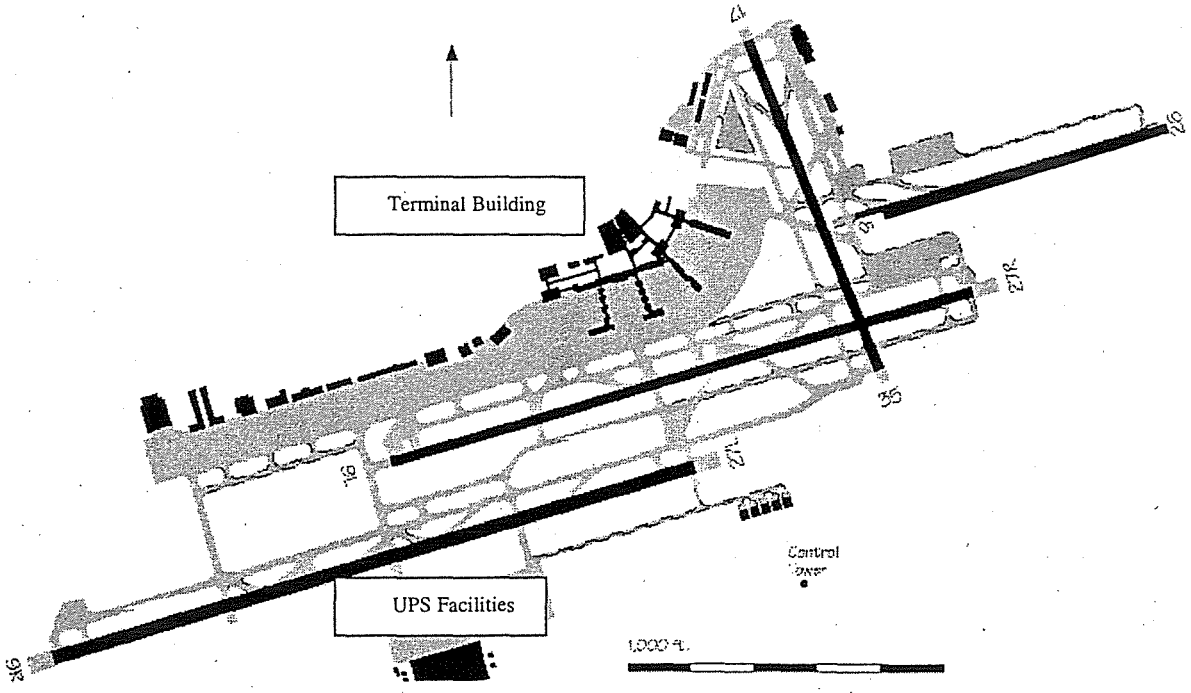


AIRPORT LAYOUT & FACT SHEET

- **Location: Philadelphia/Tinicum Township, PA.**
- Began Operation: 1925
- Runways:

Name	Length	Width
9L/27R	9,500 ft	150 ft
9R/27L	10,499 ft	200 ft
8/26	5,000 ft	150 ft
17/35	5,459 ft	150 ft

Runway 8/26 opened on December 3, 1999.



AIRPORT USERS

- Major Commercial Airlines

Air Aruba	Lufthansa German Airlines
Air Canada	Midway Airlines
Air Jamaica	Midwest Express
AirTran Airlines	National Airlines
America West Airlines	Northwest Airlines
American Airlines	Northwest Airlines International Flights
American Eagle	ProAir
ATA	Trans World Airlines
British Airways	Trans World Connection
Continental Airlines	United Airlines
Delta Air Lines	US Airways
Delta Connection	US Airways Express

- Regional Airlines

American Eagle	United Express
Continental Express	US Airways Express
TWA Express	

- Cargo Airlines

Airborne Express	Federal Express
American International Airways	Kitty Hawk Air Cargo
BAX Global	Rich International Air
DHL Airways	United Parcel Service
Emery	

- General Aviation/Air Taxi/Military

NOISE EXPOSURE MODELING

In order to model aircraft noise exposure, several key inputs are required. Among these are runway utilization, flight tracks and utilization, operational levels, fleet mix, and ground noise data. Aircraft noise exposure is predicted with the FAA's computer model known as the Integrated Noise Model (INM). The INM utilizes these inputs to produce contours of equal noise exposure. Each of these inputs is briefly discussed in the following paragraphs. **Exhibit 3** shows how noise contours are modeled.

RUNWAY UTILIZATION

- Runway use data will be extracted from a combination of Radar data, runway availability data, and discussions with the control tower and the airport to determine the proportion of time each runway is utilized, and by what categories of aircraft. This information will determine the year 1999 Baseline runway utilization.

- The 2004 Baseline noise exposure will assume that no changes will occur that will affect runway use, however, once Runway 8/26 is in full operation (with full instrumentation assumed for 10/00), during periods of West Operation in Instrument Flight Rules weather conditions aircraft will land on 27L as opposed to Runway 27R. This is also a more preferred operating condition to reduce runway incursions.

FLIGHT TRACKS

- Flight tracks are lines that represent the paths aircraft fly along when arriving or departing the airport.

- Four (4) weeks of Automated RADAR Terminal System (ARTS) data will be collected, one (1) for each of the four quarters of the one (1) year period to best represent the average flight track locations. Radar data was also collected for the noise monitoring period, October 11-15, 1999.

- The radar data will be compiled into large, medium and small jet operations, and propeller operations. Representative flight paths will be developed for each group.

- The radar data and the flight paths developed from it will be discussed with the ATCT and the airport to assure accuracy and comprehensiveness.

Exhibits 4 and 5, following this page, show sample radar data collected for arriving and departing aircraft at Philadelphia International Airport.

How Noise Contours are Generated

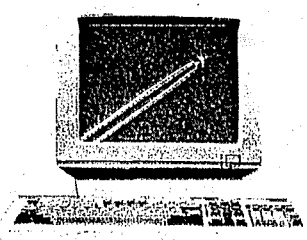
User Inputs

- **Inputs** ▶ **Source**
- Airport Information
  - ▶ ALP, ANMS
- Aircraft Flight Tracks
  - ▶ ANMS
- Fleet Mix
  - ▶ ANMS, Tower, Airport Records, OAG
- Number of Operations
  - ▶ ANMS, Tower, Airport Records, OAG
- Runway Utilization
  - ▶ ANMS
- Time of Day
  - ▶ ANMS
- Aircraft Climb Profiles
  - ▶ ANMS, INM
- Departure Trip Length
  - ▶ ANMS

Integrated Noise Model (INM)

INM Provided Information

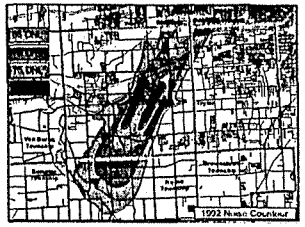
- Aircraft Noise Levels
- Aircraft Performance Data



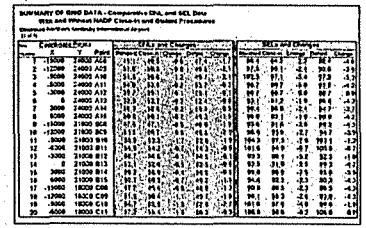
Types of Aircraft Noise Considered within INM

- Arrival
- Departure
- Flyover
- Reverse Thrust (Braking)

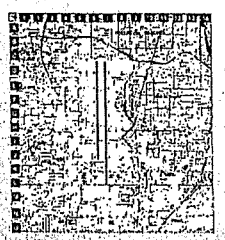
Output



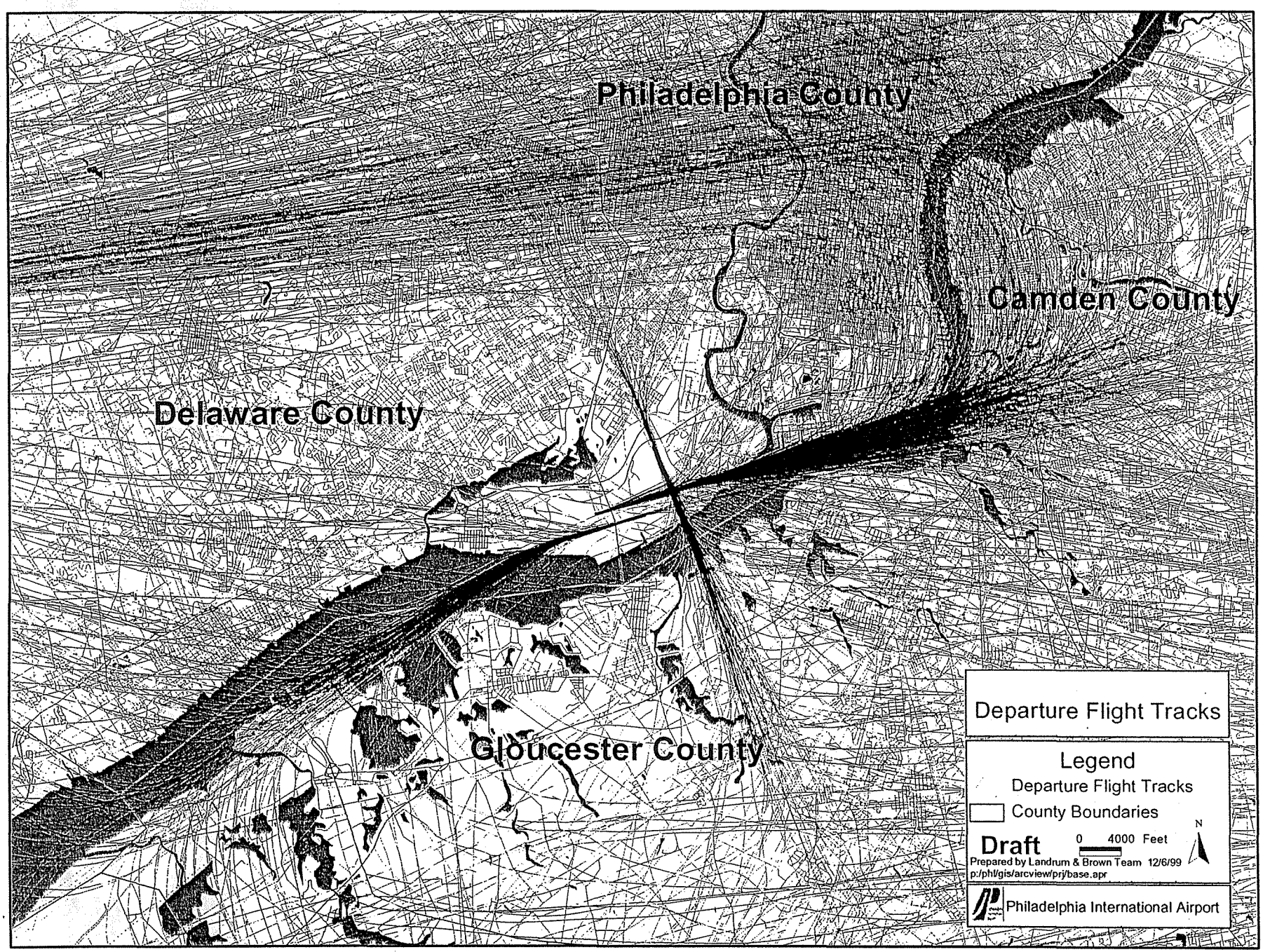
Noise Contours



Tabular Reports



Grid Point Analysis


Philadelphia County
Camden County
Delaware County
Gloucester County
Departure Flight Tracks
Legend
Departure Flight Tracks
County Boundaries
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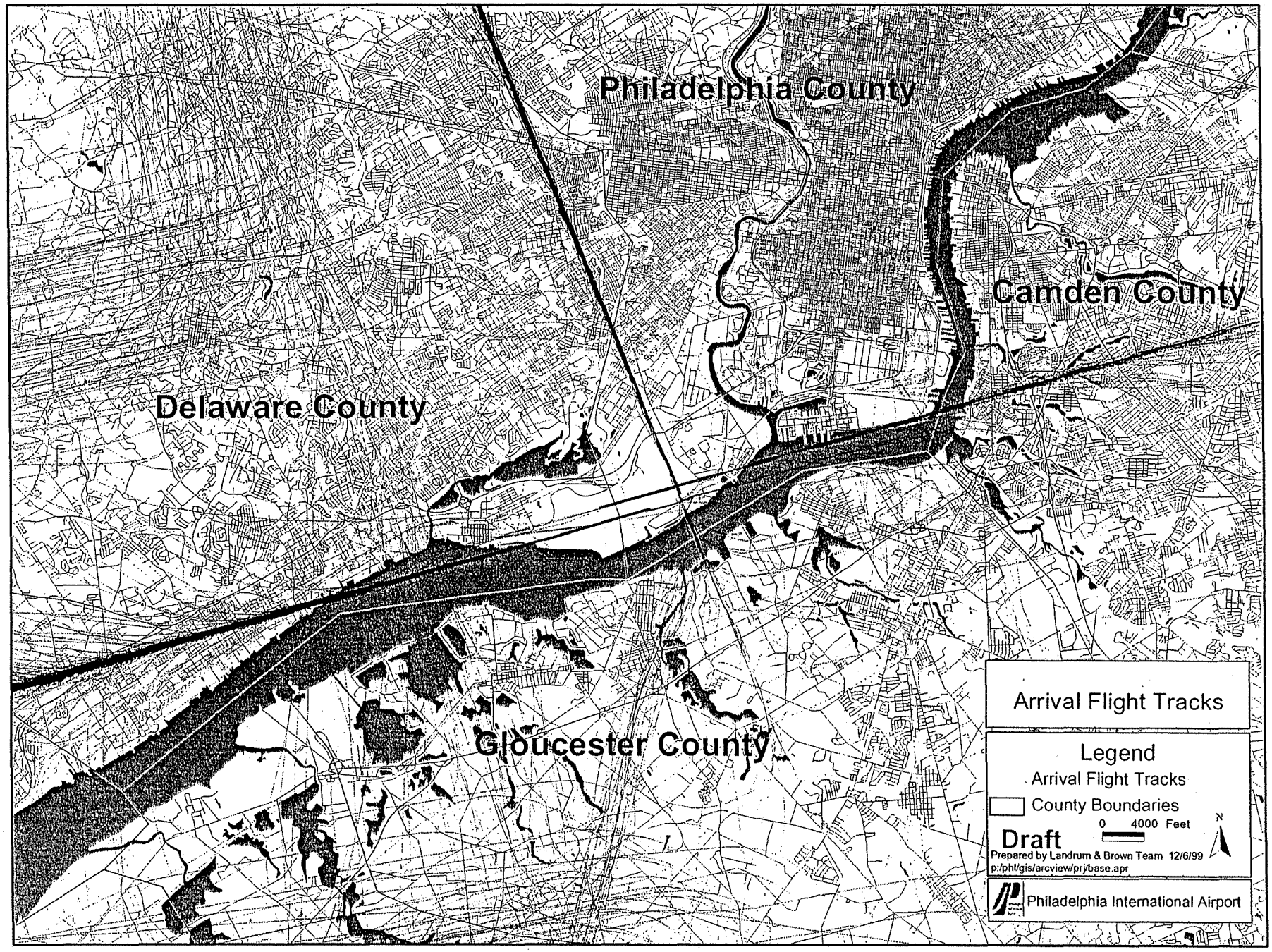
Philadelphia International Airport


Philadelphia County
Camden County
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Philadelphia International Airport

1999 BASELINE OPERATING LEVELS

- Operating Data for the 1999 baseline condition will be gathered from:
- Calendar Year 1999 Operating Records from the FAA
- Calendar Year 1999 Landing Fee Reports from the City of Philadelphia
- The total operations for 1998 (January to December) were 469,464 landings and takeoffs. When divided by 365 days, the average annual day is 1,286 takeoffs and landings.

  Calendar year 1999 operational levels will be utilized to produce the 1999 baseline noise contours. They are expected to be similar to 1998 levels. For example, the period of January to October 1999 total annual operations were 398,639. That is an average of 39,864 operations monthly, therefore, the 12 month total is likely to exceed 478,000. **Table 2** shows a breakdown of 1998 operations by category and 1999 through October.

- Major commercial operations will likely account for the majority of the annual operations.
- Regional operations, cargo operations, general aviation, and military operations will account for the remainder.

Table 2
Calendar Year 1998 and 1999 Operations

Year	Air Carrier	Air Taxi	General Aviation	Military	TOTAL
1998	268,556	148,512	42,381	10,015	469,464
1999 (to date)	233,779	121,203	42,659	998	398,639

Air Taxi aircraft are those which fly passengers or cargo but are not affiliated with major airlines or cargo carriers such as U.S. Airways or UPS.
Source: FAA APO Web Site, 1999.

1999 BASELINE FLEET MIX

- Fleet mix refers to the specific types of aircraft that operate at the airport.
- Because the INM uses an average annual day to calculate DNL noise levels, the number of average day operations are further reduced and assigned to specific aircraft types in accordance with their distribution throughout the day.
- Several different types of aircraft make up the commercial jet operations for the baseline period. They include Boeing, Airbus Industrie, McDonnell Douglas, and Canadair aircraft.

- Cargo aircraft include the Boeing 727, Boeing 757, Boeing 747 Boeing 767, Douglas DC-8, Douglas DC-9, Airbus 300 series, and various small jet and propeller aircraft.

- Regional propeller aircraft include De Havilland, Saab, Beech, Embraer, and Aerospatiale types.

- Military jets, business jets and single/twin engine turbo-propeller and propeller aircraft make up the rest of the fleet for the baseline period.

2004 BASELINE OPERATING LEVELS

- Forecasted operations for 2004, as developed by the Master Plan, will be utilized to predict the noise exposure for baseline and abated conditions. Commercial operations are expected to increase.

- General Aviation and military operations are expected to remain fairly constant or decrease for 2004 conditions.

2004 BASELINE FLEET MIX

- Two factors will play a role in determining the fleet mix for the year 2004:

  - By January 1, 2000, operators of all commercial aircraft weighing over 75,000 pounds must comply with FAA Part 91 requirements by removing from the fleet, hushkitting, or putting new engines on their Stage 2 aircraft, resulting in a 100% Stage 3 commercial fleet.

  - Operations are expected to increase between 1999 and 2004.

- Mid-size jets, such as B-737's, MD80's, and Airbus aircraft will be prominent in the future commercial jet fleet in the future. Small commuter jet aircraft are also expected to become a significant portion of the commercial jet fleet in 2004.

- Retrofitted and hushkitted aircraft are expected to be a small portion of the Stage 3 Commercial Jet operations in the year 2004.

BASELINE NOISE EXPOSURE PATTERNS

- All noise contour mapping will be developed using the FAA's Integrated Noise Model, version 6.0, which was released in October of 1999. The INM creates a noise exposure pattern for an average day of an average year. Average annual aircraft activity, fleet mix, runway use, flight track location and use, temperature, and the surrounding topography are all included in the analysis.

- A Geographic Information System (GIS) database will be utilized to determine the incompatible impacts within the noise contour maps.

NOISE COMPATIBILITY PROGRAM NOISE EXPOSURE PATTERNS

- Noise compatibility program contours will be developed from the projected 2004 baseline conditions, and will include recommended noise abatement actions developed during this planning process. They will become the final mitigation contours once approved by the Federal Aviation Administration. The airport will implement their land use and program management measures based on these contours.

- Potential noise abatement measures, land use measures and program management measures will be discussed later in this document. **Table 3** shows the FAR Part 150 Land Use Compatibility Guidance Chart.

Table 3
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
Philadelphia International Airport

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (DNL) IN DECIBELS

LAND USE	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
PUBLIC USE						
Schools, hospitals, nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	N[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail -- building materials, hardware, and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade, general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y	Y[5]	N[5]	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Table 3, Continued
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
Philadelphia International Airport

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key To Table 3

Y (Yes)	Land use and related structures compatible without restrictions.
N (No)	Land use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure
25, 30, 35	Land use and related structures generally compatible; measures to achieve a NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table 3

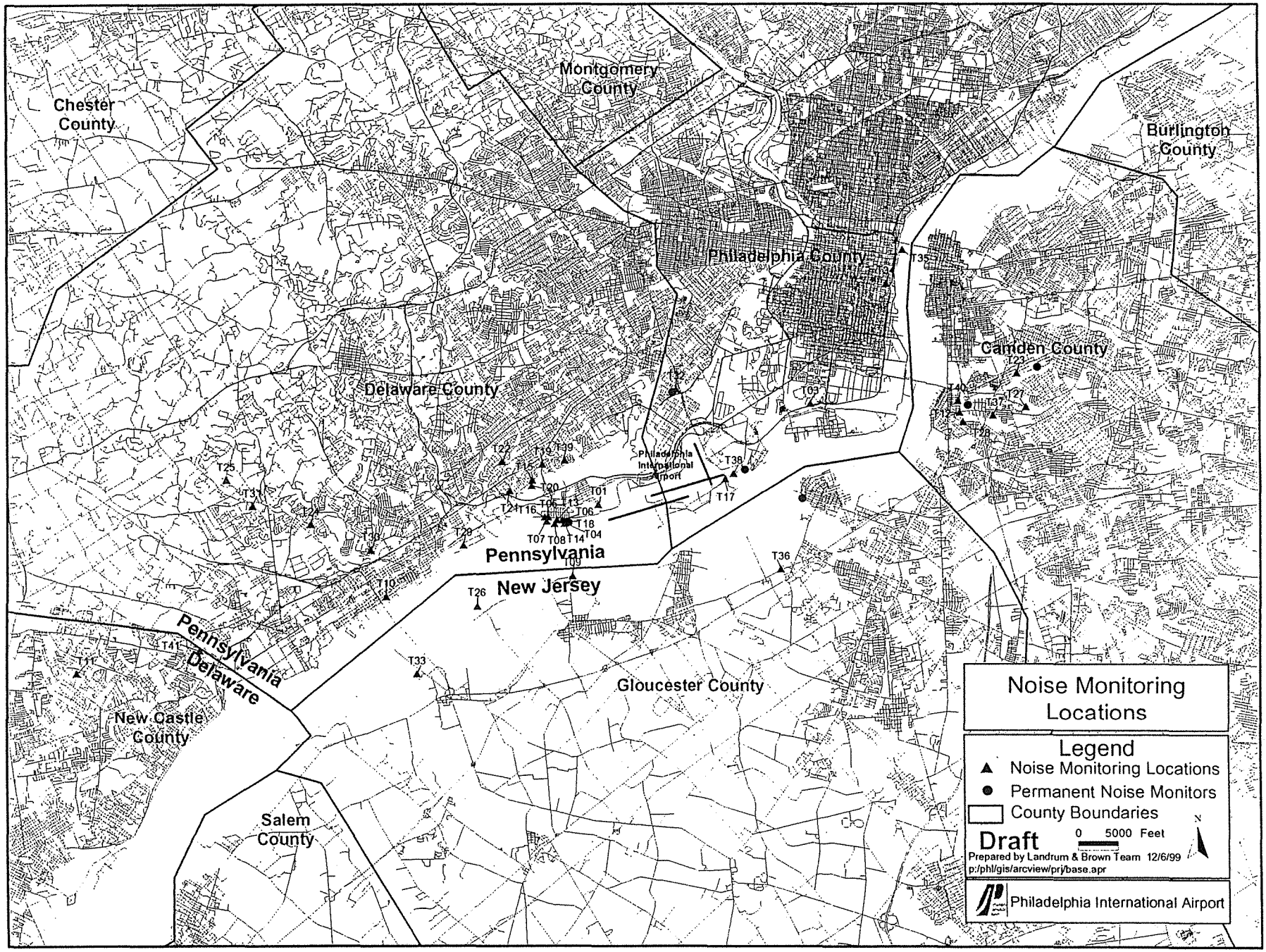
1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
5. Land use compatible provided special sound reinforcement systems are installed.
6. Residential buildings require a NLR of 25 dB.
7. Residential buildings require a NLR of 30 dB.
8. Residential buildings not permitted.

Source: FAR Part 150 Airport Noise Compatibility Planning, Appendix A, and Table 1.

NOISE MEASUREMENT PROGRAM

- During the week of October 11-15, 1999 noise monitoring was conducted in and around the airport region at the locations shown on **Exhibit 6. Table 4** shows the preliminary data.
- The purpose was to gather noise measurements that could be used to insure that INM input is as accurate as possible.
- Monitoring was conducted at 41 sites at various times during each day.
- An analysis of the monitored data collected at the individual sites and the data contained in the INM will be conducted and the results of the two data sets will be compared. The following comparisons are normally made:
  - Radar flight tracks of the aircraft monitored are identified and data associated with them extracted. A comparison of the aircraft's actual altitude and position near each site is compared to the standard aircraft profiles in the INM. For the aircraft monitored, it is determined if the modeling data and the monitoring data are similar.
  - The monitoring data will be compared to the Philadelphia International Airport's permanent noise monitoring data to determine if they are similar.

Based on this analysis, it will be decided whether changes to the INM's input data will be required.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Noise Monitoring Locations
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Philadelphia International Airport

Table 4
TEMPORARY NOISE MONITORING RESULTS
Philadelphia International Airport

Site Code	Description	Date	Times	SEL Range (in decibels)	Lmax Range (in decibels)	Peak Aircraft
T01	4th & Iriquois - Tinicum, PA (departures)	10/11/99	11:15 - 13:25	65.8 - 99.5	63.6 - 89.1	MD82
T02	4th & Iriquois - Tinicum, PA (departures)	10/11/99	12:55 - 13:10	81.1 - 94.6	71.1 - 86.3	MD88
T03	Franklin Roosevelt Park – Tinicum, PA (departures)	10/11/99	13:55 - 14:35	75.5 - 86.9	62.8 - 74.2	B747
T04	Front Street and Jansen – Tinicum, PA (departures)	10/11/99	14:40 - 15:15	80.0 - 98.2	71.4 - 90.1	B747
T05	201 Taylor Avenue – Tinicum, PA (departures)	10/11/99	14:45 - 15:25	76.9 - 84.6	67.8 - 76.3	B727
T06	334 Bartram Avenue – Tinicum, PA (departures)	10/11/99	15:25 - 16:15	72.1 - 89.6	60.4 - 80.6	MD88
T07	Governor Printz State Park Tinicum, PA (departures)	10/11/99	15:35 - 16:15	66.9 - 90.5	55.0 - 83.9	MD88
T08	River Watch Condominiums, Carre Avenue - Tinicum, PA (departures)	10/11/99	16:25 - 16:40	70.6 - 89.6	63.0 - 82.3	B737
T09	Green Acres Park – Crap Point, NJ (departures)	10/12/99	09:50 - 10:20	74.2 - 93.1	62.6 - 84.4	MD80
T10	Eddystone Ave. at 2nd St. – Chester, PA (departures)	10/12/99	10:00 - 10:20	77.9 - 88.2	65.4 - 78.5	DC9
T11	2518 Blackwood – Wilmington, DE (arrivals)	10/12/99	11:10 - 11:30	69.1 - 76.7	60.5 - 69.9	-
T12	Gloucester Park (arrivals)	10/12/99	13:15 - 13:55	75.3 - 84.3	57.2 - 72.7	B757
T13	132 Carre Ave.– Tinicum, PA (arrivals)	10/12/99	13:00 - 14:20	72.5 - 80.1	63.1 - 72.2	B737
T14	4 Jansen Street – Tinicum, PA (arrivals)	10/12/99	14:25 - 14:45	77.8 - 85.6	68.5 - 77.4	B737
T15	Rodney Road, North of Darby Road – Ridley, PA (departures)	10/12/99	14:40 - 15:05	75.4 - 83.1	62.6 - 73.0	B727
T16	2nd & Corrinthian and Essington – Tinicum, PA (arrivals)	10/12/99	14:50 - 15:00	74.6 - 83.8	62.0 - 71.6	B737
T17	Fort Mifflin Entrance (arrivals)	10/12/99	23:10 - 23:45	82.9 - 103.6	71.2 - 99.7	DC8
T18	Front Street and Erickson – Tinicum, PA (departures)	10/13/99	03:00 - 3:25	82.9 - 93.2	72.4 - 82.9	B727
T19	Lincoln & 4th – Norwood, PA (departures)	10/13/99	03:30 - 03:40	70.1 - 70.6	55.8 - 59.0	-
T20	Rooney Road – Ridley, PA (departures)	10/13/99	03:45 - 03:55	74.3	74.3	-
T21	123 LaDomus – Willow Park, PA (departures)	10/13/99	06:23 - 07:00	61.7 - 83.2	62.0 - 72.7	B727
T22	Madison Av, Edgewater Condos – Prospect Park, PA (departures)	10/13/99	07:15 - 007:49	79.8 - 85.8	66.0 - 72.7	B727
T23	1011 Eldridge, Collingswood, NJ (arrivals)	10/13/99	12:15 - 12:50	69.5 - 85.7	62.1 - 79.8	B737

Table 4, Continued
TEMPORARY NOISE MONITORING RESULTS
Philadelphia International Airport

Site Code	Description	Date	Times	SEL Range (in decibels)	Lmax Range (in decibels)	Peak Aircraft
T24	Harrison & Scarlet - Aston, PA (arrivals)	10/13/99	12:20 - 12:40	70.2	64.2	-
T25	Elm & Mount (Beechwood Park) – Aston, PA (departures)	10/13/99	13:03 - 14:00	71.0 - 82.3	59.0 - 75.1	-
T26	115 Flood Gate Road (Speedway) – Bridgeport, NJ (departures)	10/13/99	14:00 - 14:28	63.3 - 83.2	53.0 - 76.2	B737
T27	Rd "A" near Corner of Rd "B" Audobon Park, PA (arrivals)	10/13/99	14:15 - 14:44	73.9 - 82.7	64.5 - 72.2	B767
T28	Klenn & Johnson – Gloucester, NJ (arrivals)	10/13/99	00:20 - 00:46	77.9 - 84.3	64.7 - 72.7	DC8
T29	2nd & Eddystone - Eddystone, PA (departures)	10/14/99	09:30 - 10:11	70.9 - 84.7	60.3 - 71.9	B727
T30	310 3rd St – Tinicum, PA (departures)	10/14/99	09:40 - 10:27	68.5 - 91.5	59.5 - 81.2	MD80
T31	112 Gerald – Aston, PA (departures)	10/14/99	09:40 - 10:45	71.1 - 91.8	60.2 - 88.2	B737
T32	Jason St. – Eastwick, PA (departures)	10/14/99	12:03 - 14:25	65.0 - 86.6	52.3 - 79.7	Single Prop
T33	116 Buttonwood Lane - Bridgeport, NJ (departures)	10/13/99	12:10 - 13:00	70.8 - 86.3	59.2 - 75.7	MD88
T34	2nd St & Monroe, Center City - Philadelphia, PA (no observations)	10/14/99	12:50 - 1:15	-	-	-
T35	Pier 3, Columbus Blvd – Philadelphia, PA (no observations)	10/14/99	12:15 - 12:45	-	-	-
T36	71 Jobstown Rd (St Paul's Church) – Paulsboro, NJ (arrivals)	10/14/99	12:30 - 12:37	75.7	66.1	-
T37	16 Wilson St. – Haddon, PA (arrivals)	10/14/99	14:27 - 14:59	74.9 - 83.3	64.6 - 74.6	MD88
T38	Fort Mifflin (arrivals)	10/14/99	16:48 - 17:04	92.6 - 98.5	86.1 - 90.7	B757
T39	33 Martin Ave - Norwood, PA (departures)	10/15/99	10:05 - 10:45	63.9 - 75.5	51.5 - 65.9	-
T40	938 Mercer St - Gloucester, PA (departures)	10/15/99	10:30 - 10:50	76.4 - 85.8	64.6 - 75.7	MD80
T41	Society Dr. - Claymont, DE (arrivals)	10/15/99	10:36 - 10: 47	76.0 - 77.4	63.9 - 66.2	B727

T= Temporary Site SEL = Sound Exposure Level Lmax = Maximum Noise Level
dBA= A-Weighted Decibels
Note: The blank cells in this table indicate that no data was recorded or that the aircraft could not be identified from the site.
Source: Landrum & Brown, 1999.

LAND USE PLANNING

INTRODUCTION

Land use planning and the adoption, administration, and enforcement of zoning regulations is within the exclusive authority of Pennsylvania's local municipal governments within each of their jurisdictions. This includes the authority for airport compatible land use planning. The FAA does not have the authority to exercise land use control in a local government's jurisdiction. The FAA may however, provide guidance to the airport to encourage compatible land use planning in their area, and the FAR Part 150 process is one way to involve, educate and encourage local communities located within the airport environs to review their current and future land use and zoning policies.

For this FAR Part 150 Study, a data base of noise sensitive land uses is currently being developed using the most up to date information available from the local municipalities as well as the Delaware Valley Regional Planning Commission (DVRPC). Once compiled, the land use information will be incorporated onto the study area basemap (**Exhibit 7**) which will then be used to depict the noise contours developed in all phases of the study.

Having the land uses clearly identified on the basemap will allow the study team to identify and quantify any noise sensitive land uses that may be located within the 65 - 75 DNL noise contours generated for the existing, future, and alternative scenarios.

In addition to the mapping, we are in the process of collecting county, city, township and borough plans, ordinances, zoning regulations and any other documentation that pertains to land use planning and management within the municipalities located in the immediate vicinity of the airport. Each of the individual municipalities vary greatly in terms of geographic size, population, development characteristics, and degree of services.

The DVRPC is comprised of a nine county planning area which includes Bucks, Chester, Delaware, Montgomery and Philadelphia counties in Pennsylvania as well as Burlington, Camden, Gloucester, and Mercer counties in New Jersey. This study will utilize information from Delaware, Philadelphia, Camden, and Gloucester counties depicted on **Exhibit 8.**

EXISTING LAND USE

Philadelphia International Airport is located within two municipalities and counties. The northeastern portion of the airport lies within the City of Philadelphia, Philadelphia County; the southwestern portion lies within Tinicum Township, Delaware County. Development on the airport is subject to the permit application and approval requirements of the respective jurisdictions.

Northeast of the Runway 17 end is the neighborhood community of Eastwick and the Eastwick Industrial Park. The Eastwick Industrial Park is a designated City of Philadelphia Commerce Department, Keystone Opportunity Zone (KOZ), one of twelve such zones the city has identified. This industrial land consists of 131 acres located just off I-95 near the airport. Eligible KOZ business and property owners are virtually exempt from state and local business taxes until December 31, 2010. The goal of the KOZ program is to encourage business

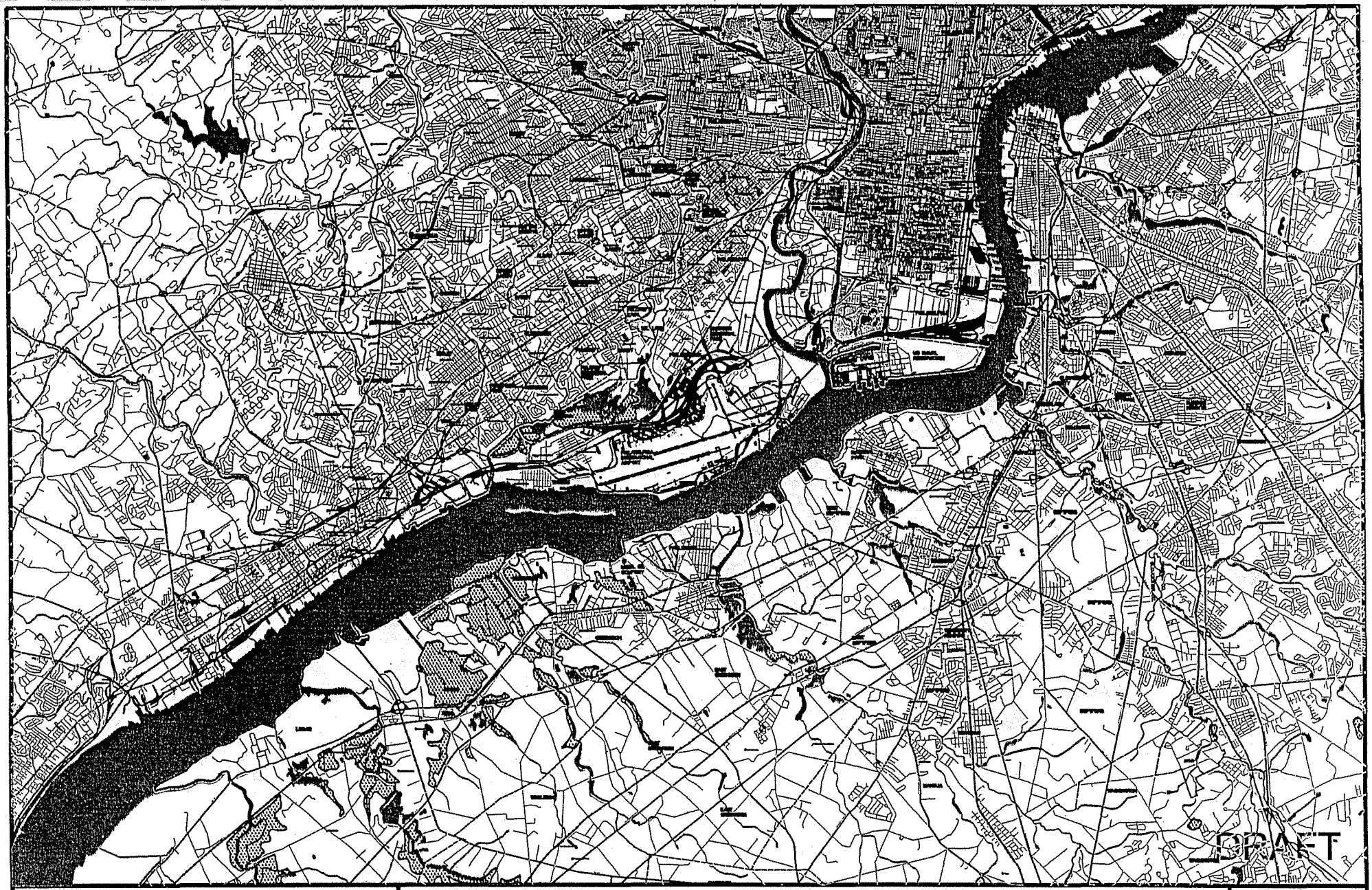
expansion within the city, attract new businesses to Philadelphia, and to encourage property owners to make capital improvements to their properties. All of which result in new job opportunities for Philadelphia citizens.

Non-airport property located east of the airport is completely developed and heavily dominated by commercial, industrial and governmental land uses. Commercial uses include several airport hotels and consumer service-type businesses located along Island Avenue and PA Route 291. Industrial sites include a waste water treatment plant, the former Philadelphia Naval Shipyard (recently converted to civilian use and due to reopen by 2000) and a bulk fuel storage facility located along the Delaware River. Fort Mifflin, a national historic site is located outside airport property off Fort Mifflin Road and partially within the Runway 27R Runway Protection Zone (RPZ).

Airport property and aviation facilities border the Delaware River to the south with the exception of the United Parcel Service (UPS) distribution center located on Hog Island Road.

West of the airport beyond Tinicum Island Road, between I-95 and the Delaware River, are Tinicum and Essington Townships. These municipalities have residential areas located directly under several flight paths. Pockets of residential development are interspersed throughout larger tracts of commercial, light and heavy industrial land uses. The Airport Business Center is an office complex and hotel facility located along I-95 west of Cargo City.

Immediately north of the airport, development is limited by PA Route 291 and I-95. Farther to the north is the John Heinz National Wildlife Refuge (JNHWR) administered by the U.S. Fish and Wildlife Service. It was established by public law in 1972 to protect 83 acres of tidal marsh in Pennsylvania. West of the JHNWR, commercial development continues along Bartram Avenue. Recent improvements include the PNC Bank operations center and several new hotels.

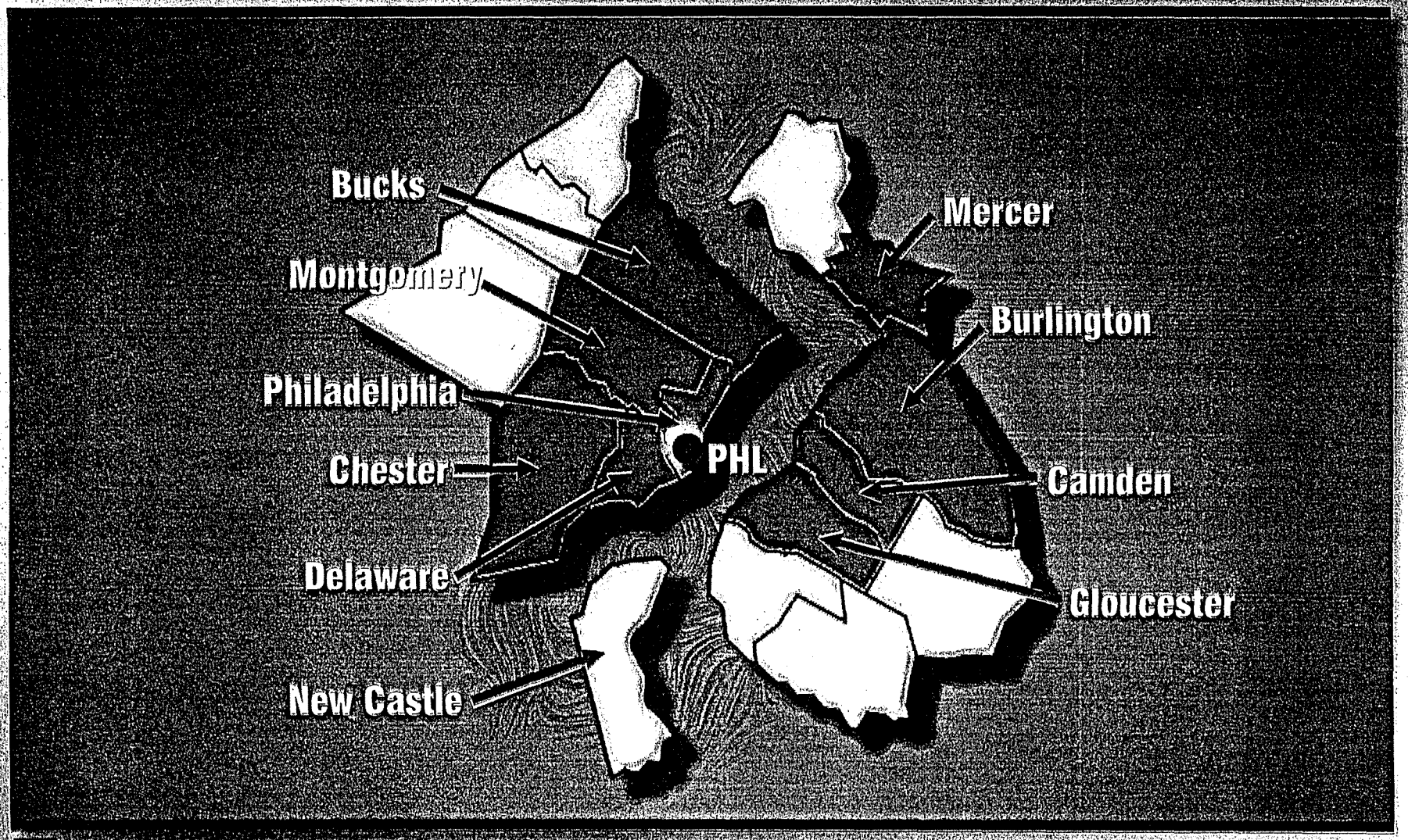


Philadelphia International Airport

Part 150 Study Base Map

Not to Scale

Airport Environs Counties



Landrum & Brown

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POTENTIAL NOISE ABATEMENT ALTERNATIVES

Noise abatement alternatives are intended to provide noise level reduction through relocation of noise sources to more compatible areas or reduction at the source. Such alternatives fall into five general categories.

- Runway Usage: Preferred use of runways to focus noise energy into areas of the most compatible land use.
- Flight Routing: Specifying takeoff and approach corridors to take advantage of compatible use areas.
- Flight Procedures: Requested use of noise abatement departure procedures to reduce takeoff noise near or distant from the airport.
- Facility Development: Construction of on-airport operating facilities such as new runways, extension or reorientation of existing runways, noise barriers or installation of navigational aids for improved flight management.

CURRENT NOISE ABATEMENT MEASURES

- Noise abatement takeoff procedures are being used.

- The following departure headings are applicable for noise abatement:

  1. Runways 9L/9R/17/35 – Fly runway heading.
  2. Runway 27L – Turn left to 255 degrees when able.
  3. Runway 27R – Turn left to 240 degrees when able.

- Engine runups are restricted to several sites on the airport. They require prior approval of airport operations and must not exceed 20 minutes in duration. Between 11:00 p.m. and 6:00 a.m., runups are restricted, unless it would delay the departure of a scheduled flight.

POTENTIAL LAND USE ALTERNATIVES

Land use alternatives are those which deal with the mitigation of aircraft noise either through the use of preventive or corrective management techniques. The following steps and procedures are commonly utilized to develop land use alternatives.

- Identify new areas of impact during noise analysis.
- Develop or expand mitigation programs to encompass new areas of impact.

Potential Corrective Measures

- Acquire properties in the most impacted noise areas, normally at levels of 75 DNL or higher.
- Provide sound insulation to noncompatible structures within the lower noise areas, typically 65-75 DNL.
- Provide purchase assurance options to noncompatible residences.

Potential Preventive Measures

- Adopt noise overlay zoning and local codes to incorporate appropriate sound insulation measures.
- Inform potential homebuyers of noise contours and areas of aircraft impacts.
- Outline guidelines to require homebuyer disclosure notices.
- Pursue adoption of noise overlay zones.
- Incorporate comprehensive land use plans into the study.

POTENTIAL PROGRAM MANAGEMENT ALTERNATIVES

Program management measures are those which deal with the implementation and management of either noise abatement or land use management measures. The following are typical measures recommended as program management alternatives:

- Noise communication programs and/or Pilot Awareness Program.
- Establishment of noise program monitoring committee.
- Conducting periodical updates of the Noise Compatibility Program.
- Provide enhancements to the noise monitoring system.

Study Advisory Committee Meeting #2

February 29, 2000

Meeting Minutes
Working Paper

Philadelphia International Airport

Noise Subcommittee Meeting Minutes
February 29, 2000

Committee Members Attending:
Beth Morgera - Citizen Representative, Wilmington, Delaware
Wayne Lamar- Citizen Representative, Tinicum, PA
Dick Lehman - Regional Manager, ATC and Airfield Operations, US Airways
Jim Byers - Environmental Protection Specialist, FAA , Harrisburg, PA
Maggie Powell - Executive Director, Eastwick PAC
Ed Masterson - Support Manager, FAA Control Tower
Cheryl Federline - Director of Marketing, Greater Philadelphia First
Dori McMunn - Executive Director, Historic Fort Mifflin

Airport Staff Attending: Jay Beratan, Thomas Moore, Bill Allen, Jeff Lehrbaum

Introductions: Jon Woodward, Landrum & Brown

Mr. Woodward welcomed the group, lead the introductions of the Landrum & Brown Team, the Airport Staff, and the members of the Sub-Committee. He reviewed the purpose of the meeting, which included:

- Presenting information on noise exposure patterns
- Initial discussions on noise abatement and land use mitigation possibilities
- Committee member input on how to improve noise conditions and on possible noise abatement and mitigation

Where are we on the Part 150 Process - Dave Ingram , Landrum & Brown

Referencing page 1 of the working paper, Mr. Ingram indicated that we are now at a stage in the study process where we are finalizing the baseline existing and future noise exposure contours.

Mr. Ingram explained that to the meeting would focus on noise contours -for 1999, 2000, and 2005 . Both 1999 and 2000 are being presented because stage II

planes were phased out by January 1, 2000. This change did impact the noise contours, which have reduced as a result of the phase out. The noise contours were created with the Integrated Noise Model (INM) version 6.0.

Important Note: Noise contours are developed in an average annual day condition - this considers a year's worth of information. The total number of operations in a year are divided by 365 days to obtain the average annual day. For airplanes that fly during nighttime hours(10 p.m. to 6:59 a.m.) are weighted with an additional 10 decibels per aircraft. Study measures just airport noise.

Maggie Powell: Do you include time when planes are on the ground and producing noise?

Dave Ingram: Yes - The study includes what are called ground run-ups for times when the planes are running engines during or after maintenance. There were 254 engine run-ups, which occurred during 1999.

We are modeling noise at this point in the study; the INM computer program takes a variety of data into consideration, and creates average Day/Night Level (DNL) noise contours for the airport.

The data is incorporated into the model includes runway layouts, operating levels, fleet mix and times of day. Pages 3through 6 in Working Paper #2 show the data used to produce contours for calendar year 1999 conditions.

Beth Morgera: Will abatement procedures be developed for areas outside the noise contours?

Dave Ingram: Yes, we will be looking at abatement outside the contour area.

How did the noise data get created: - Rob Adams

We used a computer model (the INM) to create the contours. As with any model, the INM depends on good accurate information going into the processing. L&B is still refining the data so there will be some slight modifications in future versions of the contours. The contours should be considered as a work in progress at this point.

The current runway layouts are input into the model to represent the baseline airport configuration- Reference page 3 of Working Paper #2.

Operating levels for the baseline 1999 conditions were taken from the sources referenced in the working paper. There are still some refinements to nighttime operations that must be done because some aircraft were delayed into the nighttime hours prior to takeoff and landing. This was not reflected in some of the data obtained, but was shown in the TRACOR Airport Management Information System (TAMIS). Reference Page 4, Table 2 of the working paper.

The aircraft fleet mix includes heavy passenger and cargo jets. The heavy category includes aircraft such as the B-747, B-767, DC-8, and the B-777. The Air Carrier Jet category, includes B-727, B737, DC 9, Airbus 319/320 and other medium and large jets. The regional jets category includes both commercial and commuter jets or privately owned business or charter planes. The final category discussed was propeller aircraft, which includes a wide variety of aircraft. Page 6 of the working paper has a table describing each category in detail. During 1999 about 96% of all jet aircraft were compliant with Stage 3 noise certification noise standards. Reference page 5 of the working paper.

Maggie Powell: What does Stage 2 and 3 mean?

Rob Adams: Stage II is a noisier aircraft, they are older (generally built in the 60's) and weigh over 75,000 pounds. Stage 3 are newer models that are built to the Stage 3 standards, or they are Stage 2aircraft that have received a "hush kit" or have new engines or operating standards that makes them quieter. The phasing out of Stage 2 aircraft was done under federal mandate and was completed January 1, 2000.

Maggie Powell: I would like to suggest developing a glossary of terms like these to make them easier to understand.

Dave Ingram: We are in the process of developing one.

Wayne Lamar: Does the FAA have authority over the process and the noise study?

Jim Byers: Yes, FAA enforces the Stage 2 phase outMaggie Powell: Suggestion: Go to the residents in the communities and ask them to chart what they hear themselves, thus getting the data from people as opposed to computers.

Rob Adams: The regulations require that we use the noise model to predict noise exposure. Bill Allen, the Airport Noise officer collects complaints and feedback from the public. There will be a comparison of the noise modeling data with complaints to determine levels of significance of noise within the surrounding communities. There will also be public workshop to allow for feedback from the public.

Runway Use

The next thing we look at is runway use. The airport operates in two modes depending on the winds: West flow or East flow. Reference page 8 of the working paper. The airport operates in west flow about 70% of the time for jets and propeller aircraft. As seen in the chart on Page 8 of the working paper, green arrows are departures, and blue arrows are arrivals. The chart is divided in commercial jet aircraft and general aviation and propeller aircraft.

Wayne Lamar: What about the river visual approach? Why don't the aircraft fly that approach any more? Most aircraft use the Instrument Landing System (ILS) as opposed to the river visual. In most cases, even if the pilot is using the visual, they are locked onto the instrumentation on the final approach course. Effectively, the final approach of the ILS, like the river visual approach, does not bring the aircraft over Tinnicum Township. Eventually though they do have to line up with the runway.

Flight Tracks
Page 10 of working paper. Flight tracks are lines that represent where the aircraft fly - flight tracks for average conditions are input into the noise model. The model cannot track all flights for an entire year.

We have collected radar data, which shows average operating conditions for departures and arrivals at Philadelphia International Airport. The lightly colored green lines in the exhibit on page 11 of the working paper represent actual aircraft departures; the lightly colored blue lines are actual arrivals. The Radar data collected covered 4 periods during 1999; and includes east and west

flow operations. The radar data is entered into the model and then flight tracks are drawn. The darker green and blue lines represent the flight tracks utilized to model the noise exposure. The majority of west flow (departures) are over the river, which is indicative of the noise abatement procedures currently in effect. Flight paths over Delaware, New Jersey, and other local communities are also represented by the flight tracks seen on page 10 of the working paper. The arrival tracks show how the landing aircraft must be lined up with the runway at some distance from the airport. Most of the time when you see early departure turns they are propeller aircraft which are more maneuverable and can turn at slower speeds and lower altitudes than jets.

Dave Ingram A good point to remember is that the vast majority of jet aircraft departing to the west are over the river".

Aircraft departing to the West climb to 3000 feet Above Ground Level (AGL) before the controllers give them a second turn. , To the East it is 2000 feet AGL before the second turn.

Other considerations: Neal Wolfe

Landrum & Brown also looked at ground engine run-ups - Reference Page 13 of the working paper.

Ground run-ups take place on Taxiways K and P. The nighttime (11:00 p.m. to 6:00 a.m.) preferred location is at taxiway K. A significant factor in runup operations is that the majority of run-ups take place at night and are required to be on runway K with the engines facing west toward the middle of the airport. Aircraft running engines on Taxiway P do so with their engines facing east toward the middle of the airport.

1999 Noise Exposure Map - Rob Adams.

Page 15 in working paper shows the 1999 Existing Conditions Noise Exposure Map with existing land use. They represent the average annual noise contours, not single event noise levels, as dictated by federal standards for noise modeling. The noise contours are depicted at levels of 65, 70 and 75 DNL as specified in Federal Aviation Regulation Part 150.

The gray areas on the map indicate areas that have land uses compatible with airport noise. Those include industrial, farmland, and commercial areas. They

areas in yellow indicate residential areas, which are not compatible with airport noise over the level of 65 DNL.

Lisa Mastropieri: As part of the analysis, the land uses were field verified where the contour lines fell over residential and non-residential areas. The preliminary results indicate that there are approximately 100 residences impacted by the 1999 noise contours at levels of 65 to 70 DNL. Those homes all fall within the Tinicum area.

Rob Adams: The noise contours encompass approximately 10.4 square miles (a good portion of which is over water, and quite a bit over industrial areas) No homes were found within the higher contour levels (70 and 75 DNL). We use the Airport's TAMIS the contours against actual measured noise levels. The contours are currently very close to the monitored noise, and should be even closer when the contours are further refined.

Bill Allen: There are 6 noise monitors around the airport.. The 1999 contour was developed data recorded by the TAMIS.

Maggie Powell: How long can humans listen to these particular decibels before they are hearing impaired?

Jon Woodward: The Occupational Safety and Health Act says humans who are exposed to 90 decibels over 8 hours continuously are at risk. Airport noise is typically nowhere near that level of significance.

Maggie Powell: The biggest complaints are from seniors who are retired and home all-day and concerned with the noise levels. I need to give an intelligent answer to callers who are concerned with noise impacting their hearing.

2000 Baseline Assumptions - Rob Adams

Adams explained that looking at 2000 they are going to assume that runways use percentages, and flight tracks will remain the same, as will the airport layout. What will change are the number and types of aircraft that are flying.

The majority of the projected growth in operations forecasted for 2000 is in the cargo/heavy jet category. Reference Page 17 in the working paper. Page 18 of the working paper contains a very detailed table of 2000 fleet mix and operations.

The fleet mix also changes because of the phase out of all remaining Stage 2 noisier aircraft. Roughly 28% of cargo and air carrier aircraft are retrofitted or re-

engined Stage 2 planes to make them Stage 3 compliant. Those aircraft can be significant in the amount of noise they generate.

2000 Projected Noise Contour:

Reference pages 20 and 21 in the working paper. The 2000 Baseline noise contours are depicted over the existing land use map, as were the 1999 conditions. The comparison of the two noise contours from 1999 and 2000 show that there is a reduction in the area impacted that is a direct result of the phase out of Stage 2 aircraft. The reduction in the noise is primarily centered around the primary departure corridor west of the airport. The arrival noise patterns changed little because of the increase in heavy cargo planes , which are often noisier on arrival than some aircraft are on departure.

The impacted residences within the contours (65-70 DNL only) Drops to about 64 homes for 2000 conditions. They encompass approximately 8.75 square miles.

2005 Future Baseline Noise Conditions:

Again there is no change projected in runways and flight tracks. This is a forecasted increase in the numbers of operations as well as a change in the fleet mix. There is a forecasted total growth of 19.7% over 2000 conditions. The forecast shows a 40% increase in the number of cargo and heavy aircraft operations from 2000 to 2005. This is mostly due to more large international flights.

It is anticipated that the vast majority of the retrofitted Stage 2 aircraft will be eliminated from the 2005 fleet mix. It is projected that the number will be down to 8% from the 28% forecast for the year 2000.

Maggie Powell: What is the average life span of an airplane?

John Van Woensel: It depends on the number of take-off and landing cycles, which cause stress on the airframes. Most aircraft operate for about 30 years.

Beth Morgera: Are planes checked periodically to verify that they are noise complaint?

Dave Ingram: They don't check individual planes once they are certified.

Jeff Lehrbaum: Do hush kits break down?

Dave Ingram: They do inspect the kits when periodic maintenance is performed.

Beth Morgera: But no-one is checking individual planes.

Dave Ingram: No. There is no ongoing program for individual planes, the planes are certified to be Stage 3 compliant whether manufactured to that level for retrofit/hushkitted to meet Stage 3. Maggie Powell: Does the propeller aircraft include helicopters?

Rob Adams: No - we did look at helicopters, but there were not enough to warrant including them in the noise modeling.

Another trend in the 2005 fleet mix is that regional jets will continue to see increases in use.

2005 Noise Contour.

Reference page 25 of the working paper for 2005 noise contour.

Reference page 26 of the working paper for a comparison of 2000 baseline to 2005 baseline conditions.

There is a growth in the 2005 contour along the arrival paths to Runways 9R and 27L, and reductions along the departure paths southwest of the airport, due primarily to the changes in the fleet mix. As discussed under 2000 conditions, the increase in wide-bodied aircraft landing at Philadelphia International are the primary reason the contours grow under the arrival paths. Those aircraft are significantly noisier landing than many smaller aircraft are taking off.

There is a total growth in the contours of about .33 square miles or a 3.8% increase of the area within the entire contour. There is also a growth in the number of homes impacted, with approximately 73 homes projected to be inside the 65 to 70 DNL contour.

Beth Morgera: Will this mean that there will be more noise further out because the larger airplanes have to line-up for arrival further out?

Dave Ingram: There probably won't be much change for arrival patterns, but there may be a chance to change the altitudes at which the aircraft intercept the final approach. This would keep the aircraft higher over those areas 10-15 miles straight out from the runways, and aid in abating single event noise.

Maggie Powell: How come you only have three runways?

Rob Adams: It is there (the new runway (8/26) is there, and is a part of the contour, but it is hidden by a line of the contour.

In closing, some assumptions are subject change as we continue looking at nighttime operations and aircraft weights.

Noise Abatement Alternative Discussion – Jon Woodward.

As we finalize the baseline contours, then we will be able to look at mitigation and abatement of the noise to better noise exposure conditions created by the airport.

Most of the contours overlie compatible land use areas. There are also very small residential areas that are impacted, still entirely within the Tinicum area. There are areas that are considered compatible with airport noise that could also benefit from noise abatement.

Jon Woodward reviewed several possible abatement categories – Reference page 29 of the working paper:

Flight Location: Generally, this is moving the planes to where they won't impact residential areas as much. Flow reversal operation can be effective, but only really with cargo carrier hub airports. It has worked effectively at some other airports and we could do something similar in Philadelphia to move more of the noise contour over the river.

Flight Frequency: This involves moving operations to times when they will have less impact.

Modification of Intercept Altitudes: Aircraft landing from the West intercept the glide path at 1,800 ft. and hold that altitude for several miles approaching the

approach course. The feeling was that the aircraft should be increased to higher altitudes to abate some of the noise.

On-Board Instrumentation: Instruments such as a Flight Management System (FMS) or Global Positioning System (GPS) the pilot can fly a more precise course. By using those types of systems, procedures can be designed to allow aircraft to track point to point and fly more compatible routes.

Ground Activity Restrictions
Local Restrictions on Run-ups: This can be a variety of different types of measures to reduce noise exposure from engine testing. There is a facility for this in Chicago called a Ground Runup Enclosure (GRE). These facilities can reduce noise from runups significantly, both day and night. It is possible that a GRE will be studies for Philadelphia International.

Power Backs: Powering back from the parking gates is seldom used at most airports now– this is not applicable at Philadelphia.
Facility Modifications
New Runways or Extensions for Flight Relocation – not applicable until at least the year 2005; for a 150 you deal with expected airport changes in a five-year period (2000 to 2005). There may or may not be changes to airport layout by 2005. If there are, they will be considered as part of the future conditions noise exposure map.
Terminal Area Improvements
Taxiway Relocations
High Speed Exits
Hush Houses

All the above will be assessed and discussed as part of the master plan.
Berms and barriers are utilized for blocking noise sources from sensitive receivers, but only at very short distances. There does not appear to be a need for either at Philadelphia.

Lisa Mastropieri of DMJM Aviation discussed the baseline land use they had assembled. She and Alan A'Hara discussed the following:

In addition to working with the airport on where/how aircraft fly, we've been doing a lot of work with the townships to assemble land use data and create base maps (provided in working paper #2). Part of the noise compatibility program will not only look at altering noise patterns through operational means, but also look to communities to alter the ways they accomplish land use and zoning. Some of that can be as simple as zoning/land use criteria for re-development in

the community that takes into account where the community is in relation to the airport noise exposure patterns.

One of the key things to keep in mind is that one reason we developed the contours is so we can define a program within to take into account the operational measures as well as mitigation measures for land use within the 65 DNL noise contours.

The FAA can approve different measures for funding. : There may be opportunities to conduct some soundproofing of homes within the 65 DNL area. We are going to look at various measures, but within the 65 DNL only, which is the level of significance. See pages 30-34 of working paper #2.

We have already looked at some of the sensitive areas and will now intensify the analysis on those areas and count the homes impacted within the contours. Remember, this is a joint effort with community leaders and the airport to make the land use programs successful.

Land Acquisition: This is a land use measure whereby the airport and FAA decide to purchase some of the homes within the noise contours. Based on the initial findings, it is not likely that it will be necessary for the airport to purchase homes for noise mitigation.

Purchase Assurance: If someone wants to sell his or her home, purchase assurance can be used. It allows the owner to try and sell their property and if unsuccessful the airport can purchase it at appraised value and sell it themselves.

Sound Insulation: Homes within certain levels of the noise contours are offered sound insulation in return for an easement for the airport to fly aircraft over the dwellings. Homes must have the noise reduced to the levels shown in Table 13 of Working Paper #2.

We will talk to the community leaders to encourage more comprehensive land use programs. As far as zoning, if some areas are currently zoned for residential use and have no homes on them, we'd like to get that changed so no homes can be built on this land. We will also encourage future compatible zoning in areas near the airport.
We will encourage future development in areas within or adjacent to the noise contours which considers sound insulation as part of the architecture. This will reduce the chance of future incompatibilities from new construction.

Avigation Easements: This involves purchasing the right to overfly residences without providing any mitigation. Avigation easements alone are not effective noise mitigation tools and may not be considered further in the Noise Compatibility Program study.

Purchasing Development Rights: In undeveloped areas, the airport can purchase rights from an owner to control the development of incompatible uses. This helps prevent incompatible development on properties near the airport.

Redevelopment Program: If the airport purchases properties they will develop a plan to use the land so it remains compatible with the airport.

Building Codes: Modify the existing building codes to include sound insulation of new construction near the airport.
Fair Disclosure: Homebuyers are provided information to make them aware that their intended purchase is located within or near the noise contours.

Pursue the adoption of a noise overlay zone: This will become an area in which homes are identified in relationto the noise contours. This becomes a defined ordinance if adopted.

The Noise Compatibility Program study is seeking input from those who live in the local communities. Once the public information sessions are in full operation, this will occur.

Q: WL: Why don't we take this program to the Tinnicum Commissioners to explain fully.

A: We plan on conducting public meetings for that purpose.

GIS and Land Use Patterns – Brad Rolf

Reference page 32 in Working Paper #2.

Geographic Information System (GIS) is a computer base system that displays land use data with the noise contours to determine which areas are compatible and which are incompatible with the noise contours.

INM – generated data using formulas and algorithms. The GIS maps give information on the population, homes, population mix and other related data, to show what exactly is being impacted by the noise. The study team will do detailed field studies to determine exactly what the impacts are once the contours are finalized.

Noise Abatement Measures – Jon Woodward

- Divergent departure turns – Issue a 15 degree divergent departure turn for aircraft departing to the east. This will take them over the old Navy yards, which are compatible with aircraft, noise.

- Implement flow reversal operations from and to the west for late night operations. This typically works well during cargo operations, which Philadelphia International has during late night hours. This would keep the aircraft away from populated areas during the times they impact people the most.

- Designate runway 9R/27L as the primary late night runways. This would allow for departing and arriving aircraft to be over the river when close in to the airport, and away from populated areas.

- Designate departure corridors with Flight Management Systems or Global Positioning System for noise abatement. As discussed earlier this allows the pilot to fly a more refined course and avoid populated areas as much as possible.

- Designate arrival corridors with Flight Management Systems or Global Positioning System for noise abatement. See above statement.

- Encourage the use of noise abatement procedures such as thrust reduction during departures.

- Limit visual approaches during nighttime hours by restricting arrivals to a minimum of a four-mile straight-in approach.

- Modify informal missed approach or go around procedures to keep aircraft away from populated areas during this sometimes noisy phase of flight.

- Modify pattern altitudes or implement descent profiles for arrivals. Bring planes in higher and reduce the noise when arriving aircraft begin to turn final approach.

- Technology - -Modify the way airplanes are flown re: Flight Management Systems or Global Positioning System for noise abatement.

Feedback from the group on other measures:

Abatement:

Wayne Lamar: Relocate plane run-ups. Institute a procedure for complaint based policing of run-ups.

Neal Wolfe: Consider creating a curfew for run-ups.

Mitigation:

Maggie Powell: Build sound barriers to reduce sound from run-ups.

Maggie Powell: Comment - none of the airlines or UPS is community friendly. During the flood, no one offered to help. Continue this noise committee or implement a community relations program to encourage the airport and airlines to support the community and listen to their concerns.

Maggie Powell: Build trust in the community. Sunoco was a good model for community relations as evidenced by their response to the recent oil spill.

Jon Woodward: Take the information you received today and take it back to your communities to discuss ideas on how to abate and mitigate noise.

Beth Morgera: It is difficult to get back to the community, because I am the only one representing my area. There are several community groups that should be represented.

Answ: We will follow-up to get more information and include them in the future.

Next Steps - Dave Ingram

We will continue to seek feedback and will be planning public workshops to provide information on the process for the near future.

Maggie Powell: When you go into the community have more focus on the communities being approached with larger maps of those areas.

We will refine the noise contours to better reflect nighttime operations and aircraft characteristics relevant to weights and distances traveled. We will also begin looking at changes to the contours that may occur from possible mitigation efforts.

We are going to look at the noise abatement ideas we have, as well as those provided in the meeting.

We will also continue to refine the existing land us, and develop the initial land use mitigation alternatives.

NOISE COMPATIBILITY PROGRAM STUDY

FAR PART 150

FEBRUARY 2000

Working Paper #2: Prepared by the Landrum & Brown Team

Philadelphia International Airport

Study Advisory Sub-Committee Meeting - Noise
February 29, 2000
AGENDA

1) Introductions

2) Where are we in the Part 150 Process

3) 1999 Existing Condition
   a) Runway Layout and Description
   b) 1999 Operating Levels and Fleet Mix
   c) Runway Utilization
   d) Flight Tracks
   e) 1999 Noise Exposure Pattern

4) 2000 Baseline Condition
   a) 2000 Operating Conditions
   b) 2000 Forecasted Operating Levels and Fleet Mix
   c) 2000 Noise Exposure Pattern

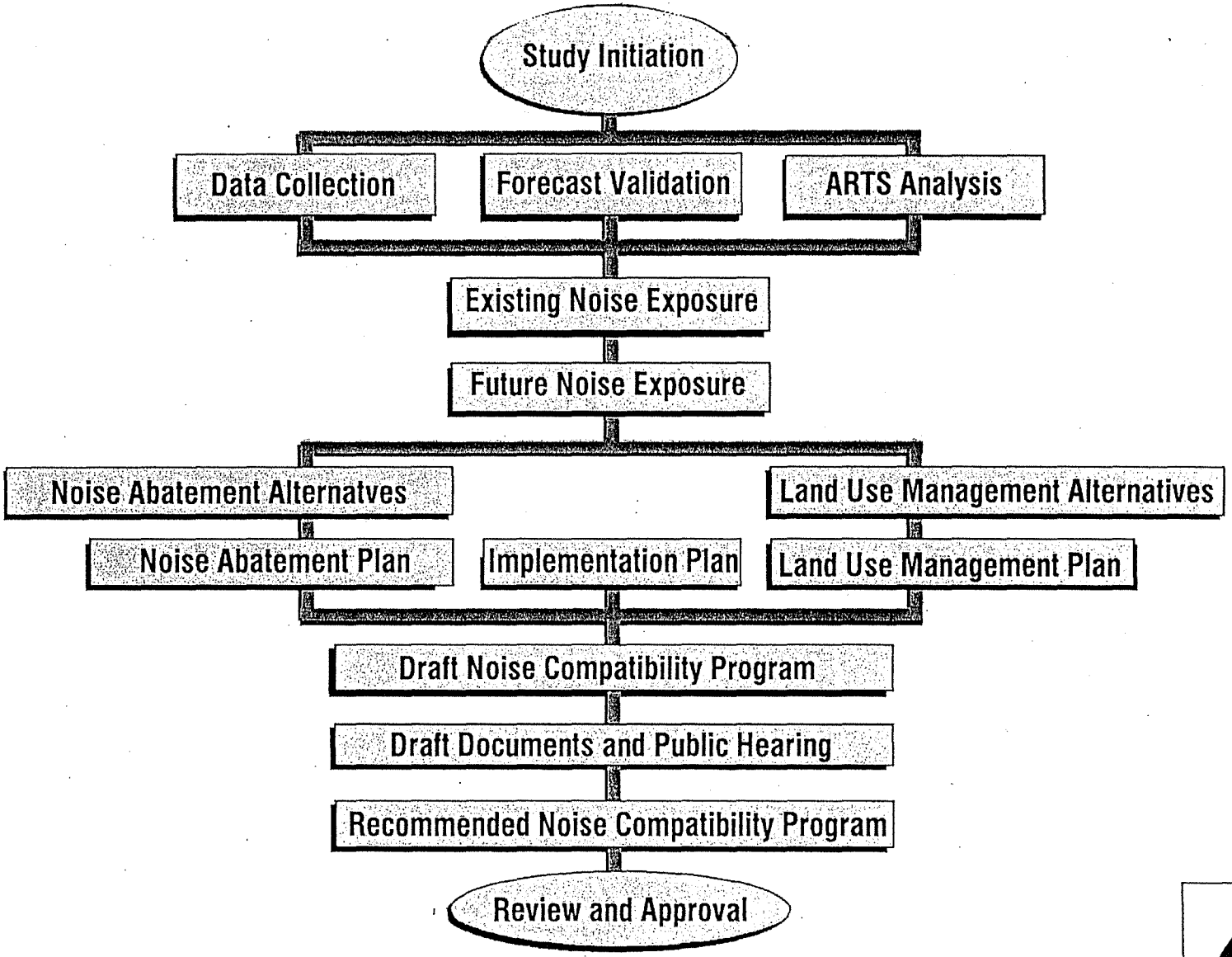
5) 2005 Future Baseline Condition
   a) 2005 Operating Conditions
   b) 2005 Forecasted Operating Levels and Fleet Mix
   c) 2005 Noise Exposure Pattern

6) Noise Abatement Alternative Discussion

7) Existing Land Use
   a) Methodology
   b) Existing Land Use map
   c) Additional Data Needs

8) Next Steps

Noise Compatibility Planning Process



Philadelphia International Airport

- NOISE EXPOSURE MAPS -

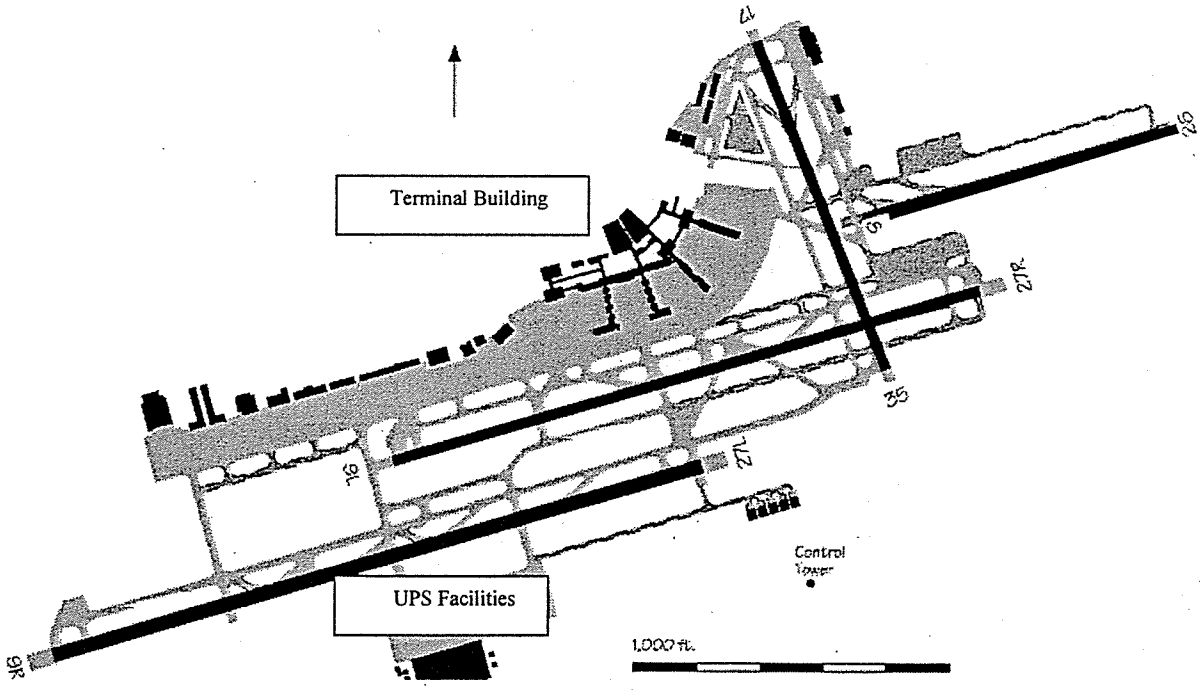
- This Part 150 will prepare noise exposure maps for three separate conditions:
  - Existing Conditions (1999)
  - Baseline Conditions (2000) forecasted from 1999 data
  - Future Conditions (2005)
- Noise exposure contours are created using the Integrated Noise Model (INM) Version 6.0, which is the latest version of the model.
- The INM requires the following data:
  - Runway Layout
  - Airport Operating Levels
  - Fleet Mix
  - Runway Use Percentages
  - Flight Tracks

RUNWAY LAYOUT & FACT SHEET

- Location: Philadelphia/Tinicum Township, PA.
- Began Operation: 1925
- Runways:

Name	Length	Width
9L/27R	9,500 ft	150 ft
9R/27L	10,499 ft	200 ft
8/26	5,000 ft	150 ft
17/35	5,459 ft	150 ft

Runway 8/26 opened on December 3, 1999.



OPERATING LEVELS
1999 EXISITNG CONDITIONS

- Operating Data for the 1999 Existing Condition was gathered from:
  1999 Official Airline Guide (OAG) data
  1999 Operating Records from the ATCT
  1999 Landing Fee Reports from the Airport
  1999 Operating Data from the TRACOR Airport Management Information System (TAMIS)

- Total operations for the Existing Conditions period (January 1999-December 1999) were approximately 480,000.

- Four primary User Groups at the Airport:
  - Cargo/Heavy Jet - Cargo airlines and international air carrier aircraft
  - Air Carrier Jet - Domestic air carrier aircraft
  - Regional Jet/Business Jet - Commuter jet aircraft and general aviation jet aircraft
  - Propeller Aircraft - Commuter turboprop and general aviation propeller aircraft

TABLE 2
AIRCRAFT OPERATIONS BY USER GROUP - 1999 EXISTING CONDITION
PHILADELPHIA INTERNATIONAL AIRPORT

User Group	1999 Existing	% of Total
Cargo/Heavy Jet	34,310	7.1%
Air Carrier Jet	246,740	51.4%
Regional/Business Jet	45,990	9.6%
Propeller Aircraft	153,300	31.9%
Total	480,340	100%

FLEET MIX
1999 EXISTING CONDITIONS

- Fleet mix refers to the specific types of aircraft that operate at the Airport.
- Because INM uses an average annual day to calculate DNL noise levels, the number of annual operations are divided by 365 and assigned to specific aircraft types in accordance with their distribution throughout the year.
- Cargo/Heavy Jet aircraft flew 7% of the total operations and included Stage 2 Boeing 727 and DC9, Hushkitted Boeing 727 and DC9, Boeing 747/767/777, Airbus 310, DC870, and DC1030.
- Air Carrier Jet aircraft flew 51% of the total operations and included Stage 2 Boeing 727, 737-200, and DC9, Hushkitted Boeing 727/737-200, Boeing 737-300, Boeing 757, Airbus 319/320, Hushkitted DC9, Fokker 100, and MD80/88.
- Roughly 96% of the Cargo/Heavy and Air Carrier operations were flown by Stage 3 aircraft.
- Regional Jet/Business Jet aircraft flew 10% of the total operations and included Canadair Regional Jets and Business Jets.
- Propeller aircraft flew the remaining 32% of the total operations and included Commuter Turbo-prop aircraft and single-engine general aviation aircraft.
- INM applies a 10dB penalty to all nighttime (10:00 p.m. to 6:59 a.m.) operations. For the 1999 Existing Condition, approximately 10%-15% of the total operations occurred during nighttime hours.

1999 Average Day Operations By Aircraft Type

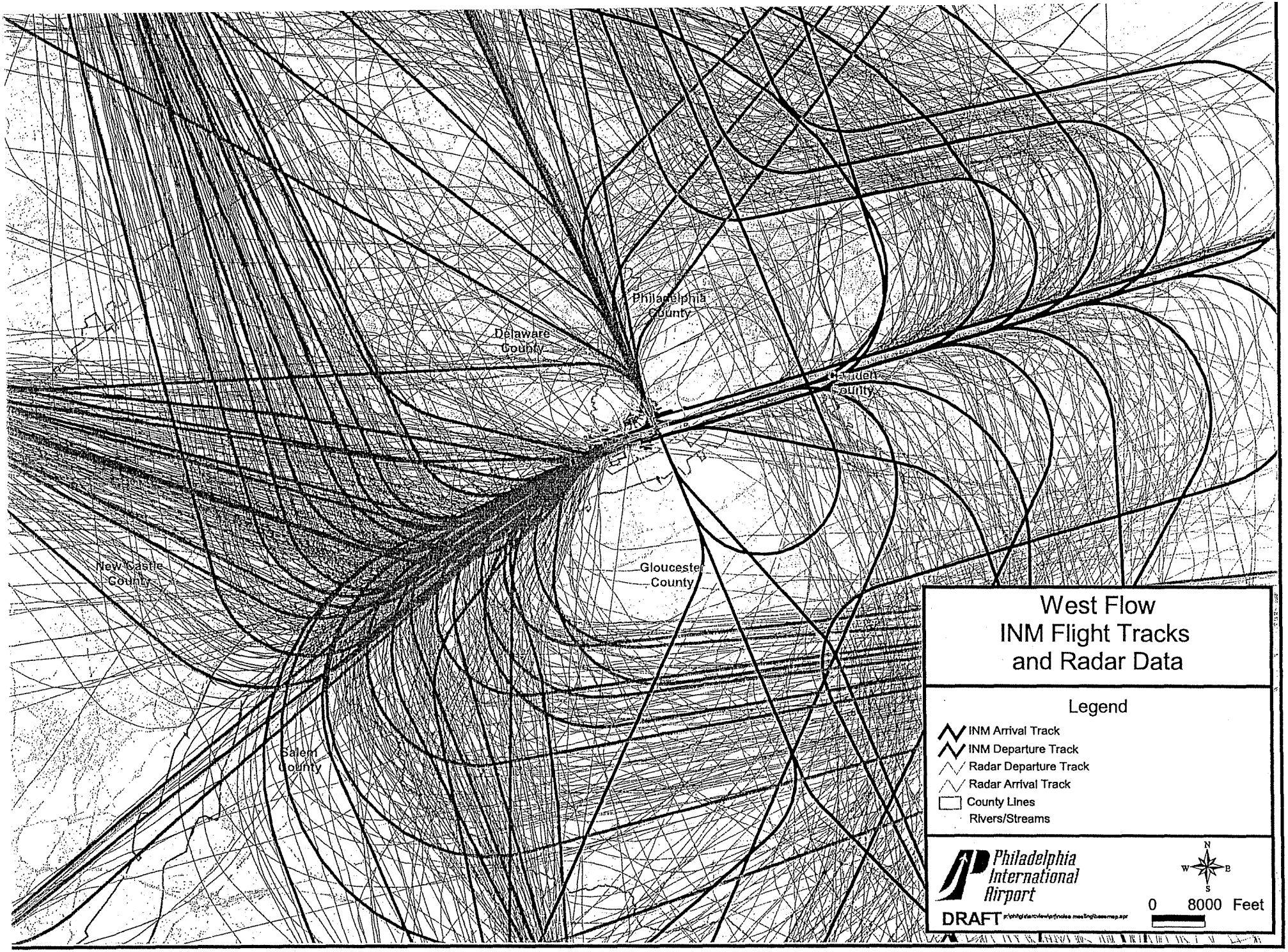
User Group & INM Type	Part 36 Stage	Aircraft Type	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Day	Total Night
Cargo/Heavy Jets								
727EM1	3	Boeing 727-100 (retrofit)	0	1	0	1	0	2
727EM2	3	Boeing 727-200 (retrofit)	1	1	0	2	1	3
727Q15	2	Boeing 727-200	0	1	0	1	0	2
727QF	3	Boeing 727-100 (reengine)	0	4	0	4	0	8
74720A	3	Boeing 747-200A	1	1	2	0	3	1
757PW	3	Boeing 757-200	0	4	0	3	0	7
757RR	3	Boeing 757-200	0	2	0	3	0	5
767300	3	Boeing 767-300	3	2	5	0	8	2
767CF6	3	Boeing 767-200	9	0	9	0	18	0
777200	3	Boeing 777-200	2	0	2	0	4	0
A310	3	Airbus 310	0	2	0	2	0	4
A320	3	Airbus 320	0	1	1	0	1	1
DC93LW	3	DC-9 30 Series (retrofit)	1	1	1	1	2	2
DC1030	3	DC-10 30 Series	1	0	1	0	2	0
DC870	3	DC-8 70 Series	7	2	3	6	10	8
Subtotal			**25**	**22**	**24**	**23**	**49**	**45**
Air Carrier Jets								
727EM2	3	Boeing 727-200 (retrofit)	13	2	15	0	28	2
727Q15	2	Boeing 727-200	4	2	5	1	9	3
737300	3	Boeing 737-300	33	3	30	6	63	9
7373B2	3	Boeing 737-300	31	1	32	0	63	1
737400	3	Boeing 737-400	41	2	42	1	83	3
737500	3	Boeing 737-500	8	1	7	2	15	3
737800	3	Boeing 737-800	2	0	2	0	4	0
737D17	2	Boeing 737-200	3	0	2	1	5	1
737N17	3	Boeing 737-200 (retrofit)	21	1	22	0	43	1
737N9	3	Boeing 737-200 (retrofit)	4	0	4	0	8	0
757PW	3	Boeing 757-200	3	1	3	1	6	2
757RR	3	Boeing 757-200	19	3	22	0	41	3
A319	3	Airbus 319	10	1	11	0	21	1
A320	3	Airbus 320	14	7	20	1	34	8
DC93LW	3	DC-9 30 Series (retrofit)	42	0	40	3	82	3
DC95HW	3	DC-9 50 Series (retrofit)	8	0	8	1	16	1
DC9Q7	2	DC-9 10 Series	3	1	3	0	6	1
DC9Q9	2	DC-9 30 Series	3	1	3	0	6	1
F10065	3	Fokker 100	23	1	23	1	46	2
MD82/83	3	MD-82 Series	24	2	24	2	48	4
Subtotal			**309**	**29**	**318**	**20**	**627**	**49**
Regional/Business Jets								
CL600	N	Business Jet	3	4	5	2	8	6
CL601	N	Canadair Regional Jet	27	1	28	0	55	1
LEAR35	N	Business Jet	16	1	16	1	32	2
MU3001	N	Business Jet	10	1	10	1	20	2
Subtotal			**56**	**7**	**59**	**4**	**115**	**11**
Propeller Aircraft								
BEC58P	N	Twin Engine Prop	11	0	11	0	22	0
CNA441	N	Light Turboprop	2	0	2	0	4	0
DHC6	N	Commuter prop	60	6	63	3	123	9
DHC8	N	Commuter prop	93	4	95	2	188	6
SF340	N	Saab 340	32	2	31	3	63	5
Subtotal			**198**	**12**	**202**	**8**	**400**	**20**
Grand Total			**588**	**70**	**603**	**55**	**1191**	**125**

RUNWAY USE PERCENTAGES
1999, 2000, AND 2005 BASELINE CONDITIONS

- Runway use data was extracted from a combination of TAMIS data and discussions with Airport staff to determine the runway use percentages for each user group.
- The airport operates in one of two operating modes based on wind direction:
  - West Flow - 70% of the time.
  - East Flow - 30% of the time.
- Commercial Jet aircraft primarily use Runways 9R/27L and 9L/27R for arrivals and departures.
  - West Flow - 68% of departures on outboard runway (27L).
    65% of arrivals on inboard runway (27R).
  - East Flow - 28% of departures on inboard runway (9L).
    25% of arrivals on outboard runway (9R).
- General Aviation and Commuter Propeller aircraft use a combination of all the runways for arrivals and departures.
  - West Flow - Primarily depart on Runway 35 and 27L.
    Primarily arrive on Runway 35 and 27R.
  - East Flow - Primarily depart on Runways 17 and 9L.
    Primarily arrive on Runways 17 and 9R.

FLIGHT TRACKS
1999, 2000, AND 2005 BASELINE CONDITIONS

- Flight tracks are lines that represent where aircraft fly when arriving or departing the Airport.
- Radar data was collected from the TAMIS system during portions of 1999 to represent both West Flow and East Flow.
- The radar data was compiled into jet flights and propeller flights, and representative flight tracks were developed for each group and were used for the 1999, 2000, and 2005 conditions.
- Over 110 INM departure flight tracks and 40 INM arrival flight tracks were developed to represent the flight corridors around the Airport.


Philadelphia County
Delaware County
Camden County
New Castle County
Gloucester County
Salem County
West Flow
INM Flight Tracks
and Radar Data
Legend
INM Arrival Track
INM Departure Track
Radar Departure Track
Radar Arrival Track
County Lines
Rivers/Streams
Philadelphia International Airport
DRAFT
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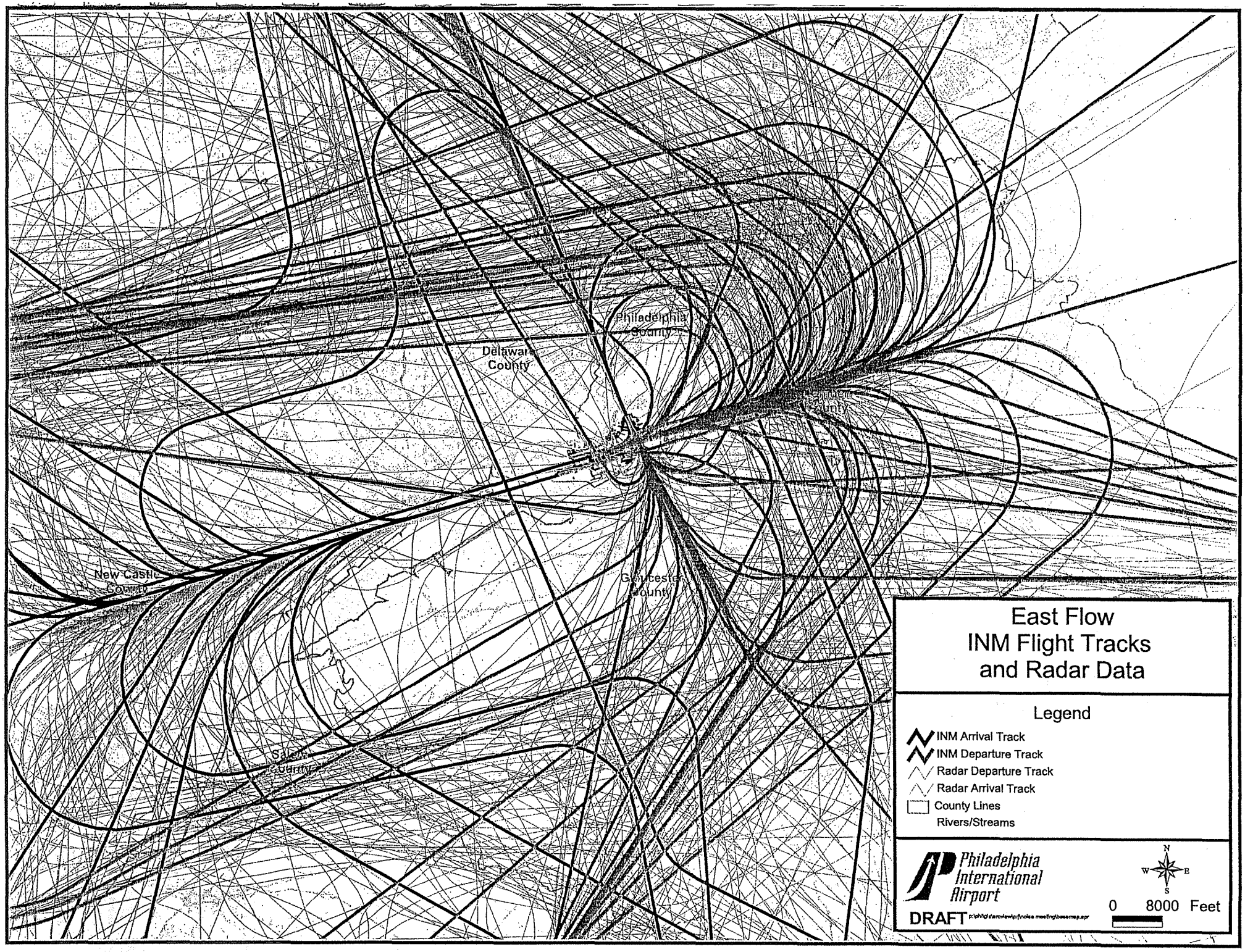
Philadelphia County
Delaware County
New Castle County
Gloucester County
Salem County
East Flow
INM Flight Tracks
and Radar Data
Legend
INM Arrival Track
INM Departure Track
Radar Departure Track
Radar Arrival Track
County Lines
Rivers/Streams
Philadelphia International Airport
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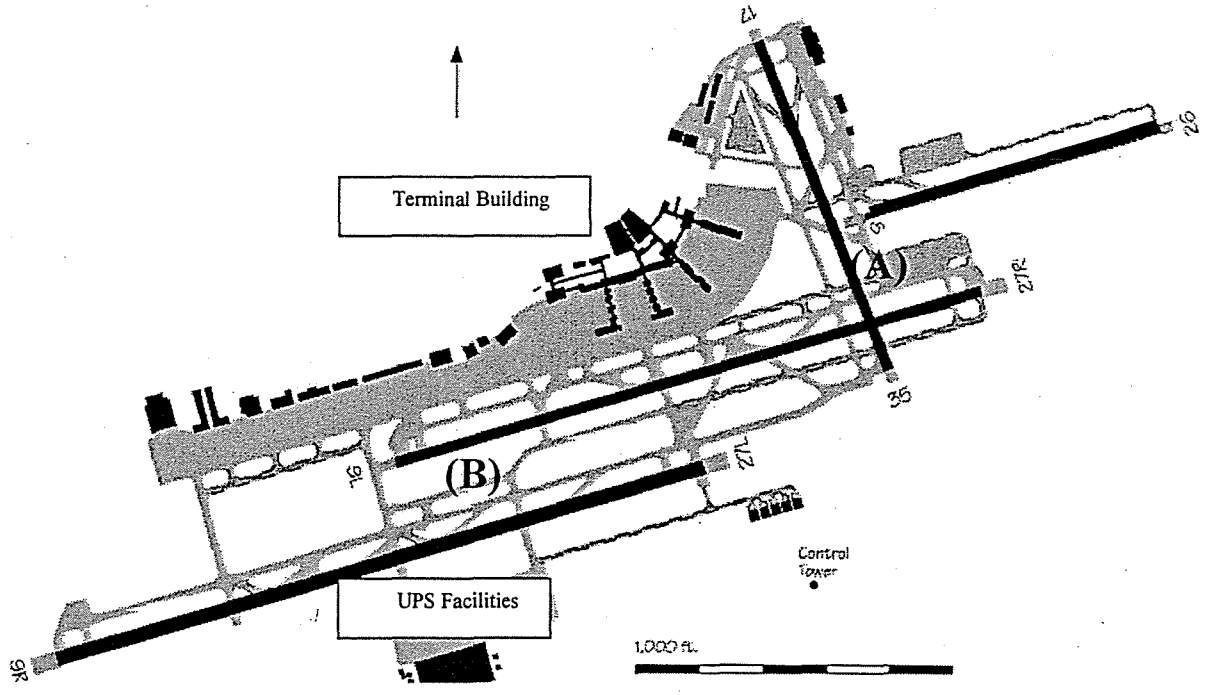
OTHER CONSIDERATIONS
1999 EXISTING CONDITIONS

- Engine Run-up information was gathered for 1999 from the Airport and inputted into the INM for processing.
- Engine run-ups occur at two centrally located positions on the airfield.
    - (A) Taxiway K at H facing east (preferred).
    - (B) Taxiway P at W facing west
- Roughly 65% of the engine run-ups occurred during the nighttime (10:00 p.m. to 6:59 a.m.).
- Run-ups between 11:00 p.m. and 6:00 a.m. are conducted at the preferred location.
- Average duration of engine run-ups is approximately 17 minutes.
- Typical aircraft types include Boeing 727/737/757, DC9, MD82, and Airbus 319/320 aircraft.



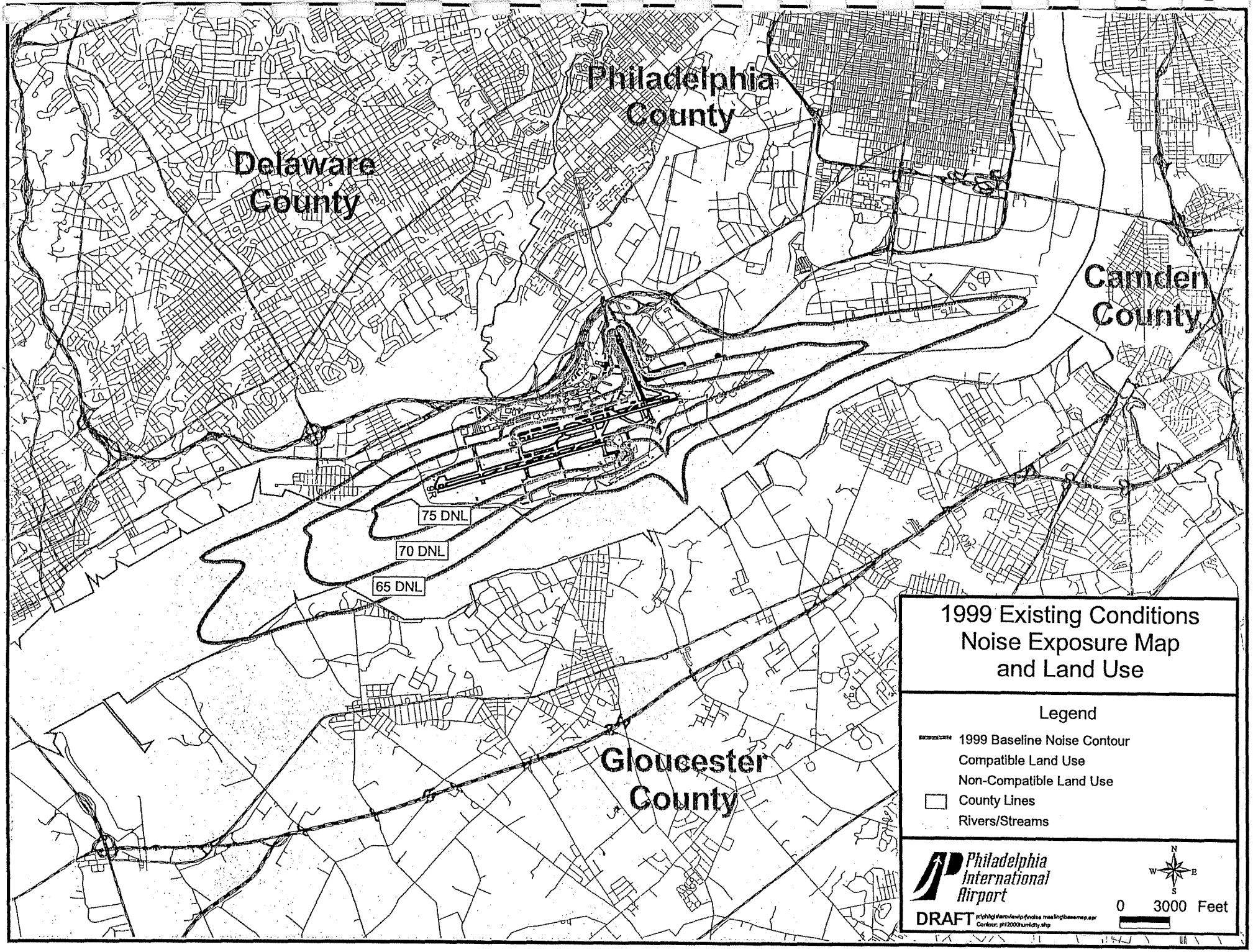
NOISE EXPOSURE PATTERN
1999 EXISTING CONDITIONS

- The 1999 Existing Conditions noise contour contains roughly 10.42 square miles within the 65 DNL.
- The size and shape of the contours reflect the runway use and the flight tracks.
- Approximately 100 homes inside the 65 DNL noise contour (based on 1990 Census Data).

NOISE EXPOSURE IMPACT - AREA (SQUARE MILES)
PHILADELPHIA INTERNATIONAL AIRPORT

Noise Contour	65-70 DNL	70-75 DNL	75+ DNL	65 + DNL
1999 Existing Contour	5.48	2.74	2.20	10.42

Source: Landrum & Brown, 2000.


Philadelphia County
Delaware County
Camden County
Gloucester County
75 DNL
70 DNL
65 DNL
1999 Existing Conditions Noise Exposure Map and Land Use
Legend
1999 Baseline Noise Contour
Compatible Land Use
Non-Compatible Land Use
County Lines
Rivers/Streams
Philadelphia International Airport
DRAFT
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3000 Feet

OPERATIONAL INPUTS
2000 BASELINE CONDITIONS

- The 2000 Baseline Condition is based upon the forecasted 1999 data and assumes the same operating conditions as the 1999 Existing Condition.
  - Runway Layout - No Change
  - Runway Use Percentages - No Change
  - Flight Tracks - No Change

- The 2000 Baseline Condition assumes anticipated growth in operations and some changes in the fleet mix due to the phase out of Stage 2 aircraft.

- Engine run-ups were adjusted to reflect anticipated number of operations and the fleet mix.

OPERATING LEVELS
2000 EXISTING CONDITIONS

- 2000 Baseline operating levels were based on 1999 actual operations and adjusted to reflect one year of growth. Approximately 496,000.
- Cargo/Heavy Jet aircraft are forecasted to fly 8% of the total operations and would include Hushkitted Boeing 727 cargo freighters, Boeing 747/767/777, Airbus 310, DC870, and DC1030.
- Air Carrier Jet are forecasted to fly 51% of the total operations and would include Hushkitted Boeing 727/737-200, Boeing 737-300, Boeing 757, Airbus 319/320, Hushkitted DC9, Fokker 100, and MD80/88.
- Roughly 28% of the Cargo/Heavy and Air Carrier operations would be flown by aircraft that have been retrofitted or hushkitted to meet Stage 3 noise limits.
- Regional Jet/Business Jet aircraft are projected to fly 10% of the total operations and include Canadair Regional Jets and Business Jets.
- Propeller aircraft would fly the remaining 31% of the total operations and include Commuter Turbo-prop aircraft and single-engine general aviation aircraft.
- Approximately 10%-15% of the total operations are forecasted to occur during nighttime hours.

AIRCRAFT OPERATIONS BY USER GROUP - 2000 BASELINE CONDITION
PHILADELPHIA INTERNATIONAL AIRPORT

User Group	1999 Existing	2000 Baseline	% Change
Cargo/Heavy Jet	34,310	38,690	12.8%
Air Carrier Jet	246,740	252,580	2.3%
Regional/Business Jet	45,990	49,640	7.9%
Propeller Aircraft	153,300	154,760	0.9%
Total	480,340	495,670	3.2%

2000 Baseline Condition Average Day Operations By Aircraft Type

User Group & INM Type	Part 36 Stage	Aircraft Type	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Day	Total Night
Cargo/Heavy Jets								
727EM1	3	Boeing 727-100 (retrofit)	0	1	0	1	0	2
727EM2	3	Boeing 727-200 (retrofit)	1	2	0	3	1	5
727QF	3	Boeing 727-100 (reengine)	0	4	0	4	0	8
74720A	3	Boeing 747-200A	2	2	4	0	6	2
757PW	3	Boeing 757-200	0	4	0	3	0	7
757RR	3	Boeing 757-200	0	2	0	3	0	5
767300	3	Boeing 767-300	3	2	5	0	8	2
767CF6	3	Boeing 767-200	11	0	11	0	22	0
777200	3	Boeing 777-200	2	0	2	0	4	0
A310	3	Airbus 310	0	3	0	3	0	6
A320	3	Airbus 320	0	1	1	0	1	1
DC93LW	3	DC-9 30 Series (retrofit)	1	1	1	1	2	2
DC1030	3	DC-10 30 Series	2	0	2	0	4	0
DC870	3	DC-8 70 Series	7	2	3	6	10	8
Subtotal			**29**	**24**	**29**	**24**	**58**	**48**
Air Carrier Jets								
727EM2	3	Boeing 727-200 (retrofit)	15	4	18	1	33	5
737300	3	Boeing 737-300	35	3	32	6	67	9
7373B2	3	Boeing 737-300	31	1	32	0	63	1
737400	3	Boeing 737-400	41	2	42	1	83	3
737500	3	Boeing 737-500	8	1	7	2	15	3
737800	3	Boeing 737-800	2	0	2	0	4	0
737N17	3	Boeing 737-200 (retrofit)	24	1	24	1	48	2
737N9	3	Boeing 737-200 (retrofit)	4	0	4	0	8	0
757PW	3	Boeing 757-200	5	1	5	1	10	2
757RR	3	Boeing 757-200	22	3	25	0	47	3
A319	3	Airbus 319	13	2	15	0	28	2
A320	3	Airbus 320	15	8	22	1	37	9
DC93LW	3	DC-9 30 Series (retrofit)	44	1	42	3	86	4
DC95HW	3	DC-9 50 Series (retrofit)	8	1	8	1	16	2
F10065	3	Fokker 100	23	1	23	1	46	2
MD82	3	MD-82 Series	19	0	19	1	38	1
MD83	3	MD-88 Series	6	2	6	1	12	3
Subtotal			**315**	**31**	**326**	**20**	**641**	**51**
Regional/Business Jets								
CL600	N	Business Jet	3	4	5	2	8	6
CL601	N	Canadair Regional Jet	31	1	31	1	62	2
LEAR35	N	Business Jet	16	2	17	1	33	3
MU3001	N	Business Jet	10	1	10	1	20	2
Subtotal			**60**	**8**	**63**	**5**	**123**	**13**
Propeller Aircraft								
BEC58P	N	Twin Engine Prop	11	0	11	0	22	0
CNA441	N	Light Turboprop	2	0	2	0	4	0
DHC6	N	Commuter prop	60	6	63	3	123	9
DHC8	N	Commuter prop	95	4	97	2	192	6
SF340	N	Saab 340	32	2	31	3	63	5
Subtotal			**200**	**12**	**204**	**8**	**404**	**20**
Grand Total			**604**	**75**	**622**	**57**	**1226**	**132**

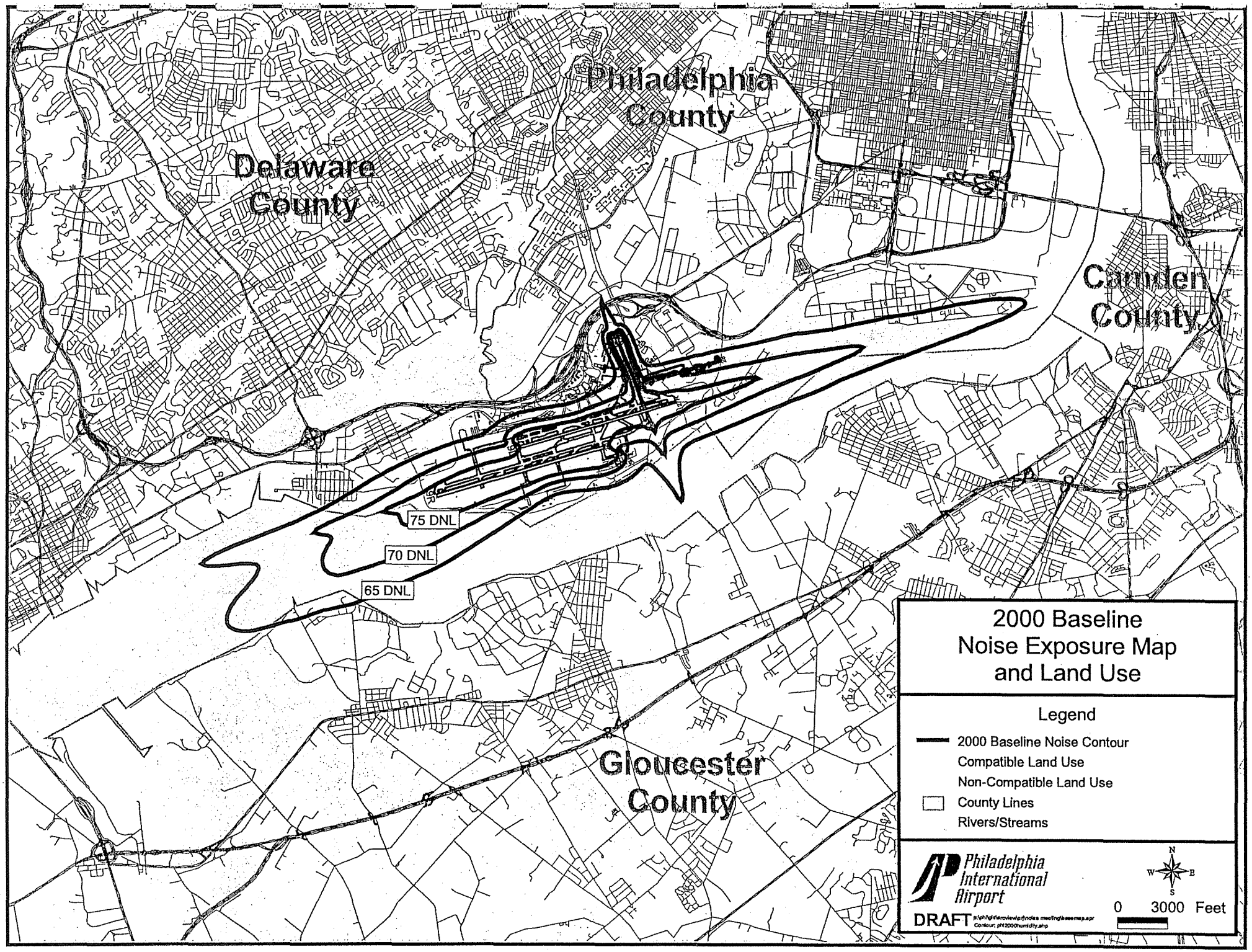
NOISE EXPOSURE PATTERN
2000 BASELINE CONDITIONS

- The 2000 Baseline Condition noise contour contains roughly 8.75 square miles within the 65 DNL, which is 16% (1.67 square miles) smaller than the 1999 Existing Condition.
- The 2000 Baseline Condition noise contours is similar in shape to the 1999 Existing Condition noise contour, however it is smaller along the departure paths due to the phase out of Stage 2 aircraft.
- Approximately 64 homes inside the 65 DNL noise contour (based on 1990 Census Data).

NOISE EXPOSURE IMPACT - AREA (SQUARE MILES)
PHILADELPHIA INTERNATIONAL AIRPORT

Noise Contour	65-70 DNL	70-75 DNL	75+ DNL	65 + DNL
1999 Existing Contour	5.48	2.74	2.20	10.42
2000 Baseline Contour	4.77	2.31	1.67	8.75
% Change 1999 vs 2000	-13.0%	-15.7%	-24.1%	-16.0%

Source: Landrum & Brown, 2000.


Philadelphia County
Delaware County
Camden County
Gloucester County
75 DNL
70 DNL
65 DNL
2000 Baseline Noise Exposure Map and Land Use
Legend
2000 Baseline Noise Contour
Compatible Land Use
Non-Compatible Land Use
County Lines
Rivers/Streams
Philadelphia International Airport
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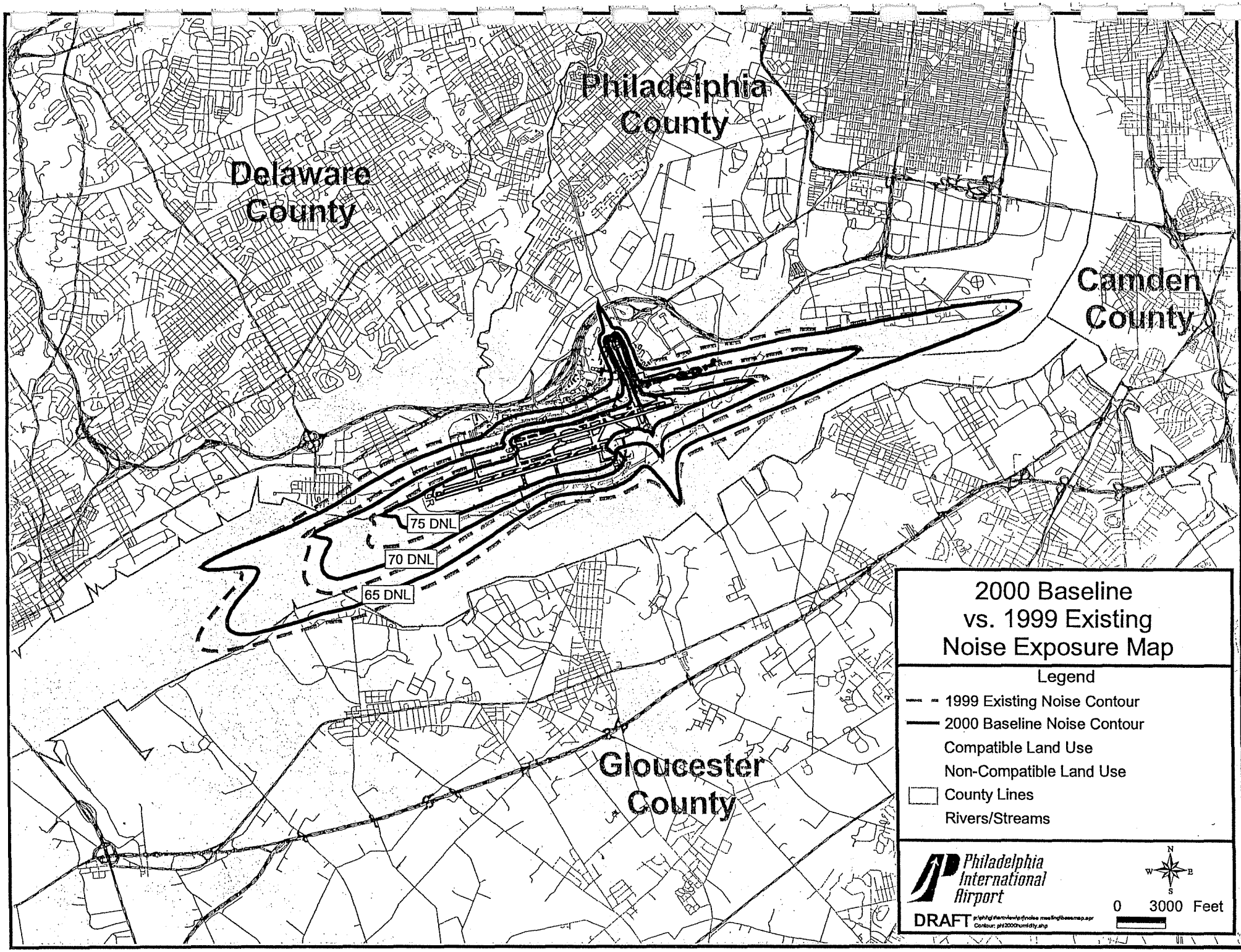
Philadelphia County
Delaware County
Camden County
Gloucester County
75 DNL
70 DNL
65 DNL
2000 Baseline vs. 1999 Existing Noise Exposure Map
Legend
1999 Existing Noise Contour
2000 Baseline Noise Contour
Compatible Land Use
Non-Compatible Land Use
County Lines
Rivers/Streams
Philadelphia International Airport
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OPERATIONAL INPUTS
2005 FUTURE CONDITIONS

- The 2005 Future Condition assumes the same operating conditions as the 1999 and 2000 Baseline Condition.
  - Runway Layout - No Change
  - Runway Use Percentages - No Change
  - Flight Tracks - No Change

- The 2005 Future Condition will be used to evaluate all proposed alternative conditions.

- The 2005 Future Condition assumes anticipated growth in operations and some changes in the fleet mix.

- Engine run-ups were adjusted to reflect anticipated number of operations and the fleet mix.

OPERATING LEVELS
2005 FUTURE CONDITIONS

- Forecasted operations for 2005 show an increase in total operations to approximately 593,500 - a 19% increase from 2000 levels.
- Cargo/Heavy Jet aircraft operations are forecasted to grow by 40% by 2005. The majority of this growth is in the widebody passenger aircraft flying international routes.
- The remaining categories of aircraft are expected to increase annual operations by 14% to 19%.

AIRCRAFT OPERATIONS BY USER - 2005 FUTURE CONDITIONS
PHILADELPHIA INTERNATIONAL AIRPORT

User Group	2000 Baseline	2005 Future	% Change
Cargo/Heavy Jet	38,690	54,020	40.0%
Air Carrier Jet	252,580	303,680	26.7%
Regional/Business Jet	49,640	59,130	19.1%
Propeller Aircraft	154,760	176,660	14.2%
Total	495,670	593,490	19.7%

FLEET MIX
2005 FUTURE CONDITIONS

- It is anticipated that by the year 2005, airlines will have retired or sold-off a significant portion of their retrofitted or hushkitted 727, 737-200, and DC-9 aircraft. (28% retrofits in 2000 to 8% retrofits in 2005)

- The 40% increase in Heavy Jet aircraft will result in a larger number of 747, 767, 777, and the introduction of the A330.

- Operations by the Air Carrier fleet will primarily be made up of Boeing 717, 737-300/400/500/800, MD80/88, Airbus 319/320, and 757-200 aircraft.

- Regional Jet aircraft will continue to increase in use at the Airport consisting of CRJ, Embraer, Dornier and others.

- Approximately 12%-17% of the total operations are anticipated to occur during nighttime hours.

2005 Future Baseline Condition Average Day Operations By Aircraft Type

User Group & INM Type	Part 36 Stage	Aircraft Type	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Day	Total Night
Cargo/Heavy Jets								
727EM2	3	Boeing 727-200 (retrofit)	1	1	0	2	1	3
727QF	3	Boeing 727-100 (reengine)	0	6	0	6	0	12
74720A	3	Boeing 747-200A	2	8	4	6	6	14
757PW	3	Boeing 757-200	0	5	1	4	1	9
757RR	3	Boeing 757-200	0	2	0	2	0	4
767300	3	Boeing 767-300	10	2	11	1	21	3
767CF6	3	Boeing 767-200	19	0	19	0	38	0
777200	3	Boeing 777-200	1	0	1	0	2	0
A330	3	Airbus 330	4	0	4	0	8	0
DC95HW	3	DC-9 50 Series (retrofit)	2	0	0	2	2	2
DC870	3	DC-8 70 Series	5	6	3	8	8	14
Subtotal			**44**	**30**	**43**	**31**	**87**	**61**
Air Carrier Jets								
717	3	Boeing 717	4	0	4	0	8	0
727EM2	3	Boeing 727-200 (retrofit)	2	0	2	0	4	0
737300	3	Boeing 737-300	116	5	116	5	232	10
737400	3	Boeing 737-400	45	4	46	3	91	7
737500	3	Boeing 737-500	13	2	13	2	26	4
737800	3	Boeing 737-800	14	7	14	7	28	14
737N17	3	Boeing 737-200 (retrofit)	13	1	13	1	26	2
757PW	3	Boeing 757-200	9	2	10	1	19	3
757RR	3	Boeing 757-200	21	5	26	0	47	5
A319	3	Airbus 319	68	9	74	3	142	12
A320	3	Airbus 320	32	7	34	5	66	12
DC93LW	3	DC-9 30 Series (retrofit)	6	0	6	0	12	0
DC95HW	3	DC-9 50 Series (retrofit)	5	0	5	0	10	0
F10065	3	Fokker 100	13	2	13	2	26	4
MD82	3	MD-82 Series	6	0	6	0	12	0
MD83	3	MD-88 Series	5	0	5	0	10	0
Subtotal			**372**	**44**	**387**	**29**	**759**	**73**
Regional/Business Jets								
CL600	N	Business Jet	8	0	8	0	16	0
CL601	N	Canadair Regional Jet	20	2	19	3	39	5
EMB145		Embraer Regional Jet	18	1	16	3	34	4
LEAR35	N	Business Jet	19	1	19	1	38	2
MU3001	N	Business Jet	12	0	12	0	24	0
Subtotal			**77**	**4**	**74**	**7**	**151**	**11**
Propeller Aircraft								
BEC58P	N	Twin Engine Prop	4	9	5	8	9	17
DHC6	N	Commuter prop	39	2	38	3	77	5
DHC8	N	Commuter prop	134	4	132	6	266	10
DHC830	N	Commuter prop	6	0	6	0	12	0
HS748A	N	Commuter prop	5	0	4	1	9	1
SF340	N	Saab 340	36	3	34	5	70	8
Subtotal			**224**	**18**	**219**	**23**	**443**	**41**
Grand Total			**717**	**96**	**723**	**90**	**1440**	**186**

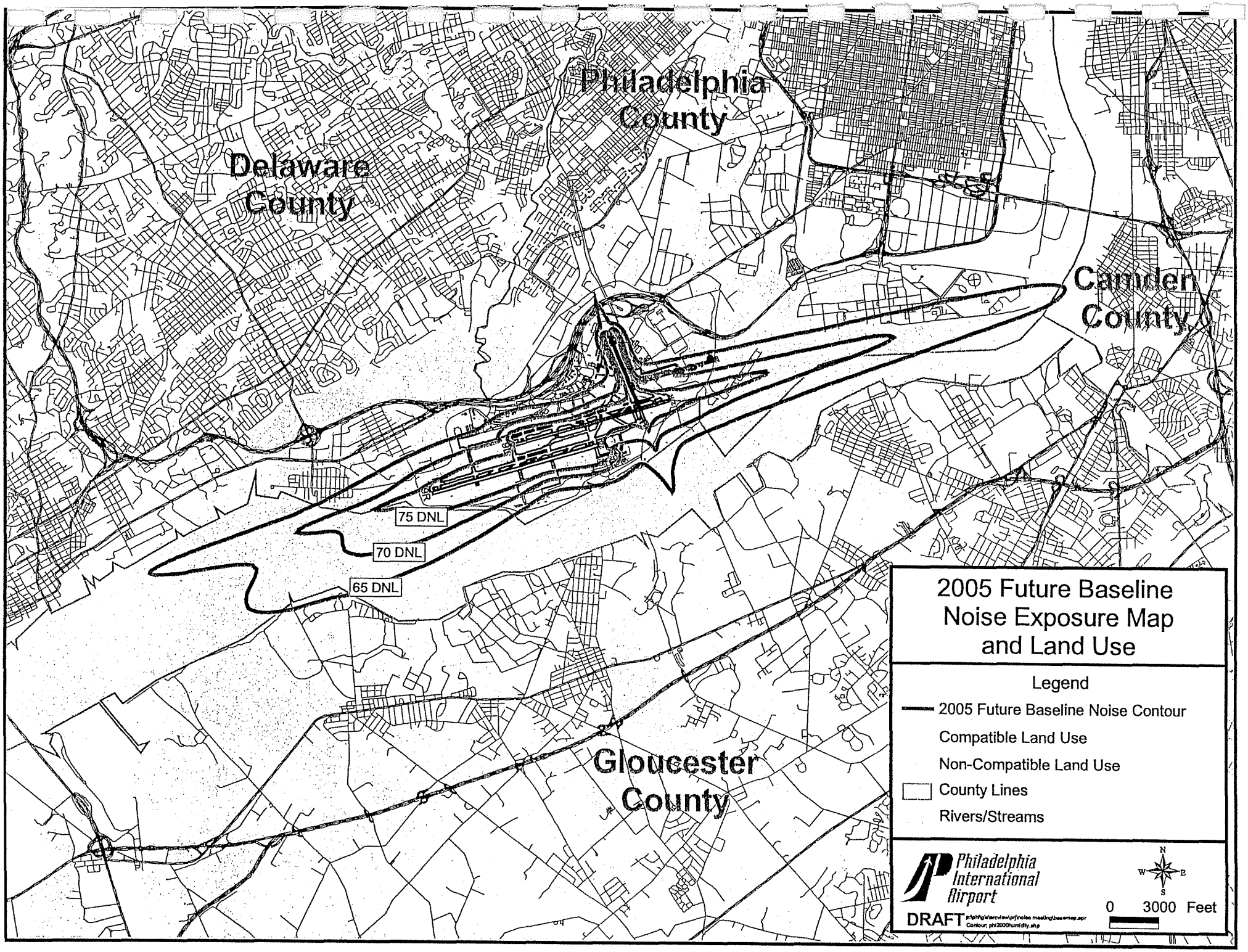
2005 FUTURE CONDITION
NOISE EXPOSURE PATTERN

- The 2005 future condition noise contour is larger than the 2000 Baseline Contour by 0.33 sq. miles (3.8%).
- The increases in the 2005 future condition contour occur primarily along the arrival paths to the two primary runways both east and west of the Airport.
    - Widebody aircraft are generally louder on arrival than smaller aircraft due to larger airframes.
    - Forecasted growth (+40%) in widebody aircraft operations.
- The 2005 future condition contour decreases in size south west of the airport along the departure corridor.
    - Hushkitted Stage 3 aircraft are generally louder than manufactured or Stage 3 aircraft.
    - Hushkitted Stage 3 aircraft operations are forecasted to reduce to 8% of the Cargo/Heavy and Air Carrier operations.
- Approximately 73 homes inside the 65 DNL noise contour (based on 1990 Census Data).

NOISE EXPOSURE IMPACT - AREA (SQUARE MILES)
PHILADELPHIA INTERNATIONAL AIRPORT

Noise Contour	65-70 DNL	70-75 DNL	75+ DNL	65 + DNL
1999 Existing Contour	5.48	2.74	2.20	10.42
2000 Baseline Contour	4.77	2.31	1.67	8.75
2005 Future Contour	5.15	2.28	1.65	9.08
% Change 1999 vs 2005	-6.0%	-16.8%	-25.0%	-12.9%
% Change 2000 vs 2005	+5.5%	-1.2%	-1.2%	+3.8%

Source: Landrum & Brown, 2000.


Philadelphia County
Delaware County
Camden County
Gloucester County
75 DNL
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2005 Future Baseline Noise Exposure Map and Land Use
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2005 Future Baseline Noise Contour
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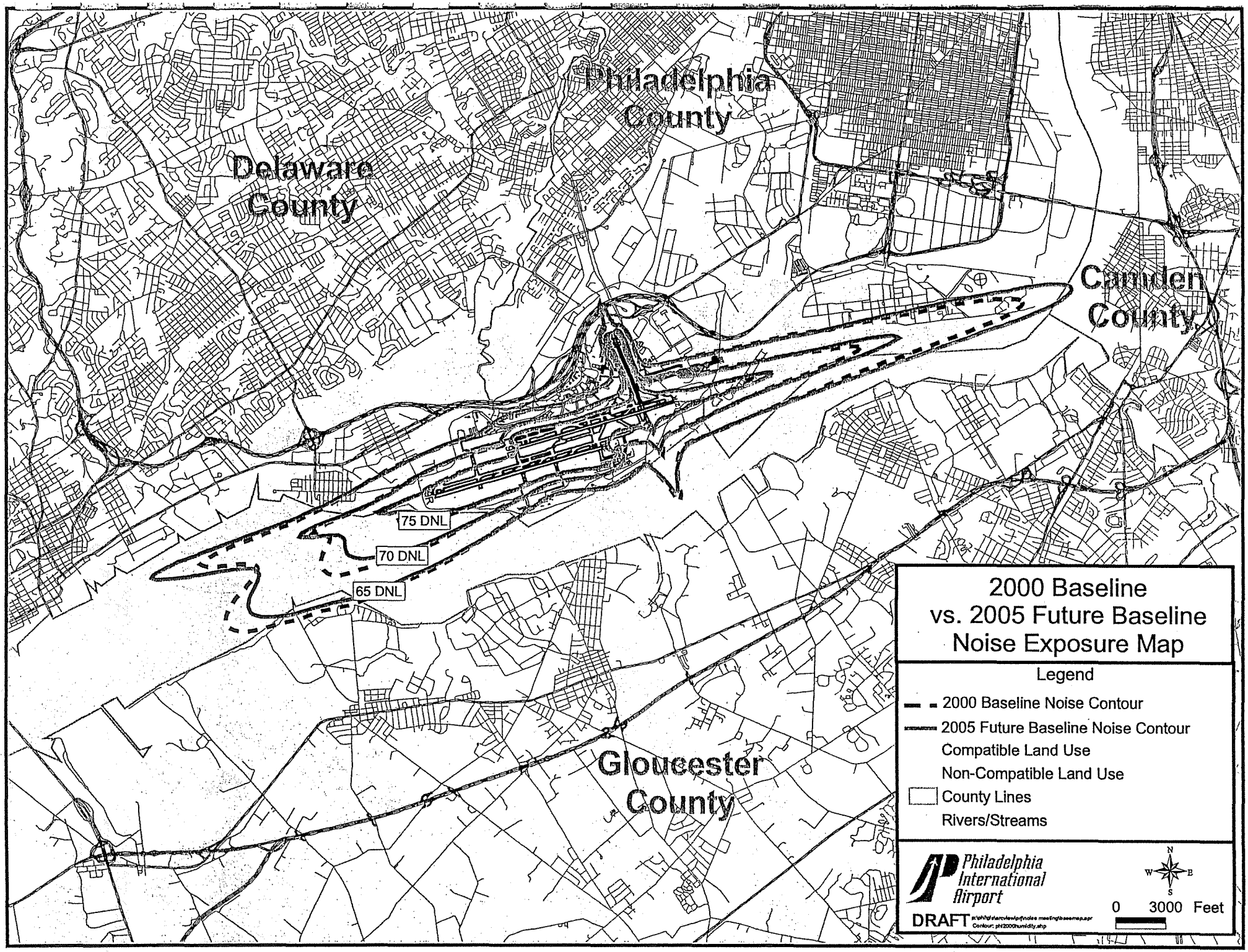
Philadelphia County
Delaware County
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Gloucester County
75 DNL
70 DNL
65 DNL
2000 Baseline vs. 2005 Future Baseline Noise Exposure Map
Legend
2000 Baseline Noise Contour
2005 Future Baseline Noise Contour
Compatible Land Use
Non-Compatible Land Use
County Lines
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NOISE ABATEMENT ALTERNATIVES

- Noise abatement alternatives are intended to provide noise level reduction through its relocation to more compatible areas or its reduction at the source. Such alternatives fall into five general categories.

- Flight Frequency: Use of different runways may be preferred to focus noise energy into areas of most compatible land use.

- Flight Location: Specifications of takeoff and approach corridors to take advantage of compatibly used areas.

- Flight Management: Requested use of noise abatement departure procedures to reduce takeoff noise near or at distance from the airport.

- Facility Modifications: Construction of on-airport operating facilities and noise barriers or installation of navigational aids for improved flight management.

- Other: Imposition of operating restrictions to limit numbers or time of flights or types of aircraft.

LAND USE COMPATIBILITY AND MITIGATION

Land use planning and the adoption, administration, and enforcement of zoning regulations is within the exclusive authority of Pennsylvania's local municipal governments within each of their jurisdictions. This includes the authority for airport compatible land use planning. The FAA does not have the authority to exercise land use control in a local government's jurisdiction. The FAA may however, provide guidance to the airport to encourage compatible land use planning in their area, and the FAR Part 150 process is one way to involve, educate and encourage local communities located within the airport environs to review their current and future land use and zoning policies.

For this FAR Part 150 Study, a data base of noise sensitive land uses is currently being developed using the most up to date information available from the local municipalities as well as the Delaware Valley Regional Planning Commission (DVRPC). Once compiled, the land use information will be incorporated onto the study area basemap that will then be used to depict the noise contours developed in all phases of the study.

FAR Part 150 requires that we identify land uses located within the existing and future noise contours which are normally compatible or incompatible in terms of the DNL noise exposure to individuals. To accomplish this the FAA has developed guidelines for land use compatibility around airports that are contained in the regulation itself and in **Table 13**.

These guidelines provide a means to determine whether or not a particular type of land use may be eligible to participate in various mitigation measures that result from the Part 150 process. Compatible or incompatible land use is determined by comparing the predicted DNL value shown on the noise maps, with the values given in the Table. For instance, as shown in the table, residential uses are not compatible with the 65 DNL or greater. In addition to residential uses, Part 150 requires that we identify if any noise sensitive public buildings such as schools, hospitals, and properties on or eligible for the National Register of Historic Places.

Philadelphia International Airport is located within two municipalities and counties. The northeastern portion of the airport lies within the City of Philadelphia, Philadelphia County; the southwestern portion lies within Tinicum Township, Delaware County. Development on the airport is subject to the permit application and approval requirements of the respective jurisdictions.

North of the Runway 17 end the 65 DNL contour remains for the most part on airport property with the exception of I-95. The contours do not extend into the neighborhood community of Eastwick.

East of the Runway 9R end, the 65 DNL encompasses non-airport property located in Philadelphia which is mostly developed and dominated by commercial, industrial, and governmental land uses.

West of the airport a portion of Tinicum Township is located within the 65 DNL contour. Pockets of residential development are interspersed throughout larger tracts of commercial, light and heavy industrial land uses as well as some open space. The only types of land use located in the 70 DNL in Tinicum are industrial and open space.

There are no schools, churches, hospitals, or other healthcare facilities located within the 65 DNL or greater contours. However Fort Mifflin, a national historic site, is located completely within the 70 DNL noise contour.

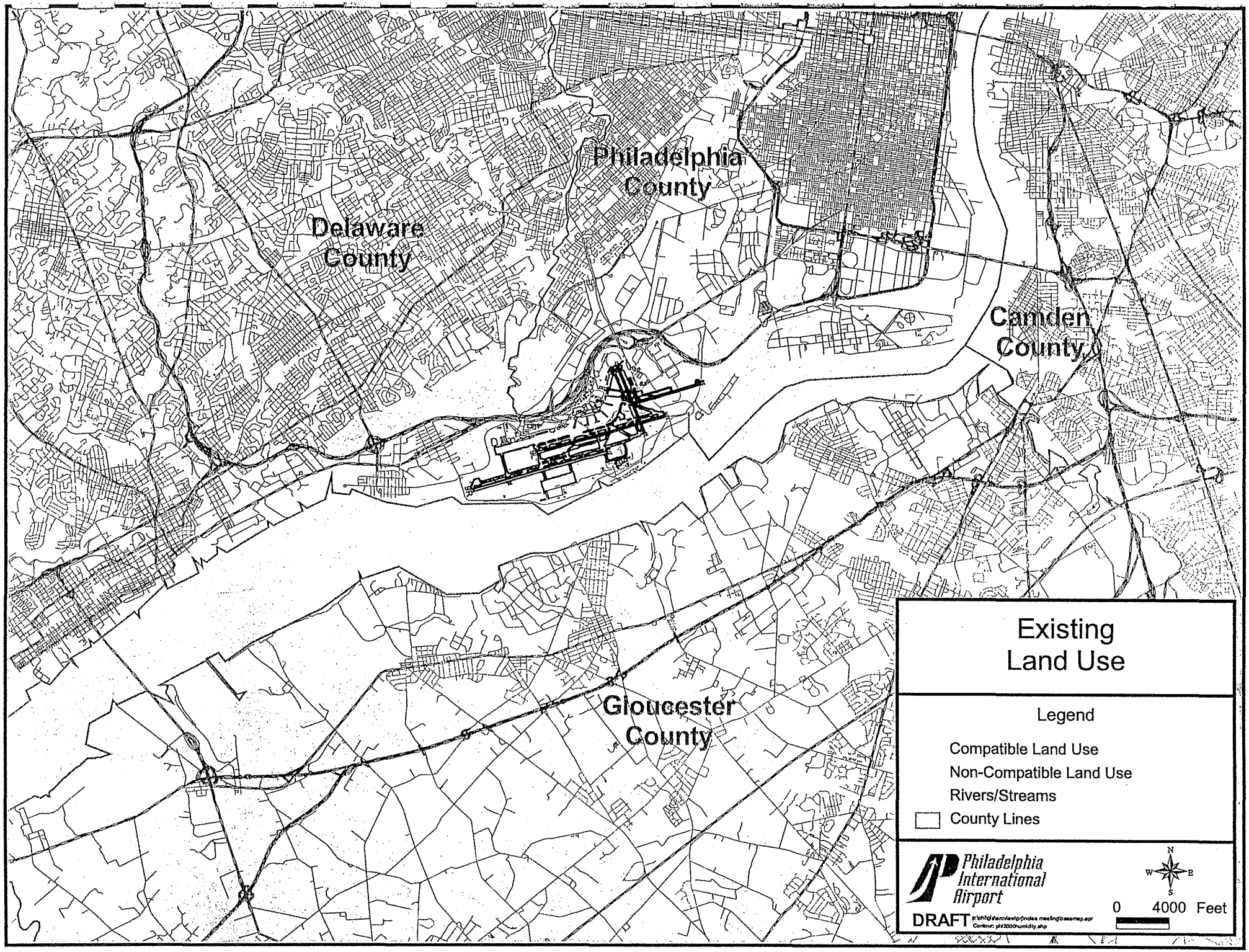
The southwest portion of the 65 DNL contour does cover a small area located in Greenwich New Jersey. The land that is located within the contour is compatible however, consisting of marshland and industrial - tank farm use.

Other than the industrial and open space impacts previously mentioned in Tinicum Township, there are no other 70 DNL impacts off-airport.

After all incompatible land uses have been identified the nest step is to look for ways to reduce noise levels or mitigation measures that may make the land use compatible. Keep in mind that determining which land use management controls are best for this particular airport will be a joint effort among the Division of Aviation and the responsible local municipalities.

Potential land use mitigation measures that may be analyzed in depth could include any of the following:

- Land acquisition programs
- Purchase assurance programs
- Sound insulation programs for existing incompatible structures.
- Encourage and continue comprehensive planning and urban growth management
- Zoning changes to prohibit future incompatible uses.
- Require acoustical treatment of new structures.
- Avigation easements
- Purchase development rights in undeveloped areas
- Establish a redevelopment program to remove existing incompatible uses and replace with compatible ones.
- Modify building codes
- Enact a fair disclosure ordinance


Philadelphia County
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Existing Land Use
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Rivers/Streams
County Lines
Philadelphia International Airport
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TABLE 13
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
(PAGE 1 OF 2)
PHILADELPHIA INTERNATIONAL AIRPORT

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (DNL) IN DECIBELS

LAND USE	Below 65	Over 65-70	70-75	75-80	80-85	85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
PUBLIC USE						
Schools, hospitals, nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	N[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail -- building materials, hardware, and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade, general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
production, and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y	Y[5]	N[5]	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusement, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

TABLE 13
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
(PAGE 2 OF 2)
PHILADELPHIA INTERNATIONAL AIRPORT

Key To Table 4

Y (Yes) Land Use and related structures compatible without restrictions.

N (No) Land Use and related structures are not compatible and should be prohibited.

NLR Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure

25, 30, 35 Land Use and related structures generally compatible; measures to achieve or NLR of 25, 30, or 35dB must be incorporated into design and construction of structure.

Notes for Table 4

1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25dB and 30dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR or 20dB, thus, the reduction requirements are often stated as 5, 10, or 15dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
5. Land use compatible provided special sound reinforcement systems are installed.
6. Residential buildings require a NLR of 25.
7. Residential buildings require a NLR of 30.
8. Residential buildings not permitted.

Source: *FAR Part 150 Airport Noise Compatibility Planning*, Appendix A, Table 1.

NEXT STEPS

With the information gathered at today's meeting we will continue to update the land use inventory data, correct the land use base map, and begin the analysis of noise abatement and mitigation techniques. The next meeting of the SAC Noise Sub-Committee will focus on the noise abatement strategies and land use management and noise mitigation strategies.

- Noise Abatement Alternatives -- Can anything more be accomplished without adversely impacting the role of the Airport in the national air transportation system? Are any of the current measures compounding the problem?
- Land Use Management Techniques -- How do we encourage the implementation of airport-compatible land use controls and deal with potential additional impacts on existing and developing residential communities?
- Mitigation Program Measures -- Develop mitigation program measures

Study Advisory Committee Meeting #3

April 17, 2001

Letter of Invite
Sign In Sheets
Meeting Minutes
Working Paper

CITY OF PHILADELPHIA

Philadelphia International Airport
Terminal E
Philadelphia, Pennsylvania 19153

(215) 937-6760
FAX (215) 937-6759

CHARLES J. ISDELL
Director of Aviation

April 6, 2001

Jim Byers
Environmental Protection Specialist
Federal Aviation Administration
3911 Hartzdale Drive, Suite 1100
Camp Hill, PA 17011

Dear Mr. Byers:

On behalf of the City of Philadelphia and the Philadelphia International Airport, you are invited to a meeting of the Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Program (NCP) Study Advisory Committee (SAC). The meeting has been scheduled for Tuesday, April 17, 2001 at the Airport Hilton Hotel, 4509 Island Avenue, from 9:30 a.m. until 12:00 p.m. Refreshments will be served.

Your attendance at this important meeting will provide you with the opportunity to directly participate in NCP planning, a process that is intended to ultimately result in the preparation of a plan of action to address noise impacts on non-compatible land uses in the airport environs. The existing and future baseline noise exposure patterns and the data used to develop them will be presented at the meeting. We will also discuss some preliminary noise and land use abatement ideas. We hope your schedule will allow you to join us.

In addition, a Public Information Workshop will be held the same day from 4:30 p.m. to 7:00 p.m. in the Tinicum School, 1st and Seneca Streets Essington, PA 19029. Notifications for the Public Information Workshop will be published in local newspapers and posted on the Philadelphia International Airport's web site as well as the Landrum & Brown web site. Those sites can be reached at www.phl.org and www.landrum-brown.com. We hope you will also help us get the word to your local constituents about the Public Information Workshop.

Please contact Phyllis VanIstendal at the Airport via telephone (215) 937-6946, FAX (215) 937-6497 or E-mail Phyllis.Vanistendal@Phila.gov, to confirm your attendance. Thank you and we look forward to seeing everyone on April 17th.

Respectfully Yours,

Charles J. Isdell, Jr.
Director of Aviation

Cc: James J. Curato, Director of Commerce

Bcc: Dave Ingram, Landrum & Brown
Jeff Lehrbaum, DOA
Phyllis VanIstendal, DOA

FAR PART 150 NOISE COMPATIBILITY STUDY

Workshop / SAC Meeting
for
Philadelphia International Airport

Sign-In Form
Date: APRIL 17, 2001

NAME	Representing:	PHONE NUMBER
Jim Byers	FAA Airport District Office	717-730-2833
Bill Allen	DMJM Aviation/PHL Noise Office	(215) 937-6233
Lisa Mastropieri	DMJM Aviation	(215) 399-4332
Allan A'Hara	DMJM Aviation	(215) 399-4331
Joe Wunder	Tinicum Township	(610) 521-1815
Wayne La Marr	Noise Complaint Comm	(610) 521-0844
Dick Nugent	John Heinz NWR, Tinicum	(610) 521-0662
Mark Gale	Philadelphia Int'l Airport	(215) 937-6952
Dick Lehman	US Airways	(610) 362-7334
Tim Eastburn	FAA ATCT - Phila., Int'l Airport	(215) 492-4105

FAR PART 150 NOISE COMPATIBILITY STUDY

Workshop/SAC Meeting
for
Philadelphia International Airport

Sign-In Form
Date: APRIL 17, 2001

NAME	REPRESENTING	PHONE NUMBER
Charles Isdell	Phila. Int'l Airport	(215) 937-6760
Jeffrey Lehrbaum	Phila. Int'l Airport	(215) 937-5571
Maggie Powell	Eastwick Project Area Committee	(215) 365-8825
Vincent Angel	Greater Philadelphia First	(215) 575-2200 x1.231
Phyllis VanIstendal	Philadelphia Int'l Airport	(215) 937-6946

Philadelphia International Airport
Federal Aviation Regulation (FAR) Part 150
Noise Compatibility Program Study – Study Advisory Committee Meeting Minutes

April 17, 2001

Committee Members Attending:

Dick Lehman – US Airways

Maggie Powell – Eastwick Project Area Committee

Wayne La Marr – Noise Complaint Committee

Joe Wunder – Tinicum Township

Jim Byers – FAA Airport District Office Harrisburg, PA

Dick Nugent – John Heinz National Wildlife Refuge, Tinicum Township

Vincent Angelucci – Greater Philadelphia First

Philadelphia International Airport Staff Attending:

Charles J. Isdell, Jr., Phyllis VanIstendal, Mark Gale, Jeffrey Lehrbaum, Bill Allen and Tim Eastburn – FAA ATCT Philadelphia International Airport

Introductions - Jon Woodward, Director of Environmental Services - Landrum & Brown

Mr. Woodward welcomed the group, lead the introduction of the **Landrum & Brown Team**, the **Airport Staff**, **DMJM Aviation**, and **Beach Advertising**, and members of the Sub-Committee. Mr. Woodward mentions that this is the third Study Advisory Committee meeting held in Philadelphia. Committee members introduced themselves and whom they were representing. Mr. Woodward asked Charles Isdell to give opening remarks.

Opening Remarks – Charles Isdell, Director of Aviation - Philadelphia International Airport

Mr. Isdell expressed his enthusiasm about being a part of the committee to address resolutions to airport noise. He also stated that being a part of this committee was new to him. He asked the presenters to please keep this in mind as those new to this process might ask numerous uninformed questions. He then encouraged all to ask many questions

and give suggestions. Mr. Isdell also thanked the committee representatives for attending today's meeting, and he acknowledged that their participation is extremely important to make this a successful process.

Overview of FAR Part 150 - Jon Woodward, Landrum & Brown

Purpose: The Study Advisory Group was established at the request of the airport to assist the airport and the Landrum & Brown team in organizing their thoughts and the evaluations that they perform. Also to ensure that they accurately cover the information they assess in the FAR Part 150 Study.

Process: The Part 150 is a planning process. It's a process that has a purpose to systematically define a series of noise abatement alternatives or options, and land use development or remedial mitigation measures that can bring better compatibility between areas surrounding the airport and the aircraft operating from the airport.

Participation: The Part 150 includes government agencies, community agencies, organizations of specific communities or local neighborhoods, users or holders of land surrounding the airport, users of the airport facilities, as well as, business aircraft operators and commercial carriers, such as US Airways.

Product: The Part 150 product will be to prepare a plan/set of recommendations for noise abatement and the land use management that is then submitted to Federal Aviation Administration for approval.

Program: The product is an administrative process that was set forth by the Aviation Safety and Noise Abatement Act of 1979. It describes the methodology used to develop a Part 150 Study. Airport operators voluntarily take part in the Part 150 process to bring awareness to the communities that are affected.

Mr. Woodward goes on to explain the Part 150 would be implemented over a series of years and through a series of financial funding sources to eventually implement all approved Noise Compatibility Program measures.

Mr. Woodward wrapped up the overview by highlighting the following topics that would further be addressed in today's meeting:

- **Noise Exposure Maps (NEM)**

  Noise exposure maps show noise exposure patterns both current and future. Noise exposure maps are shown in the Day/Night Noise Level (DNL) noise metric. The DNL metric has been in use since the 1960's and has proven to be the most effective way to present airport noise exposure levels.

  Note: This is one of the two components of the Part 150.

- **Noise Compatibility Program (NCP)**

  A NCP is a compilation of recommendations for noise abatement, land use mitigation and tools necessary to provide continuance of the process to implement the various recommendations of the NCP.

  Note: This is the second part component of the Part 150. The Noise Compatibility planning process for Philadelphia International Airport was on hiatus in 1999 for about a year, and it restarted the earlier part of 2001. The Landrum & Brown team updated the information they collected previously to continue their study. Also, this information will be reviewed by FAA. (Mr. Woodward *referred to chart*)

- **Noise Abatement Alternatives**

  Mr. Woodward notes that later in this workshop the team will be presenting preliminary alternatives and recommendations to the committee members. How should the Part 150 Study approach the development of noise abatement measures at Philadelphia International Airport?

Question: **Dick Nugent – The FAR Part 150 has been in existence since 1979?**

Answer: **Jon Woodward – It's an outgrowth of the Aviation Safety and Noise Abatement Act of 1979 to research how noise impacts the environment. Also, the airport has a set of published noise abatement measures.**

Discussion: Jim Byers, Charles Isdell, and Allan A'Hara give input to the discussion of the FAR Part 150 evolution and impact since the passage of the noise abatement act. Mr. Isdell added that he looks at the Part 150 as an education process,a process we go through to work with the community."

Philadelphia Airport History – Dave Ingram, Landrum & Brown

Starting with the airport's history, Mr. Ingram makes mention that Philadelphia is one of the busiest regional airports in comparison to New York Airports. He adds that the Philadelphia Airport is very dynamic.

In 1925 the Philadelphia Airport opened. (Mr. Ingram *refers to diagram – Airport Layout & Fact Sheet on page 6*) Mr. Ingram tells of the many physical changes that have taken place at the Airport. Looking at the diagram runways 9R/27L and 9L/27R are the primary runways that the Airport uses to launch and recover commercial jets.

Question: **Wayne La Marr - Do we have any pilots here? I think some of them should be forced to come.**

Answer: **Dave Ingram - They were invited to come but are not in attendance today. We'll talk more about airport operational procedures as the meeting progresses.**

There are also two smaller runways 17/35, which points north and south. Also, there is a runway – 8/26, which opened in December 1999 and is used for smaller aircraft (propeller types and small jets). UPS are on the south side of the airport's property.

East flow aircraft land and take off on 9L or 9R. Mr. Ingram exclaims that one of the hardest things to explain is how runways are named and laid out.

Runways –	Name	Length
	9L/27R	9,500 ft.
	9R/27L	10,499 ft.
	8/26	5,000 ft.
	17/35	5,459 ft.

Runways - The length of the runway determines which aircraft will be used on it.

Shared locations – There is an issue here with the airport being both in Philadelphia and Tinicum Township. However, most airports do have shared jurisdictions.

Airport Users - In discussing airport users Mr. Ingram referred to page 7 – *Airport Users*. The following are examples of users:

- Major Commercial Airlines:
  US Airways (the dominant carrier) Delta, British Airways, Midway, and Continental, etc.

- Regional Airlines:
  Continental Express, US Airways Express, and United Express, etc.

- Cargo Airlines:

  UPS, Federal Express, and Airborne Express, etc.

- General Aviation/Air Taxi/Military

Noise Measurement Program – Rob Adams, Landrum & Brown

Early on in the process of Part 150 the Landrum & Brown team conducted a noise measurement program to supplement the noise analysis that was being done as part of the Part 150 Study. There are three main purposes for conducting this noise measurement program:

1. Verify the input that goes into the noise model.

2. Verify what comes out of the noise model.

3. To provide the consultants/team with some first hand experience with airport operations and the community.

Mr. Adams explains that during the week of October 11-15, 1999, they had a four-man team measure noise near the Philadelphia Airport. Once the team collected the noise measurement data, it was analyzed against radar data, and compared to specifically identify what airplanes made what noise levels.

There were forty-one sites that the Landrum & Brown team monitored noise in its entirety around the airport. We were then able to go into the noise model, which has the database of noise values of all different types of aircraft to calculate and recreate the same events. After the team went through that process the noise model is considered to be accurately predicting noise levels. This is how we verify the input to the noise model. The result of collecting this data was that the vast majority of the noise readings could correlate to the radar data.

Next step for the team was to prepare noise exposure contours. We also used the monitoring data to verify the output (noise contours). At first, the team was looking at the individual input, and now we're looking at the overall noise that we're predicting for the airport.

Fortunately, the airport has permanent noise monitors, so the team was able to go by what the monitors told us the overall noise should be in certain areas. For most of the sites the permanent monitors were pretty close (within a few decibels).

Question: **Charles Isdell – You say you used forty-one different sites, so in other words you used portable equipment not permanent equipment?**

Answer: **Rob Adams – That's correct.**

Question: **Charles Isdell – What exactly is a noise model?**

Answer: **Rob Adams – We use the Integrated Noise Model. It's a program that runs on a computer. What this program does is allow us to simulate the aircraft arriving and departing Philadelphia Airport. It allows us to do that in terms of specific types of airplanes, the numbers of airplanes, which runways the airplanes are using, the flight tracks that the airplanes use, where they fly when they take off and where they're flying to.**

It's a very sophisticated model that's state of the art, and it's the model that the FAA requires us to use to calculate noise for the Part 150 Study.

Mr. Adams notes the real benefit of the model is that it allows you to look into the future and change operational assumptions to determine the effect of noise abatement operational measures.

Question: **Wayne La Marr – How are you calculating the noise? What about when the real loud planes come in?**

Answer: **When you do the noise modeling we look at an average annual day to get the DNL values.**

Question: **Wayne La Marr – is the DNL being updated?**

Answer: **Rob Adams – Yes, the DNL is routinely checked to make sure that things are still accurate.**

Wayne La Marr – But that still doesn't help out with real loud planes that come in.

Answer: **Unfortunately, the Part 150 process as far as prediction, mitigation, sound insulation, acquisitions, is based on the DNL metric. That's what the FAA uses as their criteria. Now we can look at other types of metrics, which I'll call single event metrics, which is what you're talking about – the maximum noise level/ the loudest that that plane got.**

Mr. Adams suggested how data could be collected on single event measures:

We can look at the time above a certain threshold, also, we can use those values asplanning tools to help us understand what the noise levels are. This would help us inplanning for the future.

Question: **Dick Nugent – With changes in the engines, flight patterns and airspace – as far as, the Part 150 Study are you assuming to model between 2001-2006?**

Answer: **Rob Adams - The Part 150 Study Program has a five-year window. We're working on the existing for 2001 and planning for the future year, 2006.**

Question: **Dick Nugent – What are some of the variables?**

Answer: **Rob Adams – All of the STAGE II fleet has been phased out. When you look at 1998-1999 contours as compared to 2000-2001 you see a noticeable reduction in noise based on the phaseout of older noisier aircraft.**

Question: **Maggie Powell – Why don't you let about five families in the townships conduct their own survey, and compare their data with your computer model?**

Answer: **Dave Ingram – What you're asking is already being done by the permanent noise monitoring system.**

Maggie Powell – But you're only getting computer data not humans responding.

Dave Ingram – Oh, I understand you want to consider the human response. That's something to consider in the future.

Noise Exposure Modeling – Dave Ingram, Landrum & Brown

Mr. Ingram discussed the two conditions that Part 150 for which noise exposure maps were prepared:

1. Existing Conditions (2001, based on calendar year 2000 data)

2. Future Conditions (2006 based on five-year forcasts.)

Once the Noise Compatibility Program Contour is approved by the FAA, it will become the future noise exposure map of this airport. The approved Noise Compatibility Program Contour will then be used to mitigate from and to implement their programs around.

Question: Wayne La Marr – Don't you consider changes in the airplanes?

Answer: Dave Ingram – Yes, we do.

In order to model aircraft noise exposure the following are needed:

1. *Runway Utilization* – From the TAMIS system.
2. *Flight Track Utilization* – From the TAMIS system.
3. *Operational Levels* – From airport data and forecasts.
4. *Fleet Mix* – From airport and TAMIS data.

Question: Wayne La Marr - It seems to me you have more airplanes too?

Answer: Dave Ingram – Yes, about 15%.

5. *Ground Run-Ups*- There were 159 ground run-ups at Philadelphia International for 2000.

Question: Wayne La Marr- Do you take into consideration you'll have more airplanes by 2006?

Answer: Dave Ingram – Yes, we do.

Mr. Ingram continues the discussion on the topic of noise contours saying that they are generated from the information we just talked about. There's been a change in theIntegrated Noise Model (INM) the software previously used was a 5.2A version.Currently we're using the 6.0B version. He also notes that the FAA has a Website youcan go on to get the upgraded versions. We use their Website, so we're using the mostcurrent model that we absolutely can.

We use current airport information:

- Runway Layout
- Airport Flight Tracks
- Fleet Mix – On the FAA Web site you can compute operations reported by Philadelphia Tower. It will calculate and tell you the number of operations that occur during the calendar year or month.
- Runway Utilization – Taken from the noise monitoring system.
- Aircraft that fly during the day are modeled based on their average noise levels. Aircraft that fly at night (10 p.m. to 6:59 a.m.) are weighted with an additional 10 decibels to simulate the effect of nighttime noise disturbance.

Question: Maggie Powell - Wouldn't the trees and so forth be a buffer for the noise?

Answer: Dave Ingram – trees are great... they absorb, but mainly because you can see them your perception is that it's a greater buffer. They may not be buffering as much as you think, but that perception is important and we'll be talking about barriers throughout the study. In addressing Ms. Powell's question Mr. Woodward concurred with what Mr. Ingram previously stated.

Mr. Ingram talks about *standard aircraft profiles* in saying we're not just there monitoring. We're trying to verify the aircraft flight characteristics and what kind of noise they were making. How high they're flying, as well as, distances from the airport. We look at the profiles and determine whether the airplane was at the same level as the model is predicting.

Mr. Ingram also talks about the effect of distance on noise exposure. The further the plane is going the heavier its going to be, because you need more gas, more people, cargo and the like. For example, if you're going a thousand miles from here than possibly the plane is going to make more noise than a plane going 500 miles. The noise level and performance of the aircraft – the noise levels used inside the model are sound exposure levels (SEL's), which is the noise that an airplane makes over a set period of time. It is usually based on the highest noise level that that aircraft is going to make compressed into a one second time period.

Noise Contours

This airport (Philadelphia) is primarily west flow (referred to diagram) (after page 14 in the working paper) *Runway Utilization.* It shows that in the year 2000 at (Philadelphia airport) the data we collected for commercial jets shows approximately 72% west flow and 28% east flow. And for smaller aircraft 69% west flow and 31% east flow.

Mr. Ingram said that the west flow/east flow is very similar to the last time data was collected. The last time it was 70% / 30%. We think we're doing pretty good with west flow/east flow predictions.

There was nothing going on at the airport that could cause the flow to change. Like a runway closure or unique weather patterns.

Question: **Wayne La Marr – What do you consider is the biggest plane coming out?**

Answer: **Dave Ingram – 747.**

Dave Ingram also mentions that the Concord is the noisiest commercial aircraft in the world, but because of its very rare usage in Philadelphia it was not modeled. Referred to page 14. We went through every aircraft category that we felt was flying at the airport (Philadelphia) and we did that by day/night and by runway, so that we could have the best possible data.

Question: **Wayne La Marr – What about thunder storms? Whenever there's a storm the pilots go through Tinicum Township instead of going through New Jersey.**

Answers: **Tim Eastburn – The pilots will turn over to Jersey depending on where the storm system is moving. If it's north or south, that will determine whether they make right or left turns.**

Wayne La Marr continued to express his disappointment and discuss the planes flying over Tinicum, and also felt that the pilots are allowed to do whatever they want and not get penalized.

Mr. Ingram moved the discussion to *flight tracks – (referred to diagram after page 16 INM and Radar Departure/Arrival Flight Tracks).* Flight tracks are basically the path that the aircraft fly as they come in and go out of airports. We have collected radar data, which shows actual operating conditions for departures and arrivals at Philadelphia International Airport. Looking at the departure flight tracks the lightly colored green lines represent actual aircraft departures; the lightly colored blue lines are actual arrivals. The radar collected covered four periods during 1999, and includes east and west flow operations. The radar is entered into the model and then flight tracks are drawn. The darker green and blue lines represent the flight tracks utilized to model the noise exposure (approximately 200 plus tracks).

Other Considerations 2001 Existing Conditions

Mr. Ingram *(referred to page 19)* – Roughly 65% of the engine run-ups occurred during the nighttime (10:00 p.m. to 6:59 a.m.).

Question: Wayne La Marr – What's the purpose of running engines at night?

Answer: Dave Ingram – Usually, if you have a plane needing to make a morning connecting flight at another airport you need to run engines at night.

Dave Ingram proceeds saying the airport provides a database of all the airplanes that did engine run-ups in 2000. Based on this information we know what aircraft, where they were, what time of day and so forth. We put all the information onto a spreadsheet and boiled it down to what an average day looked like at this airport. For instance, what's the duration of the engine running; how many seconds does it run a day; how many times does it run a day. All of this information is very important. Most of the airplanes that run in Philadelphia are two engine jets (for example, Boeing 737). The average duration of engine run-ups is 17 minutes. The typical aircraft types include Boeing 727/737/757, DC9, MD82, and Airbus 319/320.

Ground Run-Ups - take place on Taxiways K and P. The night time (11:00 p.m. to 6:00 a.m.) preferred location is at Taxiway K. A significant factor in run-up operations is that the majority of run-ups take place at night and are required to be on Taxiway K with the engines facing west toward the middle of the airport. Aircraft running engines on Taxiway P do so with their engines facing east toward the middle of the airport.

Mr. Ingram referred to *Table 3 Calendar Years 1999 and 2000 Operations* – he points out that the complete operations (Air Carrier, Air Taxi, General Aviation, and Military) total changed from 483,567 to the actual total of 484,308 for 2000. If we divide that by 365 we're looking at the average annual day for takeoffs and landings to be 1,328. This increase may not have any effect on the contours, but we're going to go back and input the difference. It's important that before we publish this information and get approval on it from the FAA it has to be exact as possible.

For the 2006 forecast (we talked about the 15% increase) there would be 1,525 operations a day, which is pretty much across the board. Military goes up to about a thousand a year. There is an obvious increase in commercial carriers, as well as, an increase in propeller aircraft and a big increase in regional jets.

Mr. Ingram states that although there's an obvious increase in commercial airlines and a big increase in regional jets, the contours are shrinking because the aircraft are quieter. Also, noting that the regional jet is probably one of the quietest jets on the market.

In talking about the contours, Mr. Ingram throws out the question – Why if the airplanes operations have gone up 15% did the contours shrink? He answers because the fleet has changed to the point that the airplanes are getting so quiet that we're starting to see reductions in noise even though the (operations) numbers are growing.

Question: **Dick Nugent – Are Terminal A and airline mergers all taken into consideration to show the 15% increase?**

Answers: **When they do forecasting they take into consideration the growth of the airport; what's being built; what the airlines are doing, the future of general aviation, etc.**

Charles Isdell – To assure Mr. Nugent that every consideration is being made with regard to the Airport's expansion he mentions that US Airways is telling us that there's not going to be an immediate increase of takeoffs and landings. However, Terminal A will have an additional 13 international gates opening next summer (2002). He also shares that it is his understanding that the principal consultant working on the master plan of the Airport is actually an econometric forecasting and financial planning company. He goes on to explain that the company does this across the country looking at things like mergers, economic forecast, recessions, and the like. Mr. Isdell, believes that all the aforementioned is accurately accounted for in the forecast.

Allan A'Hara – added that the principal consultants working the airport master plan have also done a base line forecast, which has been adopted for the use in planning, and was approved by the FAA.

Question: **Charles Isdell – If you do a baseline, and a five-year prediction, is it assumed that somewhere around 2006 you'll go back and do an update of this program?**

Answer: **You're at 15% growth two years from now – this should be a clear indicator that you'll be beyond 15% in five years. Rather than do a whole new program, check the contours first.**

Noise Exposure Pattern for 2001/2006 Existing Conditions

Mr. Ingram reviewed the Baseline 2001 NEM Map. He pointed out that on the baselineexposure map you can see that the patterns follow the west flow/east flow. He also notesthat there are flight tracks that go over the river, and that the goal is to go over the riverand away from the communities as quickly as possible – the better the distance the lessnoise.

The 2001 Existing Conditions noise contour contains roughly 9.31square miles within the 65 + DNL.

For 2006 (previously mentioned as the forecast) – again, we're looking at about 15% increase in operations. (Referred to Table 7, 2006 Future Baseline Condition Average Day Operations) The chart shows: User Group & INM Type Aircraft; Stage; Aircraft Type; Day/Night; Arrivals/Departures; and Totals. Mr. Ingram states this is what operations will look like in 2006 with the majority of operations occurring during the day.

In December 1999, aircraft operators had to meet the Stage III noise standards. Some of the older planes still operating have hush kits (a muffler is placed on the engine).

Wayne La Marr mentions that he had gone to a meeting where Stage III standards were presented.

Mr. Ingram wraps up with asking if there are any questions regarding the information he went over, and he mentioned that there is already talk about Stage IV standards.

Potential Noise Abatement Alternatives – Jon Woodward, Landrum & Brown

Mr. Woodward reiterated what Mr. Ingram had just gone over (noise contours). He proceeded to discuss *Current Noise Abatement Measures* (Referred to page 34). Mr. Woodward points out that there are many different types of noise abatement measures. Noise Abatement Departure Headings was one of the alternatives that Mr. Woodward discussed. He explained how departure headings for noise abatement are in place for west flow departures. Aircraft coming off the north parallel runway are turned toward a heading at 240 degree (27R), and those coming off the south parallel runway turned to a heading of 255 degree (27L). These headings generally put the aircraft over the river.

Note: As Dave Ingram said earlier sometimes the headings are not always used when there is a conflict with traffic on the runway or when weather conditions dictate a straight out departure. Air traffic controllers assign the headings.

In addition to the departure headings as noise abatement measures Mr. Woodward went over the following potential noise abatement alternatives (referring to page 35). Note: many of the alternatives were previously discussed.

- Modify Flight Locations – Moving the planes to where they won't impact residential areas as much. Flow reversal operation can be effective, but primarily with cargo carrier hub airports. It has worked effectively at some other airports and we could do something similar in Philadelphia to move more of the noise contour over the river.

- Flight Frequency – This involves moving operations to times when they will have less impact.

- Flight Times – (previously discussed)

- Flight Management – (previously discussed) Mr. Woodward mentions Part 161 in 1990.

- Ground Activity Restrictions – These are restrictions that the airport can impose. Local restrictions on run-ups are used to reduce noise exposure from engine testing. There is a facility for this in Chicago called a Ground Run-up Enclosure (GRE). These facilities can reduce noise from run-ups significantly, both day and night. It is possible that a (GRE) will be studied for Philadelphia International Airport.

- Facility Modifications – If there are any changes, they would be considered as part of the future conditions noise exposure map.

Question: **Jim Byers – If we decided to recommend the GRE as an abatement measure is it funded by the government?**

Answer: **Jon Woodward – Yes, it is.**

Question: **Charles Isdell - What happened in 1990?**

Answer: **Jon Woodward – In 1990 airports were required to place higher value on the aircraft standards. As result, Stage II aircraft had to be upgrade to Stage III aircraft by the year 2000. Restrictions were also imposed on the air carriers with regard to Stage II and Stage III aircraft's. Additionally, Stage IV is on the horizon, but there are currently no phase-out dates established.**

Mr. Woodward invited Allan A'Hara and Lisa Mastropieri to speak about potential alternatives for land use and what might be used as mitigation measures. Also, he asked Rob Adams to discuss the implementation of program measures, and said that after Mr. Adams spoke he wanted to open up to a more general discussion.

Potential Alternatives for Land Use - Allan A'Hara, DMJM Aviation

Mr. A'Hara discussed to the Part 150, saying one thing the Noise Compatibility Program does is involve the communities. This program is the mechanism to getting things done. For instance, resolving matters involving zoning on land uses clearly outside of the airport's control. The airport can use the mechanism to initiate those types of things with the cooperation of the communities.

Potential Alternatives for Land Use - Lisa Mastropieri, DMJM Aviation

The *Land Use Maps,* which you see the noise contours on, was developed by Landrum & Brown, and it's very complete with geographical information. We went to great lengths to gather all the land use plans from local and adjacent communities and incorporate that into a GIS database.

Ms. Mastropieri proceeded to say that with this database you can actually pull up streets and show the actual houses on each one.

Mr. Ingram shared that as one of tonight's workshop feature if you tell us where you live we'll look it up on the computer and pull up a map showing your home in relationship to the airport noise contours.

Ms. Mastropieri continues saying that, with the 2001 contours there are currently only a small number of houses within the 65 DNL area. And, in the year 2006, the number of people in the 65 DNL area drops. However, there are still a lot of people affected by the noise outside of the contours. Part of the noise compatibility program will not only look at altering noise patterns through operational means, but also look to communities to alter the ways they accomplish land use and zoning. Some of that can be as simple as zoning land use for re-development in the community that takes into account where it is in relation to the airport noise exposure patterns.

We have already looked at some of the sensitive areas and will now intensify the analysis on those areas and count the homes impacted within the contours. Remember, this is a joint effort with community leaders and the airport to make the land use programs successful.

Corrective Measures

- Land Acquisition – This is a land use measure whereby the airport and FAA decide to purchase the homes within the noise contours. Based on the initial findings, it is not likely that it will be necessary for the Philadelphia Airport to purchase homes for noise mitigation.

Question: **Wayne La Marr - How about a whole township? There are 5000 people in Tinicum and planes are flying all over our township – could the township be bought out?**

Answer: **Lisa Mastropieri – Not normally, when only a small portion of the township is within the 65 DNL noise contours.**

- Sound Insulation – Homes within certain levels of the noise contours can be offered sound insulation in return for an easement for the airport to fly aircraft over the dwellings.

We will talk to the community leaders to encourage more comprehensive land use programs. As far as zoning, if some areas are currently zoned for residential use and have no homes on them, we'd like to get that changed so no homes can be built on this land. We will also encourage future compatible zoning in areas near the airport.

Future development in areas within or adjacent to the noise contours should consider sound insulation as part of the architecture. This will reduce the chance of future incompatibilities from new construction.

- Purchase Assurance – If someone wants to sell his or her home, purchase assurance can be used. It allows the owner to try and sell their property and if unsuccessful the airport can purchase it at appraised value and sell it themselves.

Maggie Powell: I can see this becoming very controversial because out in Eastwick we have a landfill and the realtors were to warn the homeowners, and we've just recently been changed from a five-hundred year flood plain to a one-hundred a year plain. All of this information was supposed to be disclosed to the homeowners. The laws sit on the books, but are not enforced. This is where I see a problem coming in here.

Lisa Mastropieri – You would not only get opposition from realtors, but the current property owners see this as a negative – more difficult to sell their home.

- Easements – This involves purchasing the right to overfly residences without providing any mitigation. Most airports stay away from this because it's very hard to value.

Question: Jim Byers – If there were some areas outside of the 65 DNL range that as a community we want covered would we take a concern like this to our local government and negotiate?

Answer: Lisa Mastropieri - Yes.

Maggie Powell – It's been rumored that the Airport wanted to buy our homes so that the Airport could expand. FEMA is in Eastwick now doing acquisition of some of our homes. There was a meeting recently, in which residents were able to fill out forms to sell their homes – close to 500 homeowners filled out the form to sell their home. However, the Federal Government put so many restrictions on us that only forty-two homes are potentials for buy out. Everybody in our community believes that the rumor is true. And if so, they want 200K for their homes.

Dick Nugent – Isn't the initiative for FEMA to buy out the properties due to the landfill?

Maggie Powell – The thing is, if FEMA buys out homes they can never be rebuilt on that space. It has to stay open space. You can build like an ice-skating rink, but it can never be enclosed, and that's why people were saying Philadelphia International Airport wants it for runway space, because FEMA's restriction are that it can never be built on. The way I see it is that the homes are bought out and then the open space becomes a place for dumping everything.

Potential Program Management Alternatives – Rob Adams, Landrum & Brown

Mr. Adams briefly discussed four possible Program Management Alternatives. They are:

1. **Implement noise communication programs** from the airport to the pilots. For example: Clear definitions of sensitive area and the procedures that are in place. The information would provide the airlines and the pilots in their language what they are supposed to be doing to accommodate the noise sensitivity of the air. Another communication method from the airport to the public could be the airport providing the public with quarterly reports on the noise monitoring systems. The purpose of this is to keep the airlines, pilots, airport and public the public on the same accord with accurate and updated information.

2. **Establishment of noise program monitoring committee.** A number of airports have decided to use this as an opportunity to be inclusive with the public. Once the program is defined and approved then a noise committee can be formed. This committee provides input into how the noise programs are going and takes the information back to their respective areas. For example: If one of the runways is closed for repairs this committee would know in advance and they would be responsible for informing concerned parties.

3. **Conduct regular periodic updates of the Noise Compatibility Program.** Generally, the program is looked at every five years after the current one is completed, but if there are some changes that occur like a merger, the program can be updated virtually at anytime.

4. **Provide enhancements to the noise monitoring system.** Add noise monitors, as well as, analytical tools to the system. Provide more details and reports.

5. The idea that the Internet and Web sites are really pervasive now it is a really good opportunity to explore what types of communication we can incorporate in the noise program with Web sites.

Closing Thoughts – Jon Woodward, Landrum & Brown

Mr. Woodward posed two questions for the committee members to address:

1. What are the things that bother you the most…?
2. What are some specific thoughts of how we can deal with them?

Maggie Powell – Sometimes I sit on my deck and bird watch, and I will notice that birds will take flight and then there's this noise from the airplane. Evidently, the birds are more sensitive to the noise than we are. However, when they take flight it makes us aware that something is going on. Ms. Powell expresses that this really bothers me because they (the birds) start chirping, and I'm thinking that the noise from the planes is so loud that it bothers the bird's ears, and shortly thereafter, the noise bothers our ears. Another concern we have in Eastwick is that often times during the night we hear a terrible whining sound that bothers our ears. Ms. Powell went on to say that our community is surrounded by so much industry. However, she commends Sunoco oil refinery for making concentrated efforts to work with the community, and for them being so accessible. Ms. Powell gives the example, that Sunoco let them know what's going on and they provide them with emergency numbers. Ms. Powell feels that there's nothing like this set up with the airport. She added that the community is placing the blame of the whining noises on the airport, because they know it's not Sunoco causing this problem. She recommends that the airport follow the lead of Sunoco. "A well informed community is an understanding community," says Ms. Powell. Additionally, Ms. Powell talked about the higher volume of cars and trucks that travel through their neighborhoods to get to the airport. She sees this as an indirect noise issue.

Jon Woodward - Addressing both of Ms. Powell's concerns suggesting that the program management alternatives that Rob Adams previously talked about would be applicable to her issues.

Phyllis VanIstendal - Also addressing Ms. Powell's latter concern about traffic stating that the airport is aware of the higher volume of traffic due to the airport's expansion, and that they are working on how best to address this issue. Ms. VanIstendal also expressed that she feels that it would be beneficial for both the airport and the surrounding communities to have someone who would be a part of the master planning that's taking place at the airport. This person would also keep the community informed of those plans. She feels that communication is the key.

Dick Nugent – Agrees with what both Ms. Powell and Ms. VanIstendal said. He added that his concern is really with the wildlife refuge. He impressed upon the committee the preciousness of the John Heinz Refuge, stating that it is the most urbanized refuge in the region.

Mr. Nugent, as did **Joe Wunder** and **Jeffrey Lehrbaum,** added that they too feel communicating with the community and keeping everyone informed about what's going at the airport is key.

Next Steps – Jon Woodward, Landrum & Brown

- Technical conferences with aviation and land use professionals to discuss implementation techniques of alternative details – May/June
- SAC/Public Workshop on preliminary recommendations we put together on Noise Compatibility Program measures June/July
- SAC Meeting on draft final Noise Compatibility Program - August
- Public Hearing on Noise Compatibility Program - September
- Final Noise Compatibility Program to Airport Operator, which takes 180 days to get approval – November, 2001

Mr. Woodward informs and encourages the committee to attend tonight's public workshop at the Tinicum School.

P H I L A D E L P H I A

Federal Aviation Regulation Part 150 Noise Compatibility Study

Working Paper

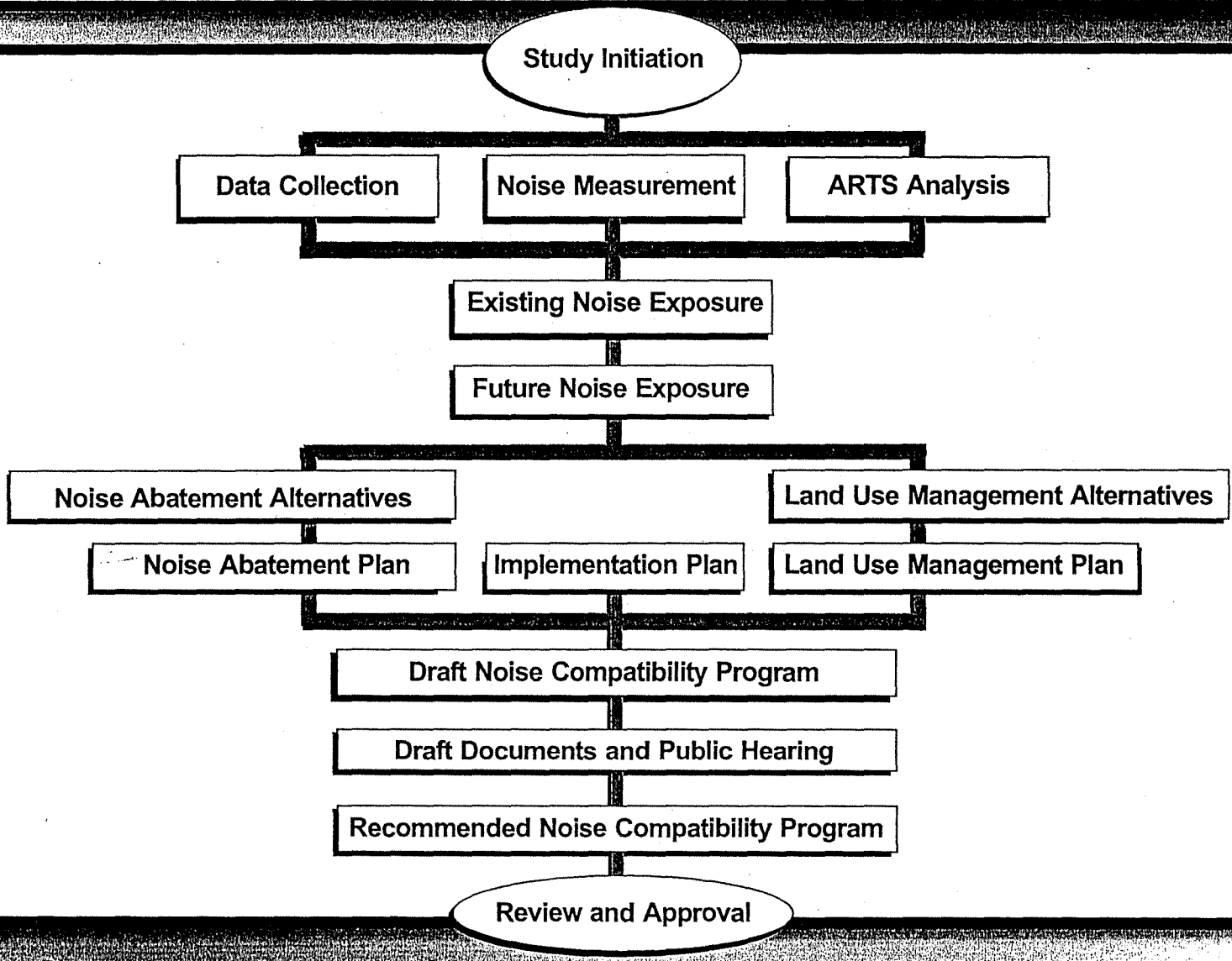
Philadelphia International Airport

50 Landrum & Brown Team

Part 150 Planning

- **Purpose:**
  To Plan Systematically for Noise Abatement & Guide Land Development to Compatible Use
- **Process:**
  Define Unabated Conditions
  Map Noise Exposure & Impacts
  Prepare Current & 5 Year Forecast
  Develop Solutions/Improvements
  Evaluate Available Alternatives
  Recommend Mitigation Program of Noise Abatement & Land Management
- **Participation:**
  Coordinate With Governmental Agencies, Airport Users and General Public
- **Product:**
  Plans for Airport Noise/Land Use Compatibility Ready for FAA Approval
- **Program:**
  Implementation by Airport, FAA, Airport Users, Local Governments and Property Owners

Noise Compatibility Planning Process



F.A.R. PART 150

The Aviation Safety and Noise Abatement Act of 1979 (Public Law 96-193), was enacted "...to provide and carry out noise compatibility programs, to provide assistance to assure continued safety in aviation." This legislation requires the establishment of single systems for measuring aircraft noise, determining noise exposure, and identifying land uses that are normally compatible with various noise exposure levels.

Federal Aviation Regulation (FAR) Part 150, the administrative rule which implements the Act, sets requirements for airport operators who choose to undertake an airport noise compatibility study with federal funding assistance. Part 150 provides for the development of two components, Noise Exposure Maps (NEMs) and a Noise Compatibility Program (NCP).

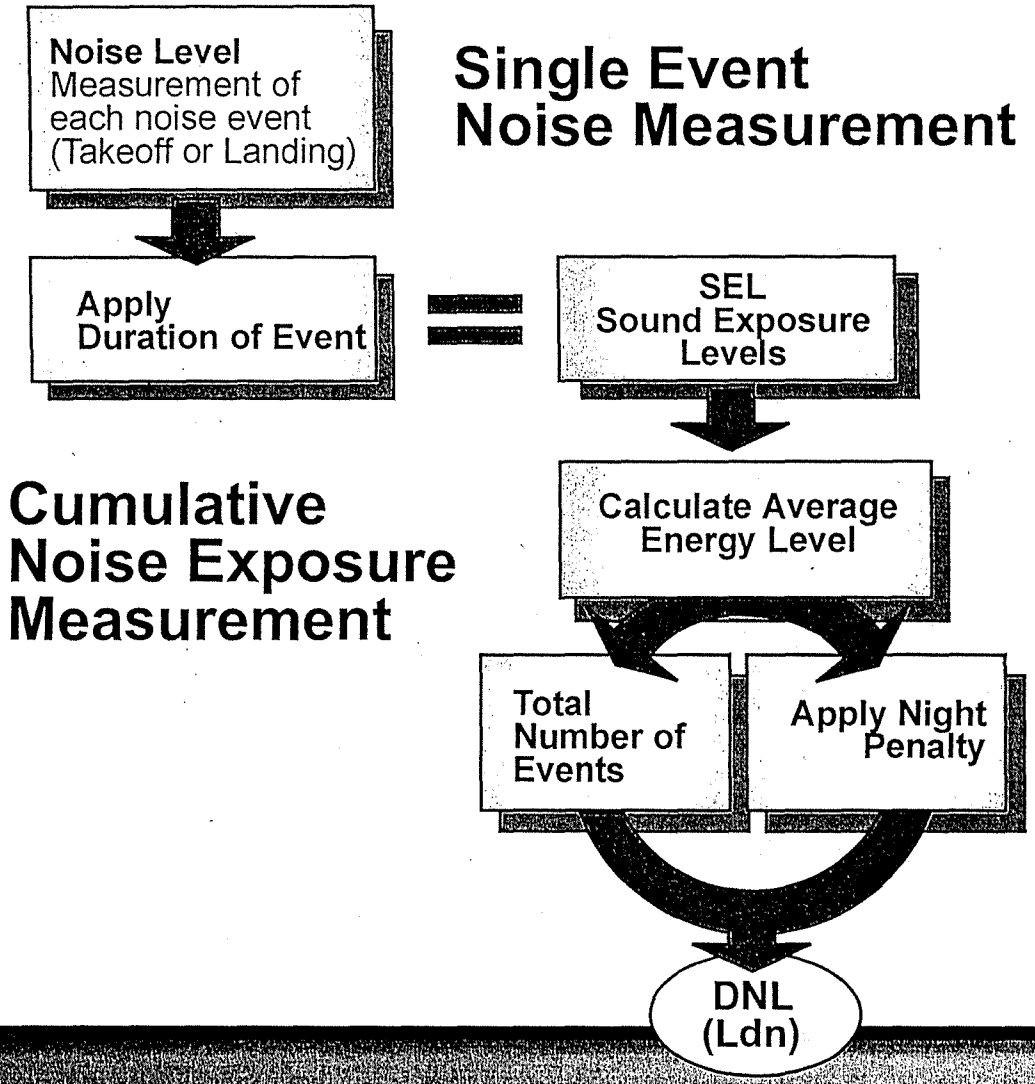
NOISE EXPOSURE MAPS

The Noise Exposure Maps component of a Part 150 document presents existing and future noise conditions at the airport. It includes maps of unabated noise exposure (noise contours) for the current year and five-years in the future. Noise contours are developed in the Day-Night Average Sound Level (DNL) metric, which is an average of daily aircraft noise with a penalty of 10 decibels (dB) for nighttime operations. Nighttime is defined as the period between 10:00 p.m. and 7:00 a.m. The exhibit on the following page explains the DNL metric graphically. The noise contours are then superimposed on a map to show non-compatible land use.

Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes guidelines for the identification of land uses that are not compatible with noise of different levels. In Section 150.21(d), airport proprietors are required to update noise exposure maps when changes in the operation of the airport would create any new, substantial non-compatible use. A substantial non-compatible use is considered to be an increase in the yearly day-night average sound level (DNL) of 1.5 dBA or greater in either land areas which were formerly compatible but are made non-compatible, or in a land area which was previously determined to be non-compatible and whose non-compatibility is increased significantly. The Airport proprietor can gain limited legal protection through preparation, submission and publication of noise exposure maps. ASNA provides in Section 107(a) that:

> "No person who acquires property or an interest therein, in an area surrounding an airport with respect to which a noise exposure map has been submitted shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless...such person can show that...
>
> (i) A significant change in the type or frequency of aircraft operations at the airport; or
>
> (ii) A significant change in the airport layout; or
>
> (iii) A significant change in the flight patterns; or
>
> (iv) A significant increase in nighttime operations; occurred after the date of acquisition of such property..."

What is DNL(Ldn)?



Part 150 defines "significant increase" as an increase of 1.5 dBA of DNL. For purposes of this provision, FAA officials consider the term "area surrounding an airport" to mean an area within the 65 DNL contour. (See F.A.R. Part 150, Section 150.21 (d), (f), and (g)).

The noise exposure maps must be found in compliance with the requirements of Part 150 before the FAA will approve the noise compatibility program for the airport.

NOISE COMPATIBILITY PROGRAM

A Noise Compatibility Program includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, airport regulations, or airport facility modifications. It also includes provisions for land use compatibility planning and may include actions to mitigate the impact of noise on non-compatible land uses. The program must contain provisions for updating and periodic revision.

FAR Part 150 establishes procedures and criteria for FAA evaluation of noise compatibility programs. Among these, two criteria are of particular importance: the airport proprietor may not take any action that imposes an undue burden on interstate or foreign commerce, nor may the proprietor unjustly discriminate between different categories of airport users.

The FAA also reviews changes in flight procedures proposed for noise abatement on the basis of safety of flight operations, safe and efficient use of the navigable airspace, management and control of the national airspace and traffic control systems, effect on security and national defense and compliance with applicable laws and regulations. The Federal Aviation Act of 1958 and its successors state that the airspace of the United States is totally within the control of the Federal Government. The FAA implements or regulates flight procedures within this airspace. Any measures dealing with airspace issues are clearly within the FAA's purview and may not be implemented unilaterally by the airport proprietor.

With an approved noise compatibility program, an airport proprietor becomes eligible for federal funding to implement approved items of the program.

* * * * *

The Part 150 process for Philadelphia International Airport includes a review of current noise abatement and mitigation programs and recommended strategies reflecting any relevant changes to the operation of the airport. The following exhibit shows the standard Part 150 process.

Part 150 Planning

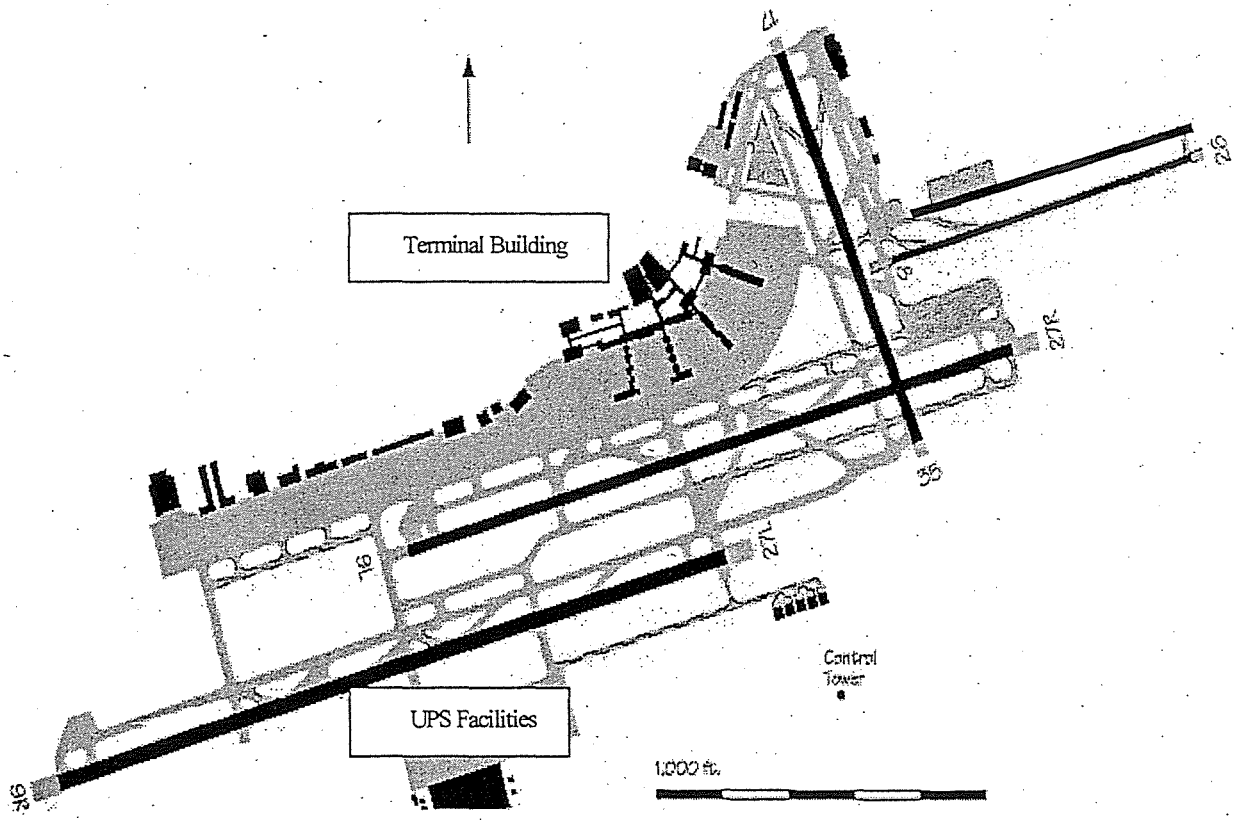
- **Purpose:**
  To Plan Systematically for Noise Abatement & Guide Land Development to Compatible Use
- **Process:**
  Define Unabated Conditions
  Map Noise Exposure & Impacts
  Prepare Current & 5 Year Forecast
  Develop Solutions/Improvements
  Evaluate Available Alternatives
  Recommend Mitigation Program of Noise Abatement & Land Management
- **Participation:**
  Coordinate With Governmental Agencies, Airport Users and General Public
- **Product:**
  Plans for Airport Noise/Land Use Compatibility Ready for FAA Approval
- **Program:**
  Implementation by Airport, FAA, Airport Users, Local Governments and Property Owners

AIRPORT LAYOUT & FACT SHEET

- **Location:** **Philadelphia/Tinicum Township, PA.**
- Began Operation: 1925
- Runways:

Name	Length	Width
9L/27R	9,500 ft	150 ft
9R/27L	10,499 ft	200 ft
8/26*	5,000 ft	150 ft
17/35	5,459 ft	150 ft

*Runway 8/26 opened on December 3, 1999.



AIRPORT USERS

- Major Commercial Airlines

  Air Canada
  Air France
  Air Jamaica
  Air Tran Airlines
  American Trans Air
  America West Airlines
  American Airlines
  British Airways
  Continental Airlines
  Delta Air Lines
  Lufthansa German Airlines
  Midway Airlines
  Midwest Express
  National Airlines
  Northwest Airlines
  Trans World Airlines
  United Airlines
  US Airways
  Charter Airlines

- Regional Airlines

  American Eagle
  Continental Express
  Delta Connection
  United Express
  US Airways Express

- Cargo Airlines

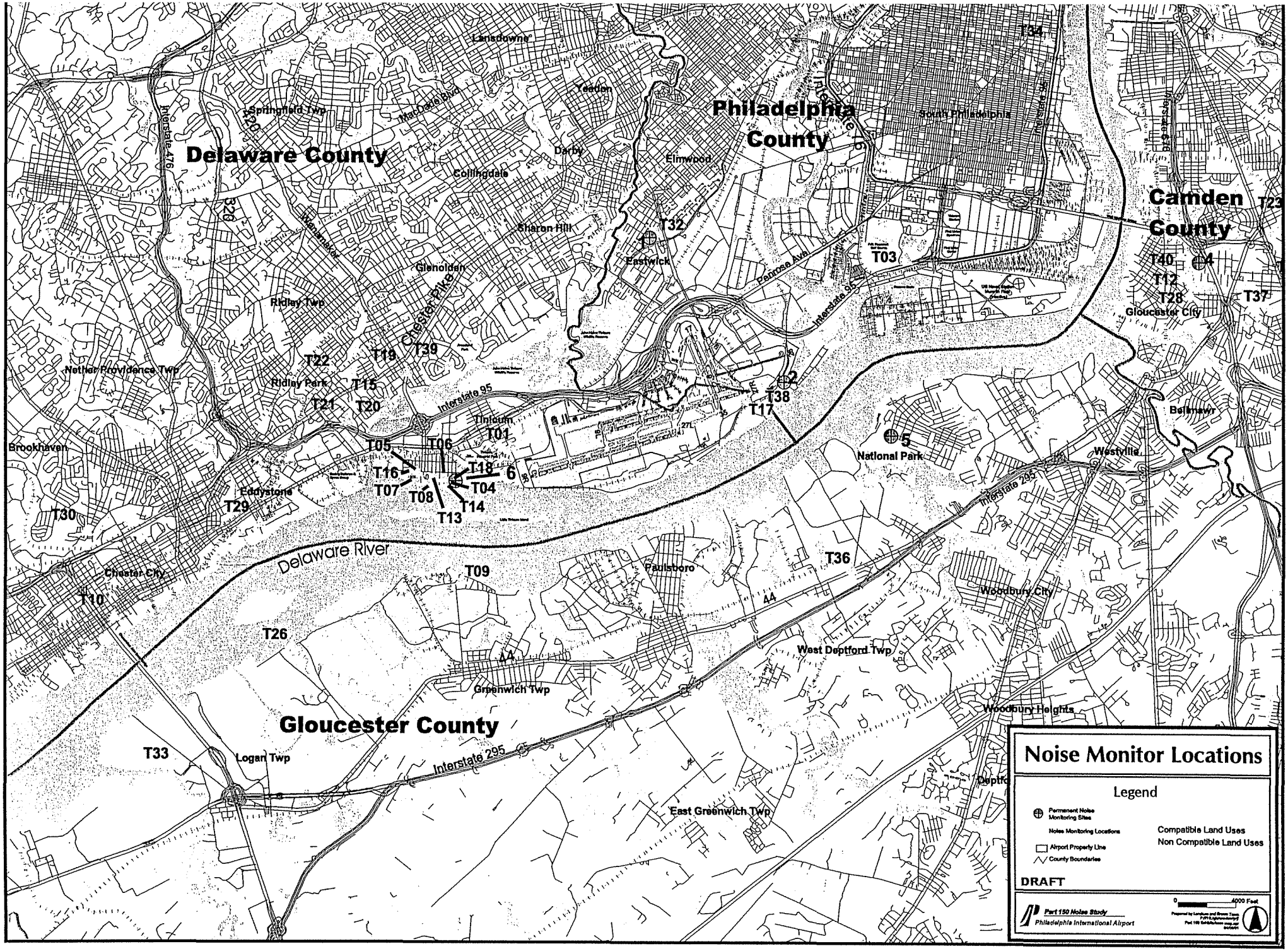
  Airborne Express
  DHL
  Emery
  Federal Express
  Burlington Air Express
  United Parcel Service

- General Aviation/Air Taxi/Military

NOISE MEASUREMENT PROGRAM

- During the week of October 11-15, 1999 noise monitoring was conducted in and around the airport region at the locations shown on the exhibit following this page. **Table 1** shows the measurement results.
- The purpose was to gather noise measurements that could be used to insure that Integrated Noise Model input is as accurate as possible.
- Monitoring was conducted at 41 sites at various times during each day, see the exhibit following this page.
- An analysis of the monitored data collected at the individual sites and the data contained in the INM was conducted and the results of the two data sets were compared. The following comparisons are normally made:
  - Radar flight tracks of the aircraft monitored were identified and data associated with them extracted. A comparison of the aircraft's actual altitude and position near each site is compared to the standard aircraft profiles in the INM. For the aircraft monitored, it is determined if the modeling data and the monitoring data are similar.
  - The monitoring data was compared to the Philadelphia International Airport's permanent noise monitoring data to determine if they are similar.
  - Based on this analysis, it was decided that no-changes to the INM's input data would be required.
- Future noise samplings may be conducted to further verify the INM.

Aircraft noise exposure modeling requires key inputs including runway utilization, flight tracks and utilization, operational levels, fleet mix, and ground noise data. Aircraft noise exposure is predicted with the FAA's Integrated Noise Model (INM) Version 6.0B which utilizes these inputs to produce contours of equal noise exposure.


Delaware County
Philadelphia County
Camden County
Gloucester County
Delaware River
Interstate 476
Interstate 95
Interstate 295
Chester Pike
MacDade Blvd
Lansdowne
Springfield Twp
Yeadon
Darby
Collingdale
Sharon Hill
Glenolden
Ridley Twp
Ridley Park
Nether Providence Twp
Eastwick
Elmwood
South Philadelphia
Penrose Ave
Penrose Ave Br
Gloucester City
Tinicum
Brookhaven
Eddystone
Chester City
Paulsboro
Woodbury City
West Deptford Twp
Greenwich Twp
Woodbury Heights
Logan Twp
East Greenwich Twp
Westville
Bellmawr
National Park
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Noise Monitor Locations
Legend
Permanent Noise Monitoring Sites
Noise Monitoring Locations
Airport Property Line
County Boundaries
Compatible Land Uses
Non Compatible Land Uses
DRAFT
Part 150 Noise Study
Philadelphia International Airport
0
4000 Feet

Table 1
TEMPORARY NOISE MONITORING RESULTS
Philadelphia International Airport

Site Code	Description	Date	Times	SEL Range (in decibels)	Lmax Range (in decibels)	Peak Aircraft
T01	4th & Iriquois - Tinicum, PA (departures)	10/11/99	11:15 - 13:25	65.8 - 99.5	63.6 - 89.1	MD82
T02	4th & Iriquois - Tinicum, PA (departures)	10/11/99	12:55 - 13:10	81.1 - 94.6	71.1 - 86.3	MD88
T03	Franklin Roosevelt Park – Tinicum, PA (departures)	10/11/99	13:55 - 14:35	75.5 - 86.9	62.8 - 74.2	B747
T04	Front Street and Jansen – Tinicum, PA (departures)	10/11/99	14:40 - 15:15	80.0 - 98.2	71.4 - 90.1	B747
T05	201 Taylor Avenue – Tinicum, PA (departures)	10/11/99	14:45 - 15:25	76.9 - 84.6	67.8 - 76.3	B727
T06	334 Bartram Avenue – Tinicum, PA (departures)	10/11/99	15:25 - 16:15	72.1 - 89.6	60.4 - 80.6	MD88
T07	Governor Printz State Park Tinicum, PA (departures)	10/11/99	15:35 - 16:15	66.9 - 90.5	55.0 - 83.9	MD88
T08	River Watch Condominiums, Carre Avenue - Tinicum, PA (departures)	10/11/99	16:25 - 16:40	70.6 - 89.6	63.0 - 82.3	B737
T09	Green Acres Park – Crap Point, NJ (departures)	10/12/99	09:50 - 10:20	74.2 - 93.1	62.6 - 84.4	MD80
T10	Eddystone Ave. at 2nd St. – Chester, PA (departures)	10/12/99	10:00 - 10:20	77.9 - 88.2	65.4 - 78.5	DC9
T11	2518 Blackwood – Wilmington, DE (arrivals)	10/12/99	11:10 - 11:30	69.1 - 76.7	60.5 - 69.9	-
T12	Gloucester Park (arrivals)	10/12/99	13:15 - 13:55	75.3 - 84.3	57.2 - 72.7	B757
T13	132 Carre Ave.– Tinicum, PA (arrivals)	10/12/99	13:00 - 14:20	72.5 - 80.1	63.1 - 72.2	B737
T14	4 Jansen Street – Tinicum, PA (arrivals)	10/12/99	14:25 - 14:45	77.8 - 85.6	68.5 - 77.4	B737
T15	Rodney Road, North of Darby Road – Ridley, PA (departures)	10/12/99	14:40 - 15:05	75.4 - 83.1	62.6 - 73.0	B727
T16	2nd & Corrinthian and Essington – Tinicum, PA (arrivals)	10/12/99	14:50 - 15:00	74.6 - 83.8	62.0 - 71.6	B737
T17	Fort Mifflin Entrance (arrivals)	10/12/99	23:10 - 23:45	82.9 - 103.6	71.2 - 99.7	DC8
T18	Front Street and Erickson – Tinicum, PA (departures)	10/13/99	03:00 - 3:25	82.9 - 93.2	72.4 - 82.9	B727
T19	Lincoln & 4th – Norwood, PA (departures)	10/13/99	03:30 - 03:40	70.1 - 70.6	55.8 - 59.0	-
T20	Rooney Road – Ridley, PA (departures)	10/13/99	03:45 - 03:55	74.3	74.3	-
T21	123 LaDomus – Willow Park, PA (departures)	10/13/99	06:23 - 07:00	61.7 - 83.2	62.0 - 72.7	B727
T22	Madison Av, Edgewater Condos – Prospect Park, PA (departures)	10/13/99	07:15 - 007:49	79.8 - 85.8	66.0 - 72.7	B727
T23	1011 Eldridge, Collingswood, NJ (arrivals)	10/13/99	12:15 - 12:50	69.5 - 85.7	62.1 - 79.8	B737

Table 1, Continued
TEMPORARY NOISE MONITORING RESULTS
Philadelphia International Airport

Site Code	Description	Date	Times	SEL Range (in decibels)	Lmax Range (in decibels)	Peak Aircraft
T24	Harrison & Scarlet - Aston, PA (arrivals)	10/13/99	12:20 - 12:40	70.2	64.2	-
T25	Elm & Mount (Beechwood Park) – Aston, PA (departures)	10/13/99	13:03 - 14:00	71.0 - 82.3	59.0 - 75.1	-
T26	115 Flood Gate Road (Speedway) – Bridgeport, NJ (departures)	10/13/99	14:00 - 14:28	63.3 - 83.2	53.0 - 76.2	B737
T27	Rd "A" near Corner of Rd "B" Audobon Park, PA (arrivals)	10/13/99	14:15 - 14:44	73.9 - 82.7	64.5 - 72.2	B767
T28	Klenn & Johnson – Gloucester, NJ (arrivals)	10/13/99	00:20 - 00:46	77.9 - 84.3	64.7 - 72.7	DC8
T29	2nd & Eddystone - Eddystone, PA (departures)	10/14/99	09:30 - 10:11	70.9 - 84.7	60.3 - 71.9	B727
T30	310 3rd St – Tinicum, PA (departures)	10/14/99	09:40 - 10:27	68.5 - 91.5	59.5 - 81.2	MD80
T31	112 Gerald – Aston, PA (departures)	10/14/99	09:40 - 10:45	71.1 - 91.8	60.2 - 88.2	B737
T32	Jason St. – Eastwick, PA (departures)	10/14/99	12:03 - 14:25	65.0 - 86.6	52.3 - 79.7	Single Prop
T33	116 Buttonwood Lane - Bridgeport, NJ (departures)	10/13/99	12:10 - 13:00	70.8 - 86.3	59.2 - 75.7	MD88
T34	2nd St & Monroe, Center City - Philadelphia, PA (no observations)	10/14/99	12:50 - 1:15	-	-	-
T35	Pier 3, Columbus Blvd – Philadelphia, PA (no observations)	10/14/99	12:15 - 12:45	-	-	-
T36	71 Jobstown Rd (St Paul's Church) – Paulsboro, NJ (arrivals)	10/14/99	12:30 - 12:37	75.7	66.1	-
T37	16 Wilson St. – Haddon, PA (arrivals)	10/14/99	14:27 - 14:59	74.9 - 83.3	64.6 - 74.6	MD88
T38	Fort Mifflin (arrivals)	10/14/99	16:48 - 17:04	92.6 - 98.5	86.1 - 90.7	B757
T39	33 Martin Ave - Norwood, PA (departures)	10/15/99	10:05 - 10:45	63.9 - 75.5	51.5 - 65.9	-
T40	938 Mercer St - Gloucester, PA (departures)	10/15/99	10:30 - 10:50	76.4 - 85.8	64.6 - 75.7	MD80
T41	Society Dr. - Claymont, DE (arrivals)	10/15/99	10:36 - 10: 47	76.0 - 77.4	63.9 - 66.2	B727

T= Temporary Site SEL = Sound Exposure Level Lmax = Maximum Noise Level
dBA= A-Weighted Decibels
Note: The blank cells in this table indicate that no data was recorded or that the aircraft could not be identified from the site.
Source: Landrum & Brown, 1999.

NOISE EXPOSURE MODELING

This Part 150 will prepare noise exposure maps for two conditions:

- Existing Conditions (2001, based on calendar year 2000 data)
- Future Conditions (2006 based on forecasts)

A third map, normally called the Noise Compatibility Program (NCP) noise exposure map will also be prepared. It will consider the recommended noise abatement procedures developed during the study.

In order to model aircraft noise exposure, key inputs are required, including runway utilization, flight tracks and utilization, operational levels, fleet mix, and ground noise data. Aircraft noise exposure is predicted with the FAA's Integrated Noise Model (INM) Version 6.0B. The INM utilizes these inputs to produce contours of equal noise exposure. Each input is briefly discussed in the following paragraphs. The next exhibit shows how noise contours are modeled.

RUNWAY UTILIZATION

- Runway use data is extracted from a combination of Radar data, runway availability data, and discussions with the control tower and the airport to determine the proportion of time each runway is utilized, and by what categories of aircraft. This information determines the year 2001 Baseline runway utilization. The 2006 Baseline noise exposure assumes that no changes will occur that will affect future runway use. **Table 2** shows the runway utilization assumed for 2001 and 2006 baseline conditions.

- The airport operates in one of two modes based on wind direction:
  - West Flow – approximately 70% of the time.
  - East Flow – approximately 30% of the time.

- Commercial Jet aircraft primarily use Runways 9R/27L and 9L/27R for arrivals and departures.
  - Departures: 63% of departures on outboard runway (27L) in west flow.
    26% of departures on inboard runway (9L) in east flow.
  - Arrivals: 64% of arrivals on inboard runway (27R) in west flow.
    27% of arrivals on outboard runway (9R) in east flow.
- General Aviation and Commuter Propeller aircraft use a combination of all the runways for arrivals and departures.
  - Departures: Primarily depart on Runway 35 and 27L in west flow.
    Primarily depart on Runways 17 and 8 in east flow.
  - Arrivals: Primarily arrive on Runway 35 and 26 in west flow.
    Primarily arrive on Runways 17 and 9R in east flow.

How Noise Contours are Generated

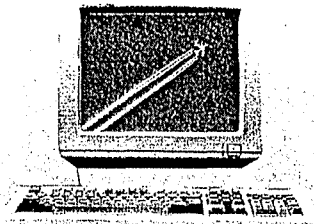
User Inputs

- **Inputs** ▶ **Source**
- Airport Information
  - ▶ ALP, TAMIS
- Aircraft Flight Tracks
  - ▶ TAMIS
- Fleet Mix
  - ▶ TAMIS, Tower, Airport Records, OAG
- Number of Operations
  - ▶ TAMIS, Tower, Airport Records, OAG
- Runway Utilization
  - ▶ TAMIS
- Time of Day
  - ▶ TAMIS
- Aircraft Climb Profiles
  - ▶ TAMIS, INM
- Departure Trip Length
  - ▶ TAMIS

Integrated Noise Model (INM)

INM Provided Information

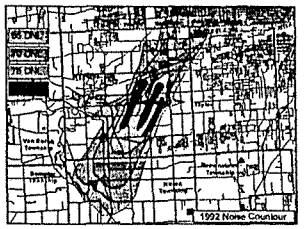
- Aircraft Noise Levels
- Aircraft Performance Data



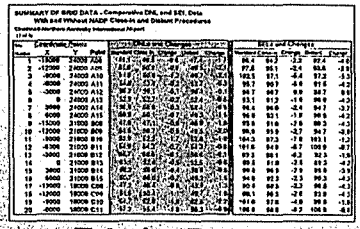
Types of Aircraft Noise Considered within INM

- Arrival
- Departure
- Flyover
- Reverse Thrust (Braking)

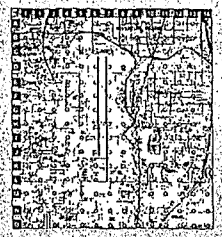
Output



Noise Contours



Tabular Reports



Grid Point Analysis

TABLE 2
2001 AND 2006 BASELINE CONDITIONS
DETAILED RUNWAY UTILIZATION BY USER GROUP

Daytime Arrivals (7:00 a.m. to 9:59 p.m.)

Category	09L	09R	17	27L	27R	35	8	26	Total
Cargo/Heavy Jet	0.8%	28.0%	0.9%	16.7%	54.5%	0.0%	0.0%	0.0%	100.0%
Air Carrier Jet	0.8%	27.0%	0.0%	5.7%	66.4%	0.0%	0.0%	0.0%	100.0%
Air Carrier Propeller	1.1%	10.3%	20.3%	2.3%	20.2%	35.6%	0.0%	10.2%	100.0%
GA - Business Jet	1.3%	30.6%	5.8%	2.4%	32.9%	20.7%	0.0%	3.5%	100.0%
GA - Propeller	0.7%	10.5%	22.3%	1.9%	9.9%	41.3%	0.0%	13.5%	100.0%

Daytime Departures (7:00 a.m. to 9:59 p.m.)

Category	09L	09R	17	27L	27R	35	8	26	Total
Cargo/Heavy Jet	28.1%	7.2%	0.0%	45.1%	19.7%	0.0%	0.0%	0.0%	100.0%
Air Carrier Jet	25.5%	1.9%	0.0%	65.0%	7.6%	0.0%	0.0%	0.0%	100.0%
Air Carrier Propeller	5.9%	0.0%	9.4%	24.6%	10.6%	39.6%	9.8%	0.0%	100.0%
GA - Business Jet	10.1%	1.1%	19.2%	22.3%	17.5%	18.1%	11.6%	0.0%	100.0%
GA - Propeller	2.3%	0.4%	25.2%	14.8%	6.9%	35.6%	14.9%	0.0%	100.0%

Nighttime Arrivals (10:00 p.m. to 6:59 a.m.)

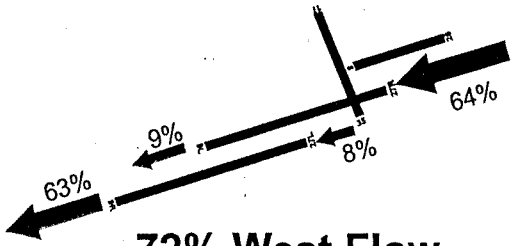
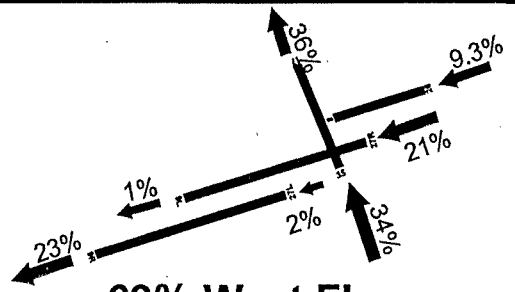
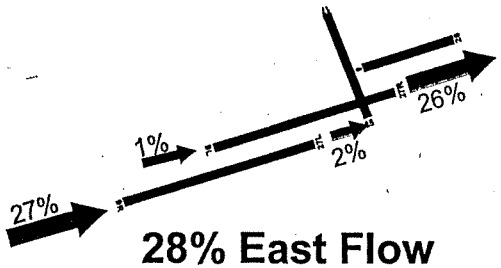
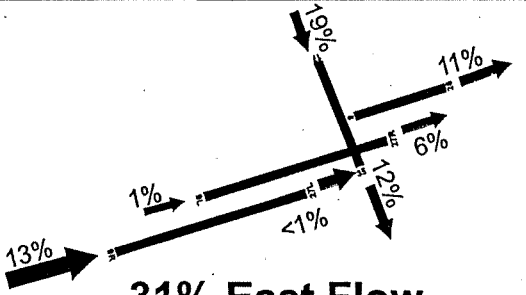
Category	09L	09R	17	27L	27R	35	8	26	Total
Cargo/Heavy Jet	1.4%	26.5%	0.0%	40.1%	32.0%	0.0%	0.0%	0.0%	100.0%
Air Carrier Jet	1.5%	31.2%	0.0%	2.5%	64.8%	0.0%	0.0%	0.0%	100.0%
Air Carrier Propeller	1.1%	10.3%	20.3%	2.3%	20.2%	35.6%	0.0%	10.0%	100.0%
GA - Business Jet	4.1%	26.9%	1.4%	5.5%	41.4%	17.2%	0.0%	3.5%	100.0%
GA - Propeller	4.7%	18.7%	12.1%	0.9%	15.9%	24.3%	0.0%	23.4%	100.0%

Nighttime Departures (10:00 p.m. to 6:59 a.m.)

Category	09L	09R	17	27L	27R	35	8	26	Total
Cargo/Heavy Jet	22.8%	5.5%	0.0%	55.5%	16.2%	0.0%	0.0%	0.0%	100.0%
Air Carrier Jet	32.2%	2.1%	0.0%	56.0%	9.7%	0.0%	0.0%	0.0%	100.0%
Air Carrier Propeller	6.2%	0.0%	13.0%	19.2%	7.9%	38.9%	14.6%	0.0%	100.0%
GA - Business Jet	9.4%	0.6%	39.2%	15.55	17.7%	7.2%	10.5%	0.0%	100.0%
GA - Propeller	3.1%	0.0%	29.1%	12.6%	20.5%	15.0%	19.7%	0.0%	100.0%

Category Key	Description
Cargo/Heavy Jet	UPS, other cargo, and Heavy Jet air carrier (e.g., 767, 777, 747, A340)
Air Carrier Jet	Large Jet air carrier (e.g., 727, 737, 757, A319, A320, MD80)
Air Carrier Propeller	Propeller air carrier (e.g., twin turboprop)
GA - Business Jet	GA Business Jet (e.g., C550, C650, MU3, Gulfstream)
GA - Propeller	GA Propeller (e.g., single/twin engine prop and turboprop)

Runway Utilization Flow

Commercial Jet Aircraft	General Aviation and Propeller Aircraft
 72% West Flow	 69% West Flow
 28% East Flow	 31% East Flow

Arrivals

Departures

Part 150 Noise Study
Philadelphia International Airport

N

FLIGHT TRACKS

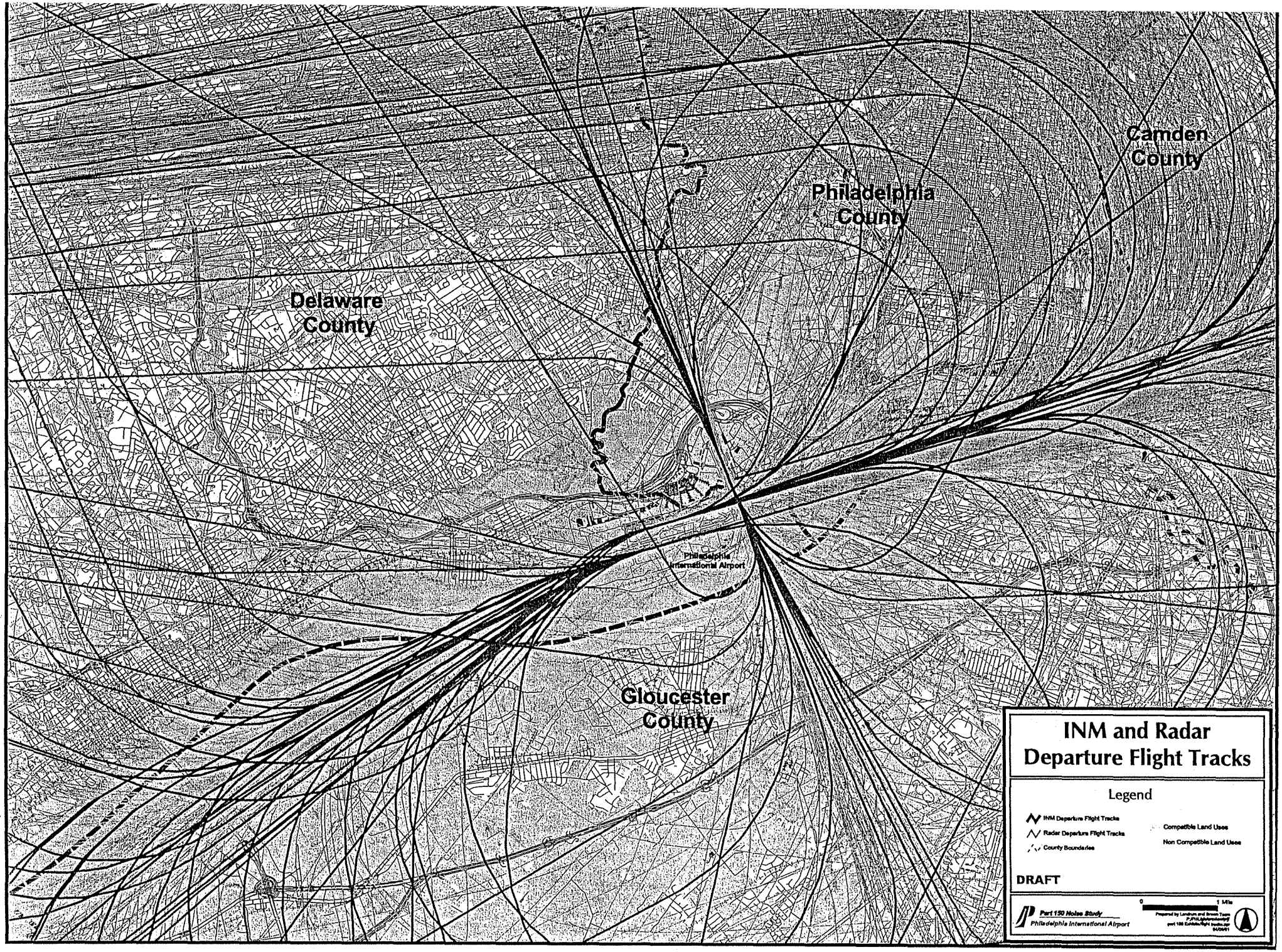
- Flight tracks are lines that represent the paths aircraft fly along when arriving or departing the airport.

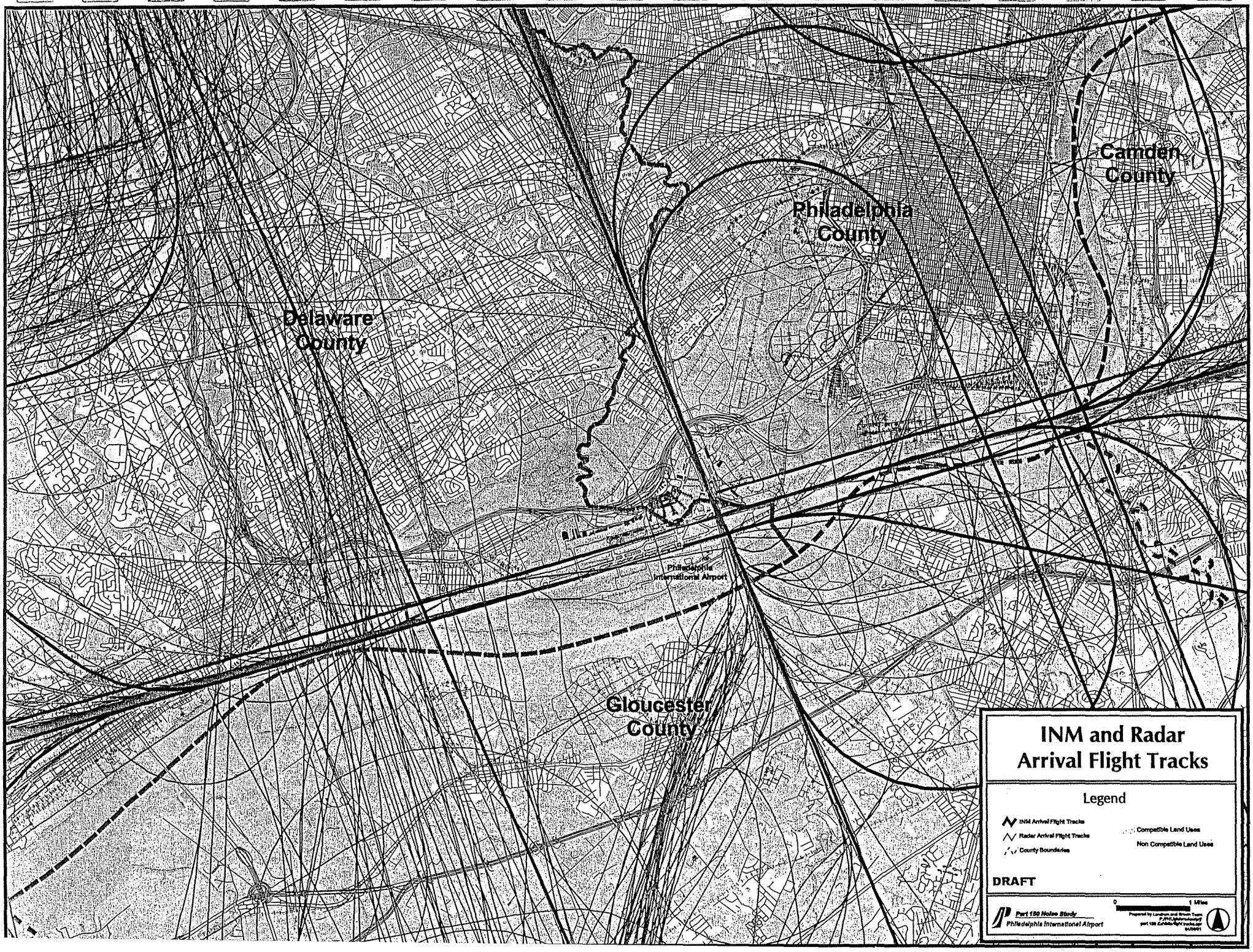
- Four (4) weeks of radar data were collected from the TRACOR Airport Management Information System (TAMIS). One (1) for each of the four quarters of a one (1) year period to best represent the average flight track locations. Radar data was also collected for the noise monitoring period, October 11-15, 1999.

- The radar data was compiled into jet operations and propeller operations. Representative flight paths were developed for each group and were used for 2001 and 2006 baseline conditions.

- The radar data and the flight paths were discussed with the ATCT and the airport to assure accuracy and comprehensiveness.

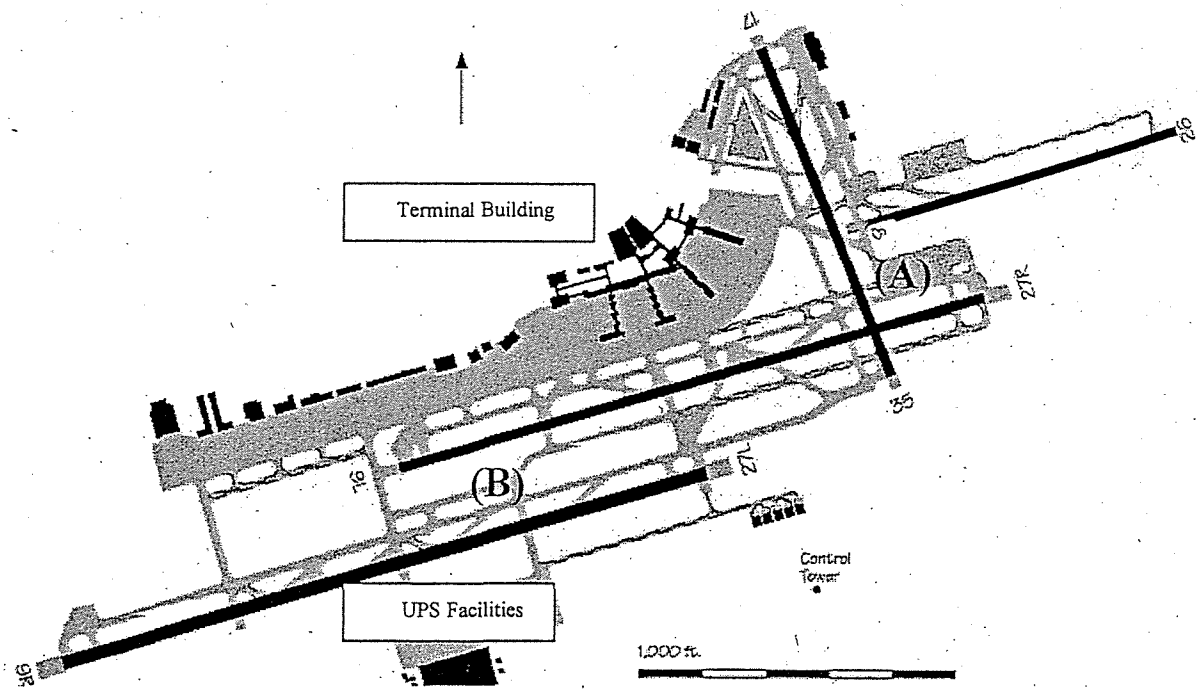
The next two exhibits, following this page, show sample radar data collected for arriving and departing aircraft at Philadelphia International Airport.


Camden County
Philadelphia County
Delaware County
Philadelphia International Airport
Gloucester County
INM and Radar Departure Flight Tracks
Legend
INM Departure Flight Tracks
Radar Departure Flight Tracks
County Boundaries
Compatible Land Uses
Non Compatible Land Uses
DRAFT
0
1 Mile
Part 150 Noise Study
Philadelphia International Airport


Camden County
Philadelphia County
Delaware County
Philadelphia International Airport
Gloucester County
INM and Radar Arrival Flight Tracks
Legend
INM Arrival Flight Tracks
Radar Arrival Flight Tracks
County Boundaries
Compatible Land Uses
Non Compatible Land Uses
DRAFT
0
1 Miles
Part 150 Noise Study
Philadelphia International Airport

OTHER CONSIDERATIONS
2001 EXISTING CONDITIONS

- Engine Run-up information was gathered for 2000 from the Airport and input into the INM for processing. A total of 159 engine run-ups were conducted in the year 2000.
- Engine run-ups occur at two centrally located positions on the airfield.
  - (A) Taxiway K at H facing east (preferred).
  - (B) Taxiway P at W facing west
- Roughly 65% of the engine run-ups occurred during the nighttime (10:00 p.m. to 6:59 a.m.).
- Run-ups between 11:00 p.m. and 6:00 a.m. are conducted at the preferred location (Site A).
- Average duration of engine run-ups is approximately 17 minutes.
- Typical aircraft types include Boeing 727/737/757, DC9, MD82, and Airbus 319/320 aircraft.



2001 BASELINE OPERATING LEVELS

Operating Data for the 2001 baseline condition was gathered from:

2000 Official Airline Guide (OAG) data
2000 Operating Records from the ATCT
2000 Landing Fee Reports from the Airport
1999/2000 Operating Data from the TAMIS

- The total operations for 2000 (January to December) were 483,567 landings and takeoffs. When divided by 365 days, the average annual day is 1,325 takeoffs and landings. INM uses the average annual day to calculate Day-Night Level (DNL) noise contours.

- Calendar year 2000 operational levels will be utilized to produce the 2001 baseline noise contours. **Table 3** shows a breakdown of 2000 operations by category, as well as 1999 operations for comparison.

- Major commercial operations will likely account for the majority of the annual operations.

- Regional operations, cargo operations, general aviation, and military operations will account for the remainder of the activity.

- Four primary User Groups at the Airport, **Table 4** shows the percentage of each group operating at the airport in 2001 baseline conditions:

  - Cargo/Heavy Jet - Cargo airlines and international air carrier aircraft

  - Air Carrier Jet - Domestic air carrier aircraft

  - Regional Jet/Business Jet - Commuter jet aircraft and general aviation jet aircraft

  - Propeller Aircraft - Commuter turboprop and general aviation propeller aircraft

Table 3
CALENDAR YEARS 1999 AND 2000 OPERATIONS

Year	Air Carrier	Air Taxi	General Aviation	Military	TOTAL
1999	218,930	146,250	51,021	1,078	480,279
2000	296,059	125,777	61,186	545	483,567

Source: FAA APO Web Site, 2001.

TABLE 4
AIRCRAFT OPERATIONS BY USER GROUP - 2001 EXISTING CONDITION
Philadelphia International Airport

User Group	2001 Existing	% of Total
Cargo/Heavy Jet	51,100	10.6%
Air Carrier Jet	210,970	43.6%
Business Jet	67,160	13.9%
Propeller Aircraft	153,792	31.8%
Military Aircraft	545	0.1%
Total	483,567	100%

Source: Landrum & Brown, 2001.

2001 BASELINE FLEET MIX

- Fleet mix refers to the specific types of aircraft that operate at the airport.
- Because the INM uses an average annual day to calculate DNL noise levels, the number of average day operations are further reduced and assigned to specific aircraft types in accordance with their distribution throughout the day.
- Air carrier (passenger) jets flew 44% of the total operations and included Hushkitted Boeing 727/737-200, Boeing 737-300, Boeing 757, Airbus 319/320, Huskitted DC9, Fokker 100, and MD80/83/88 types. Cargo/Heavy jet aircraft flew 11% of the total operations and included Hushkitted Boeing 727 and DC9, Boeing 747/757/767/777, Airbus 310, DC870, and various small jet and propeller aircraft.
- Business jets flew approximately 14% of the total operations for 2001 baseline conditions.
- Military operations accounted for less than 1% of total operations.
- Propeller aircraft flew the remaining 32% of the total operations and included both commuter and general aviation aircraft.
- The INM applies a 10 decibel penalty to all nighttime (10:00 p.m. to 6:59 a.m.) operations. For 2001 Existing Conditions, approximately 10.5% of the total operations occurred during nighttime hours. **Table 5** shows the average annual day fleet mix and operational levels.

Table 5
2001 AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE

User Group & INM Type	Part 36 Stage	Aircraft Type	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Day	Total Night
Cargo/Heavy Jets								
727EM1	3	Boeing 727-100 (retrofit)	0	1	0	1	0	2
727EM2	3	Boeing 727-200 (retrofit)	1	2	0	3	1	5
727QF	3	Boeing 727-100 (reengine)	1	4	1	4	2	8
74720A	3	Boeing 747-200A	2	1	2	0	4	1
757PW	3	Boeing 757-200	0	4	0	4	0	8
757RR	3	Boeing 757-200	0	2	0	2	0	4
767300	3	Boeing 767-300	4	1	4	0	8	1
767CF6	3	Boeing 767-200	8	0	8	0	16	0
777200	3	Boeing 777-200	2	0	2	0	4	0
A310	3	Airbus 310	0	2	0	2	0	4
DC93LW	3	DC-9 30 Series (retrofit)	1	0	1	0	2	0
DC870	3	DC-8 70 Series	6	3	10	6	16	9
Subtotal			**25**	**20**	**28**	**22**	**53**	**42**
Air Carrier Jets								
727EM2	3	Boeing 727-200 (retrofit)	14	2	14	1	28	3
737300	3	Boeing 737-300	32	4	27	7	59	11
7373B2	3	Boeing 737-300	30	0	30	0	60	0
737400	3	Boeing 737-400	47	1	47	1	94	2
737500	3	Boeing 737-500	8	0	7	1	15	1
737800	3	Boeing 737-800	2	0	2	0	4	0
737N17	3	Boeing 737-200 (retrofit)	9	1	9	1	18	2
737N9	3	Boeing 737-200 (retrofit)	3	0	3	0	6	0
757PW	3	Boeing 757-200	4	1	5	1	9	2
757RR	3	Boeing 757-200	22	4	21	2	43	6
A319	3	Airbus 319	27	2	27	2	54	4
A320	3	Airbus 320	22	4	24	2	46	6
DC93LW	3	DC-9 30 Series (retrofit)	40	2	37	3	77	5
DC95HW	3	DC-9 50 Series (retrofit)	8	1	8	1	16	2
F10065	3	Fokker 100	18	1	19	0	37	1
MD82/83	3	MD-82 Series	28	2	28	5	56	7
Subtotal			**314**	**25**	**308**	**27**	**622**	**52**
Regional/Business Jets								
CL600	3	Business Jet	3	4	4	3	7	7
CL601	3	Canadair Regional Jet	35	3	35	3	70	6
LEAR35	3	Business Jet	6	7	6	5	12	12
MU3001	3	Business Jet	6	5	6	5	12	10
Subtotal			**52**	**19**	**53**	**16**	**101**	**35**
Propeller Aircraft								
BEC58P	N	Twin Engine Prop	10	1	6	0	16	1
DHC6	N	Commuter prop	69	11	80	8	149	19
DHC8	N	Commuter prop	94	9	92	10	186	19
SF340	N	Saab 340	15	0	14	1	29	1
Subtotal			**188**	**21**	**192**	**19**	**380**	**40**
Grand Total			**579**	**85**	**581**	**84**	**1156**	**169**

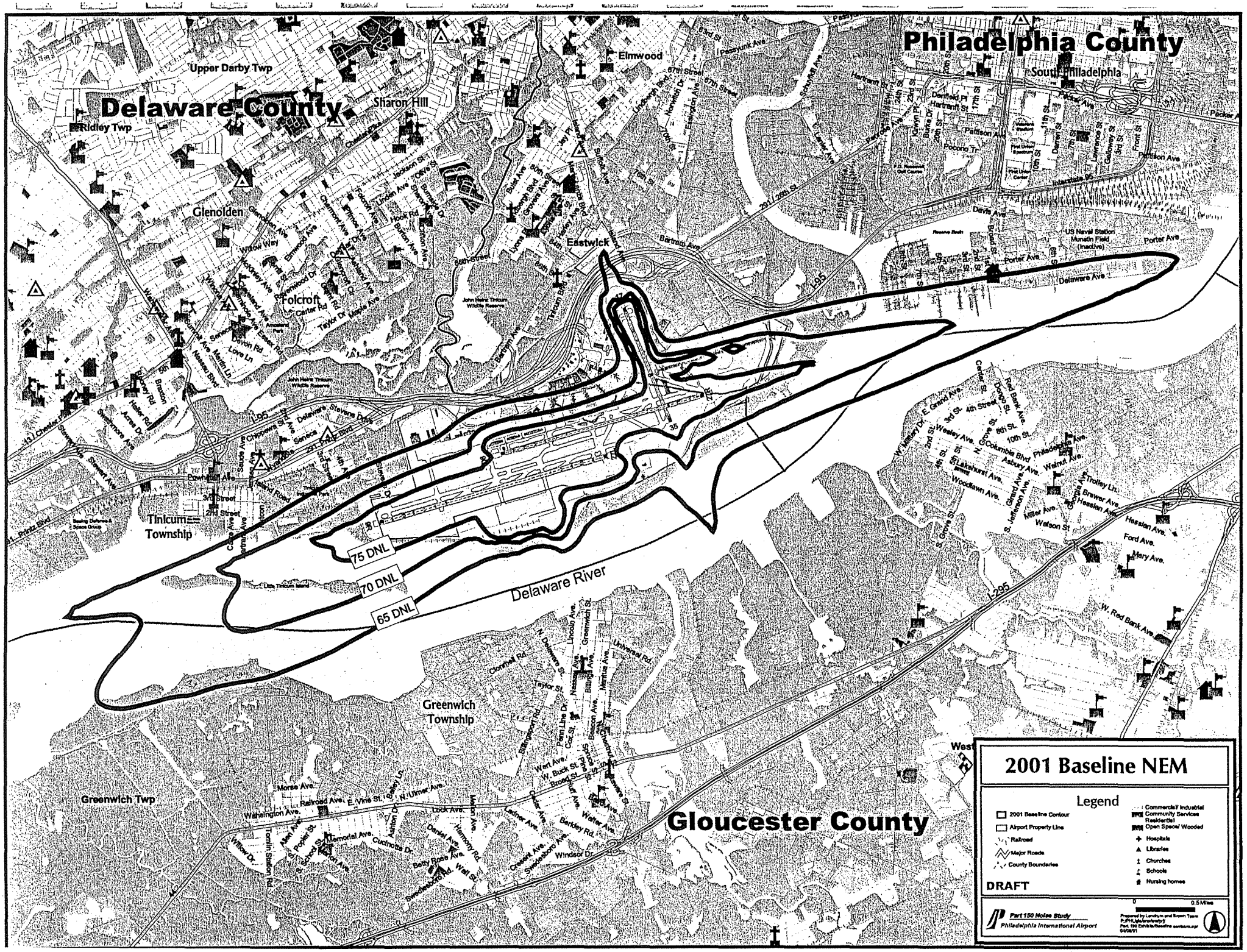
NOISE EXPOSURE PATTERN
2001 EXISTING CONDITIONS

- The 2001 Existing Conditions noise contour contains roughly 9.31 square miles within the 65 + DNL. **Table 6** shows the 2001 baseline noise exposure impact.
- The size and shape of the contours reflect the runway use and the flight tracks. The next exhibit shows the 2001 baseline noise exposure contours.
- Approximately 19 homes fall inside the 65 + DNL noise contours (based on 1990 Census Data).

TABLE 6
2001 BASELINE EXISTING
NOISE EXPOSURE IMPACT - AREA (SQUARE MILES)
Philadelphia International Airport

Noise Contour	65-70 DNL	70-75 DNL	75+ DNL	65 + DNL
2001 Existing Contour	4.93	2.41	1.97	9.31

Source: Landrum & Brown, 2001.


Philadelphia County
Delaware County
Gloucester County
Upper Darby Twp
Elmwood
Sharon Hill
Ridley Twp
South Philadelphia
Glenolden
Folcroft
Eastwick
Tinicum Township
Greenwich Township
Greenwich Twp
Delaware River
75 DNL
70 DNL
65 DNL
I-95
2001 Baseline NEM
Legend
2001 Baseline Contour
Airport Property Line
Railroad
Major Roads
County Boundaries
Commercial/ Industrial
Community Services
Residential
Open Space/ Wooded
Hospitals
Libraries
Churches
Schools
Nursing homes
DRAFT
Part 150 Noise Study
Philadelphia International Airport

2006 BASELINE RUNWAY UTILIZATION AND FLIGHT TRACKS

Both runway utilization and flight track positions are assumed to remain the same for future baseline conditions.

2006 BASELINE OPERATING LEVELS

- Forecasted operations for 2006, as developed by the ongoing Master Plan Update, were utilized to predict the noise exposure for baseline and abated future conditions. Annual operations are forecast to increase to 556,800, an increase of approximately 15%.

- Commercial operations include both passenger and cargo airlines. Commercial operations are forecast to increase to 500,200.

- General Aviation and military operations are expected to also increase for 2006 conditions.

2006 BASELINE FLEET MIX

- Two factors will play a role in determining the fleet mix for the year 2006:

  - By January 1, 2000, operators of all commercial aircraft weighing over 75,000 pounds complied with FAA Part 91 requirements by removing from the fleet, hushkitting, or putting new engines on their Stage 2 aircraft, resulting in a 100% Stage 3 commercial fleet.

  - Operations will increase between 2001 and 2006.

- Mid-size jets, such as B-737's, MD80's, and Airbus aircraft will be prominent in the future commercial jet fleet. Small commuter jet aircraft are also a significant portion of the commercial jet fleet in 2006.

- Retrofitted and hushkitted aircraft are expected to be a small portion of the Stage 3 Commercial Jet operations in the year 2006.

Table 7 shows the forecasted 2006 operational levels and fleet mix for an average annual day.

Table 7
2006 FUTURE BASELINE CONDITION AVERAGE DAY OPERATIONS BY AIRCRAFT TYPE

User Group & INM Type	Part 36 Stage	Aircraft Type	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Day	Total Night
Cargo/Heavy Jets								
727EM1	3	Boeing 727-100 (retrofit)	0	1	0	1	0	2
727EM2	3	Boeing 727-200 (retrofit)	1	3	1	3	2	6
727QF	3	Boeing 727-100 (reengine)	0	3	1	2	1	5
74720A	3	Boeing 747-200A	1	1	1	0	2	1
757PW	3	Boeing 757-200	0	5	1	3	1	8
757RR	3	Boeing 757-200	0	2	0	3	0	5
767300	3	Boeing 767-300	1	2	3	0	4	2
767CF6	3	Boeing 767-200	6	1	5	1	11	2
777200	3	Boeing 777-2002	1	0	1	0	2	0
A310	3	Airbus 310	1	1	1	1	2	2
DC93LW	3	DC-9 30 Series (retrofit)	0	1	0	1	0	2
DC870	3	DC-8 70 Series	2	2	2	3	4	5
Subtotal			**13**	**22**	**16**	**18**	**29**	**40**
Air Carrier Jets								
727EM2	3	Boeing 727-200 (retrofit)	10	2	10	2	20	2
7373B2	3	Boeing 737-300	35	1	30	0	65	1
737300	3	Boeing 737-300	31	4	29	5	60	9
737400	3	Boeing 737-400	69	1	68	1	177	2
737500	3	Boeing 737-500	9	0	8	1	17	1
737N9	3	Boeing 737-200 (retrofit)	3	0	3	0	6	0
737N17	3	Boeing 737-200 (retrofit)	10	1	10	1	20	2
757PW	3	Boeing 757-200	4	1	4	1	8	2
757RR	3	Boeing 757-200	23	1	23	1	46	2
A320	3	Airbus 320	65	12	69	7	134	19
DC93LW	3	DC-9 30 Series (retrofit)	43	2	41	5	84	7
DC95HW	3	DC-9 50 Series (retrofit)	9	1	8	1	17	2
F10065	3	Fokker 100	25	1	26	0	51	1
MD82	3	MD-82 Series	19	0	21	1	40	1
MD83	3	MD-88 Series	12	1	7	4	19	5
Subtotal			**367**	**28**	**357**	**30**	**724**	**58**
Regional/Business Jets								
CL600	N	Business Jet	1	3	2	2	3	5
CL601	N	Regional Jet	41	3	42	3	83	6
LEAR35	N	Business Jet	4	7	5	5	9	12
MU3001	N	Business Jet	3	3	3	3	6	6
Subtotal			**49**	**16**	**52**	**13**	**101**	**29**
Propeller Aircraft								
BEC58P	N	Twin Engine Prop	6	1	5	0	11	1
DHC6	N	Commuter prop	76	13	126	12	202	25
DHC8	N	Commuter prop	113	11	133	18	246	29
SF340	N	Saab 340	12	1	16	2	28	2
Subtotal			**207**	**26**	**280**	**32**	**487**	**57**
Grand Total			**636**	**92**	**705**	**93**	**1,341**	**184**

NOISE EXPOSURE PATTERN
2006 FUTURE BASELINE CONDITIONS

- The 2006 Existing Conditions noise contour contains roughly 8.75 square miles within the 65 + DNL. **Table 8** shows the noise exposure impact resulting from 2006 future baseline conditions.

- The size and shape of the contours reflect the runway use and the flight tracks. The following exhibit shows the 2006 future baseline noise contours.

- Approximately 3 homes fall inside the 65 + DNL noise contours (based on 1990 Census Data), this represents a decrease from 2001 baseline conditions.

TABLE 8
2006 FUTURE BASELINE
NOISE EXPOSURE IMPACT - AREA (SQUARE MILES)
Philadelphia International Airport

Noise Contour	65-70 DNL	70-75 DNL	75+ DNL	65 + DNL
2006 Existing Contour	4.65	2.13	1.97	8.75

Source: Landrum & Brown, 2000.

NOISE COMPATIBILITY PROGRAM NOISE EXPOSURE PATTERNS

- Noise compatibility program contours will be developed from the projected 2006 baseline conditions, and will include recommended noise abatement actions developed during this planning process. They will become the final mitigation contours once approved by the Federal Aviation Administration. The airport will implement their land use and program management measures based on these contours.

- Potential noise abatement measures, land use measures and program management measures will be discussed later in this document. **Table 9** shows the FAR Part 150 Land Use Compatibility Guidance Chart.

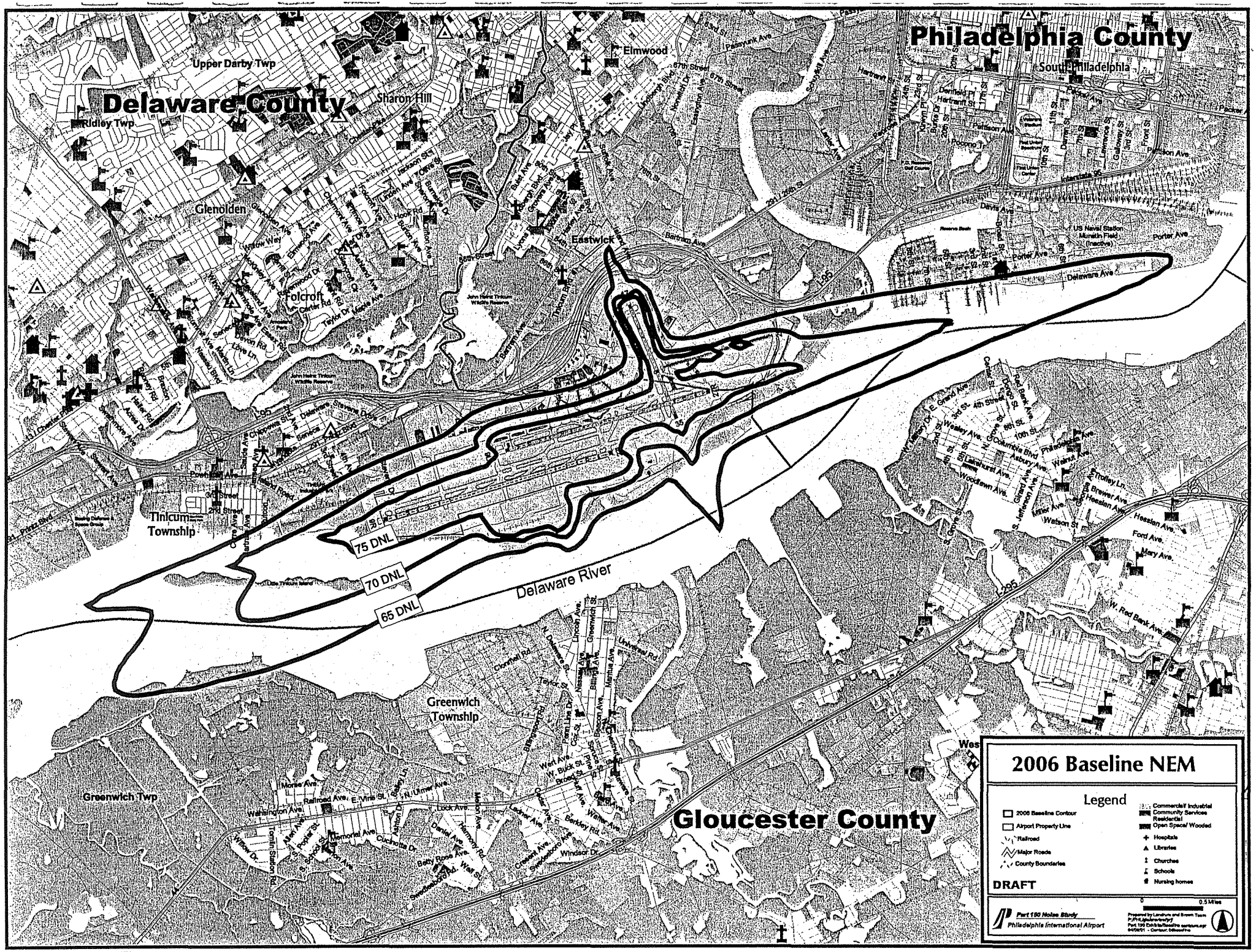

Philadelphia County
Delaware County
Gloucester County
Upper Darby Twp
Ridley Twp
Sharon Hill
Elmwood
South Philadelphia
Glenolden
Folcroft
Eastwick
Tinicum Township
Greenwich Township
Greenwich Twp
Delaware River
75 DNL
70 DNL
65 DNL
2006 Baseline NEM
Legend
2006 Baseline Contour
Airport Property Line
Railroad
Major Roads
County Boundaries
Commercial/ Industrial
Community Services
Residential
Open Space/ Wooded
Hospitals
Libraries
Churches
Schools
Nursing homes
DRAFT
0
0.5 Miles
Part 150 Noise Study
Philadelphia International Airport

Table 9
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
Philadelphia International Airport

YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (DNL) IN DECIBELS

LAND USE	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
PUBLIC USE						
Schools, hospitals, nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	N[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail -- building materials, hardware, and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade, general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y	Y[5]	N[5]	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Table 9, Continued
LAND USE COMPATIBILITY GUIDELINES - FAR PART 150
Philadelphia International Airport

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key To Table 9

Y (Yes)	Land use and related structures compatible without restrictions.
N (No)	Land use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure
25, 30, 35	Land use and related structures generally compatible; measures to achieve a NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table 9

1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.
5. Land use compatible provided special sound reinforcement systems are installed.
6. Residential buildings require a NLR of 25 dB.
7. Residential buildings require a NLR of 30 dB.
8. Residential buildings not permitted.

Source: FAR Part 150 Airport Noise Compatibility Planning, Appendix A, and Table 1.

LAND USE PLANNING

INTRODUCTION

Land use planning and the adoption, administration, and enforcement of zoning regulations is within the exclusive authority of Pennsylvania's local municipal governments within each of their jurisdictions. This includes the authority for airport compatible land use planning. The FAA does not have the authority to exercise land use control in a local government's jurisdiction. The FAA may however, provide guidance to the airport to encourage compatible land use planning in their area, and the FAR Part 150 process is one way to involve, educate and encourage local communities located within the airport environs to review their current and future land use and zoning policies.

For this FAR Part 150 Study, a data base of noise sensitive land uses was developed using the most up to date information available from the local municipalities as well as the Delaware Valley Regional Planning Commission (DVRPC). Land use information is incorporated onto the study area basemap (see the next exhibit) which is then used to depict the noise contours developed in all phases of the study.

Having the land uses clearly identified on the basemap will allow the study team to identify and quantify any noise sensitive land uses that may be located within the 65 - 75 DNL noise contours generated for the existing, future, and alternative scenarios.

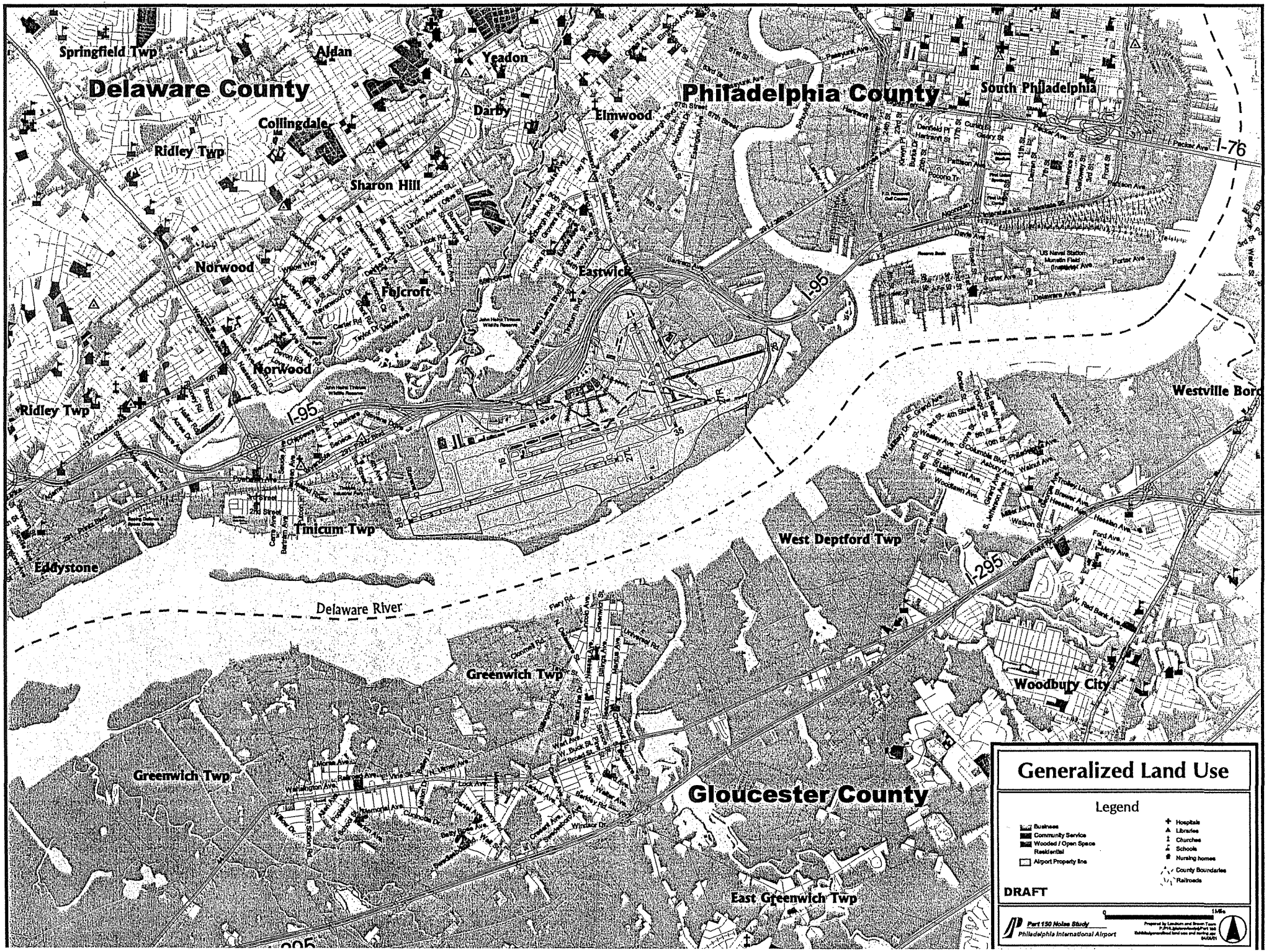
In addition to the mapping, county, city, township and borough plans, ordinances, zoning regulations and any other documentation that pertains to land use planning and management within the municipalities located in the immediate vicinity of the airport are collected. Each of the individual municipalities vary greatly in terms of geographic size, population, development characteristics, and degree of services.

The DVRPC is comprised of a nine county planning area which includes Bucks, Chester, Delaware, Montgomery and Philadelphia counties in Pennsylvania as well as Burlington, Camden, Gloucester, and Mercer counties in New Jersey. This study utilizes information from Delaware, Philadelphia, Camden, and Gloucester counties.

EXISTING LAND USE

Philadelphia International Airport is located within two municipalities and counties. The northeastern portion of the airport lies within the City of Philadelphia, Philadelphia County; the southwestern portion lies within Tinicum Township, Delaware County. Development on the airport is subject to the permit application and approval requirements of the respective jurisdictions.

Northeast of the Runway 17 end is the neighborhood community of Eastwick and the Eastwick Industrial Park. The Eastwick Industrial Park is a designated City of Philadelphia Commerce Department, Keystone Opportunity Zone (KOZ), one of twelve such zones the city has identified. This industrial land consists of 131 acres located just off I-95 near the airport. Eligible KOZ business and property owners are virtually exempt from state and local business


Springfield Twp
Aldan
Yeadon
Delaware County
Philadelphia County
South Philadelphia
Collingdale
Darby
Elmwood
Ridley Twp
Sharon Hill
I-76
Norwood
Eastwick
I-95
Folcroft
Norwood
Ridley Twp
Westville Boro
Tinicum Twp
West Deptford Twp
Eddystone
I-295
Delaware River
Greenwich Twp
Woodbury City
Greenwich Twp
Gloucester County
East Greenwich Twp
Generalized Land Use
Legend
Business
Community Service
Wooded / Open Space
Residential
Airport Property line
Hospitals
Libraries
Churches
Schools
Nursing homes
County Boundaries
Railroads
DRAFT
Part 150 Noise Study
Philadelphia International Airport

taxes until December 31, 2010. The goal of the KOZ program is to encourage business expansion within the city, attract new businesses to Philadelphia, and to encourage property owners to make capital improvements to their properties. All of which result in new job opportunities for Philadelphia citizens.

Non-airport property located east of the airport is completely developed and heavily dominated by commercial, industrial and governmental land uses. Commercial uses include several airport hotels and consumer service-type businesses located along Island Avenue and PA Route 291. Industrial sites include a wastewater treatment plant, the former Philadelphia Naval Shipyard and a bulk fuel storage facility located along the Delaware River. Fort Mifflin, a national historic site is located outside airport property off Fort Mifflin Road and partially within the Runway 27R Runway Protection Zone (RPZ).

Airport property and aviation facilities border the Delaware River to the south with the exception of the United Parcel Service (UPS) distribution center located on Hog Island Road.

West of the airport beyond Tinicum Island Road, between I-95 and the Delaware River, are Tinicum and Essington Townships. These municipalities have residential areas located directly under several flight paths. Pockets of residential development are interspersed throughout larger tracts of commercial, light and heavy industrial land uses. The Airport Business Center is an office complex and hotel facility located along I-95 west of Cargo City.

Immediately north of the airport, development is limited by PA Route 291 and I-95. Farther to the north is the John Heinz National Wildlife Refuge (JHNWR) administered by the U.S. Fish and Wildlife Service. It was established by public law in 1972 to protect 83 acres of tidal marsh in Pennsylvania. East of the JHNWR, commercial development continues along Bartram Avenue. Recent improvements include the PNC Bank operations center and several new hotels.

LAND USE IMPACTS

A small portion of Tinicum Township is located within the 65-70 DNL noise contours. Pockets of residential development are mixed with larger tracts of commercial, light and heavy industrial land uses as well as some open space in the area affected. The only types of land use located in the 70-75 DNL in Tinicum are industrial and open space.

There are no schools, churches, hospitals, or other healthcare facilities located within the 65 DNL or greater contours. However Fort Mifflin, a national historic site, is located completely within the noise contours.

The southwest portion of the 65 DNL contour does cover a small area located in Greenwich New Jersey. The land that is located within the contour is compatible however, consisting of marshland and industrial - tank farm use.

Other than the industrial and open space impacts previously mentioned in Tinicum Township, there are no other 70 DNL areas off-airport.

CURRENT NOISE ABATEMENT MEASURES

- Noise abatement takeoff procedures are being used.

- The following departure headings are applicable for noise abatement:

1. Runways 9L/9R/17/35 – Fly runway heading (no distance or altitude specified).
2. Runway 27L – Turn left to 255 degrees when able, to overfly the Delaware River.
3. Runway 27R – Turn left to 240 degrees when able, to overfly the Delaware River.

Engine runups are restricted to two centrally located sites on the airport. Engine runups require prior approval of airport operations and must not exceed 20 minutes in duration. Between 11:00 p.m. and 6:00 a.m., runups are restricted, unless it would delay the departure of a scheduled flight.

POTENTIAL NOISE ABATEMENT ALTERNATIVES

Noise abatement alternatives are intended to provide noise level reduction through relocation of noise sources to more compatible areas or reduction at the source. Such alternatives fall into these general categories.

- **Modify Flight Locations**
  1. Preferred flight tracks
  2. Instrumented approaches (Standard Terminal Arrival Routes (STARs))
  3. Departure procedures (Departure Procedures or Standard Instrument Departures (SIDs))

- **Flight Frequency**
  1. Preferred runway use programs
  2. Track usage by type of operation
  3. Track usage by type of aircraft

- **Flight Times**
  1. Preferential operations by time of day

- **Flight Management** (Use of preferred flight procedures)
  1. Reduced thrust
  2. Modification of intercept altitudes
  3. On-board instrumentation

- **Ground Activity Restrictions**
  1. Local restrictions on runups (time, location, orientation, power)
  2. Power backs

- **Facility Modifications**
  1. New runways or extensions for flight relocation
  2. Terminal area improvements
  3. Taxiway relocations
  4. High speed exits
  5. Hush Houses/Ground Runup Enclosures
  6. Berms and/or barriers

POTENTIAL LAND USE ALTERNATIVES

Land use alternatives are those measures that deal with the mitigation of aircraft noise either through the use of preventive or corrective management techniques. The following steps and procedures are commonly utilized to develop land use alternatives.

- Identify new areas of impact during noise analysis.
- Develop or expand mitigation programs to encompass new areas of impact.

Potential Corrective Measures

- Acquire properties in the most impacted noise areas, normally at levels of 75 DNL or higher.
- Provide other mitigation to noncompatible structures within the lower noise areas, typically 65-75 DNL.
  - Sound Insulation
  - Purchase Assurance
  - Easements

Potential Preventive Measures

- Adopt noise overlay zoning and local codes to incorporate appropriate sound insulation measures in areas exposed to significant noise levels.
- Inform potential homebuyers of noise contours and areas of aircraft impacts.
- Outline guidelines to require homebuyer disclosure notices.
- Pursue adoption of noise overlay zones.
- Incorporate comprehensive land use plans into the study.

POTENTIAL PROGRAM MANAGEMENT ALTERNATIVES

Program management measures are those which deal with the implementation and management of either noise abatement or land use management measures. The following are typical measures recommended as program management alternatives:

- Implement noise communication programs and/or Pilot Awareness Program.
- Establishment of noise program monitoring committee.
- Conduct regular periodic updates of the Noise Compatibility Program.
- Provide enhancements to the noise monitoring system.

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Public Information Workshop #1

April 17, 2001

Proof of Publication
Handout
Sign In Sheets
Comment Forms

Copy of Notice or Publication

Philadelphia International Airport
FAR Part 150 Noise Study
Public Workshop

A Public Information Workshop on the Philadelphia International Airport's Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Study will be held on **Tuesday, April 17, 2001, between 4:30 p.m. - 7:00 p.m.,** at the Tinicum School in the All Purpose Room, 1st and Seneca Streets, Essington, Pennsylvania. The public is welcome to attend the workshop anytime during these hours.

The Part 150 Study is being sponsored by the City of Philadelphia and the Philadelphia International Airport and will focus on reducing present and future noise impacts on communities surrounding the airport.

Proof of Publication of Notice in Delaware County Daily Times

Under Newspaper Advertising Act. No. 587, Approved May 16, 1929

State of Pennsylvania, County of Delaware, } **ss.**

Carol Sandone

designated agent of CENTRAL STATES PUBLISHING, INC., being duly sworn, deposes and says that the DELAWARE COUNTY DAILY TIMES, a daily newspaper of general circulation as defined in the above-mentioned Act, published at Primos, Delaware County, Pennsylvania, was established September 7, 1876, and issued and published continuously thereafter for a period of 100 years and for a period of more than six months immediately prior hereto, (under the name Chester Times prior to November 2, 1959) in the City of Chester, County of Delaware and further says that the printed notice or publication attached hereto is an exact copy of a notice or publication printed and published in the regular edition and issues of the DELAWARE COUNTY DAILY TIMES on the following dates, viz.....

April 14, 16, 17, 2001

..... **A.D. 20.....**

and that said advertising was inserted in all respects as ordered.

Affiant further deposes that he is the proper person duly authorized by CENTRAL STATES PUBLISHING, INC. publisher of said DELAWARE COUNTY DAILY TIMES, a newspaper of general circulation, to verify the foregoing statement under oath and that affiant is not interested in the subject matter of the aforesaid notice or advertisement, and that all allegations in the foregoing statements as to time, place and character of publication are true.

.....

Sworn to and subscribed before me this

17th April 2001

..... **day of** ..... **20** .....

.....

Notary Public

Notarial Seal
Thomas Abbott, Notary Public
Upper Darby Twp., Delaware County
My Commission Expires Aug. 23, 2001
Member, Pennsylvania Association of Notaries

Proof of Publication In The Philadelphia Inquirer
Under Act. No 160, P.L. 877, July 9, 1976

STATE OF PENNSYLVANIA
COUNTY OF PHILADELPHIA

Anna Dickerson being duly sworn, deposes and says that **The Philadelphia Inquirer** is a daily newspaper published at Broad and Callowhill Streets, Philadelphia County, Pennsylvania, which was established in the year 1829, since which date said daily newspaper has been regularly published and distributed in said County, and that a copy of the printed notice of publication is attached hereto exactly as the same was printed and published in the regular editions and issues of said daily newspaper on the following dates:

April 15, 2001

Affiant further deposes and says that he is an employee of the publisher of said newspaper and has been authorized to verify the foregoing statement and that he is not interested in the subject matter of the aforesaid notice of publication, and that all allegations in the foregoing statement as to time, place and character of publication are true.

Anna Dickerson

Sworn to and subscribed before me this 16th day of April, 2001.

Margaret C. Ruchalski
Notary Public

My Commission Expires:

NOTARIAL SEAL
Margaret C. Ruchalski, Notary Public
City of Philadelphia, Phila. County
My Commission Expires May 27, 2002

Copy of Notice of Publication

Philadelphia International Airport FAR Part 150 Noise Study Public Workshop

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Proof of Publication In The Philadelphia Inquirer
Under Act. No 160, P.L. 877, July 9, 1976

STATE OF PENNSYLVANIA
COUNTY OF PHILADELPHIA

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Anna Dickerson

Sworn to and subscribed before me this 16th day of April, 2001.

Margaret C. Ruchalski
Notary Public

My Commission Expires:

NOTARIAL SEAL
Margaret C. Ruchalski, Notary Public
City of Philadelphia, Phila. County
My Commission Expires May 27, 2002

Copy of Notice of Publication

Philadelphia International Airport FAR Part 150 Noise Study Public Workshop

A Public Information Workshop on the Philadelphia International Airport's Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Study will be held on **Tuesday, April 17, 2001, between 4:30 p.m. - 7:00 p.m.,** at the Tinicum School in the All Purpose Room, 1st and Seneca Streets, Essington, Pennsylvania. The public is welcome to attend the workshop anytime during these hours. The Part 150 Study is being sponsored by the City of Philadelphia and the Philadelphia International Airport and will focus on reducing present and future noise impacts on communities surrounding the airport.

Philadelphia International Airport

Landrum & Brown Team — Since 1949

FEDERAL AVIATION REGULATION PART 150
NOISE COMPATIBILITY PROGRAM
PUBLIC INFORMATION WORKSHOP HANDOUT

APRIL 17, 2001

The FAR Part 150 Noise Compatibility Program is aimed at balancing an airport's operational needs and its impact on the surrounding community. Its purpose is to reduce noise impacts on existing non-compatible land use and to prevent the introduction of new non-compatible land uses in the areas impacted by aircraft noise. The Part 150 process includes funding for the implementation of **noise abatement strategies** (which affect the operation of the airfield) and **noise mitigation techniques** (designed to mitigate the impact of aircraft noise on existing non-compatible land uses through sound insulation, acquisition, etc.). The Part 150 process for Philadelphia International Airport (PHL) will review noise abatement and mitigation options for future (2006) noise conditions and recommend strategies for the mitigation of impacts.

PROGRESS TO DATE:

- Noise analyses for existing conditions (2001) and future conditions (2006) completed.
- A land use survey is ongoing, a digital land use data base is being prepared, and preliminary land use maps have been developed. Land use zoning maps are also being prepared.
- Radar flight tracks were consolidated into flight corridors for use in noise modeling.
- Fleet mix and operations for 2001 and 2006 Baseline cases were developed.
- Preliminary noise and land use abatement options have been developed.

PRELIMINARY CONCLUSIONS TO DATE:

- Overall noise levels are expected to increase slightly over the next 5 years.
- 2001 Baseline noise contours include approximately 19 housing units within 65 DNL
  2006 Baseline noise contours include approximately 3 housing units within 65 DNL
- No noise-sensitive facilities are located within the 65 DNL for both the 2001 and 2006 Baselines:

NEXT STEPS

- Noise Abatement / Land Use Management Alternatives and Preliminary Noise Compatibility Program Presentation at Study Advisory Committee Meeting #2 -- June/July 2001
- Public Information Workshop #2 -- June/July 2001
- Final Noise Compatibility Program Presentation at Study Advisory Committee Meeting # 3 – August/September 2001
- Public Hearing and Public Information Workshop # 3 – August/September 2001
- Final Noise Compatibility Program Presentation to Airport Operator – November 2001

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
for
Philadelphia International Airport

Sign-In Form

Date: APRIL 17, 2001

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Sign-In Form
Date: April 17, 2001

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George Reeveen Jr.	215 Putcan Ave Essington Pa.	610 521-9329
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Date: April 17, 2001

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FAR PART 150 NOISE COMPATIBILITY STUDY

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Date: April 17, 2001

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FAR PART 150 NOISE COMPATIBILITY STUDY

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FRANK WATSON JR.	341 MANHATTAN ST. LESTER, PA.	610-521-3089
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FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
for
Philadelphia International Airport

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Date: April 17, 2001

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Lisa Marchetti	127 POTOMAC AVE	6105212134
Robert W Knight	541 JANSEN AVE	610 362-0701
Joan L Powers	1311 4th Ave Lester Pa 19029-1818	610-521-3470
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Walt Lee	737 Jansen Ave. Essington, PA. 19029	610-521-3350
Yvonne Lee	" " "	" "

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
for
Philadelphia International Airport

Sign-In Form
Date: April 17, 2001

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Pete Romano	246 Wanamaker Ave., Essington PA 19029	
Ray Clemens	1110 4th Ave, Lester, PA 19029	
(*)		
(*)		

(*) Represents participants who did not want to sign-in.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date: 4/17/01

Please provide your comments below:

Ms. Blackwell - Troubled by -

1) Jets using runway closest to my house located on (Manhattan St 341)
2) Jet fumes - Heavy fuel smell in summer. We keep our windows down. We have no central air.
3) Noise - Jets cause windows + awning to rattle, can not hear tv, radio, telephone conversations. Must stop talking to someone when outside in yard when jet flys over.

Name: Frank & Sharon Watson

Address: 341 Manhattan St, Lester PA.

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

ate:

Please provide your comments below:

The planes fly to low over my house they interfear when talking on the phone they also interfear with Televison The noise keeps me awake at night The Windows shake when they fly low

J J

Name: Margaret Renshaw

Address: 124 Pittsan Ave Essington Pa 19029

ou may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower ilding, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date: 4/17/2001 Anita La Marr

Please provide your comments below:

Low flying over 120 Markham St
Chuck Jones, can't have phone +
have to lip read TV. Fumes very
bad, & I here run up's at night &
can't sleep.

Name: _____

Address: _____

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

ate:

Please provide your comments below:

No information pertaining to the noise study for the township

Why can't I know my DB reading at my location?

The noise study does not reflect ~~R~~ 27R Runway

Name: Edward R Hawkins

Address: 401 Essington Ave Essington PA

u may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower lding, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date: 4-18-01

Please provide your comments below:

Noise level at my home is very very low. Put a monitor in my front porch for a day or two. I really mean this.

My mother is 90 and the airplanes get on her nerves.

Name: Joan Power

Address: 1311 4th Ave Leslie, Pa 19029-1815

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

ate:

Please provide your comments below:

Every night after 11 pm there are numerous planes revving up. I know this because my bedroom window is right in line with the airport. Can something be done It is hard to fall asleep & stay asleep.

Name: Loretta Gianfrisco Foro

Address: 315 La Grange Ave

u may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower ilding, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date:

Please provide your comments below:

1 NO INFORMATION PERTAINING TO THE NOISE STUDY FOR THE TOWNSHIP.

2 RESIDENTS WOULD LIKE TO KNOW WHAT READINGS WERE RECORDED FOR THEIR LIVING AREA (LOCATION)

3 STUDY IS NOT RIGHT. BECAUSE
4 NO READING WERE TAKEN IN MY HOUSE BETWEEEN 3 PM & 7 30 PM.
WE NEED A NIGHT CURFEW ON NIGHT FLIGHTS.

5 CANNOT SIT OUTDOORS BETWEEN 3 PM & 7 PM

Name: CARMELLA POLONCARZ

Address: 510 LA GRANGE AVE, ESSINGTON, PA 19029

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

ate: 4-18-2001

Please provide your comments below:

The charts + explanation are colorful.
The airplanes make a ~~lot of~~ lot of noise all day + night. You should visit me anytime - for a few hours. The window rattle - you can't hear TV or even talk to your friends on the phone. My home was built in 1918 by my grandparents. The Phila. Airport was an Island Road - I have seen the airport grow + grow + grow. I know you can't stop progress but neighbors should be considered and big business need to listen to the small people.
Planes rev up all night - not stopping 11-6

Name: Joan L. Powers

Address: 1311 4th Ave Lester, Pa 19029

u may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower lding, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date: 4-18-2001

Please provide your comments below:

The charts & explanations are colorful.
You should live & try living a normal life with the constant noise from the planes. The smell of the fumes from the plain exhaust.

Name: Anita Coppens

Address: 220 E. Second St. | 135 Carre Ave. | 97 La Grange Ave
208 - Second St. | 133 Carre Ave.
Essington - Pa. 19029

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date: 4/17/01

Please provide your comments below:

I don't feel that this workshop was very informative. I would like for someone to come sit on my deck where you cannot have a conversation without being stilled by the planes flying over head I cannot talk on the phone, let alone watch t.v. These planes flix right over my home and some nights actually light up my bedroom window! My children are often taken away from our swimming pool in our backyard because our friends refuse to gather at our house due to the excessive interruptions in our conversations by these airplanes. What will be done about this situation??

Name: LISA MARCHETTI

Address: 127 PUTCAN AVE ESSINGTON PA 19029

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

Date: April 17, 2001

Please provide your comments below:

Would like to have more literature on the graphs.

Why the year of 2004? This is 2001.

Name: _____

Address: _____

You may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower Building, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.

FAR PART 150 NOISE COMPATIBILITY STUDY

Public Workshop
For
Philadelphia International Airport

ate: 4-19-01

Please provide your comments below:

Very disappointed in the lack of written information
Also the projectory til 2006 is very long
Why no graphs for the citizens to see how they
stand in the noise levels.

Name: Carol Billbrough

Address: 16 Lenora St. Essington Pa 19029

u may leave your comments at the meeting or mail to: Ms. Eva Blackwell, Beach Advertising, Lewis Tower lding, 225 South 15th Street, 4th Floor Philadelphia, PA 19102 by May 11, 2001.