CHAPTER THREE
ALTERNATIVES

The Council on Environmental Quality (CEQ) regulations, implementing the National Environmental Policy Act (NEPA), states that alternatives are the heart of the Environmental Impact Statement (EIS). Those regulations require that the Federal decision-maker perform the following tasks:

- Rigorously explore and objectively evaluate all reasonable alternatives, including alternatives not within the jurisdiction of the Federal agency; and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated; and

- Devote substantial treatment to each alternative considered in detail, including the No-Action Alternative and the preferred alternative, so that reviewers may evaluate their comparative merits.

Federal guidelines concerning the environmental review process require that all reasonable alternatives which might meet the purpose and need of a proposed project be identified and evaluated. A recent judicial ruling found that the alternatives cannot be found deficient simply because every device and thought conceivable was not included. Therefore, this discussion is necessarily limited to those alternatives that are considered feasible to meet the project's purpose and need.

The 1999 Noise Compatibility Program (NCP) Update for T.F. Green Airport (PVD) included an extensive examination of noise abatement and land use alternatives. The alternatives addressed the need to: (1) promote airport safety; (2) enhance airport/airspace capability and reduce delays; and (3) provide mitigation of noise impacts from aircraft operations. While the NCP Update provided significant information regarding possible improvements at the airport, the study process for this EIS required an entirely separate and independent examination of reasonable alternatives for meeting the purposes and needs identified in Chapter Two, *Purpose and Need*.

One method to better manage the noise generated by departing aircraft is to develop noise abatement flight tracks and/or corridors, which turn them over the most compatible areas near an airport. Compatible land areas are further defined in Section 5.2 *Land Use*. According to 14 CFR Part 150, "Compatible land use means the use of land that is identified under 14 CFR Part 150 as normally compatible with the outdoor noise environment (or an adequately attenuated noise level reduction for any indoor activities involved) at the location because the yearly day-night average sound level (DNL) is at or below that identified for that or similar use under Appendix A (Table 1) of CFR Part 150." Table 1 is included in this EIS in Section 5.2, *Land Use*. (See Table 5.2-2.*)* For T.F. Green Airport, there were opportunities from the primary runways, 5R/23L and 16/34, to implement these types of procedures. Seven departure noise abatement flight corridors and one arrival corridor were recommended for implementation in the NCP Update. These corridors are for jet aircraft only, as they are responsible for the bulk of the noise exposure. Propeller aircraft can fly where needed to reach their destinations.

It should be noted that the increased utilization of the SWAP route for aircraft departing to BWI would utilize the recommended noise abatement flight tracks/corridors from the NCP Update. The SWAP route freight tracks all turn to the south and southeast from the four main runway ends.

The examination of alternatives is of critical importance to the environmental review process and serves to establish the conclusion that an alternative that addresses the purpose and need and might enhance environmental quality (or have a less detrimental effect), has not been inappropriately dismissed from consideration. This chapter describes the process of identifying alternatives for meeting the purpose and need along with the process of assessing the reasonableness of each alternative in light of environmental as well as operational, financial, and other significant considerations.

3.1 RANGE OF ALTERNATIVES

The preceding chapter (Chapter Two, *Purpose and Need*) provided a description of the purposes and needs for the Proposed Action at T.F. Green Airport. The analysis of alternatives contained in this chapter was prepared to determine the options available to reasonably meet those needs.

The options available to reasonably meet the purpose and need of the project can be grouped into four categories:

- **No Action:** This alternative addresses the consequences of not implementing the air traffic noise abatement measures or increasing the number of departures on the BWI SWAP route.

- **Air Traffic Noise Abatement Measures:** These alternatives would enhance the human environment by reducing noise impacts on surrounding communities. They are air traffic procedures with associated NCP mitigation measures to further reduce noise impacts. These associated NCP measures include actions such as sound insulation of impacted residences and schools, acquisition of some impacted residences, construction of noise barriers, updates of comprehensive plans, and implementation management actions.

- **Other Procedural Alternatives *(Not Studied in Detail)*:** This section looks at the air traffic actions originally proposed for the NCP, but found to be unsuitable for implementation. These alternatives were considered then dismissed from further analysis.

- **The Proposed Action:** This range of alternatives recommends the air traffic noise abatement actions with associated NCP mitigation measures (described under Air Traffic Noise Abatement Measures) and increased utilization of the BWI SWAP route.

The screening actions utilized to determine the criteria for eliminating alternatives from further consideration are contained in a table later in this chapter. The central screening criteria was the ability of the alternatives to address the purpose and need of this EIS. Additionally, some alternatives were screened by testing them for the capability to implement them into the air traffic control system.

It should be noted that NEPA requires that a No-Build/No-Action Alternative be considered in the environmental assessment of impacts. Although not always prudent, the No-Build/No-Action Alternative is discussed as a potential alternative and serves as a baseline for the assessment of future conditions. Therefore, the No-Build/No-Action Alternative is carried through each of the factors assessed in the environmental consequences (Chapter Five of this document).

3.2 ALTERNATIVES EXAMINED *(IN DETAIL)*

Alternatives examined and considered for further analysis are discussed below. They are representative of the reasonable range of alternatives which meet the purpose and need described earlier. They were developed as a result of the recommendations of the 1999 NCP Update and the FAA proposal for changing aircraft route utilization.

3.2.1 No-Build/No-Action Alternative

The No-Build/No-Action Alternative was also examined in the 1999 NCP Update and was called the 2003 Baseline Noise Exposure Map (NEM). The contours contained in that NEM represent the future impacts from aircraft noise exposure if there is no implementation of air traffic noise abatement procedures and the BWI SWAP route is not utilized more. The future NEM with No-Build/No-Action and the impacts resulting from it are shown and discussed in Chapter Five, *Environmental Consequences*.

It should be noted that the No-Build/No-Action Alternative has more impact on the study area than the Proposed Action. The contours are larger than those of the Proposed Action by approximately seven percent. More importantly, the impacted housing increases within the No-Build/No-Action contours. See Chapter Five, *Environmental Consequences* for more details.

3.2.2 Noise Abatement Air Traffic Measures

The noise abatement air traffic procedures of the 1999 NCP Update propose changes to the route of flight for departing and to some extent arriving aircraft at T.F. Green Airport. Therefore, it was determined that they should be examined as a possible alternative in the EIS.

The noise abatement air traffic procedures seek to further reduce noise exposure to the community by focusing the aircraft noise into predictable corridors that fall over more compatible land uses as defined by the Federal Aviation Administration (FAA). This is accomplished primarily by identifying departure and arrival headings.

Noise abatement air traffic procedures are those which deal with the operation of aircraft either on the airfield or in the air. This EIS addresses proposed measures that could be implemented for noise abatement purposes and their effect on the local area. The eight measures analyzed are listed in **Table 3-1**. The corridors resulting from the noise abatement air traffic procedures are shown in **Exhibit 3-1** and **Exhibit 3-2**.

These noise abatement air traffic procedures are combined with other measures (as described previously in this chapter) to produce a NCP Noise Exposure Map (NEM). The NEM and the resulting impacts within the study area is discussed and presented in Chapter Five, *Environmental Consequences*.

3.2.3 Other Procedural NCP Alternatives *(Not Studied in Detail)*

The other procedural alternatives considered in this EIS include air traffic procedures from the 1999 NCP Update. Air traffic procedures were analyzed during the NCP Update process and for various reasons were not included in the final program. The 14 alternative air traffic procedures and the reasons for discontinuing them are listed in **Table 3-2**. As stated previously the primary screening tool for these alternatives was their ability to address the purpose and need of this EIS. Additional testing and analysis was conducted in the NCP update and some alternatives were eliminated through that process.

3.2.4 Alternatives Considered and Rejected From Further Analysis

The use of other modes of transportation and airports is beyond the purpose and need of this EIS and is not considered a reasonable alternative. The EIS deals strictly with operational air traffic changes that direct aircraft into specific flight corridors. Those corridors were designed to be over land areas that would have the fewest possible impacts to airport neighbors. The change in air traffic procedures is a NCP noise abatement action that in itself does not result in any increase in the numbers of operations. As a result, this alternative was not analyzed further, based on the above conditions.

3.2.5 The Proposed Action

As stated previously in this document, the Proposed Action includes two distinct parts:

1. The implementation of the proposed noise abatement air traffic procedures from the 1999 NCP Update.

2. The implementation of the user proposed increased utilization of the SWAP route down the east coast for jet aircraft departing T.F. Green Airport bound for BWI. The SWAP route is shown in **Exhibit 3-3**.

Table 3-1
RECOMMENDED AIR TRAFFIC NOISE ABATEMENT MEASURES
T.F. Green Airport

- Weather and traffic permitting, all southbound jet aircraft departing Runway 5R, turn right to a 080-degree heading until reaching 3 DME (from the PVD VORTAC), passing over Passeonkquis Cove, Gaspee Point Beach, and Narragansett Bay before being vectored to assigned heading. Prop and turboprop may be assigned divergent headings at the discretion of Air Traffic Control. *New Measure. This measure is intended to route jet traffic away from the more densely populated residential and public use areas to a course over Passeonkquis Cove and Gaspee Point Beach, thereby more quickly reaching Narragansett Bay.* ***(See Exhibit 3-1, Corridor D5SB.)***
- Weather and traffic permitting, all northbound jet aircraft departing Runway 5R turn left as soon as practicable after passing runway end to fly a 360-degree heading until reaching 3 DME (from the PVD VORTAC); before being vectored to assigned heading. Prop and turboprop may be assigned divergent headings at the discretion of Air Traffic Control.
  New Measure. This measure is intended to route jet traffic away from the more densely populated residential and public use areas to a course over undeveloped and more compatibly developed commercial areas along U.S. Highway 1. ***(See Exhibit 3-1, Corridor D5NA.)***
- Weather and traffic permitting, all southbound jet aircraft departing Runway 23L, turn left as soon as practicable after passing runway end to a 160-degree heading until reaching 5 DME (from the PVD VORTAC) or intercepting 180-degree radial (whichever occurs first); before being vectored to an assigned heading (if necessary). Prop and turboprop may be assigned divergent courses at the discretion of Air Traffic Control.
  New Measure. This measure is intended to route jet departures over Greenwich Bay and along the north edge of Goddard Memorial State Park, away from residential areas closer to the extended runway centerline. This action is representative of noise abatement action NA-2 in the 1999 NCP Update. (Includes the BWI SWAP route.) ***(See Exhibit 3-1, Corridor D2SA.)***
- Weather and traffic permitting, all northbound jet aircraft departing Runway 23L, turn right as soon as practicable after passing runway end to a 280-degree heading until reaching 3 DME (from the PVD VORTAC); before being vectored to assigned heading. Prop and turboprop may be assigned divergent headings at the discretion of Air Traffic Control.
  New Measure. This measure is intended to direct jet departures, below approximately 3,000 feet, over areas of compatible land use in Apponaug and along I-95 and SR 115. ***(See Exhibit 3-1, Corridor D2NA.)***
- Weather and traffic permitting, all southbound jet aircraft departing Runway 34, turn right to a 360-degree heading until reaching a position 3 DME north of the PVD VORTAC, before being vectored to assigned heading. Prop and turboprop departures may be assigned divergent courses at the discretion of Air Traffic Control.
  New Measure. This measure is intended to direct jet departures, below approximately 3,000 feet, over compatible land uses along I-95 and the Pawtuxet River corridors. This action is representative of air traffic noise abatement action NA-25 in the 1999 NCP Update. (Includes the BWI SWAP route.) ***(See Exhibit 3-1, Corridor D35A.)***
- Weather and traffic permitting, all northbound jet aircraft departing Runway 34, turn left as soon as practicable after passing runway end to a 330-degree heading until reaching 4 DME (from the PVD VORTAC); before being vectored to assigned heading. Prop and turboprop departures may be assigned divergent courses at the discretion of Air Traffic Control.
  New Measure. This measure is intended to direct jet departures, below approximately 3,000 feet, over areas of compatible land use along SR 37 and I-295. ***(See Exhibit 3-1, Corridor D3NA.)***

Table 3-1, Continued
RECOMMENDED AIR TRAFFIC NOISE ABATEMENT MEASURES
T.F. Green Airport

- Weather and traffic permitting, all southbound jet aircraft departing Runway 16, turn right to a 180-degree heading until reaching 3 DME from the PVD VORTAC, or intercepting the PVD VORTAC 180-degree radial (whichever occurs first), before being vectored to an assigned heading (if necessary). Prop and turboprop may be assigned divergent courses at the discretion of Air Traffic Control. This action is representative of noise abatement action NA-25 in the 1999 NCP Update. (Includes the Baltimore SWAP route.)
  New Measure. This measure is intended to direct jet departures, below approximately 3,000 feet, over areas of greater land use compatibility along Brush Creek Cove and Greenwich Bay. ***(Exhibit 3-1, Corridor D3SA.)***
- Approaching Runway 34, all jet aircraft intercept the final approach course before crossing the shoreline at Rocky Point Beach on Warwick Neck (4 DME from the PVD VORTAC).
  New Measure. This measure would assure that all jet aircraft intercept and follow the same course along the extended runway centerline from beyond the shoreline. ***(See Exhibit 3-2, Corridor A3SA.)***

In short, the Proposed Action is a combination of the noise abatement procedures and the SWAP route, and is the implementation of air traffic procedures with other measures that further minimize noise.

The implementation of the proposed noise abatement air traffic procedures from the 1999 NCP Update was analyzed as a separate alternative in the preceding section. For the Proposed Action analysis, both parts are examined together and are considered to be implemented.

The noise abatement air traffic procedures considered for implementation in the NCP process are a series of departure turns from the two primary runway systems to corridors over the most noise compatible areas around the airport. The alternatives also include one arrival procedure that calls for aircraft landing Runway 34 to turn final approach before crossing the shoreline at Rocky Point Beach on Warwick Neck.

Table 3-2
NCP AIR TRAFFIC ALTERNATIVES WITHDRAWN FROM CONSIDERATION
T.F. Green Airport

Alternative: *Request that all operators of all air carriers and business jets use maximum climb procedures for takeoffs from Runway 34*. While the use of a maximum climb procedure from Runway 34 would theoretically result in more distance between departing aircraft and noise-sensitive land uses under the takeoff path, the retention of takeoff power for longer periods necessary to reach higher altitudes before thrust reduction would result in higher noise levels. Furthermore, the measure would introduce a non-standard departure procedure for local use. Such procedures are precluded by FAA Advisory Circular 91-53A. Therefore, the measure would not benefit noise reduction or be feasible.

Recommendation: Discontinue consideration.

Alternative: *Departing Runway 5R, all jets bound to Putnam fix turn right as soon as practicable after passing runway end to a 100-degree heading until reaching 2 DME (from the PVD VORTAC), passing over Passeonkquis Cove and Gaspee Point Beach before turning to assigned heading to departure fix*. This measure is intended to route jet traffic to the Putnam departure gate away from the more densely populated residential and public use areas located along the extended centerline of Runway 5R. Takes departures to a course that more quickly reaches the compatible Narragansett Bay. The route expected for this operation passes over the less intensely developed open spaces along Passeonkquis Cove. The measure calls for jet aircraft to turn left after reaching the shoreline, a procedure which would require aircraft to cross the missed approach course from Runway 5R, creating potential airspace conflicts. Furthermore, the measure would route significant portions of departure traffic over neighborhoods not previously overflown and into airspace reserved for Boston approaches. Because of these disadvantages, the measure is not considered beneficial to noise abatement.

Recommendation: Discontinue consideration.

Alternative: *Departing Runway 5R and passing runway end, all turboprops and piston prop aircraft bound toward Block Island turn right as soon as practicable after passing runway end to a 195-degree heading, turning over Occupessatuxet Cove and Narragansett Bay*. This measure provides for an intended separation of prop and turboprop traffic from the jet aircraft using the procedure set forth by other measures. An immediate turn to a 195-degree heading from Runway 5R will result in a turn to overfly less developed residential areas east of the airport. Coupled with the jet routing over Narragansett Bay, the measure should result in a natural separation of the two traffic streams. However, evaluations by the ATCT have indicated that this alternative would result in a conflict with Runway 5R and Runway 34 arrivals. It is more operationally feasible to use the same route for propeller aircraft, with a divergent heading, as the jet aircraft.

Recommendation: Discontinue consideration.

Table 3-2, Continued
NCP AIR TRAFFIC ALTERNATIVES WITHDRAWN FROM CONSIDERATION
T.F. Green Airport

Alternative: *Departing Runway 5R and passing runway end, all turboprops and piston prop aircraft bound to Putnam fix turn left as soon as practicable after passing runway end and fly direct to Putnam*. This measure is intended to route Putnam bound prop and turboprop traffic away from the more densely-populated residential and public use areas located along the extended centerline of Runway 5R and to a course that flies over the more compatibly developed commercial and industrial areas along SR 37. This measure, in combination with others, are expected to reduce the number of dwellings within the 65 DNL noise contour north of the airport by approximately 188 units. This reduction is largely achieved by the reduction of the area of flight dispersion present under existing conditions through a concentration of those flights into a more focused area of overflights. An evaluation of this measure by ATCT has concluded that this measure is not necessary and that it is more operationally feasible to route the propeller aircraft on the same route, with a divergent heading, as the jet aircraft.

Recommendation: Discontinue consideration.

Alternative: *Departing Runway 23L, all jets turn left at 1.2 DME to intercept a 3 DME arc from the PVD VORTAC, to cross the 185 radial, then direct to Block Island*. This measure is intended to route both Putnam and Block Island jet departures from Runway 23L over the middle of Greenwich Bay. The measure routes Putnam traffic directly away from the most desirable route, while it routes Block Island departures generally away from the departure fix. More importantly, the measure would route departure traffic into and through the downwind approach stream to the active runway (23L), located east and southeast of the airport. Because of this conflict, the measure is not considered implementable without significant disruption to air traffic control and efficiency.

Recommendation: Discontinue consideration.

Alternative: Departing *Runway 23L, all Block Island jet departures turn right as soon as practicable after passing the runway end to a 240-degree heading until reaching 4 DME (from the PVD VORTAC), then direct to assigned course*. This measure is intended to direct jet departures, below approximately 3,000 feet, over the compatible land uses adjacent to I-95, near SR 4. At the same time, the desirable separation between jet and prop traffic would be left to the discretion of the FAA Air Traffic Control. While this measure would likely result in a reduction in the number of dwellings overflown in the area beyond the 65 DNL contour south of the airport, the shift in location is not sufficient enough to be perceived as a significant change. Furthermore, the route described (and necessary in this case to focus on compatibly used areas) would fly directly toward the principal descent area for most arrivals into the airspace. Consequently, the measure is not considered to be implementable.

Recommendation: Discontinue consideration.

Table 3-2, Continued
NCP AIR TRAFFIC ALTERNATIVES WITHDRAWN FROM CONSIDERATION
T.F. Green Airport

Alternative: *Departing Runway 34, all Block Island jet departures turn left as soon as practicable after passing runway end to a 200-degree heading until crossing the 250 Radial (from the PVD VORTAC), then direct to assigned course*. This measure is intended to direct jet departures, below approximately 3,000 feet, over the compatible land uses adjacent to the I-95 and I-295 corridors. Departures from Runway 34 have the advantage of overflying generally compatible land until reaching points approximately 1.5 miles from the end of the runway. Further, much of the land immediately west of the airport is developed as industrial, transportation, and open space uses compatible with the aircraft noise. Consequently, a procedure that takes advantage of the presence of such uses will reduce general noise exposure on non-compatible uses. This measure results in a focusing of jet departure traffic to the south from Runway 34 along a course designed to fly over these compatibly used lands. Evaluations conducted by ATCT indicate that this measure would create conflicts with the arrival flows to Runway 5R and Runway 34 and is not feasible to safely implement.

Recommendation: Discontinue consideration.

Alternative: *Departing Runway 16, all Putnam jet departures turn right as soon as practical to a 180-degree heading until reaching 3 DME (from the PVD VORTAC), then direct to assigned course*. This measure continues the turn initiated by another alternative for jet aircraft bound to the Putnam fix northwest of the airport. The measure would result in the continued overflight of Greenwich Bay until aircraft are at altitudes generally above 3,000 to 4,000 feet when they cross back over the shoreline near the Potowomut River south of Goddard Memorial State Park. The measure is generally used today for Putnam departures from Runway 16, but turns are now made much earlier than would be provided for by the use of a 3 DME fix for turns, and overfly developed areas south of the airport.

Recommendation: Discontinue consideration.

Alternative: *Departing Runway 16, all Putnam jet departures turn left as soon as practicable to a heading of 090 degrees until reaching 3 DME (from the PVD VORTAC); then direct to assigned course*. This measure is intended to place traffic over commercial properties and open space along Buckeye Creek, north of SR 117. The alternative would require turns of 70 degrees at relatively low altitudes to achieve the desired effect of placing traffic over the most compatible areas. Once reaching the shoreline of Narragansett Bay, aircraft would continue their left turns to assigned headings to reach the Putnam fix. This course may encroach upon the commonly used airspace shared with Boston which lies northeast of the airport. Furthermore, the compatible area is a narrow corridor sandwiched by larger areas of residential use. The effect would be comparable to threading a needle to achieve noise abatement -- an approach that is typically unsuccessful in meeting its desired goal. The measure is not considered implementable and is not assured of noise level reduction over incompatible areas.

Recommendation: Discontinue consideration.

Table 3-2, Continued
NCP AIR TRAFFIC ALTERNATIVES WITHDRAWN FROM CONSIDERATION
T.F. Green Airport

Alternative: *Departing Runway 16, all Block Island jet departures turn left as soon as practicable to a heading of 090 degrees until reaching 2.5 DME (from the PVD VORTAC), crossing the shoreline of Narragansett Bay, then turn right direct to assigned heading*. This measure is intended to apply the initial course established by another alternative to those jets bound to the south. The alternative would require turns of 70 degrees at relatively low altitudes to achieve the desired effect of placing traffic over the most compatible areas. Once crossing the shoreline, aircraft would turn back to the right by approximately 100 degrees to exit the area. Furthermore, the compatible area is a narrow corridor sandwiched by larger areas of residential use. The effect would be comparable to threading a needle to achieve noise abatement -- an approach that is typically unsuccessful in meeting its desired goal. The measure is not considered implementable and is not assured of noise level reduction over incompatible areas.

Recommendation: Discontinue consideration.

Alternative: *Departing from all runways, all jets maintain runway heading until reaching 3 DME (from the PVD VORTAC) before turning to assigned heading. All prop and turboprop aircraft turn right or left as soon as practicable to assigned divergent courses and fly assigned courses to enroute fixes*. This measure is intended to limit the dispersion of jet overflights from broad areas off the end of each runway and concentrate the activity along narrow corridors from each runway end. This measure is likely the easiest to achieve of those evaluated, but would result in increases in the number of dwellings within the 65 DNL noise contour by a total of 59 houses. Furthermore, it would continue direct overflights of densely populated areas beyond the 65 DNL contour without relief from current noise conditions. Finally, the restriction of departures to a single course from each runway would reduce the flexibility now available to air traffic controllers to achieve an efficiency of flight operations.

Recommendation: Discontinue consideration.

Alternative: *Approaching Runway 5R, establish a visual approach course which flies over the middle of Greenwich Bay and intercepts the final approach course over Apponaug Cove (one mile south of the runway threshold*). This measure suggests the development of an approach course over the middle of Greenwich Bay that would intercept the final approach course near Arnold Neck at Apponaug Cove. While the desired procedure, if extensively used, would remove much of the noise impact from approaches from the Cowesett and Chepiwanoxet communities, it is unlikely that turns of 90 degrees or more within two miles of the landing threshold would ever be accepted by pilots of large aircraft if other measures are available. Furthermore, the desired approach course would potentially conflict with recommended departure procedures from Runway 5R. Therefore, the measure is not considered safe or implementable.

Recommendation: Discontinue consideration.

Table 3-2, Continued
NCP AIR TRAFFIC ALTERNATIVES WITHDRAWN FROM CONSIDERATION
T.F. Green Airport

Alternative: *Approaching Runway 23L, jet aircraft establish downwind approaches over Narragansett Bay and the Providence River and intercept final approach course beyond the shoreline*. This measure is the general instrument approach procedure to Runway 23L today, although it currently requires the overflight of East Providence to establish final approach courses. The maintenance of overflights solely over Narragansett Bay and the Providence River would require acute turns onto final approaches of approximately 120 degrees. Without course guidance, this procedure would result in frequent overshoots of the final approach and incursions into neighborhoods north and northwest of Roger Williams Park, which have not been frequently overflown by approaches in the past. Consequently, the maintenance of the "downwind" portion of the approach above the river is not considered feasible or beneficial to noise abatement. Continuation of the existing instrument approach procedure is recommended.

Recommendation: Discontinue consideration.

Alternative: *Approaching Runway 5R, establish a charted visual approach with an initial VOR/DME approach course along the 210 Radial of the PVD VORTAC, sidestepping at 3 DME to intercept the final approach course*. The intent of this visual approach procedure is to provide a course for aircraft over Greenwich Cove, east of East Greenwich, until the aircraft reaches a position where a sidestep to final approach would be required. The suggested Radial is 17 degrees off of the final approach course, and turns of this amount should be achievable without significant difficulty. The effect of the measure is to move low level overflights from above residential areas of Cowesett and Chepiwanoxet to more compatibly used water and vacant areas under the Radial course. Evaluations by the Air Traffic Control Tower have found that this procedure would be virtually impossible to implement while maintaining efficiency and safety in the airspace.

Recommendation: Discontinue consideration.

Source: T.F. Green Airport NCP Update, 1999.

The airspace system at T.F. Green Airport is limited to a one-way in and two-ways out theme. Arrivals to T.F. Green Airport generally approach the airspace from the southwest and must be vectored to the runway of intended landing. Departures from T.F. Green Airport are normally vectored to the Putnam, Connecticut departure fix or south out the 180-degree radial of the Providence navigational aid (VORTAC). The proposed increased utilization of the BWI SWAP route does not require changing the NCP measures. Regardless of which runway these aircraft use, there is a noise abatement procedure that they could fly.

3.3 FAA CONSIDERATION OF REASONABLE ALTERNATIVES

Under NEPA, the FAA has a responsibility to explore and objectively evaluate all reasonable alternatives, including those beyond the jurisdiction of the FAA and RIAC. Federal agencies may consider the applicant's purposes and needs and common sense realities of a given situation in the development of alternatives "Guidance Regarding NEPA Regulations," CEQ, July 22, 1983, 48 *Federal Register* 34263 (July 28, 1983)). Federal agencies may also afford substantial weight to the alternative preferred by the applicant, provided there is no substantially superior alternative from an environmental standpoint.

3.3.1 Discussion

The FAA does not initiate 14 CFR Part 150 projects. Such projects require the involvement of a local sponsor, in this case, RIAC. It is, therefore, appropriate for the FAA to give substantial weight to the recommendations of the airport in identifying reasonable alternatives and considering whether alternatives meet the national policy objectives expressed in 14 CFR, Part 150, and the purposes and needs of RIAC.

The airport and the FAA have identified and analyzed a range of alternatives for meeting the purposes and needs presented in Chapter Two, *Purpose and Need*. The airport has applied a comprehensive range of operational, economic, and environmental criteria in assessing whether alternatives would be feasible and prudent, practicable, or reasonable. Through this process, RIAC and the FAA have identified the Proposed Action for meeting its purpose and need. The FAA has reviewed the process and has concluded that it was acceptable and also appears consistent with the public policy objectives of the 14 CFR, Part 150 program.

Full implementation of the proposed air traffic actions and the increased utilization of the BWI SWAP route would not require funding. These actions would all be operational in nature and any costs associated with them would in all likelihood be from administrative or training actions.

Funding for land use actions proposed in the 1999 NCP Update was estimated to be $75,535,000 for a combination of mitigation measures. That cost includes $50,000,000 for voluntary acquisition of property, $24,900,000 for sound insulation of impacted homes, and $635,000 for the sound insulation of a local school, if the FAA determines it is eligible. The land use mitigation costs will be incurred by RIAC, the city of Warwick, and the FAA. The costs were estimated in 1999 dollars and are generally considered to be one time costs.

3.3.2 Summary

The FAA has thoroughly reviewed and participated in the process and the analysis of the 1999 NCP Update and the increased use of the BWI SWAP route alternatives. In light of the purpose and need, the FAA finds the process and analysis to be acceptable in establishing the range of reasonable alternatives. The Sponsor's and FAA's Proposed

Actions (2003 NCP Actions and additional utilization of the BWI SWAP route) satisfies those considerations and is consistent with the stated purpose and need. The FAA finds those alternatives reasonable. Accordingly, the alternatives selected by the FAA for detailed analysis in this EIS include:

- Alternative 1: 2003 Baseline Condition (No-Build/No-Action)
- Alternative 2: 2003 with Air Traffic Actions from the NCP Update
- Alternative 3: 2003 Air Traffic Actions and increased utilization of the BWI SWAP route (Proposed Action)

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