



CAPE COD COMMISSION

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DATE: February 7, 2002

TO: Patrick Butler, Esquire
Nutter, McClennen & Fish, LLP
1513 Iyannough Road
Hyannis, MA 02601

FROM: Cape Cod Commission

RE: Development of Regional Impact
Cape Cod Commission Act, Sections 12 and 13

APPLICANT: Willowbend Development Corporation
130 Willowbend Drive
Mashpee, MA 02649

PROJECT #: TR #20055

PROJECT: Willowbend Golf Course Expansion

BOOK/PAGE: Book 12251, page 088; Book 11930, pages 249, 250; Book 11979,
page 270; Book 13114, page 011; Book 13322, page 172; Book 11850,
pages 289, 290; Book 11838, pages 321, 322

DECISION OF THE CAPE COD COMMISSION

SUMMARY

The Cape Cod Commission (Commission) hereby approves with conditions the application of Willowbend Development Corporation (Willowbend or Applicant) as a Development of Regional Impact (DRI) pursuant to Sections 12 and 13 of the Cape Cod Commission Act (Act), c. 716 of the Acts of 1989, as amended, for the proposed Willowbend Golf Course Expansion Project (the Project). The decision is rendered pursuant to a vote of the Commission on February 7, 2002.



PROJECT DESCRIPTION

Willowbend Corporation proposes to construct nine golf holes on two separate land areas adjacent to Willowbend's existing 18-hole private golf course in Mashpee, MA, on 67.9 acres of land, as shown on Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Measures, Plans 1 – 4, dated January 10, 2002. The Project is located within Significant Natural Resource Area as mapped by the RPP, and contains sensitive resources throughout the proposed development. In addition to expanded golf holes, the proponent plans to expand water hazards for challenge of play, expand irrigation ponds to store more water, and add running water courses at two holes for aesthetic purposes. A modification to the Applicant's 1987 Special Permit will change a 67-unit subdivision into the golf course. The Project area is zoned R-3 residential.

Two golf holes (#16, #17) are proposed for construction in the "Northern Area", which comprises 12.2 acres as shown on the Plans. The Northern Area surrounds the site of an inactive cranberry operation containing overgrown bogs, a pump house and associated water works, dirt roadways, an irrigation pond and a residence. It is bordered to the north by Sampsons Mill Road and to the south by the existing Willowbend 18-hole golf course.

The "Central Area" is not new construction, it is an area within the existing 18-hole golf course outside the project area where the Applicant will reconfigure several golf holes, and provide mitigation for impacts in the Northern and Southern Areas.

The Applicant proposes to construct seven new golf holes (#20 - #26) in the "Southern Area", which covers 55.7 acres. This area is bordered by Quinaquisset Avenue on the north and Shoestring Bay on the south. This parcel surrounds Bryant's Cove, an estuary at the mouth of Quaker Run, a length of Quaker Run, and also runs along the western edge of Shoestring Bay north of Bryant's Cove.

PROCEDURAL HISTORY

Willowbend Development Corporation initially submitted a DRI Application for the Willowbend Golf Course Expansion) in December 1999, when the Cape Cod Commission determined that the Golf Course Expansion was a DRI, and was subsequently withdrawn by the Applicant without prejudice. The proponent made further revisions to conform to local zoning changes. Willowbend submitted a Notice of Project Change (NPC) to the Executive Office of Environmental Affairs on April 17, 2001 (EOEA No. 6416). EOEA issued a Certificate that an Environmental Impact Report (EIR) was not required on May 25, 2001. The Project was referred to the Cape Cod Commission by the Mashpee Planning Board on May 3, 2001. The Commission received the referral on May 4, 2001. Willowbend filed a new DRI application on June 13, 2001. A hearing officer of the Cape Cod Commission opened and continued the public hearing for procedural purposes on June 26, 2001. A duly noticed public hearing pursuant to Section 5 of the Act was conducted by the Commission on August 23, 2001, at the Mashpee Town Hall, where public testimony was received and the hearing was continued to September 20, 2001. A

subcommittee meeting was held Sept. 4, 2001 to review Project revisions. On September 20, 2001 a hearing officer closed the hearing.

A second duly noticed public hearing was conducted by the Commission on December 12, 2001 to review Project changes. The public hearing was closed on this date, and the record kept open. Extensions for the decision period were made to January 20, 2002, January 30, 2002, February 9, 2002, and finally to Feb. 22, 2002. A subcommittee meeting was held Jan. 17, 2002 to deliberate on the Project. The subcommittee voted unanimously to draft an approval decision with conditions. A final subcommittee meeting was held on Jan. 30, 2002 at which time the subcommittee reviewed the draft findings and conditions and voted two in favor and one opposed to recommend a DRI approval with conditions to the full Commission. The full Commission conducted a duly noticed public hearing on the draft decision on February 7, 2002 at the Assembly of Delegates Chamber in Barnstable, MA. At the conclusion of this hearing the Commission voted 11 to 1 to approve the Project with conditions.

MATERIALS SUBMITTED FOR THE RECORD

By State Representatives

Letter from Senator Robert O'Leary in support of the Project – June 24, 2001

Letter from Representative Matthew Patrick in support of the Project– Aug. 16, 2001

By Town of Mashpee

- Referral from Tom Fudala for the Mashpee Planning Board – May 4, 2001
- Copy of town by-laws relative to Willowbend from Tom Fudala – June 30, 2001
- Letter from the Mashpee Water District– August 1, 2001
- Letter from the Mashpee Office of Economic Development– August 21, 2001
- Letter from the Mashpee Wampanoag Tribal Council– Aug. 16, 2001
- Copy of Willowbend's DEP Water Withdrawal Permit from Robert Sherman, Conservation Agent – Aug. 14, 2001
- Letter from Diane Boretos, Assistant Conservation Agent to sub-committee – Aug. 22, 2001
- Copies of Request for Determination (RDA) and Notice of Intent (NOI) filings relative to Willowbend properties in Conservation Commission jurisdiction – Aug. 29, 2001

By Willowbend:

- Notice of Project Change (NPC) for Willowbend golf course expansion as part of MEPA process EOE A # 6416 – April 25, 2001
- Secretary of EOE A Certificate determining that the Notice of Project Change (NPC) does not require a Supplemental Environmental Impact Report (EIR) – May 29, 2001
- Existing Conditions (Tab 8) and Proposed Condition (Tab 9) plans - June 9, 2001
- DRI Application and enclosures - June 13, 2001
- Copy of NPC for Willowbend golf course expansion – June 13, 2001
- Architectural Plans sheets 1 – 9 – June 13, 2001
- Memorandum Of Understanding with Cotuit Bay condominium for connection to WWTF, Subdivision plan for Shoestring Bay (appendix 3 of DRI Application – June 19, 2001

- Wetlands and Water Resource issues for Tab 26 of Notebook - June 25, 2001
- Open Space plans and figures for the natural resources inventory – July 9, 2001
- Fax from Patrick Butler, attorney for Willowbend, to M. Twombly confirming Aug. 2 site visit and Aug. 23 hearing – July 18, 2001
- Letter from Bruce Besse to S. Michaud: Grading and Drainage Plans – July 26, 2001
- Letter and enclosures from Mr. Butler – July 27, 2001
- Assessor’s Map (property along Santuit River) – July 30, 2001
- Matrix for wetland mitigation and habitat enhancement – July 30, 2001
- Final Wetland Restoration Plan for Cape Cod Hospital – Aug. 2, 2001
- Revised matrix of mitigation and “habitat enhancement” areas compared to altered areas – Aug. 2, 2001
- Trip generation calculations from Vanasse Hangen Brustlin (VHB) – Aug. 3, 2001
- Benefits of sewerage Cotuit Bay Condominiums from Horsley & Witten – Aug. 23, 2001
- Revised Mitigation and Enhancement Matrix – Aug. 23, 2001
- Project Comparison Table – August 28, 2001
- Nitrogen Loading and house site plans from 1987 Special Permit – Aug. 29, 2001
- Grading and Drainage Plans w/notations about additional wetland mitigation measures noted - Sept. 4, 2001
- Summary of areas to be naturalized – Sept. 4, 2001
- Fax from Mr. Butler to M. Twombly – Sept. 17, 2001
- Letter and enclosures from Mr. Butler - Sept. 28, 2001
- Letter dated Oct. 24, 2001 from John McElhinney to Brona Simon of the Massachusetts Historical Commission (MHC) – Oct. 30, 2001
- Letter dated Nov. 1, 2001 from John Bresnehan to S. Michaud – Nov. 5, 2001
- Turfgrass maintenance issues dated Nov. 5, 2001 from John Bresnehan to S. Michaud – Nov. 6, 2001
- Hazardous materials spill response action plan – Nov. 6, 2001
- Copy of memo dated 12/5/01 from John Bresnehan to Bruce Besse – Nov. 6, 2001
- Letter dated 10/30/01 from John McElhinney to M. Twombly – Nov. 8, 2001
- Revised golf hole Project plans from Mr. Butler to staff – Nov. 13, 2001
- Revised mitigation matrix from Scott Horsley to H. McElroy – Dec. 4, 2001
- Surface and groundwater monitoring for ESS-13 pilot test from John Bresnehan to S. Michaud via fax – Dec. 5, 2001
- Vernal pool certification from John McElhinney to H. McElroy – Dec. 6, 2001
- Revised final archaeological report from Mitch Mulholland, U. Mass., to Brona Simon of MHC – Dec. 10, 2001
- Letter from John Bresnehan dated Dec. 11, 2001 – Dec. 12, 2001
- Fax from John McElhinney dated Dec. 12, 2001 to Commission staff including a letter dated Dec. 11, 2001 addressing details of the 12/7/01 staff report – Dec. 11, 2001
- Letter and enclosures from Mr. Butler to Commission staff – Dec. 19, 2001
- Planting specifications from Bruce Besse – Dec. 19, 2001
- Memo from Horsley & Witten to M. Twombly – Dec. 28, 2001
- Memo from P. Butler to Horsley & Witten – Dec. 31, 2001
- Revised Golf Course turfgrass management plan from John Bresnehan – Jan. 2, 2002

- Revised average trip length summary from VHB – Jan. 2, 2002
- Master map of property and narrative containing mitigation proposals and matrix for additional buffer alteration from Horsley & Witten - Jan. 4, 2002
- Revised restoration and vegetative planting specifications from Bruce Besse to H. McElroy – Jan. 4, 2002
- Revised open space analysis from VHB – Jan. 4, 2002
- Proposed water quality monitoring program and groundwater monitoring stations in the N. and S. areas from Horsley & Witten to S. Michaud – Jan. 4, 2002
- Letter from Pro-Am Children’s Charity to Bruce Besse – Jan. 7, 2002
- Memo from Horsley & Witten to H. McElroy with accompanying matrix – Jan. 10, 2002
- Memo from Mr. Butler to M. Twombly – Jan. 10, 2002
- Memo from Horsley & Witten re: revised site plans and confirmation of Jan. 11, 2002 discussions with staff – Jan. 15, 2002
- Revised plans, kettlehole map “Matrix Areas #s 4 & 7” – Jan 28, 2002
- Revised open space plans – Jan. 28, 2002
- Open space plans C1, C2, C3 – Feb. 1, 2002

By Cape Cod Commission staff:

- Staff comments on Notice of Project Change to Secretary of EOEA– May 15, 2001
- Letter to Mr. Butler from M. Twombly notifying of DRI referral from the Town of Mashpee Planning Board – May 29, 2001
- Memo to file from M. Twombly, hearing officer, to open and continue hearing for procedural purposes – June 26, 2001
- Project Update to sub-committee from M. Twombly – June 21, 2001
- Letter to Mr. Butler from M. Twombly – June 27, 2001.
- Meeting notes from M. Twombly from July 10 meeting with Commission staff, Willowbend staff and consultants – July 11, 2001
- Fax to Mr. Butler containing meeting notes and confirming Aug. 23 hearing – July 17, 2001
- Memo to Commission staff, subcommittee, Mashpee officials, Willowbend from M. Twombly – July 19, 2001
- Fax to subcommittee, Mashpee officials, Wampanoag Tribe from M. Twombly – July 31, 2001
- Memo to Catherine Frazer accompanying video tape from Aug. 2 site visit from M. Twombly – Aug. 3, 2001.
- Letter to Mr. Butler from M. Twombly – Aug. 10, 2001
- Staff Report – Aug. 16, 2001
- Staff report faxed to Sean Gonsalves, Cape Cod Times from M. Twombly – Aug. 23, 2001
- Letter to Mr. Richard Aliberti from M. Twombly – Aug. 27, 2001
- Fax to Marsha Kozubek, Upper Cape Codder from M. Twombly - Aug. 28, 2001
- Memo to sub-committee from M. Twombly – Aug. 30, 2001
- Letter to Robert Sherman, Mashpee Conservation Agent, from M. Twombly – Aug. 31, 2001
- Summary of information/questions still pending to staff and Willowbend (fax) from M. Twombly – Sept. 4, 2001
- Website information about ESS-13 Sealer to Commission staff and Willowbend – Sept. 13, 2001

- Meeting notes from Sept. 4, 2001 meeting to Mr. Butler from M. Twombly – Sept. 10, 2001
- 45-day notice to Mr. Butler from M. Twombly – Oct. 1, 2001.
- Fax to Mr. Butler from M. Twombly with Nov. 29, 2001 meeting notes – Dec. 4, 2001
- Memo with enclosures re: revised golf layout site plans and mitigation matrix to sub-committee from M. Twombly– Dec. 6, 2001
- Staff report update issued Dec. 7, 2001
- Fax to Don Kieran, APCC, re: groundwater monitoring from M. Twombly – Dec. 10, 2001
- Fax to Pat Butler from M. Twombly – Dec. 12, 2001
- Letter to Horsley & Witten from H. McElroy – Dec. 27, 2001
- Email to Pat Butler from M. Twombly – Jan. 4, 2002
- Letter to Horsley & Witten from H. McElroy – Jan 7, 2002
- Staff report update to subcommittee – Jan. 7, 2002
- Memo to Pat Butler and Willowbend staff via fax from M. Twombly – Jan. 11, 2002
- Memo to Willowbend and subcommittee – Jan. 11, 2002

By Interested Parties:

- Letter from Richard Aliberti and Richard Barry questioning current DEP compliance for water use and monitoring by Willowbend, and concerns about additional water use in expansion proposal – May 17, 2001
- Petition from Willowbend abutters with signatures – Aug.10, 2001
- Petition from Willowbend abutters with signatures – Aug. 13, 2001
- Letter from Cotuit-Santuit Civic Association – Aug. 17, 2001
- Article from Cape Cod Times – Aug. 25, 2001
- Letter from the Association for the Preservation of Cape Cod to the Commission – Dec. 12, 2001

The application and notices of public hearings relative thereto, the Commission staff's notes, exhibits and correspondence, the transcript and minutes of meetings and hearings and all written submissions received in the course of our proceedings are incorporated into the record by reference.

Public Hearing #1 – August 23, 2001

Patrick Butler and the Willowbend design team outlined Willowbend's proposal of nine additional golf holes in lieu of 67 pre-permitted houses. The design included water use reductions, nitrogen loading reductions, habitat enhancement, wetland and coastal buffer alterations, a unique methodology to preserve sites to protect archaeological resources, open space over the RPP standard, and reductions in pesticide and fertilizer use. Mr. Butler believed this Project warrants use of the flexibility clause, and that the proposal better protects the resources than the housing development.

The subcommittee asked questions about impacts from the pre-permitted homes, affordable housing, potential real estate tax revenue from housing, the chemical make-up of the pond liner emulsion, revisions to the DEP water withdrawal permit, verification of the nitrogen reduction

from sewerage the condos, monitoring water retention for the pond liners, water use calculations, the time frame on the liner material pilot study, and specifics on the condominium hookup to the WWTF.

Martha Twombly stated that staff reviewed the project impacts on natural, coastal and water resources relative to the RPP, and did not view the project as “redevelopment” because the houses were never built. Sarah Korjeff requested more details on construction plans to avoid disturbance of sensitive archaeological resources. Scott Michaud asked for clarification concerning nitrogen reductions, pond liners, and groundwater monitoring. Steve Tucker stated that the proposal still alters coastal bank and buffer zone, and stated that intrusions into coastal buffers do not meet several MPSs. Heather McElroy stated the present configuration poses significant direct impacts to wetlands and their buffers in both the N. area and the S. Area which are specifically prohibited in the RPP.

Public Testimony

Maggie Connolly, representing Matthew Patrick, read his letter of support into the record.

John Cahalane, Chair, Mashpee Board of Selectmen; Marcia King, Assembly of Delegates representative from Mashpee; Tom Fudala, Town Planner; Bert Kaplan, Cotuit Bay Condominium Association; Ernie Cornelson; Glenn Marshall, President of Wampanoag Tribal Council; Nicholas Abraham; and Ed Baker, representative of Mashpee Environmental Coalition, spoke in support of the golf course in lieu of the housing development.

Bob Sherman and Diane Boretos, Conservation Commission Agents, stated there were large areas of impact and pointed out that the town bylaw also has a flexibility clause, but cautioned about its use. Diane Boretos stated that Shoestring Bay provides a high quality habitat and suggested design alternatives should be explored.

Richard Aliberti questioned Willowbend’s meeting DEP requirements to monitor water withdrawals on Santuit River.

Tony Analetto raised questions as to whether these homes could be built and asked about using land bank funds to purchase the Meeting House property.

Dr. Becker expressed concerns about Simons Road and potential water quality impairment to his well due to Willowbend golf course pesticide use.

Robert Mills supported the condo hookup, and felt that capping the archaeological sites would protect them.

Public Hearing #2 – December 12, 2001

Patrick Butler and the Willowbend design team described changes to the project including: 1) the fly-over hole was eliminated in the Southern area, reducing impacts to coastal and wetland buffers; 2) the wetland and Quaker Run alterations were omitted in the Northern area; 3) a large land area was added to the mitigation package; and, 4) impacts in the Preservation Restriction areas. Mr. Butler reiterated that Willowbend is faced with a trade-off between the houses and golf course, and he believed this is an appropriate situation for use of the Flexibility Clause as the houses would not protect the resources as well.

The subcommittee asked questions concerning the 67 homes, the turf maintenance program, the green encapsulation methodology, Chapter 91 permits, the 15-year subsidy for the condo hook-up to the WWTF, water use attributable to the bog operation, water withdrawal limits, buffer alteration mitigation.

Ms. Twombly stated that Willowbend made substantial changes to the course layout to reduce impacts to resources. Scott Michaud discussed the MOU with the condominium, the limit on maximum withdrawal of approximately 52.8 MG/Y, and assurances that the 5 ppm standard will be met. Heather McElroy stated that the redesign reduced most of the impacts to wetland buffers, and that Willowbend had come forward with significant mitigation measures. Steve Tucker stated that the plan still alters coastal bank and salt marsh, and that Willowbend is placing a C/R around Bryant's Cove and up Quaker Run that protects a significant habitat. Glenn Cannon pointed out that a disagreement exists concerning trip reduction calculations. Andrea Adams said she has received additional materials discussing hazardous materials in the Zone II. Ms. Twombly stated that staff was awaiting approval of the encapsulation and construction methodology for archaeologically sensitive areas from MHC.

Public testimony:

Tom Fudala, Mashpee Town Planner, commented on the Rte. 28/ Quinaquisset Road redesign and the house being donated to the Mashpee Housing Authority.

Marcia King, Mashpee Assembly of Delegates Representative; Glenn Marshall, Mashpee Tribal Council; Mark Harding, Deputy Historic Preservation Officer for the Wampanoag Tribe; and Ed Baker, Mashpee Environmental Coalition, spoke in support of the golf course project.

Laura Opie, resident from Cotuit, read a letter into the record and expressed concerns about lapses in oversight by Willowbend. Ms. Opie was not sure the proposal for 67 homes was real.

Jacob Levine, of Cotuit Bay Condos, clarified that the 15-year term limits the subsidy by Willowbend, not the length of the overall agreement for connection to the WWTF.

Tony Analetto, requested that Bryant's Cove Road be left it in its natural, unpaved state. He was concerned that other property around Noisy Hole would not be protected.

JURISDICTION

The proposed Willowbend Golf Course Expansion Project qualifies as a Development of Regional Impact (DRI) under the Code of Cape Cod Commission Regulations of General Application, Chapter A, Section 3 (e), Barnstable County Ordinance 90-12, as a Project that meets or exceeds the regional development threshold for an outdoor, commercial, recreational development greater than 40,000 square feet.

FINDINGS

The Commission has considered the application of Willowbend Corporation for the proposed Willowbend Golf Course Expansion Project in Mashpee, MA, and based on consideration of such application, and upon the information presented at the public hearings and submitted for the record, makes the following findings pursuant to Sections 12 and 13 of the Act:

General Findings

G1. The Project is a 9-hole golf course expansion to Willowbend's existing 18-hole golf course on Quinaquisset Ave. in Mashpee, MA, shown on Plans dated Jan. 10, 2002. The nine holes are to be constructed in two areas, a Northern area north of the existing 18 holes, on Sampsons Mill Road and on the site of an abandoned cranberry operation. The Southern expansion surrounds Bryant's Cove, the estuary at Quaker Run, and extends northward along Quaker Run. A Central Area, upland and cultivated cranberry bogs located within the existing course layout and outside of Project areas, provides offsite mitigation for Project impacts. The total Project area is 67.9 acres.

G2. The Applicant will be required to seek a variance from the Zoning Board of Appeals for reduced buffers to roads and adjacent properties. A special permit and modification to the existing special permit from the Planning Board will be required regarding the golf course bylaw. A Chapter 91 filing from the state will be required for the bridge between holes 24 and 25. The Mashpee Conservation Commission will also require an Order of Conditions, an Order of Resource Delineation and wetlands permits to allow any alteration of wetland buffers.

G3. The golf course expansion proposal is consistent with the Mashpee Local Comprehensive Plan.

G4. The property under consideration is zoned R-3 residential. Mashpee's new golf course bylaw allows golf courses by special permit in residential zones.

G5. The Willowbend Golf Course Expansion would be built in lieu of a permitted subdivision based on a 1987 Special Permit allowing for the construction of up to 67 houses and associated Order of Conditions.

G6. Testimony from two public hearings has shown support from all town officials and the Wampanoag Tribal Council, that indicated the town is generally in favor of the golf course development over the housing option, as long as water, wetland, coastal and archaeological resources are protected.

G7. Willowbend has made several commitments as part of the proposed Project that benefit the town of Mashpee, in addition to providing mitigation measures required by the RPP for impacts to resources. These are: the permanent and perpetual connection and sewerage of Cotuit Bay Condominiums with a 15-year subsidy for operation and maintenance costs to the CBC Condominium Association; excess open space; phragmites control in Shoestring Bay; reductions in fertilizer use throughout the existing 18-hole golf course as well as the new 9 holes; a stewardship monitoring and education program for Byrant's Cove; Phragmites monitoring and control plan; habitat improvements throughout the entire golf course; the donation of a house to the Mashpee Housing Authority for affordable housing; the removal of impervious surfaces in previously altered areas; and, the development of an emergency response plan for hazardous materials.

Water Resource Findings:

WR1. The project consists of 27.5 acres of expanded managed golf turf (9 additional golf holes) and over 4 acres of expanded water hazards, irrigation ponds, and running-water courses located in two distinct areas consisting of a total of 67.5 acres.

WR2. The Project is located in an Impaired Area, as defined by MPS 2.1.1.2.D, resulting from a plume of solvent-contaminated groundwater flowing beneath the site from the former Augat site on Falmouth Road (Route 28). Due to the Project's location in sensitive water-resource areas defined under MPS 2.1.1.2.A and 2.1.1.2.C and consisting of Wellhead Protection Areas (WHPA) and Marine Water Recharge Areas (MWRA), the Project area is also classified as a Water Quality Improvement Area (WQIA), MPS 2.1.1.2.E. Improvement of water quality is a major goal in WQIAs.

WR3. MPS 2.1.1.1. requires DRIs to meet a Cape-wide 5-ppm nitrogen-loading standard. The Project meets this standard for the entire Project area (see Finding WR9).

WR4. MPS 2.1.1.2.A.1 requires DRIs to meet a 5-ppm nitrogen-loading standard in WHPAs. The Project meets this standard in the Northern Area which overlaps the Zone II and WHPA for public water-supply well Pumping Station #4 (Quaker Run) managed by the Mashpee Water District, delineated in the TMP and consistent with RPP, Water Classification Map I. This is a larger area than the current Zone II. This information is contained in the Turf Management Plan (TMP) received by the Commission on January 3, 2002.

WR5. MPS 2.1.1.2.A.2 states that development involving "*the use, treatment, generation, storage or disposal of hazardous wastes or hazardous materials, with the exception of household quantities, shall not be permitted.*" The final TMP supplied by Turfgrass Environmental

Consultants, dated January 3, 2002, details provisions for meeting this standard. The TMP quantifies typical pesticide active-ingredient applications to specific areas of managed turf, and further describes plans for transport of pesticides and fertilizers into the WHPA in less than household quantities (25 gallons, or dry-weight equivalent).

WR6. The TMP adequately describes protocol for integrated management of golf turf, including turf-tissue and soil diagnostics, and integrated pest management. Consistent with Other Development Review Policy (ODRP) 2.1.1.9, the TMP describes holistic turf-management, use of industry-certified seed, and reliance on pesticides as a last resort. The TMP identifies proposed fertilizer and pesticide types and typical application rates, as well as information regarding pesticide mobility in soils and environmental persistence. The TMP is being applied to the existing 18-hole golf course, in addition to the 9-hole expansion.

WR7. Addenda to the TMP details a groundwater monitoring plan consisting of seven groundwater-monitoring locations adjacent to proposed turf and one monitoring location adjacent to the area where fertilizer- and pesticide-application equipment is rinsed (TMP, Attachment V, Figure 1). Each of the monitoring locations will have up to two well screens - a well screened across the water table and a well screened immediately below for characterization of deeper water quality. Reporting of water-quality monitoring results to the Commission, the Mashpee Planning Board and the Mashpee Board of Health is specified in the TMP.

WR8. The Project is located in a watershed that discharges to Shoestring Bay, a sensitive MWRA. The Cape Cod Coastal Embayment Project (1998, Cape Cod Commission) identifies Shoestring Bay, and the larger Popponesset estuarine system of which it is a part, as nitrogen overloaded. The report estimates nitrogen load to Shoestring Bay was 28,741 kilograms per year (kg-N/yr). At Buildout of the Shoestring Bay watershed nitrogen loading to the system is estimated to be 41,364 kg-N/yr. Characterization of the system as distressed is supported by ongoing water-quality assessments conducted by the Center for Marine Science & Technology, University of Massachusetts, Dartmouth. As a result, MPS 2.1.1.2.C.2 requires that development in the Shoestring Bay watershed “*maintain or improve existing levels of nitrogen loading*” and Willowbend meets this standard.

WR9. Project plans describe conveyance of 18,100 gallons per day of Title-5 wastewater from the 89-unit Cotuit Bay Condominium (CBC) complex for treatment at the wastewater-treatment plant owned and operated by Willowbend Development Corporation (WDC). A Memorandum of Understanding (MOU) signed on May 21, 2001 between WDC and CBC describes intent to render the condominium’s 13 septic systems inoperable and to provide for the conveyance, treatment and disposal of the condominiums’ wastewater under WDC’s ground water discharge permit (GWDP). The MOU describes an intended funding arrangement as follows: “*For a period of fifteen years from the date of completion of the project, the [CBC] Trustees will pay no usage fee after which, the units would be charged by Willowbend Community Trust, ...on a pro-rata basis with all other users of the system. No charges for capital improvements to the plant will be assessed.*” A July 25, 2001 letter from Thomas Hardman of Cullinan Engineering

certifies that sufficient capacity is available at the Willowbend plant to treat the condominiums' wastewater.

Golf-course expansion will result in an increased nitrogen load to Shoestring Bay of approximately 250 kg-N/yr (550 lbs-N/yr). Treatment of the condominiums' wastewater to a 10 ppm-nitrogen level, as specified in WDC's GWDP, will enable mitigation of approximately 525 kg-N/yr (1,150 lbs-N/yr) from wastewater generated by CBC. Therefore, pursuant to nitrogen accounting methodology described in Cape Cod Commission Technical Bulletin 91-001, there will be a net reduction in nitrogen loading to Shoestring Bay of approximately 275 kg-N/yr (600 lbs-N per year).

WR10. All new tee and green turf areas will be underlined with PVC, HDDP, or EPDM geomembrane liner. Encapsulation of new tee and green turf areas will provide further protection to groundwater by enabling capture of impacted water leaching beneath the root zone. Water captured at golf holes will be redirected either to a vegetated basin for infiltration (greens and tees at golf holes 25 & 26), or to lined irrigation ponds and water hazards for reuse (all remaining new greens and tees). Consistent with MPS 2.1.1.6, fairway drains will capture excess stormwater runoff during high-intensity storm events and redirect captured water to a vegetated basin for infiltration (fairway at golf holes 25 & 26), or to lined irrigation ponds and water hazards (all remaining new fairways), further increasing the potential for water reuse and reduction in water withdrawals for irrigation.

WR11. MPS 2.1.1.5 states that DRIs that “*withdraw over 30,000 gallons of water per day shall be required to evaluate impacts....*” The existing 18-hole golf course is permitted by the state through its Water Management Act Permit to withdraw 65.88 million gallons of water per year (MGY). Total annual water withdrawals from the Santuit River irrigation well and directly from Quaker Run for the existing course have averaged 52.8 million gallons from 1993 to 2000. Consistent with Other Development Review Policy (ODRP) 2.1.1.7, and despite expansion of golf turf, the golf course has committed to reducing water withdrawals, not to exceed an average of 52.8 MGY over any 5 consecutive year period (i.e. a total of 264 million gallons over the 5-year averaging period). Consistent with ODRP 2.1.1.8, proposed strategies to reduce water demand consist of: 1) replacement of all impact irrigation heads with more efficient gear-driven models rated to provide up to 20% water savings at the heads; 2) removal of 12 acres of existing rough turf areas from active management (225 irrigation heads); and, 3) lining of existing and sealing of expanded water hazards and irrigation ponds.

WR12. The Project consists of an expansion of water hazards and irrigation ponds of over 4 acres. When properly operated and maintained, irrigation ponds can facilitate prudent water-use by providing above-ground storage of water withdrawn during wetter climatic periods for use during dry periods. New water hazards and irrigation ponds will be equipped with polymer geomembrane liners to eliminate water loss through pond bottoms.

Commission projection of the applicant's estimate of evaporation rates from expanded ponds and hazards exceeds 5 MGY. To mitigate evaporative loss from expanded ponds, the applicant has

committed to a 5,000 square foot (sf) reduction in "Lake 19" not reflected in October 22, 2001 plans. This translates to a reduction in projected evaporative loss of approximately 153,000 gallons per year.

Six existing water hazards and ponds will be sealed using a proprietary material called ESS-13 that enables sealing of filled ponds without the need for draining and excavation. A limited range of regulated metals (arsenic, barium, and chromium) were detected in ESS-13 samples submitted for laboratory analysis. Concentrations are not expected to present environmental or public health risk. All ESS-13 applications will occur outside existing Wellhead Protection Areas (WHPA). Addenda to the TMP include plans to monitor water quality in the ponds and groundwater following ESS-13 applications. The TMP describes past collection of groundwater samples from a well (RIZ-2) located 200 yards from a pond used for pilot testing of the ESS-13 liner material. Because it is unclear whether groundwater samples are collected from a point that is downgradient from the pilot pond, the value of continued sample collection from this location is questionable.

WR13. Willowbend has committed to providing the Commission with further detailed information as outlined in Condition WR4 below.

Historic Preservation Findings:

HP1. Minimum Performance Standard 6.1.3 states that "*development proposed on or adjacent to prehistoric or historic ... sites with high archaeological sensitivity...that the development shall be configured so as to maintain and/or enhance such resources where possible.*" The proposed Project involves golf course construction in two general areas of archaeological sensitivity, as determined by archaeological investigations of the site.

HP2. The Massachusetts Historical Commission holds Preservation Restrictions in parts of the Project area and as such has authority to determine whether the proposed methods for avoiding impacts to archaeological resources are satisfactory prior to allowing development to proceed in the sensitive areas.

HP3. The proposed encapsulation of golf course areas in the vicinity of archaeological resources, if conducted in accordance with procedures reviewed and approved by the State Archaeologist and Massachusetts Historical Commission, will provide adequate protection from disturbance both during the construction phase and over the long term.

Coastal Resource Findings:

CR1. In the Southern Area, the construction of six new golf links is proposed adjacent to and within buffers to saltmarsh, coastal bank, Bryant's Cove, and Quaker Run. Quaker Run flows into and through Bryant's Cove, an estuary which flows to Shoestring Bay. According to testimony from the Mashpee Conservation Commission staff, and based on Commission staff field visits, the Bryant's Cove estuary is a highly productive and sensitive wildlife habitat,

supporting a variety of resident and migratory wildlife, including small mammals, shorebirds and passerines, and according to the Natural Resource Inventory (NRI), the Cooper's Hawk. The combination of saltmarsh and freshwater wetlands together with the sheltering topography of this cove contribute to this area's significance to wildlife within the developed context of Shoestring Bay. According to information provided in the NRI, the southern portions of Quaker Run may provide habitat for trout. The coastal bank and buffers to saltmarsh along the edge of Shoestring Bay also provide valuable habitat to wildlife, as well as providing filtering of surface and below-ground pollutants, thereby protecting water quality in the bay to the benefit of wetland and aquatic wildlife as well as humans.

CR2. Work proposed within the 100 foot buffer zone to Coastal Bank includes both immediate construction impacts and long-term use of the altered areas. MPS 2.2.2.4 prohibits activities that could adversely affect the height, stability, or standing of the bank as a sediment source. Impacts will result from clearing of vegetation, grading, construction of golf course features, placement of fill, and revegetation with grasses. However, due to the shallow slope of the coastal bank resources on the subject parcel, the extent to which they are sheltered from direct exposure to coastal wind and wave effects, and given the proposed enhancement of vegetation on the bank where such coverage is sparse, limited clearing in proximity to the top of coastal bank is unlikely to effect the interests protected by MPS 2.2.2.4. Post-Project conditions will require maintenance within the buffer zone.

CR3. The Project calls for work within the required 100 foot undisturbed buffer to mean high water and wetland resources. While wetland restoration Projects and water dependant uses may be allowed within buffer areas, other disturbance within the one-hundred foot buffer is prohibited by MPS 2.2.3.7 and (by reference) 2.3.1.2.

CR4. Clearing of vegetation within the buffer zone to mean high water, and in close proximity to the top of coastal bank can alter the appearance of the landform when viewed from public waterways and adjacent shores. Maritime character and aesthetic interests described in Regional Policy Plan Goal 2.2.1 are best protected by maintaining adequate vegetation and natural screening in the buffer zones between coastal and upland resources. In addition, it is important to preserve these zones by limiting any human incursion after the course is in operation to the greatest extent possible.

CR5. MPS 2.3.1.2 permits vista pruning where no feasible alternative exists. The course layout for the 25th hole includes area within the 100 ft buffer where vista pruning is proposed. Minimal selective cutting of tree limbs and replacement of some understory vegetation in order to allow for views from the 25th hole to Shoestring Bay may be permitted following Commission approval. The scope of actual material removed shall not result in the degradation of vegetation presently providing wildlife habitat, bank stabilization, erosion control and nutrient removal.

CR6. Willowbend has requested that consideration of some limited vista pruning not be precluded from land within the 100 ft buffer along the 24th fairway. This same area is proposed as mitigation for impacts within the 100 ft buffer associated with construction of the 24th hole.

Minimal selective cutting of tree limbs and replacement of some understory vegetation with lower growing species in order to allow for views may be considered following Cape Cod Commission review and approval. Any proposed vegetation removal which is subsequently approved shall not undermine the purposes for which this area is accepted as mitigation, specifically preservation of wildlife habitat, bank stabilization, erosion control, and nutrient removal.

CR7. Patches of the Common Reed, *Phragmites australis* have been identified in resource areas adjacent to the Project. This plant is considered a significant threat to the biodiversity of native species in wetland systems on Cape Cod. While the area of *Phragmites* mitigation is substantially less than the area of proposed alteration of coastal buffers, the proposal incorporates measures such that both immediate and long term benefits may be realized. Specifically, the applicant proposes to treat, restore and monitor a portion of coastal marsh currently infested by *Phragmites australis*. When properly conducted, the recommended methodology has been shown to have no adverse effects on plant and animal species in wetland areas. While the invasive species mitigation area does not provide adequate mitigation for habitat value lost due to buffer zone alteration, the initial treatment and future management of invasive species will improve the natural environment and could provide additional public benefit by averting future degradation of the estuarine and coastal environment.

CR8. The applicant agrees to the development and implementation of the “Bryant’s Cove Stewardship Program”. If properly conducted, this program may establish elevated levels of stewardship for the public interest and resources of Bryant’s Cove by founding a substantive education and monitoring program. In order to be substantive, the program should meet the following criteria:

- The program should include facilities for the archiving of data collected during the program, including space for written materials and electronic storage of digital data and access to the world wide web for remote access to data, and for posting education program information and analysis.
- The applicant should retain professionals to conduct “train the trainer” courses to teachers interested in participating in the curriculum.
- Assessment of the resource by students should occur on a seasonal basis, a minimum of four times per year to demonstrate seasonal variability in habitat characteristics and species utilizing the site.
- Stations for photographic documentation should be established and photographic documentation should be collected at least every five years to provide visual reference for data collected in the field and to document changes in the environment over time.
- At a minimum, participants in the educational program should receive instruction and collect or evaluate data on the following metrics: avifauna, aquatic macroinvertebrates, vegetation, salinity gradients, water chemistry and land use.

CR9. The proposed Project is within the marine recharge area to the Shoestring Bay, an

impaired water quality area. Additional nutrient loading would be detrimental to the resource and contrary to goal 2.2.3 of maintaining and improving coastal water quality. Mitigation of future nitrogen contributions to the embayment, specifically the sewerage of Cotuit Bay Condominiums proposed by the applicant, constitutes a benefit of the Project in that it advances the goal of improving water quality in a designated Water Quality Improvement Area as described in finding WR.2.

CR10. The applicant has proposed restoration of disturbed areas of coastal bank amounting to 112 sf, as indicated on the Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures (Southern Area) as prepared by Horsley & Witten, Inc. and dated 1/10/02. Additional plantings supplementing existing natural vegetation on the coastal bank and within the 100-foot buffer zone with appropriate native species contributes toward mitigation for buffer zone alterations.

CR11. The applicant has further proposed additional improvements to previously altered areas by removing impervious surfaces affecting the Coastal Bank and adjacent resources. The proposed work to remediate 2,710 sf of impervious surface is likely to reduce stormwater runoff to wetlands and coastal waters.

CR12. The applicant has further proposed permanent protection of coastal buffer zones that might not be as well protected from incursions that may be allowed through the local permitting process. This measure is described in greater detail in finding NR12(c).

Natural Resources Findings

NR1. Consistent with the requirements of MPS 2.4.1.1, Willowbend has provided a Natural Resources Inventory (NRI). The Project is located within Significant Natural Resource Area as mapped by the RPP. Although the site is not mapped as rare species habitat by the Natural Heritage and Endangered Species Program, the NRI submitted for this Project identified the presence of the Cooper's Hawk, a recently delisted species of special concern.

NR2. Development and onsite mitigation is located in roughly three areas: 1) the Northern Area is a parcel of land abutting Sampsons Mill Road and is located north of the existing golf course. This area includes an irrigation pond, cultivated and overgrown cranberry bogs through which a stream, Quaker Run, historically ran, and of which evidence is still present around and through the bogs; 2) the Central Area is upland and cultivated cranberry bogs located within the existing course layout, and provides off-site mitigation outside the Project area; and 3) the Southern Area is a parcel of land south of Quinaquisset Avenue and the existing golf course, running south to Shoestring Bay, surrounding Bryant's Cove and through which Quaker Run flows.

NR3. The Project has undergone extensive review and revision, resulting in revised plans which minimize, to the extent possible impacts to resources protected by the RPP, while still allowing for construction of the nine holes.

NR4. In the Northern Area, the construction of two new golf links is proposed adjacent to three cranberry bogs, and over a small man-made irrigation pond. The northern-most and middle bogs are overgrown with various wetland shrubs, pitch pine and red maple saplings and mature trees of various sizes. The stratified and diverse nature of the vegetation within these bogs presently supports a variety of wildlife, including resident and migratory passerines, and small mammals. The southern-most bog in this Northern Area is partially overgrown and partially cultivated. These are productive wetlands providing wildlife habitat. A 4,531 sf man-made irrigation pond presently functions as a wetland, is defined as such by the RPP, and is consequently protected by MPS 2.3.1.1. This pond presently supports some aquatic and emergent vegetation, invasive milfoil, as well as wetland shrubs. Water dependent invertebrates were also observed at this wetland.

NR5. In the Northern Area, existing buffers to wetlands are comprised of pitch pine/mixed oak woodlands with a typical shrub understory detailed in the NRI. According to the NRI, these areas are providing habitat for a variety of birds, mammals and amphibians. Extensive portions of these buffers are presently altered, including the house and yard area, the pumphouse, dirt cartpaths/roads surrounding the bogs, and refuse piles all located within the area of the proposed 16th fairway.

NR6. MPS 2.3.1.1 requires the protection of wetlands, and MPS 2.3.1.2 requires the protection of 100 ft vegetated buffers to wetlands. The Project design involves various impacts to wetlands and wetland buffers in the Northern Area, and is not in compliance with MPSs 2.3.1.1 and 2.3.1.2. Site constraints, residential setback requirements associated with the Mashpee Zoning Bylaw, and safety considerations associated with golf course design in the Northern Area influenced the proposed course layout. The construction of the 16th fairway, small portions of the 17th fairway, cartpaths and a wooden bridge located between the middle and southernmost bogs, will require filling the 4,531 sf irrigation pond, the alteration of approximately 36 sf of bordering vegetated wetland (BVW) within the line of flight for the 16th hole, the alteration of 1.26 acres of buffer zone to BVW, and the alteration of 1.25 acres of previously altered buffer to BVW.

NR7. MPS 2.3.1.2 allows alteration of “previously altered” areas, which includes for this Project: impervious surfaces, dirt tracks, managed lawn areas or refuse piles, managed turf within portions of the 16th and 17th fairways and proposed cartpaths in the Northern Area. Consistent with this MPS, the replacement of these altered areas with managed turf will not increase adverse impacts to the buffer. In addition, as discussed in Findings NR3 and NR6, there is no feasible construction alternative. Mitigation is not required for this buffer alteration.

NR8. In the Central Area, the relocation of the rest station to an area within previously altered buffer to wetlands may be permitted pursuant to MPS 2.3.1.2. Willowbend has agreed to infiltrate stormwater runoff from the new structure through a vegetated swale, and will revegetate the buffers to the bogs at this location with native species appropriate to the site. In addition, the reconfiguration of the 14th tee will result in alteration of previously altered buffer to wetlands. Willowbend has agreed to construct a proposed retaining wall in such a manner as to allow for stormwater infiltration. Consistent with MPS 2.3.1.2, the proposed alterations will not

increase adverse impacts to the buffer. In addition, there is no technically demonstrated feasible construction alternative.

NR9. MPS 2.3.1.2 requires the protection of 100 foot vegetated undisturbed buffers to wetlands. The Project design involves various impacts to wetland buffers in the Southern Area and is not in compliance with 2.3.1.2. The layout requirements for a Championship golf course on this unique site have resulted in the final proposed layout dated Jan. 10, 2002, while minimizing impacts to wetlands, wetland buffers and wildlife habitat within this Southern Area. The construction of the 25th and 24th links and a golf cart bridge spanning Quaker Run will result in the alteration of 1.05 acres of alteration to salt marsh buffer. The construction of the 25th hole may require some vista pruning within the salt marsh buffer. Vista pruning along the 24th fairway may be considered following construction of the 24th fairway. Construction of the 20th tee will require alteration of previously altered buffers to saltmarsh and freshwater BVW and as referenced in Finding CR1 regarding wetland buffer values in the Southern Area.

NR10. The golf cart bridge proposed over the Quaker Run at Bryant's Cove, designed as proposed in the Notice of Project Change (NPC) pages 1-9 and Section 2.4.2, minimizes impacts to wetland buffers at this location, and will not require wetland alterations. Additional plantings are proposed at this location, as detailed in the NPC.

NR11. The proposed alteration of previously altered buffer areas from dirt track or managed turf to managed turf in the Southern Area at the 20th tee is allowed by the RPP, MPS 2.3.1.2. Consistent with this MPS, the replacement of these altered areas with managed turf will not increase adverse impacts to the buffer. In addition, as discussed in Findings NR3, NR9, and NR12, there is no feasible construction alternative. Mitigation is not required for this buffer alteration.

NR12. The proposed alterations to wetlands and wetland buffer described in Findings NR4, NR6, NR9 and Coastal Findings CR1, CR2, CR3 are not permitted by the RPP, MPSs 2.3.1.1, 2.3.1.2, and 2.2.3.7. Based on the unique conditions associated with this Project (see Finding G5), the Commission finds that it is appropriate to invoke the Flexibility Clause of the RPP to allow the wetland and wetland buffer alteration required for this Project. In considering the mitigation proposed below, the proposed use would not be more detrimental to the protected resource than would be allowable under the applicable MPSs. The following factors, taken together, are essential components of this Finding:

- a) During the review of this Project, the amount of wetland alteration has been significantly reduced through Project modifications to the minimum amount necessary to accomplish the purpose of the Project, a Championship golf course.
- b) There are no feasible alternatives to the layout requirements for the proposed Project that would completely eliminate the need for wetland or wetland buffer alteration.

c) Significant mitigation has been provided associated with this Project's impacts. A specific breakdown of the proposed mitigation is provided in the Willowbend Modification "Matrix of Proposed Project Areas and Restoration and Habitat Enhancement Measures," as revised and submitted January 15, 2002 (Appendix A). Referencing this matrix to numbers in parentheses, the proposed mitigation for the Northern Area includes:

- restoration of 7,406 sf of cultivated cranberry bog (Reference Item 1 on matrix),
- permanent protection of the 1.96 acre Noisy Hole wetland (Item 3),
- permanent protection of 5,663 sf of kettlehole wetlands north of Quinaquisset Ave. (Item 4),
- permanent protection of 8.97 acres of wetland buffers to Noisy Hole (Item 6),
- permanent protection of 31,799 sf of wetland buffers to kettlehole wetlands north of Quinaquisset Avenue (Item 7),
- improvement of 3,501 sf turtle nesting habitat (items 8, 9),
- creation of a 2,000 sf sandplain grassland (Item 10),
- removal of 771 sf impervious surface within the wetland buffer Item 20),
- naturalization of various areas throughout the existing Willowbend Golf Course and at one off-site location with native wetland buffer vegetation (2.22 acres), (Items A-I, and K).

Again referencing this matrix, the proposed mitigation for the Southern Area includes:

- restoration of 112 sq ft of disturbed areas with native plants (Item 11),
- removal and restoration of 3,710 sq ft impervious areas (Items 12, 13),
- permanent protection of 8.86 acres of the 100 ft buffer to salt marsh (Items 15, 16).

d) Aspects of the proposed mitigation will provide a public benefit directly to the town of Mashpee, and indirectly to the region as resources of public and Native American interest will be permanently protected.

e) In addition to the mitigation described in NR12(c) above, other Project modifications and proposals will result in additional benefits to wetland and wetland buffers on the site. These include the stewardship and education program proposed within Bryant's Cove, improved pollution attenuation capacity within the saltmarsh buffer associated with the removal of septic systems at Cotuit Bay Condos, improved water quality within Shoestring Bay associated with the sewerage of Cotuit Bay Condos, and control and monitoring of two stands of *Phragmites australis* within the saltmarsh adjacent to holes 24 and 25.

NR13. Consistent with the requirements of the Mashpee Wetlands Bylaw, Willowbend proposes replicating a pond as mitigation for filling the irrigation pond within the 16th fairway. The RPP does not permit replication as mitigation for wetland alteration, and consequently, the Commission neither accepts nor requires this mitigation.

NR14. Willowbend proposes restoration of a vernal pool located just off-site on town-owned land within the Com-Electric utility easement. The area is presently used by ORVs, resulting in siltation and degradation of the vernal pool. The Commission neither recognizes nor requires this

as mitigation for the Willowbend Project due to concern that the proposed restoration will not prevent ORV access through the vernal pool. However, the Commission supports the effort to restore and protect this vernal pool, and encourages Willowbend to pursue and refine this mitigation proposal with the Mashpee Conservation Commission.

NR15. The applicant has agreed to construct cartpaths throughout the new course with pervious materials, including shells, bark mulch, native crushed stone, cobblestone for safety on slopes, pine needles, or similar materials, thereby allowing for stormwater infiltration and minimizing impacts to wetland buffers.

NR16. Willowbend proposes to revegetate extensive areas of the proposed and existing course with native materials appropriate to local site conditions as part of the mitigation proposal. A Restoration and Vegetative Planting Specification list (Spec. list) revised and dated January 3, 2002 has been provided detailing types of species, quantities, and plant spacing. Revegetation at the proposed sites will follow the proposals in this Spec. list and as discussed in the accompanying letter from Bruce Besse dated January 4, 2002. Willowbend has a professional in-house landscaping staff. In lieu of a maintenance contract, the applicant has agreed to supply documentation on the success of the planting program for five full growing seasons to ensure the viability of proposed plantings. The applicant is encouraged to incorporate more hardy, flowering perennials to replace water-intensive annuals into the landscape plan for the course.

NR17. Throughout the existing and proposed golf course Willowbend proposes areas of natural plantings (designated N.P. on the approved Project plans) which are presently managed and irrigated turf. These areas, separate from proposed mitigation areas, will be allowed to grow naturally, i.e. without the use of fertilizers or irrigation, and mowed only once or twice a year. In some locations the natural grasses may be supplemented with additional low growing vegetation such as bearberry or heaths.

NR18. The applicant has agreed to restore a section of a tributary to the Quaker Run streambed which presently passes through the center of the course through culverts. This may be considered an improvement over the present culverted streambed. Willowbend is encouraged to improve the buffers to the streambank with wetland vegetation in order to improve the stream's value to wildlife in this area.

Open Space Findings

OS1. The 67.9 acre Project site is located in Significant Natural Resource Area, and consequently 65%, or 44.13 acres is required to be protected to meet the open space requirements of MPS 2.5.1.3. Willowbend states that 48.99 acres, or 72.2% of the project area, will be permanently protected as a result of Project approval. This acreage includes 27.64 acres of undisturbed wooded upland, 4.39 acres of natural vegetation restoration area, and 16.96 acres of golf course rough, thus exceeding the quantity of open space required. 40.13 acres of the proposed 48.99 acres are shown on the plans titled "Open Space Plan, 'Southern Area', Willowbend" drawing C1 and "Open Space Plan, 'Northern Area', Willowbend" drawing C2 as

prepared by VHB and dated 1/31/02. The remaining 8.86 acres of proposed open space is provided at Noisy Hole, and is addressed in Finding OS2 below. The open space proposal adequately addresses the MPSs 2.4.1.2, 2.4.1.3, 2.5.1.1, 2.5.1.2 regarding minimizing impacts to vegetation, topography, and wildlife habitat, and addressing the quality of open space. Golf course land use requirements typically result in the fragmentation of undisturbed woodland, as is the case with the Willowbend proposal. However, the combination of proposed mitigation around Bryant's Cove and along Shoestring Bay, and the provision of open space located in undisturbed wooded areas on-site and off-site around Noisy Hole (many of the most sensitive areas of the site and significant off-site land) will be permanently protected through this proposal.

OS2. The wetland known as Noisy Hole and surrounding upland provides significant wildlife habitat and open space of value to the town of Mashpee, Cape Cod, and to the Wampanoag Tribal Council. In order to permanently protect the significant natural resource values of the wetland known as Noisy Hole and a significant buffer around this resource, Willowbend has agreed to place a conservation restriction on 19.79 acres of the Meetinghouse Road property as shown on the plan titled "Open Space Plan, 'Noisy Hole' Parcel, Meeting House Road" drawing C3 as prepared by VHB and dated 1/23/02, and located adjacent to other town-owned land. The permanent protection of 8.86 upland acres of the 19.79 acre conservation area is provided to meet, in part, the open space requirements for the Willowbend Project. The remaining 10.93 acres is protected as mitigation for wetland and wetland buffer impacts as detailed in Finding NR12. Willowbend has indicated that the Mashpee Water District may wish to install a municipal well within the vicinity of the proposed conservation restriction. Construction of a well at this location would need to demonstrate to the Commission that there would be no adverse impacts to the Noisy Hole wetland. In addition, the area of pumphouse, access road and any other development area shall be outside the area subject to the conservation restriction.

OS3. The Town of Mashpee Conservation Commission has indicated its willingness to hold the conservation restrictions and accept the donations of land required by this decision.

Transportation Findings

T1. Willowbend Development Corporation proposes to add 9 golf holes to the existing 18-hole golf course (27 total holes) located along Quinaquisset Avenue in Mashpee, MA. Quinaquisset Avenue is a regional road as defined in the Regional Policy Plan.

T2. Based on the proponent's estimates the new vehicle trips generated by this development will be:

- Morning peak hour 18 trips/hr
- Afternoon peak hour 23 trips/hr
- Average daily traffic 296 trips/day
- Saturday midday peak hour 38 trips/hr
- Saturday daily total 337 trips/day

T3. Minimum Performance Standard 4.1.1.1 of the RPP requires analysis and mitigation for traffic impacts generated by the development greater than 24 vehicles per hour (vph) on any regional roadway link or regional intersection (50 vph for locations in a growth center). Based on the trip distribution submitted by the proponent, the site-generated traffic will be below the 25-trip per hour threshold on any regional roadway link or regional intersection.

T4. MPS 4.1.1.7 states “*Regardless of Project size or traffic generation, there shall be no degradation in public safety as a result of a DRI*”. As identified by the proponent the regional intersection of Route 28 and Quinaquisset Avenue is a high crash location. Conceptual improvements were proposed for the Route 28/Quinaquisset Avenue intersection by the proponent, which consisted of restricting Quinaquisset Avenue to right turn in only. Based on information submitted by the proponent, the Commission finds that the intersection of Route 28/Orchard Road/Ashers Path does meet traffic signal warrants and that if the Town of Mashpee restricts egress movement from Quinaquisset Avenue to Route 28, a traffic signal located at Route 28/Orchard Road/Ashers Path could be designed to handle the additional traffic load.

T5. MPS 4.1.2.1 states that DRIs must reduce the average daily automobile trips by 20% to comply with MPS 4.1.2.1 of the RPP. The proponent has chosen to make a contribution to promote alternative modes of transportation, based on the transit equivalency equation as allowed by MPS 4.1.2.2.

The proponent submitted average trip length for all the existing members of Willowbend in a memorandum dated December 20, 2001 and supplemental information dated January 2, 2002. The December 20, 2001 memorandum estimated the average trip length at 2.35 miles. Based on the transit equivalency equation, the cost to offset 20 percent of the average daily traffic (59 trips per day) is \$56,000.00.

Economic Development Findings:

ED1. The Economic Development goals of the Regional Policy Plan are:

3.1 to promote businesses that are compatible with Cape Cod’s environmental, cultural, and economic strengths in order to ensure balanced economic development; 3.2 to locate development so as to preserve the Cape’s environment and cultural heritage, minimize adverse impacts, and enhance the quality of life; and 3.3 to encourage the creation and diversification of year-round employment opportunities.

ED2. Development Review Policy 3.3.1 states that, “*Developments of Regional Impact should be evaluated for net new jobs created, salary and benefit levels, occupational advancement opportunities for local workers, and the impact on existing business, traffic, natural resources, and decent affordable housing for employees.*” Development Review Policy 3.3.2 states that, “*The Commission should encourage Projects which provide permanent, well-paying, year-round jobs and employment training opportunities for Cape Cod residents.*” Development Review Policy 3.3.3 states, “*The Commission should encourage Projects reviewed as Developments of*

Regional Impact to employ Cape Cod contractors and use local suppliers and workers.” And Development Review Policy 3.3.4 encourages the employment of minority and women contractors and encourages the employment of minorities.

ED3. The Applicant states that it is anticipated that the Willowbend expansion will employ between ten (10) and fifteen (15) new year-round employees, and fifty (50) seasonal jobs, distributed between departments of golf course management and club operations.

ED4. The Applicant stated it will make every effort to hire local Mashpee and Cape Cod residents for the year round and seasonal positions to the maximum extent possible.

ED5. According to the Applicant, the salary ranges for the proposed Project are generally the following:

Asst. General Manager	\$50,000 per year
Asst. Director Fitness Facility	\$35,000 per year
Specialized Hourly	\$7.25/hour to \$12.50/hour
Fitness Staff	\$8.50/hour
Seasonal w/tip positions	Minimum Wage

ED6. Based upon the Applicant’s information and the Commission’s analysis, the Town of Mashpee and the state would benefit from increased property taxes, sales taxes, meal taxes, and other taxes. General data from the golf industry show there would be additional indirect economic benefits to the community and the region, as Cape Cod and Islands golf facilities account for 10% of the golf facilities in the state, thereby resulting in \$729 million in economic influence within the region.

ED7. It is anticipated by the Applicant and Commission staff evaluation that the impact to town services will be minimal, in large part due to the fact that school costs would not be impacted by the Willowbend Golf Course expansion.

Hazardous Materials/Wastes Findings

HM1. According to information received as part of the Development of Regional Impact review, the Applicant has offered an existing dwelling within the Northern Area to the Mashpee Housing Authority (MHA) for re-use at an unspecified off-site location. Correspondence from the Applicant's attorney confirms that an inspection was conducted of this existing dwelling for the presence of asbestos-containing material, and lead-based paint. Correspondence states that no asbestos was located within the structure. The Applicant agreed to cover the costs associated with removal of any asbestos or lead-based paint and to remove the structure's 275-gallon heating oil tank.

HM2. Based on maps approved as part of the 1996 Regional Policy Plan, new hole #16 and #17 as shown on the plan entitled "Willowbend - Matrix of Proposed Project Areas - Northern

Location - Restoration and Habitat Enhancement Measures, Plate 2" (dated 1/10/02) are located in a Wellhead Protection District/Zone II area. As such, Minimum Performance Standard 4.2.2.3 applies to this Project, which states that *"commercial and industrial development and redevelopment that involves the use, treatment, generation, storage or disposal of hazardous wastes or hazardous materials, with the exception of household quantities, shall not be allowed within Wellhead Protection Districts."*

HM3. For construction activities, a July 27, 2001 letter states that the Applicant will place a restriction on construction work requiring that overnight storage of equipment and hazardous materials and vehicle fueling and staging operations take place outside of the Wellhead Protection District/Zone II area.

HM4. For post-construction activities, the Applicant has committed in the Integrated Pest Management Plan (IPM) to use not more than 25 gallons or its dry weight equivalent at any one time of pesticides, insecticides, fungicides and fertilizer in areas inside the Wellhead Protection District/Zone II. Information submitted by the Applicant on December 5, 2001 also indicates that the facility's long-term chemical handling and storage areas are now and will continue to be outside the Wellhead Protection District, and that the "addition of nine golf holes...will not result in an increase of pesticide or fertilizer storage capacity".

HM5. MPS 4.2.2.1 requires *"development and redevelopment shall make reasonable efforts to minimize their hazardous waste generation through source reduction, reuse, material substitution, employee training and education."* For the construction phase of the Project, the Applicant submitted a Spill Response Action Plan that outlines procedures to insure that construction contractors will make efforts to minimize their hazardous waste generation. These procedures include on-site work meetings, inspections of storage areas, marking of any hazardous materials or waste storage areas and use of containment measures. The Applicant also provided an outline of a workplace hazard communications plan and a sample emergency response plan to respond to releases of oil or hazardous materials. The IPM plan also addresses conformance with MPS 4.2.2.1 in the long term by limiting the use of herbicides, fungicides and insecticides based on careful observation of turf.

In terms of other hazardous materials currently attributable to Willowbend, the course maintains two underground tanks: a 1,000-gallon diesel and a 2,000-gallon gasoline tank. These tanks were upgraded in 1997.

HM6. MPS 4.2.2.2 requires that *"development and redevelopment shall be in conformance with the Massachusetts Hazardous Waste Regulations, 310 CMR 30.000."* In terms of construction activities, the Spill Response Action Plan outlines protocols for insuring proper management and disposal of hazardous waste generated by construction contractors.

For post-construction activities, the IPM plan addresses conformance with MPS 4.2.2.2 by establishing regular inspections of chemical storage areas, and provides for updates of employee training in the handling and use of pesticides and other chemicals.

HM7. The Applicant agrees that no additional hazardous waste would be generated by the course as a result of the 9 new holes. Willowbend currently generates approximately 200 gallons per year of used oil, which would make it a Very Small Quantity Generator of waste oil. Willowbend uses a licensed hazardous waste hauler to transport this waste off site.

Willowbend does "light maintenance" of its turf management equipment on-site (blade sharpening, changing spark plugs, oil changes). Because of this, it also has a parts-washing station, a self-contained solvent dispensing and collection unit that is serviced monthly by a contractor.

HM8. Other Development Review Policy 4.2.2.4 states that "*development and redevelopment using or storing hazardous materials or wastes should prepare and maintain an emergency response plan which identifies potential environmental and health risks and recommends ways to reduce those risks. Such plans should be provided to local officials responsible for hazardous waste coordination.*" Information submitted as part of the DRI review process indicates that the Applicant has such a plan in place for both construction and post-construction activities. This constitutes a benefit of the Project.

Community Character Findings

CC1. In a July 27, 2001 letter from the Applicant's attorney, the Applicant stated that the proposed expansion "will not result in the construction or utilization of any exterior lighting. The course is operational from sun up to sun down and will not be open or operated during the night-time hours."

CONCLUSION

Based on the Findings above, the Cape Cod Commission hereby concludes:

1. The benefits of the proposed development based on Findings G6, G7, WR6, WR9, CR8, CR12, NR17, NR18, HM1, HM7 and ED6, as conditioned, outweigh the detriments based on Findings G5, CR3, NR4, NR6, NR9, and NR 10.
2. Provided that the Project obtains all permits required by the Town of Mashpee, including the grant of a special permit from the Mashpee Planning Board and a variance from the Mashpee Zoning Board of Appeals as noted in Finding G2, and Notice of Intent by the Mashpee Conservation Commission, the Project is in compliance with local development bylaws. The granting of the DRI approval is in no way intended to support or oppose the grant of these waivers at the local level.

3. Providing that the Project receives an approval for the encapsulation construction methodology from the Massachusetts Historic Commission as noted in Finding HP2, the project is in compliance with MHC Preservation Restrictions.

4. The Project is consistent with the Minimum Performance Standards of the Regional Policy Plan, except where indicated in Findings CR3, NR4, NR6, NR9, and NR11 and MPS 2.2.3.7, 2.3.1.1, and 2.3.1.2. Under the Flexibility Provision in the RPP the Applicant was able to demonstrate an alternate approach including proposed mitigation, that will not be more detrimental than would be allowed under MPS 2.3.1.1, 2.3.1.2 and MPS 2.2.3.7 of the RPP.

5. The Project as proposed is consistent with the Mashpee Local Comprehensive Plan.

The Cape Cod Commission hereby approves the Willowbend Golf Course Expansion as a DRI under Sections 12 and 13 of the Act, provided the following Conditions are met.

CONDITIONS

General Conditions

G1. This DRI decision is valid for 7 years and local development permits may be issued pursuant hereto for a period of 7 years from the date of the written decision.

G2. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this decision.

G3. The Applicant shall obtain all state and local permits for the proposed project.

G4. No development work, as the term "development" is defined in the Act, shall be undertaken until all appeal periods have elapsed or, if such an appeal has been filed, until all judicial proceedings have been completed.

G5. Prior to the start of construction for any portion of the proposed Project, the Applicant shall submit final plans as approved by local boards for review by Commission staff to determine their consistency with Section 7 of the Cape Cod Commission Administrative Regulations, Modifications to Approved DRIs, dated 6/3/99 and as amended from time to time.

G6. The Applicant shall obtain a Preliminary Certificate of Compliance from the Commission which states that Conditions in this decision required prior to the start of construction have been met.

G7. The Applicant shall obtain a Phase 1 Certificate of Compliance from the Cape Cod Commission which states that all Conditions in this decision required prior to the start of construction, except within Preservation Restriction areas and a 50' buffer surrounding them, have been met. The Applicant shall obtain a Phase 2 Certificate of Compliance from the Cape Cod Commission which states that all Conditions in this decision required prior to seeding of the fairways have been met.

G8. The project shall not be open for business to the public until a final Certificate of Compliance is received from the Cape Cod Commission. Unless otherwise stated herein, all remaining Conditions shall be complied with prior to issuance of a Final Certificate of Compliance.

G9. The Applicant shall notify Commission staff of the intent to seek any Certificate of Compliance at least thirty (30) days prior to the anticipated date of issuance. Such notification shall include a list of key contact(s) for questions that may arise during the Commission's compliance review. Commission staff shall complete an inspection under this Condition within seven (7) business days of such notification and inform the Applicant in writing of any deficiencies and corrections needed. The Applicant understands that the Commission has no obligation to issue a Certificate of Compliance unless all Conditions are complied with or secured consistent with this decision. The Applicant agrees to allow Cape Cod Commission staff to enter onto the property that is the subject of this decision for the purpose of determining whether the Conditions contained in the decision are met.

G10. The Applicant shall be responsible for providing proof of recording of the decision prior to issuance of a Preliminary Certificate of Compliance.

G11. The 1987 Special Permit allowing 67 permitted houses will be modified and reconfigured to provide for substitution of the proposed golf course Project prior to the issuance of a Phase 1 Certificate of Compliance.

Water Resource Conditions

WR1. Water withdrawals for the 27-hole Willowbend golf course shall be limited to 264 million gallons of water over every consecutive 5-year period. Compliance with this condition shall be verified through water-use metering, and submission of annual reports to the Commission shall begin on January 1, 2003. Annual reports to the Commission shall contain tabulated monthly water withdrawals distinguishing: 1) source (i.e. Quaker Run or Santuit River well); 2) volume used for actual irrigation; 3) totals for the season; and, 4) cumulative totals and average for the averaging period. Annual reports filed with the Commission following each of the initial four irrigation seasons shall contain an assessment of Willowbend's projected ability to meet the 264 million-gallon limit. Subsequent annual reports shall contain a demonstration that the 264 million-gallon limit has been met. If Willowbend anticipates that it will be unable to meet the prescribed water-withdrawal limit set forth in this condition under normal operating procedures, the applicant shall execute mitigation strategies outlined in the TMP and detail implemented strategies in the respective annual report.

WR2 Use, storage and handling of Hazardous Materials, as defined by the RPP (including but not limited to turf-management chemicals, pesticides and fertilizers) within the WHPA identified by the RPP, referenced in Finding WR5 and depicted in the TMP, shall be limited to 25 liquid gallons or its dry weight equivalent.

WR3. The TMP shall be edited and implemented as follows, and an updated copy of the TMP shall be forwarded to the Commission prior to issuance of the Preliminary Certificate of Compliance:

- Portions of the TMP superseded by the Addenda to the TMP dated Jan. 4, 2002 shall be removed from the TMP.
- Attachment I (Water Conservation Measures) reference to commencement of the 5-year averaging period for water use following an initial two-year turf establishment period shall be replaced by language describing commencement of the 5-year irrigation-averaging period upon Commission approval of the Project.
- Attachment II (Hazard Sealant Pilot Program and Monitoring) shall describe collection of groundwater samples for metals analyses at the water table and immediately downgradient of pilot ponds receiving ESS-13 treatment. Groundwater samples shall be collected at a time and frequency in recognition of expected groundwater travel times from sealed ponds to respective monitoring wells such that characterization of groundwater flowing beneath the pond at the time of ESS-13 applications is achieved. Groundwater samples shall be analyzed for RCRA 8 metals. As-built monitoring-well plans, illustrating construction details and surveyed well locations relative to treated ponds, shall be provided to the Commission upon well completion. Laboratory results shall be tabulated in a systematic way and forwarded to the Commission, the Mashpee Planning Board, the Mashpee Board of Health, and the Mashpee Conservation Commission in digital and hard-copy form upon receipt from the laboratory.
- Attachment V (Water Quality Monitoring Program) shall be edited to clarify that: 1) monitoring-well clusters will consist of 10-foot screens centered across average water-table elevations, and 5-foot screens immediately below the 10-foot screens at locations noted in Figures 1 & 2 by the letter 'D'; 2) that monitoring well HW-7 will be located immediately adjacent to and downgradient of the designated area for rinsing fertilizer- and pesticide-application equipment; and, 3) as-built monitoring-well plans shall be provided to the Commission upon well completion illustrating construction details and surveyed well locations relative to managed turf.
- Attachment V reference to biannual groundwater sampling for pesticide analyses following the initial three-year period of annual sampling for all indicated wells shall be changed and implemented such that groundwater samples from monitoring wells HW-2, HW-3S,D, located in the WHPA, and HW-7 shall be collected and analyzed *at least* annually for target pesticides. Annual and biannual sample collection shall occur in September of each respective year, laboratory results shall be tabulated in a systematic way and forwarded to the Commission, the Mashpee Planning Board, the Mashpee Board of Health, and the Mashpee Conservation Commission in digital and hard-copy form upon receipt from the laboratory. At a five-year interval commencing from the date of this decision, the groundwater-monitoring plan shall be subject to joint review by Commission technical staff, the Mashpee Planning Board, the Mashpee Board of Health, the applicant, and the Mashpee Conservation Commission.

- The Attachment V reference to annual pesticide-application reporting to the Town of Mashpee shall also reference the Commission as a recipient, complete with pesticide application locations, dates and quantities applied.

WR4. The following shall be forwarded to the Commission prior to issuance of the Final Certificate of Compliance:

- Final irrigation-design plans detailing irrigation infrastructure from well to irrigation heads;
- Revised plans illustrating underlining of all tee and green areas not shown in existing plans, specifically locations within the WHPA;
- Revised plans illustrating the final irrigation/hazard pond layout and dimensions; and
- Turf seed-lot certification consistent with the Federal Seed Act and US Department of Agriculture regulations, and results of additional testing for noxious weed-grass contamination of selected seed lot, including *poa-trivialis* (Rough Bluegrass).

WR5. Prior to issuance of the Phase 1 Certificate of Compliance, WDC shall execute and implement a binding agreement with CBC, consistent with terms of the MOU referenced in Finding WR9 and WDC's existing GWDP, for conveyance and treatment of 100% of wastewater generated by the CBC, and such that the existing Title-5 septic systems servicing the Cotuit Bay Condominium complex are rendered inoperable.

Historic Preservation Conditions:

HP1. When seeking a Preliminary Certificate of Compliance, the Applicant shall notify Cape Cod Commission staff of the status of the agreement with the State Archaeologist and Massachusetts Historical Commission regarding work in the archaeologically sensitive areas. Prior to finalizing the agreement, the Applicant shall provide a draft copy of the agreement to Cape Cod Commission staff for their review and comment to insure consistency with the Cape Cod Commission decision.

HP2. Prior to issuance of the Phase 1 Certificate of Compliance, the Applicant shall provide proof of reaching a final agreement with the State Archaeologist and Massachusetts Historical Commission addressing the details of the encapsulation techniques, construction methodology, and provisions to prevent disturbance of these sites in the future. No construction or other ground disturbance shall occur in the archaeologically sensitive areas until such final agreement is reached.

Coastal Resource Conditions

CR1. Siltation controls shall be installed at the edge of work in accordance with NR3 and NR9 and with conditions established by the Town of Mashpee Conservation Commission.

CR2. Initial treatment and subsequent maintenance of *Phragmites australis* shall ensue by hand by a licensed pesticide applicator. During the initial treatment *Phragmites* stalks shall be cut and

removed, followed by an application of the herbicide Glyphosate (Glyphosate is an herbicide manufactured specifically for use in aquatic environments that is rendered inert on contact with water.) Each stalk shall be individually clipped and clippings shall be contained in bags to minimize dispersal of seeds and fragments. Glyphosate shall be applied to each *Phragmites* stem by means of a swab. The Glyphosate compound shall be dyed to facilitate application and to minimize potential redundancy. Work shall be scheduled to minimize risk of seed dispersal, and quantity of herbicide in the resource area shall be limited to one twelve ounce container per licensed applicator, to minimize the risk of spillage. Although the Commission seldom endorses the use of herbicides, the threat of additional colonization by the common reed and its deleterious effect on the native plant and animal community is greater than the risks associated with this methodology.

Native plantings shall be introduced following the removal of the *Phragmites*. The two areas slated for *Phragmites* removal are within a salt marsh and along the freshwater/saltwater fringe of the salt marsh. Within the salt marsh community, the applicant shall plant saltmarsh cordgrass (*Spartina patens*) and/or seashore saltgrass (*Distichlis spicata*) within bare areas. Bare root plugs shall be planted four to six inches deep, at least 18-24 inches on center in staggered rows. Plantings along the upper reaches of the salt marsh shall include, panic grass (*Panicum virgatum*), Olney three-square (*Scirpus americanus*), salt marsh bulrush (*Scirpus robustus*), soft-stem bulrush (*Scirpus validus*), prairie cordgrass (*Spartina pectinata*), and shrubs of bayberry (*Myrica pensylvanica*) and virginia rose (*Rosa virginiana*), or acceptable equivalent species. Target densities within these areas shall be comparable to adjacent, naturally vegetated areas. A definitive planting list shall be submitted to the Cape Cod Commission (CCC) for approval.

In addition, the applicant shall provide a comprehensive monitoring program prior to the Phase 1 Certificate of Compliance, which shall be prepared and conducted by a professional wetland scientist and licensed pesticide applicator. The monitoring program shall entail linear transects through the affected/restored area, photographic stations to provide documentation of baseline conditions, mitigation protocol, and post-mitigation conditions, and quantitative sampling of vegetative cover for a minimum of five years starting from the date of issuance of a Final Certificate of Compliance. After five years, monitoring of previously affected areas and inspection for new colonies may be conducted through the science and education program described in condition CR5. The applicant shall survey for survival and vigor of herbaceous cover planted at mitigation sites, and shall replace non-viable plantings during the five-year monitoring period. The applicant shall destroy any common reed plants (or any other invasive exotic plants that may establish as a result of the disturbance) in the restoration area for the duration of the five year mitigation monitoring program.

CR3. Limited vista pruning is permitted at the 25th hole consistent with finding CR5. Following construction of the 25th hole and prior to the Final Certificate of Compliance, Willowbend may request consideration of vista pruning within an area defined on the plan titled "Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures" (Southern Area) as prepared by Horsley & Witten, Inc. and dated 1/10/02, and as further limited by this condition. Minimal selective cutting of tree limbs and replacement of some understory

vegetation in order to allow for views from the 25th hole to Shoestring Bay may be permitted, as determined by Cape Cod Commission staff and the Mashpee Conservation Commission. The scope of material removed shall be determined at the site after the 25th fairway has been constructed and shall not result in the complete removal of understory vegetation presently providing bank stabilization and wildlife habitat. Existing trees shall remain, though possible removal of 1 or 2 trees may be considered. Willowbend shall submit a plan detailing areas of proposed pruning and revegetation for Commission view following construction. The scope of area within which vista pruning may occur is limited to areas between the 8th and 12th contours, and to an area defined by the lines diverging from the 25th hole as presented on the approved Project plans and forming a 90° angle, and facing southeast. Permitted vista pruning at this location shall not degrade the wildlife habitat values of the buffer within Bryant's Cove. (Refer to Condition CR7).

CR4. This decision does not preclude consideration of limited vista pruning along limited sections of the 24th fairway consistent with finding CR6. Following construction of the 24th fairway, Willowbend may request that the Commission staff consider limited vista pruning within the 100 ft buffer to saltmarsh in Shoestring Bay, but not within Bryant's Cove. Willowbend shall submit a plan showing areas of proposed pruning and revegetation for Commission review following construction. The scope of material which may be removed shall be determined in part by a site visit after the 24th fairway has been constructed and in consultation with the Mashpee Conservation Commission and shall not result in the complete removal of understory vegetation. All mature and dead trees within the 100 ft buffer to saltmarsh shall remain. The purposes for which this area is accepted as mitigation (preservation of wildlife habitat, bank stabilization, erosion control, nutrient removal) shall not be undermined by any proposed vegetation removal. The scope of area within which limited vista pruning may be considered is limited to areas between the 50 ft and 100 ft buffer to saltmarsh, and shall not disturb the understory between the 25-50 ft buffer to saltmarsh, and to an area limited in length along the 24th fairway starting from a line drawn due west-south-west from the 24th hole as shown on the approved plans and moving east to the 24th tee. In no way shall this decision be construed to either grant or prohibit limited vista pruning within this area, and in no way shall allowed vista pruning be interpreted to include more than 20% of the area described in this condition. (Refer to Condition CR7).

CR5. The educational initiative, the Bryant's Cove Stewardship Program, shall be structured to address two priorities, education and substantive environmental monitoring of Bryant's Cove. While the monitoring program does not provide direct mitigation for direct impacts to the buffer zone, this measure formalizes a mechanism to provide an elevated level of care for public trust resources affected by the project. The applicant has referenced literature describing the use of a multi-metric approach to salt marsh monitoring. This methodology which involves the use of the "Wetlands Health Assessment Toolbox" involves the use of non-professional monitors to assess wetland health through multi-metric analysis is available at www.salemsound.org/page20.html and www.state.ma.us/CZM/wastart.htm. At a minimum, the initiative shall meet the following criteria:

CR5(a) Education

-The Applicant has agreed to fund the Bryant's Cove Stewardship Program through the Willowbend Pro-Am Children's Charity. The initial grant for the year 2002 will be in the amount of \$2,000.00. This amount will be awarded on a yearly basis and indexed accordingly for any cost increases (see letter dated January 7, 2002) subject to annual review by the Charity.

- The applicant shall invite local educational institutions to participate in the curriculum, including but not limited to elements of the Mashpee public schools system and Cape Cod Community College.

- Willowbend shall provide access to the site for participants in the Bryant's Cove Stewardship Program on a seasonal basis, a minimum of four times per year.

- A letter report providing a program synopsis, describing date and duration of student visits, number of participating students (by institution) and findings of the classes, and plans for future development or petitions for program modification shall be submitted to the Commission in accordance with the reporting requirements of the Willowbend Pro-Am Children's Charity, or on a bi-annual basis no later than the first week of August for the prior two school years.

CR5(b) Bryant's Cove Monitoring

- Wetland resource area delineations shall be reviewed by a professional wetland scientist every five years, to establish a baseline for comparison with student delineations and to track changes in the resource over time. Revised delineations shall be submitted to the Town of Mashpee Conservation Commission as a Notice of Resource Area Delineation.
- The five year survey by a professional wetland scientist shall include a search for invasive species. Any invasive species identified on site shall be mitigated in collaboration with the recommendations of the Town of Mashpee Conservation Commission and Condition CR2, above. Such mitigation shall be incorporated into the education course curriculum.

CR6. Willowbend shall post clear signage indicating that the buffers to salt marsh, coastal banks and wetlands are "no retrieval" zones, to prevent any incursions into these areas at holes 16, 17, 20, 24 and 25. In addition, Willowbend shall post general information about the Bryant's Cove Monitoring and Stewardship Project at hole # 25.

CR7. After final grading has been completed but prior to any pruning or alteration of buffer zone vegetation for the purpose of providing view corridors, Willowbend shall submit plans showing areas of both temporary and permanent enhancement and maintenance and areas proposed to be left undisturbed for Commission review. The plans shall include planting species, densities and distribution in areas proposed for vista pruning and enhancement.

Natural Resources Conditions

NR1. The proposed Project shall be constructed as shown on plans titled "Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures" Plans 1-4, as prepared by Horsley & Witten, Inc. and dated 1/10/02.

NR2. Consistent with Findings NR4 and NR6, limited removal of tree growth within the northern-most and middle bogs located within the Northern Area is permitted over the life of the golf course. Material which may be removed includes *Pinus rigida* (pitch pine) saplings up to 5 inches "diameter at breast height" (dbh) within the line of flight area for the 16th hole as shown on plans titled "Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures" Maps 1-4, as prepared by Horsley & Witten, Inc. and dated 1/10/02. Other tree species may be removed within this defined area only with prior approval of the Cape Cod Commission staff and the Mashpee Conservation Commission. Tree removal shall only occur by hand. Prior to the Final Certificate of Compliance, permanent concrete bounds shall be installed in the upland delineating the line of flight as shown on the above referenced plans.

NR3. Construction of the clear-span bridges, one spanning Quaker Run at Bryant's Cove and the other located between the middle and southern-most bogs in the Northern Area, shall not alter wetlands.

NR4. Consistent with Finding NR8, relocation of the rest station and construction of the new 14th tee shall be constructed as shown on the plan titled "Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures" (Central Location) as prepared by Horsley & Witten, Inc. and dated 1/10/02. Best management practices shall be utilized to prevent adverse impacts to wetlands adjacent to these work areas. Construction of the stone retaining wall around the 14th tee shall be designed to allow for stormwater infiltration (e.g. dry masonry construction). Stormwater runoff from the rest station shall be infiltrated away from the wetland utilizing a vegetated swale. A limit of work boundary shall be established with construction fencing as close as feasible to the work sites prior to construction in order to prevent destruction of existing vegetation.

NR5. Prior to a Final Certificate of Compliance, Willowbend shall complete the proposed revegetation in the Northern, Central and Southern Areas as detailed in the "Willowbend Restoration and Vegetative Planting Specifications" and as further refined in the letter from Bruce Besse dated 1/4/02. Plant materials specified by this decision may be substituted with prior written approval by Commission staff.

In the event that the applicant is unable to complete any portion of the planting program prior to a Final Certificate of Compliance (e.g. due to seasonal constraints or lack of availability of plant materials), the applicant shall provide an escrow fund equal to 150% of the estimated costs for completion of the work, as approved by Commission staff. The escrow agreement shall be in a form and content approved by Commission counsel. The escrow agreement shall be payable to the Cape Cod Commission with the work approved by Commission staff prior to the release of

the escrow agreement. The escrow agreement may allow for partial release of escrow funds upon partial completion of work. All incomplete work shall be completed within six months of the Final Certificate of Compliance.

NR6. Installation and maintenance of all proposed plant materials shall be performed and supervised by Willowbend's professional in-house landscaping staff. On an annual basis for five growing seasons following the installation of the planting program, Willowbend shall provide documentation of the establishment of the plant material, and shall replace failed plantings in the mitigation area consistent with the planting plan submitted to the Commission.

NR7. Consistent with Finding NR15, all new golf cart paths within the new course shall be constructed utilizing pervious materials in order to allow for stormwater infiltration.

NR8. The naturalization of approximately 12 acres of the existing course as detailed on the plan titled "Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures" (Northern, Central, and Southern Locations) as prepared by Horsley & Witten, Inc. and dated 1/10/02 shall occur prior to a Final Certificate of Compliance. These areas shall remain low-maintenance areas consistent with Finding NR17.

NR9. Prior to the Phase 1 Certificate of Compliance, Willowbend shall provide the Cape Cod Commission with a conservation restriction consistent with Massachusetts General Laws Chapter 184, § 31 – 33, and accompanying plan to be approved by Commission counsel, which provides that 19.79 acres located within the Meeting House Road parcel and identified on the plan titled "Open Space Plan, 'Noisy Hole' Parcel, Meeting House Road" drawing C3 as prepared by VHB and dated 1/23/02 shall be preserved as permanent open space. Willowbend shall also provide proof of submittal of the conservation restriction to the Division of Conservation Services and to the Mashpee Boards from whom approval is required prior to the Phase I Certificate of Compliance.

Prior to the Phase 2 Certificate of Compliance (i.e. any seeding of the fairways in the Project area), Willowbend shall execute and record the conservation restriction and site plan at the Registry of Deeds or Registry District of the Land Court, and proof of recording shall be provided to the Commission. In order to preserve the significant habitat values of this open space area, the land subject to this conservation restriction shall remain undisturbed for conservation and wildlife habitat preservation purposes and may provide for public access. (Refer to Condition OS1).

NR10. Prior to the Final Certificate of Compliance, Willowbend shall create turtle nesting habitat as described in the Wetlands Section of the NPC, presented in the "Matrix of Proposed Project Areas and Restoration and Habitat Enhancement Measures, Willowbend Modification" (mitigation matrix) and dated 1/15/02, and shown on the plan titled "Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures" (Plans) as prepared by Horsley & Witten, Inc. and dated 1/10/02.

NR11. Prior to the Final Certificate of Compliance, Willowbend shall create the sandplain grassland as described in the Wetlands Section of the NPC, presented in the mitigation matrix and as shown on the plan titled “Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures” as prepared by Horsley & Witten, Inc. and dated 1/10/02, utilizing the materials detailed in the “Restoration and Vegetative Planting Specifications” dated 1/3/02, and the NPC, as appropriate to site conditions.

NR12. Prior to the Final Certificate of Compliance, Willowbend shall restore the actively farmed cranberry bog in the Northern Area to naturalized wetland as presented in the mitigation matrix and as shown on the plan “Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures” as prepared by Horsley & Witten, Inc. and dated 1/10/02, utilizing the materials detailed in the “Restoration and Vegetative Planting Specifications” dated 1/3/02.

NR13. Prior to the Phase 2 Certificate of Compliance, Willowbend shall provide the Cape Cod Commission with proof of recording of deeds transferring the 37,462 sf mitigation parcels containing 5,663 sf of kettlehole wetlands and 31,799 sf of wetland buffers located north of Quinaquisset Avenue and identified as parcels 71, 79, 86, and 90 on the plan titled “Matrix Area #s 4 & 7 Detail Map” for the Willowbend Golf Course Expansion to the Town of Mashpee Conservation Commission to be held for permanent conservation purposes. The form and content of the deed shall be approved by Cape Cod Commission counsel prior to recording.

NR14. Prior to the Final Certificate of Compliance, Willowbend shall complete the proposed naturalization of existing managed areas within the existing Willowbend Golf Course as described in the mitigation matrix items A – I and K, and as shown on the plan titled “Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures” as prepared by Horsley & Witten, Inc. and dated 1/10/02, utilizing the materials detailed in the “Restoration and Vegetative Planting Specifications” dated 1/3/02.

NR15. Prior to the Final Certificate of Compliance, Willowbend shall remove the impervious surfaces at matrix locations 12 and 20 as shown on the plan titled “Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures” as prepared by Horsley & Witten, Inc. and dated 1/10/02, and shall revegetate matrix locations 11, 12, 13, and 20 as shown on this same plan and as discussed in the Wetlands Section of the NPC, utilizing the materials detailed in the “Restoration and Vegetative Planting Specifications” dated 1/3/02.

NR16. Prior to the Phase 1 Certificate of Compliance, Willowbend shall provide the Cape Cod Commission with a conservation restriction consistent with Massachusetts General Laws Chapter 184, § 31 – 33, and accompanying plan to be approved by Commission counsel which provides that 8.86 acres located within the Southern Area and identified as matrix locations 15 and 16 on the plan titled “Willowbend Matrix of Proposed Project Areas, Restoration and Habitat Enhancement Measures” (Southern Location) as prepared by Horsley & Witten, Inc. and dated 1/10/02 shall be preserved as permanent open space. Willowbend shall also provide proof of submittal of the conservation restriction to the Division of Conservation Services at the

Executive Office of Environmental Affairs and to the Mashpee Boards from whom approval is required prior to the Phase 1 Certificate of Compliance.

Prior to the Phase 2 Certificate of Compliance (i.e. any seeding of the fairways in the Project area), Willowbend shall execute and record the conservation restriction and site plan at the Registry of Deeds or Registry District of the Land Court, and proof of recording shall be provided to the Commission. In order to preserve the habitat values of these buffers to wetlands, these areas shall remain undisturbed, including fallen dead wood and snags, except where some limited vista pruning and revegetation may be permitted as detailed in Condition CR3 and CR4.

NR17. Prior to the commencement of site work, the applicant shall place a visible construction fence or its equivalent that will delineate in the field the limit of work for the proposed project. The centerline and edges of fairways as shown on the final plan shall be staked in the field and reviewed for compliance with the final plans by Commission staff prior to construction. Best management practices shall be maintained at all times during construction to minimize adverse impacts to the wetlands in the project site during construction, including, but not limited to the use of silt-fencing and double-row haybales at the boundary of wetland/construction areas.

NR18. This approval is conditioned upon the Applicant's receipt of an Order of Conditions for the applicable areas from the Mashpee Conservation Commission and the Massachusetts Department of Environmental Protection permitting the project. A copy of the applicable decisions shall be provided to the Cape Cod Commission prior to a Phase I Certificate of Compliance.

NR19. The wetlands, including the existing bogs and bordering vegetated wetland areas and undisturbed wetland buffers shall be designated "environmentally sensitive areas" which are to be out-of-bounds, or lateral hazards, in accordance with the U.S. Golf Association Rules of Golf. Balls shall not be retrieved from these areas. This requirement shall be made clear to players through signage and printing of rules on scorecards.

NR20. Any perimeter fencing shall be no higher than 6 ft above grade and shall maintain ground clearance which shall not preclude wildlife movement through and across the site as designed by a wildlife biologist in consultation with Commission staff. Any perimeter fence not meeting these standards shall require approval by the Cape Cod Commission.

Open Space Conditions

OS1. Prior to the Phase 1 Certificate of Compliance, Willowbend shall provide the Cape Cod Commission with a draft conservation restriction consistent with Massachusetts General Laws Chapter 184, § 31 – 33, and accompanying plan to be approved by Commission counsel which provides that 19.79 acres located within the Meeting House Road parcel and identified on the plan titled "Open Space Plan, 'Noisy Hole' Parcel, Meeting House Road" drawing C3 as prepared by VHB and dated 1/23/02 shall be preserved as permanent open space. Willowbend shall also provide proof of submittal of the conservation restriction to the Division of

Conservation Services and to the Mashpee Boards from whom approval is required prior to the Phase I Certificate of Compliance.

Prior to the Phase 2 Certificate of Compliance (i.e. any seeding of the fairways in the Project area), Willowbend shall execute and record the conservation restriction and site plan at the Registry of Deeds or Registry District of the Land Court, and proof of recording shall be provided to the Commission. In order to preserve the significant habitat values of this open space area, the land subject to this conservation restriction shall remain undisturbed for conservation and wildlife habitat preservation purposes and may provide for public access. (Refer to Condition NR9).

OS2. Prior to the Final Certificate of Compliance, Willowbend shall provide the Cape Cod Commission with a conservation restriction consistent with Massachusetts General Laws Chapter 184, § 31 – 33 and accompanying plan to be approved by Commission counsel and recorded at the Registry of Deeds or Registry District of the Land Court which provides that 40.13 acres located within the Northern and Southern Areas of the Willowbend Project site and identified as open space on the plan titled “Open Space Plan, ‘Southern Area’, Willowbend” drawing C1 and “Open Space Plan, ‘Northern Area’, Willowbend” drawing C2 as prepared by VHB and dated 1/31/02 shall be preserved as permanent open space. The restriction and site plan shall be executed and recorded and proof of recording shall be provided to the Commission prior to the receipt of the Final Certificate of Compliance. In order to preserve the significant habitat values of the open space areas protected through this conservation restriction, the land subject to this conservation restriction shall remain undisturbed for conservation and wildlife habitat preservation purposes. Exceptions to this requirement include occasional maintenance of golf course rough areas as shown on the above referenced plan and consistent with Finding NR17, and an allowance for some supplemental plantings within the open space areas as described in the “Restoration and Vegetative Planting Specifications” dated 1/3/02.

OS3. All conservation restrictions and donations of land required by this decision shall be held by the Town of Mashpee Conservation Commission, or other conservation entity as approved by Commission staff, for conservation purposes.

Transportation Condition:

T1. The Applicant shall make a one-time monetary payment of \$56,000.00 to comply with MPS 4.1.2.1 prior to the Preliminary Certificate of Compliance. These funds shall be held by the County of Barnstable/Cape Cod Commission and will be expended upon the recommendation of the Cape Cod Commission Executive Director. The funds shall be used in the town of Mashpee to support projects or strategies that encourage alternatives to automobile travel which may include, but are not limited to, monitoring of traffic volumes, speeds and vehicle classification, planning, design or construction of alternatives to automobile travel such as bicycle paths and sidewalks, supporting, marketing or promoting bus or shuttle services or other alternatives to automobile transportation, or the purchase of land for creation of bicycle or pedestrian ways.

Any funds remaining after 10 years shall be turned over to the Cape Cod Regional Transit Authority or similar transportation agency for public transportation.

Economic Development Condition:

ED1. Prior to the issuance of a final Certificate of Compliance, the Project proponent shall provide a report to the Commission regarding the number of Cape Cod construction companies and workers, including women and minorities, employed in the construction of the Project. This information should also be provided with regard to regular employees. This report shall include the number of jobs by type, year-round or seasonal, the salary ranges for the positions, and the benefits provided with these positions annually at the end of the summer season.

Hazardous Materials/Wastes Conditions:

HM1. Any on-site vehicle fueling, "field" maintenance, and staging activities done in connection with development of golf holes #16 and #17 shown on the plan entitled "Willowbend - Matrix of Proposed Project Areas - Northern Location - Restoration and Habitat Enhancement Measures, Plate 2" (dated 1/10/02) shall be done at locations other than any part of holes #15, #16 or #17 or the area between the second cul-de-sac loop on Stirling Road and holes #15 and #16 as shown on the plan entitled "Willowbend - Matrix of Proposed Project Areas - Restoration and Habitat Enhancement Measures, Plate 2"(dated 1/10/02). These locations shall be clearly marked and/or delineated on the ground.

HM2. Prior to Preliminary Certificate of Compliance, the Applicant shall submit for Commission review evidence that locations described in HM1 above have been designated in the field, along with a protocol for making construction contractors aware of these restrictions.

HM3. Vehicle maintenance done "in the field" in connection with development of golf holes #16 and #17 shall be limited to greasing of fittings and joints.

HM4. The amount of hazardous materials, including but not limited to turf management chemicals, pesticides and fertilizers utilized, stored or handled within the area of golf holes #15, #16 and #17 as shown on the plan entitled "Willowbend - Matrix of Proposed Project Areas - Restoration and Habitat Enhancement Measures, Plate 2" (dated 1/10/02) shall be limited to 25 liquid gallons or its dry weight equivalent.

HM5. Prior to issuance of the Final Certificate of Compliance, the Applicant shall submit evidence for review by Commission staff that field marking has been posted around the outer limit of golf holes #15, #16 and #17 as shown on the plan entitled "Willowbend - Matrix of Proposed Project Areas - Restoration and Habitat Enhancement Measures, Plate 2" (dated 1/10/02) that alerts course maintenance staff that they are entering an area where application of turf management chemicals must be limited to 25 liquid gallons or its dry weight equivalent. In-the-field marking in connection with this Condition may consist of a system other than actual

signage, including but not limited to color-coded posts, so long as the marking is clearly visible to course maintenance staff when they are using all types of turf management machinery.

HM6. Prior to issuance of the Final Certificate of Compliance, the Applicant shall submit for Commission review evidence that any material suspected of or actually containing asbestos, as well as lead-based paint coated building materials and the 275-gallon fuel tank have been remediated or removed from the house located in the Northern area. Such remediation and/or removal must also be completed as a condition of the donation of the house for re-use or shall be disposed of in accordance with applicable law.

SUMMARY

The Cape Cod Commission hereby approves, with Conditions, the application of Willowbend Development Corporation as a Development of Regional Impact application of Willowbend Development Corporation, for the Willowbend Golf Course Expansion Project located in Mashpee, Massachusetts, pursuant to Sections 12 and 13 of the Cape Cod Commission Act, c.716 of the Acts of 1989, as amended.

Elizabeth Taylor
Elizabeth Taylor, Chair

Feb 7, 2002
Date

Commonwealth of Massachusetts

Barnstable, ss,

On this 7th day of Feb, 2002, before me personally appeared Elizabeth Taylor, to me known to be the person described in and who executed the foregoing instrument, and acknowledged that she executed the same as her free act and deed.

Katharine L. Peters
Notary Public
Commonwealth of Massachusetts

My Commission expires:



Table 1. Matrix of Proposed Project Areas and Restoration and Habitat Enhancement Measures, Willowbend Modification.

NORTHERN AREA							
PROPOSED ALTERATION				PROPOSED RESTORATION			
Type of Area	Description of proposed alteration	Area of proposed alteration (s.f.)	Area of proposed alteration (acres)	Description of proposed restoration	Area of proposed restoration (s.f.)	Area of proposed restoration (acres)	Net Gain (Restored - Altered) (acres) / (%)
Bordering Vegetated Wetland (BVW)	Selective Vegetative Maintenance	36.2	0.001	(1) Restore actively farmed cranberry bog to natural state	7,406	0.17	
				(2) Restore impacted vernal pool	14,291	0.33	
				(3) Noisy hole wetland	85,250	1.96	
				(4) Donate parcels containing wetlands to Town of Mashpee (adjacent to town open space lands)	5,663	0.13	
	Total:	36.2	0.001	Total:	112,610	2.59	+2.589 / 2,589%
Land Under Water Bodies	Filling manmade irrigation pond	4,531	0.10	(5) Replicate pond at 2:1 ratio of replicated area to original area	16,419	0.38	
	Total:	4,531	0.10	Total:	16,419	0.38	+0.28 / 280%
100 Foot Buffer Zone to Bordering Vegetated Wetland (BVW)	Proposed golf course tees and fairways	55,110 s.f. of proposed new alterations (previously altered buffer zone 54,635 s.f.)	1.26	(6) Noisy hole 200 foot buffer	390,733	8.97	
				(7) 100 foot buffer to (4)	31,799	0.73	
				(8) Create turtle nesting habitat in borrow pit near northern bog	2,501	0.06	
				(9) Enhance / enlarge other turtle nesting areas	1,000	0.02	
	(10) Create sandplain grassland north of bog	2,000	0.05				
Total:	55,110	1.26	Total:	428,033	9.83	+8.57 / 680%	
Northern Area Totals:	Total Resource Area:	4,567	0.101	Total Resource Area	129,029	2.97	+2.869 / 2,841%
	Total Buffer Zone Area:	55,110	1.26	Total Buffer Zone	428,033	9.83	+8.57 / 680%

SOUTHERN AREA

PROPOSED ALTERATION				PROPOSED RESTORATION			
Type of Area	Description of proposed alteration	Area of proposed alteration (s.f.)	Area of proposed alteration (acres)	Description of proposed restoration	Area of proposed restoration (s.f.)	Area of proposed restoration (acres)	Net Gain (Restored - Altered) (acres) / (%)
Coastal Bank	Golf cart path	0	0	(11) Restore disturbed areas of coastal bank with plantings	112	0.003	
				(12) Remove impervious surface off Shoestring Bay Road and remediate stormwater discharge	1,820	0.04	
				(13) Restore disturbed area adjacent to impervious surface with native plantings and grade to prevent runoff into wetlands	1,890	0.04	
	Total:	0	0	Total:	3,822	0.09	+0.09
Salt Marsh	No alteration	0	0	(14) Monitor and/or control Phragmites within salt marsh (two locations)	3,000	0.07	
	Total:	0	0	Total:	3,000	0.07	+0.07
100 Foot Buffer Zone to Salt Marsh	Proposed golf course tees and fairways	45,559	1.05	(15/16) Conservation Restrictions	385,942	8.86	
				(18) Bryant's Cove stewardship	234,925	5.39	
	Total:	45,559	1.05	Total:	620,867	14.25	+ 13.2 / 1,257%
100 Foot Buffer Zone to Bordering Vegetated Wetland (BVW)	No alteration proposed	0	0	(20) Remove impervious surface of existing cart path on 11 th tee	771	0.02	
	Total:	0	0	Total:	771	0.02	+0.02
Southern Area Totals	Total Resource Area:	0	0	Total Resource Area:	6,822	0.16	+0.16
	Total 100-Foot Buffer Zone Areas:	45,559	1.05	Total 100-foot Buffer Zone:	621,638	14.27	+13.22 / 1,259%

SUMMARY OF RESOURCE AREAS AND BUFFER ZONES BY PROJECT AREA (CHOICE 1):

Type of Area	Location	Total proposed alteration (acres)	Location	Total proposed restoration (acres)	Total of Net Difference (acres)
Resource Areas	Northern Area	0.101	<i>Northern Area</i>	<i>2.97</i>	
	Southern Area	0	<i>Southern Area</i>	<i>0.16</i>	
	Total of Resource Areas to be altered	0.101	<i>Total of Resource Areas to be restored</i>	<i>3.13</i>	+3.029
100 Foot Buffer Zones	Northern Area	1.26	<i>Northern Area</i>	<i>9.83</i>	
	Southern Area	1.05	<i>Southern Area</i>	<i>14.27</i>	
	Total of Buffer Zone Area to be altered	2.31	<i>Total of Buffer Zone Area to be restored</i>	<i>24.10</i>	+21.79
Total:		2.411		27.23	+24.819
Areas Impacted by Approved Subdivision*		(1.80)			
Naturalized Resource Areas				2.25	
Net Total:		0.611		29.48	+28.869

*Southern Area only

OR

SUMMARY OF ALL AREAS (CHOICE 2):

Type of Area	Total proposed alteration (s.f.)	Total proposed alteration (acres)	Total proposed restoration (s.f.)	Total proposed restoration (acres)	Total of Net Difference (acres)
Resource Areas	4,567	0.101	<i>135,851</i>	<i>3.13</i>	
100 Foot Buffer Zones	100,669	2.31	<i>1,049,671</i>	<i>24.10</i>	
Total:	105,236	2.411	1,185,522	27.23	+24.819
Areas Impacted by Approved Subdivision*		(1.80)			
Naturalized Resource Areas				2.25	
Net Total:		0.611		29.48	+28.869

* Southern Area only

Other Habitat Enhancement and Restoration Measures include:

ADDITIONAL RESOURCE AREAS TO BE NATURALIZED

Type of Area	Description of proposed naturalization	Area of proposed naturalization (s.f.)	Area of proposed naturalization (acres)
100 Foot Buffer Zone to Bordering Vegetated Wetland (BVW)	(A) Chipping area/Quinnaquisset Road buffer area to pond/eliminate mowed lawn area	8,155	.19
	(B) Hole # 16 bordering Quaker Run bogs slope managed turf to native plantings	6,513	0.15
	(C) Slope stabilization off Quinnaquisset Quaker Run bogs (8' x 250')	2,000	0.05
	(D) Native plantings in buffer to Quaker Run bogs; off Quinnaquisset in open space	3,514	0.08
	(E) 10 th tee replace managed turf with native plantings; buffer zone to Quaker Run bog	5,941	0.14
	(F) #11/#12 pond buffer zone; replace managed turf with native plantings	16,127	0.37
	(G) Slope area off existing #12 tee	9,196	0.21
	(H) Disturbed area adjacent to Santuit River buffer zone (100') across from Maushop House Farm on Sampson's Mill (20' x 230')	4,600	0.11
	(K) Behind 16 th green adjacent to Quaker Run bog and irrigation pond	16,955	0.39
Total:	73,001	1.69	
Riverfront	(I) Outer Riparian Zone (100' x 230')	23,000	0.53
	Total:	23,000	0.53
TOTAL RESOURCE NATURALIZATION		96,001	2.22