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VERMONT ENVIRONMENTAL BOARD  
10 V.S.A. Chapter 151

Re: Sherman Hollow, Inc.; Richard A. Gadbois, Trustee,  
Estate of Ned H. Pettengill; Roger Lussier; and  
Arthur Elliot  
Application #4C0422-5R-1-EB

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER (REVISED)

This decision, dated June 19, 1992, pertains to a request for reconsideration of a 1989 denial of a land use permit application for a golf course. That denial concluded that the Applicants had failed to sustain their burden of proof on several of the Act 250 criteria at 10 V.S.A. § 6086(a) and specified in detail information which would be needed to meet that burden. The criteria at issue were 1(B) (waste disposal), 1(E) (streams), 3 (water supplies) and 4 (soil erosion).

I. SUMMARY OF DECISION

As is explained below, the Environmental Board denies the reconsideration request. With respect to Criteria 1(B), 1(E) and 3, the Applicants have not submitted significant portions of the information which the Board determined was lacking in 1989 and thus have not corrected the deficiencies in the application as required by 10 V.S.A. § 6087. The Board therefore denies the application pursuant to these criteria because the Applicants have not met their burden of proof.

With respect to denial under Criterion 1(B), the most significant defect is the failure to submit information concerning the ingredients of Green Life Conditioner (GLC). Without this information, it is not possible to reliably judge the behavior of GLC and its water pollution impacts. The Applicants claim that GLC is "non-toxic" and "organic" but cannot substantiate this claim because they do not know what the ingredients are.

Concerning denial under Criteria 1(E) and (3), the Applicants' have not met the requirement of the Board's 1989 decision to submit site plans showing a 50-foot buffer between the greens and all watercourses.

The Board also denies the application pursuant to Criterion 4 because the project will cause unreasonable soil erosion. Regarding denial under Criterion 4, the most significant defect is the probable failure to establish the turf on the golf course. The soils on the site have poor value in terms of plant nutrients. The Applicants plan to use GLC and a small amount of top dressing to make up for

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this difficulty. The Applicants claim, however, that GLC has only trace amounts of nutrients in it and does not add nutrients to soil but rather frees the nutrients in the soil through microbial action.

The problem with this claim is that GLC cannot free nutrients which are not there. If the nutrients are not there, it is unlikely that turf will be established. Turf establishment will be critical in preventing soil erosion on this site, which has steep slopes, shallow permeable soils and limited ability to absorb water. If the turf is not established, large areas without vegetative cover will be created, resulting in a strong likelihood of unreasonable soil erosion.

Finally, the Board denies a cross-appeal seeking to re-open Criteria 1 (air), 1(C) (water conservation), 8(A) (wildlife), and 9(A) (impact of growth) because insufficient basis has been provided to re-open these criteria.

## II. SUMMARY OF PROCEEDINGS

On February 17, 1989, the Environmental Board issued a decision concerning an appeal from the District #4 Environmental Commission's denial of Land Use Permit Application #4C0422-5. The Board's decision revised an earlier Board decision concerning an application for Phase I of a proposed destination resort located in the Towns of Huntington, Richmond, and Hinesburg, Vermont.

Phase I consists of the construction of an 18-hole golf course and the addition of lighting to 1.5 kilometers of existing cross-country ski trails. The revised decision approved the lighting portion of the application but denied the golf course portion pursuant to Criteria 1(B) (waste disposal), 1(E) (streams), 3 (burden on existing water supply), and 4 (soil erosion).

On August 17, 1989, pursuant to 10 V.S.A. § 6087(c), the Applicants filed an application for reconsideration with the District #4 Environmental Commission. The application attached an affidavit certifying that the deficiencies found by the Board in its revised decision had been corrected.

On September 14, 1990, the District Commission issued Findings of Fact, Conclusions of Law and Order #4C0422-5R-1, denying the request for reconsideration. The District Commission found that the application still does not comply

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with Criteria 1(B) and 1(E). The District Commission further found that the application now complies with Criteria 3 and 4. The District Commission also expanded the scope of its proceedings beyond the criteria specified by the Board and issued affirmative findings pursuant to Criteria 1 (air), 1(C) (water conservation), and 9(A) (impact of growth), as authorized by Board Rule 31(B).

On October 12, 1990, the Applicants filed an appeal with the Board concerning the District Commission's negative findings pursuant to Criteria 1(B) and 1(E). On October 26, a cross-appeal was filed by parties Paul and Phyllis Austin, Peter and Lucinda Bailey, Lisa Barrett, James Hildebran, Kristin Juergens, Paula Kelley, Janet Labelle, Blanche Perry, and Wendell Sargent (the Neighbors). In the cross-appeal, the Neighbors raised issues related to the following criteria: 1 (air pollution - noise), 1(A) (headwaters), 1(B), 1(C), 1(G) (conformance with wetland rules), 2 (sufficient water available), 3, 4, 5 (traffic), 7 (local governmental services), 8 (aesthetics, natural areas), 8(A) (wildlife), 9(A), and 9(H).

On November 19, 1990, former Board Chair Stephen Reynes convened a prehearing conference in Richmond, Vermont. At the prehearing, party Marlene McDonald appeared and was represented by the same counsel as the Neighbors above. All references to the Neighbors below include Ms. McDonald. On December 18, the Board issued a prehearing conference report and order.

During October 1990 through early January 1991, parties filed numerous motions, petitions, and legal memoranda concerning preliminary legal issues, party status, and access to the project site for testing. The Board convened oral argument on these issues on January 9, 1991.

On March 18, 1991, the Board issued a memorandum of decision concerning the preliminary issues, which defined the scope of these proceedings and set a schedule for filing testimony and holding evidentiary hearings. During April through mid-July 1991, parties filed offers of proof, lists of witnesses and exhibits, prefiled testimony, and prefiled evidentiary objections and responses. During this period, issues arose requiring Board decision as set forth in memoranda of decision dated April 22 and June 12.

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On June 17, 1991, the Applicants filed a motion to dismiss the Neighbors' cross-appeal. On June 25, Chair Elizabeth Courtney issued a letter notifying all parties that this motion would be reviewed following evidentiary hearings. On July 11, the Neighbors filed a motion to dismiss the application.

On July 25 and 26, and August 8, 9, and 22, 1991, the Board convened hearings in Richmond, with the following parties participating:

The Applicants by Andrew H. Neisner, Esq.  
The Neighbors by Michael Marks, Esq.  
The Chittenden County Regional Planning Commission by Arthur Hogan  
The Town of Huntington by Robert Perry, Esq. (on July 25 and 26) and Rod Ross (on August 8, 9, and 22)

After taking a site visit and hearing testimony, the Board recessed the matter pending filing of proposed findings of fact and conclusions of law, review of the record, deliberation, and decision.

On August 22, 1991, the Neighbors filed a memorandum of law on the Board's authority to review the likelihood that permit conditions will **be implemented**. On September 5, the Neighbors filed proposed findings and a legal memorandum. On that date, the Applicants filed proposed findings, a memorandum regarding testing of a product to be applied to the soils in connection with the project, and a memorandum in response to the Neighbors' memorandum regarding implementation of permit conditions. On October 21, the Applicants filed a letter attaching a discharge permit issued by the State of Vermont Agency of Natural Resources.

The Board deliberated concerning this matter on September 25 and October 30, 1991. On October 30, following a review of the evidence and arguments presented in the case, the Board declared the record complete and adjourned the hearing. On November 19, the Board issued findings of fact and conclusions of law.

On December 19, 1991, the Applicants filed a motion to alter. The proceedings regarding that motion are separately described in a memorandum of decision issued concurrently with this revised decision. This matter is now ready for

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decision. To the extent any proposed findings of fact and conclusions of law are included below, they are granted; otherwise, they are denied.

### III. ISSUES

The issues before the Board are:

a. With regard to Criteria 1(B) (waste disposal), 1(E) (streams), 3 (burden on existing water supplies) and 4 (soil erosion), whether the Applicants have supplied sufficient information to meet the deficiencies outlined in the February 1989 decision.

b. If the Applicants have met the deficiencies, whether the Applicants have proved that the application meets Criteria 1(B), 1(E), 3, and 4.

c. If the Applicants have *not* proven that the criteria are met, whether the Board should have the State perform **testing of** Green Life Soil Conditioner, and if so, what kind of tests should be performed.

d. With regard to Criteria 1 (air), 1(C) (water conservation), 8(A) (wildlife), and 9(A) (impact of growth), whether the Neighbors have persuaded the Board that these criteria should be reopened.

e. If the Neighbors have persuaded the Board that criteria should be reopened, whether the application complies with those criteria.

f. Whether the Board has authority to deny an application because an applicant cannot be relied on to properly implement the conditions.

The Board does not reach the last two issues **identified** here because of its decisions on the other issues as outlined below.

### IV. FINDINGS OF FACT

1. In its decision dated February 17, 1989, the **Environmental** Board issued Findings of Fact which are incorporated by reference.
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2. Soils at the golf course site have poor plant nutrient value. Therefore, the Applicants originally proposed to apply fertilizers to supply nutrients needed for turf growth. The original proposal also included pesticide application.
  3. This proceeding is a request to reconsider the denial of the original proposal as set forth in the Board's February 1989 decision. The Applicants claim that, instead of pesticides and fertilizers, they will now use top dressing and a product called Green Life Soil Conditioner (GLC) to promote turf growth on the golf course. They state that they will use these items as part of an "Organic Turf Management program." For this reason, they have not provided a list of pesticides and fertilizers to be used at the golf course.
  4. The District #4 Environmental Commission held hearings and issued a decision on the Applicants' reconsideration request which is now on appeal to the Board. During the District Commission proceedings concerning the reconsideration request, the Applicants did not propose to use GLC and top dressing instead of pesticides and fertilizers, but rather continued to propose use of pesticides and fertilizers. The Applicants did not propose use of GLC until after they filed their appeal of the District Commission's decision on the reconsideration request.
  5. The Applicants have submitted a statement that no pesticides or commercial fertilizers will be used at the golf course. The Applicants will use pesticides and commercial fertilizers to manage the golf course if alternative methods do not work.
  6. The Applicants' proposed top dressing will consist of one part peat, one part sand, and one part steer manure. It will be used on the greens every two weeks during the growing season at the rate of one cubic foot per thousand feet of green. On the tees and fairways, only divots and damaged areas will be treated with top dressing.
  7. Total annual volume of steer manure planned for the greens will be approximately 12 cubic yards. Steer manure contains nitrogen which will be added to the golf course. No other components of steer manure have been identified.
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8. GLC is a substance applied to land to help turf grow. The Applicants claim that GLC does not achieve turf growth through the addition of nutrients. The Applicants claim that a University of Vermont test shows that GLC contains only trace amounts of nitrates, potassium, and phosphorus (NXP), which are important and **widely-used** plant nutrients.
9. The Applicants claim that GLC encourages nitrogen fixation through encouraging microbial action in soils. Specifically, the Applicants claim that GLC, through microbial activity, makes available trace elements which are present in the soil and which provide plant nutrition. The Applicants have submitted no verification of their statements concerning how GLC works.
10. The Applicants will dilute GLC with water at a ratio of 100 parts **water to** one part GLC prior to application. The Applicants will apply GLC to the greens, tees, **fairways**, and the fringe rough. The Applicants claim that no GLC will be applied within 50 feet of the streams on the site. To the greens and tees, the Applicants will apply the diluted mixture containing GLC at a rate of 100 gallons per thousand square feet per month.. To the fairways and fringe rough, the Applicants will supply 400 gallons of the diluted mixture per acre per month.
11. The Applicants have submitted no complete list of ingredients or breakdown of the amount or relative percentage of each ingredient in GLC, but have merely provided a copy of a label issued **by the** product's manufacturer which states:

TOTALLY SAFE

Green Life is a safe and non-harmful product as demonstrated by laboratory testing, utilizing EPA testing protocols. It is functional, effective, and also biodegradable. Green Life has been tested by Applied Biological Sciences Laboratory, Inc., an E.P.A. approved laboratory. Green Life is a non-poisonous, non-caustic, non-acidic.

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Green Life is a natural organic soil conditioner that produces lush greens, tees, and fairways. It contains a mixture of enzymes, co-enzymes, amino acids, proteins, trace minerals, and biologically secured nutrients derived from nonharmful naturally-occurring microbial organisms found in soil and water.

12. The only tests which the Applicants have submitted concerning GLC are a series of priority pollutant scans performed by a laboratory certified by the U.S. Environmental Protection Agency (EPA). The tests state that they were performed using EPA methods and an undiluted sample of unspecified size. There is no verification that the compound tested was actually GLC. Laboratories test those compounds they are given.
13. The priority pollutant scan does not show what it is in a compound but rather analyzes a compound to see whether a number of common pollutants are in it. The scan tests for some pollutants which are representative of other pollutants for which the scan does not actually test. There are many compounds, including pollutants, which are not tested for or represented in the scan. A negative result on the scan does not mean no pollutants are present in a compound.
14. Several priority pollutants were present in the sample tested, as follows in micrograms per liter (ug/l):

Methylene chloride	2 ug/l (estimated)
Toluene	1 ug/l (estimated)
Bis (2-ethyl hexyl) phthalate	190 ug/l (estimated)
Chromium	17 ug/l
Copper	166 ug/l
Lead	17 ug/l
Zinc	6940 ug/l
Cyanide	5 ug/l
Unidentified phenols	40 ug/l

The sample was tested for various other compounds, including other volatile organic compounds, semivolatile compounds, metals, pesticides, and various phenols. None of these other compounds was detected., Two other compounds were detected: "unknown alkane" at

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160 ug/l and undecane at 240 ug/l. No information concerning the nature or pollutant status of **alkane** or undecane has been provided.

15. The Applicants have provided the opinion of Dr. William Bress of the Vermont Department of Health that GLC contains no compounds which exceed the Vermont Drinking Water Health Advisories. Dr. Bress reached his opinion by comparing the advisories to the priority pollutant scan tests described in Findings 12 through 14, above. Dr. Bress was not told the ingredients of GLC.
  16. The Applicants have provided no information on the mobility or solubility of GLC.
  17. GLC is a recently developed product.' The company which makes it has been in business approximately ten years. Several golf courses in California have applied the product to their soils. **Some** of these courses subsequently ceased using the product. Outside of California, a few golf courses have tested GLC but none use or have used it on a regular basis.
  18. The Applicants have provided the results of a **ground-**water study based on 59 test pits which were dug on the site. **The study** shows the rates and directions of flow throughout the site, the depth of the water table, and the golf course's zone of hydrogeologic influence.
  19. The golf course's hydrogeologic zone of influence includes the entire site, Sherman Hollow Brook, the streams and intermittent watercourses on the site, and adjacent drinking water wells of Marlene McDonald and Phyllis Austin.
  20. The Applicants have submitted a study of soil types throughout the site, in which particular attention was paid to the native soils in the areas of the proposed greens and tees. Only four test pits, TP #51, 52, 53, and 55, were dug in the valley floor, through which Sherman Hollow Brook runs. There is a large untested area of land which forms a gap between TP #53 and TP #55. This gap is approximately 2100 feet measured in a straight line between TP #53 and #55. The gap includes most of the valley floor on the site. No samples were taken in this area.
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21. Soils at TP #53 consist of glaciofluvial sediments underlain by bedrock. The bedrock there dips east, in the opposite direction from the valley floor gap between TP #53 and TP #55. Soils at TP #52 and #55 consist of glaciofluvial sediments underlain by basal till. No bedrock was observed at TP #52. The existence of bedrock was inferred under the basal till at TP #55.
  22. Except for the valley floor, soils at the site consist of two layers. The first layer is weathered till to a depth of a few feet and the second layer is a thick one of basal till.
  23. The glaciofluvial sediments and weathered till have a high permeability. The basal till is densely compacted and has a very low permeability.
  24. Because the basal till is highly impermeable, water tends to flow along the surface of the site, or through the permeable weathered till, to the streams and intermittent watercourses and down to the valley bottom and Sherman Hollow Brook.
  25. There are two aquifers in the area of the site. One is a shallow aquifer located along the valley floor underlying Sherman Hollow Brook. The other is a deep aquifer underlying the bedrock.
  26. The McDonald and Austin wells draw water from the shallow aquifer. Travel time for water from the closest tee, the 12th tee, to the closest neighboring well, one of the two Austin wells, is estimated to be 27.1 days through the weathered till.
  27. The Applicants have provided construction details for the greens and tees. They have identified locations of **outfalls** and drains associated with all greens except that at hole 14 and have not identified any such locations for the tees. The green at hole 14 is **approximately 350 feet and upslope** from Sherman Hollow Brook. ~~The Applicants~~ The Applicants have provided construction details for typical **outfalls** and drains and information on soil types for the greens, tees, and fairways.
  28. Topsoils at the greens will consist of 80 percent sand and 20 percent peat moss to a depth of one foot, underlain by a four inch layer of gravel. The **subgrade**
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will consist of native soils. Topsoils at the tees will consist of 70 percent sand and 30 percent peat moss to a depth of eight inches. The **subgrade** here will also consist of native soils. Fairways will consist of six inches of native topsoil to be placed over grade following construction.

29. Surface water will be drained from the greens and discharged through pipes which will run from the greens to varying locations a few dozen feet off the greens. See Exhibits **A19G** and **A19H**. There will be one outfall pipe per green only. From the ends of the pipes, the water from the greens will join the rest of the site's water flow, which will discharge into the Brook, streams on the site, and intermittent watercourses, as described in **Finding 24**, above.
  30. Discharges from the project site will likely include waste from GLC and top dressing application, as well as soil particles and other naturally occurring solids caught, by the flows.
  31. The outfall for the third green will discharge to the northwest of the green toward a nearby watercourse. The outfall for the seventh green will discharge into a nearby watercourse.
  32. The Applicants have not provided a groundwater monitoring program in connection with this reconsideration application.
  33. The Applicants have not provided information on the effects of using bacteriological controls. They state that they will use none and that, prior to using any, the controls will be reviewed by experts and that the experts' reports will be submitted to the District Commission. However, as shown in **Finding 9**, above, the Applicants **also claim** that GLC promotes turf growth through microbial action in the soil.
  34. The Applicants have not provided information on the effects on aquatic biota of **GLC** as a compound or of its ingredients individually.
  35. The Applicants have not provided a revised site plan showing at least a 50-foot buffer between greens and tees and all watercourses. Instead, they have provided
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revised site plans (Exhibit **A19E**) which show several greens either on watercourses or within 50 feet of them. Specifically, the **5th, 7th, 10th,** and 16th greens will all be placed either on watercourses or within 50 feet of a watercourse.

36. The Applicants have provided information used to calculate the amount of water needed to irrigate the greens and tees. Those areas will need a maximum of one inch of water per week during all months except July and August. During July and August, those areas will need a maximum of one inch and a quarter of water per week to irrigate the greens and tees.
  37. During months when the Applicants need to apply one inch of water per week to the greens and tees, the Applicants will need approximately 613,000 gallons of water. During months when the Applicants need to apply one inch and a quarter of water per week, the Applicants will need approximately 767,000 gallons of water. The Applicants' irrigation water supply will come from wells on the property, an existing pond, and rainfall. The total amount of water available from these first two sources is approximately 430,000 gallons per month from the wells, with an additional **approximately** 300,000 gallons in the pond, for a total amount of 730,000 gallons available in a monthly period. While the wells and the pond only contain 730,000 gallons, water from rainfall will make up the difference during July and August. From 1979 to 1986, the average amount of rainfall during the month of July was **.75** inches (114,000 gallons) and during the month of August was 1.09 inches (165,000 gallons).
  38. The Applicants claim that application of GLC results in a 10 percent reduction in **irrigation water** needs. The basis for this claim is the testimony of witness Timothy Kelly, a golf course manager who does not have a science background. No information has been supplied to show why GLC would or how it could cause such a reduction.
  39. The Applicants have provided final designs for the irrigation system and plans showing where and how irrigation pipes **will cross** streams.
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40. The existing pond has no direct inlet or outlet. The volume of water in the pond has been observed to fluctuate little during the year.
  41. Irrigation water will be pumped to the pond from the four wells. Exhibit A19G shows a pipe running from one location to a proposed club house and a pipe running from Well 1B to the pond. The wells supplying the pond will be pumped for a maximum of 12 hours per day. Irrigation water will be pumped from the pond through pipes to the greens and tees. Computer-controlled spray heads at the end of the pipes will spray irrigation water onto the greens and tees. The computers will regulate the amount and timing of the spraying. The irrigation will increase the amount of the discharge described in Findings 24, 29, and 30, above.
  42. Irrigation pipes which cross streams will be steel pipes which will cross above the streams. The Applicants' plans show three such pipes: two crossing Sherman Hollow Brook and one crossing a watercourse which feeds the Brook. Concrete anchors will be placed in stream banks at the stream crossings. Some of the irrigation pipes shown on Exhibits A18A and A18B will pass through areas of existing trees designated to be saved on Exhibits A19E and A19F (see Finding 46, below). The Applicants do not intend to clear any trees in these areas to lay the pipes and have agreed to a condition prohibiting clearing in these areas.
  43. Exhibit A19A shows four on-site wells located near Sherman Hollow Brook south of Sherman Hollow Road and east of the access road to the proposed project. Of these wells, Well 1B will supply approximately 90 percent of the irrigation water coming from the wells. The well is a bedrock well which is recharged by water flowing vertically to the deep aquifer through nearby bedrock fractures. The closest off-site drinking water wells are outside Well 1B's radius of influence based on a pumping rate of 29 gallons per minute (gpm). The safe yield rate for Well 1B is 19.1 gpm, which is the maximum rate the Applicants will use and is the rate approved for the well by the Vermont Department of Health.
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44. The likelihood of a direct hydraulic connection between Well 1B and Sherman Hollow Brook is slight.
  45. The Applicants have provided a map of the site containing a detailed depiction of existing conditions with erosion control details for the proposed project, an erosion control plan for both the clearing and grubbing of the site and the construction of the golf course, some specific information on how erosion control measures will be implemented, provisions for protection of existing vegetation, plans for the proposed routes of golf carts from the greens to the tees, and plans for erosion control during the construction and maintenance of golf court paths.
  46. The vast majority of the project site is presently forested. During construction of the project, well over half of the area depicted on Exhibits A19E and A19F will be clear-cut. Areas to be cut include the banks of the Sherman Hollow Brook and intermittent water courses and lands adjacent to those streams. Exhibits A19E and A19F also delineate tree stands to be preserved.
  47. The Applicants have designed the golf course so that the fairways, with one exception, will run parallel to the contours of the land. The exception is the fairway for hole four, which will run perpendicular to the contours at a slope of approximately 10 percent. The existing slope of the third fairway is 20 percent. The Applicants will place fill onto fairway three to create a plateau which has a 35 percent slope at its northern edge. The Applicants also will clear areas which are not to be fairways, tees, or greens, and in some of these areas slopes significantly exceed 10 percent.
  48. The ability of the soils on the site to absorb water is limited and soil saturation is likely during periods of rain.
  49. The Applicants will schedule major clearing operations only during periods when the soils are frozen or dry. Skid trails and areas to be cleared will be plainly delineated on the site as well as areas to be preserved. Bumper trees will be left to protect trees to be preserved, and will be removed only after all other trees in the areas have been removed. Clearing
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will commence at the farthest extremity of each skid road from the project access road and work backward along the skid roads.

50. Before cutting begins, certain erosion control measures will be undertaken which will be in place during cutting and clearing in accordance with Exhibits **A19C**, **A19D**, and **A19J**. Landing areas will be recontoured to redirect surface water. Culverts will be installed under all truck ingress and egress drives to the landing areas. Hay bales and silt fences will be placed below the landing areas. Culverts, diversion ditches, and water bars will be built into all skid trails as they are constructed. Hay bales will be placed below all potential surface water discharge points such as culverts and water bars. Hay bales will also be placed in the beds of intermittent streams to prevent carriage of sediment to permanent streams. Skid trails and landing areas will be smoothed and mulched whenever operations cease for a week or more.
  51. During all logging and earthwork, the Applicants claim they will either maintain a vegetated buffer along all streams or provide a berm, silt fence, or hay bale dike to prevent sediment from entering streams. However, Exhibits **A19C** and **A19D** show cleared areas adjoining streams with no vegetative buffers or erosion control devices along the streams.
  52. A full-time erosion control officer and a forester, both hired by the Applicants, will be on site daily during logging and clearing operations with authority to implement additional control measures or order that operations cease if necessary.
  53. In implementing erosion control measures, the Applicants intend to adhere to the "Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont," issued by the State of Vermont Agency of Natural Resources, Department of Forest, Parks, and Recreation.
  54. After clearing operations are completed and prior to grubbing and commencement of construction, many erosion control devices will be installed in accordance with Exhibits **A19E**, **A19F**, **A19G**, **A19H**, **A19I**, and **A19J**. These include silt fences, hay bales, stone-lined ditches, and stabilized construction entrances.
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55. During grubbing and construction, silt fences will be placed below all top soil stockpiles. Topsoil stockpiles will be placed no closer than 50 feet to any streams.
  56. On slopes greater than ten percent, all golf cart paths will be paved.
  57. The Erosion Control Officer will continue to monitor the site on a daily basis during grading and construction. During that time, engineers hired by the Applicants will inspect the site on a weekly basis.
  58. The Applicants will take stumps caused by clearing operations and will bury them in mounds. Exhibit A19E shows at least ten stump burial mounds in areas where existing trees are to be saved. The Applicants will not be able to create the mounds in these areas without clearing trees.
  59. Construction will be on a hole-by-hole basis, starting with the holes at the highest elevations and working across slopes along parallel contours. No downhill area will be disturbed for grubbing or construction until grass is established above the area.
  60. All disturbed areas of the site will be seeded and mulched between October 15 and April 15, regardless of whether final grading has occurred.
  61. Establishment of grass and turf will be critical in preventing soil erosion during and after construction. During construction, the Applicants will use ryegrass and oat seed as temporary control measures. Only oat seeds will be used between October 15 and April 15. Ryegrass can become established within a few days. Oat seeds take some time to become established and overland flow and consequent erosion are likely in oat-seeded areas during the period between seeding and establishment. On a permanent basis, the Applicants will use a variety of bentgrasses on the tees, greens, and fairways, and bluegrass, ryegrass, and fescue in the roughs. The grasses to be used on the tees, greens, and fairways are grasses typically used on golf courses and have strong resistance to pests and to the heavy foot traffic associated with golf courses.
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62. The Applicants plan regular mowing, weed removal, and application of GLC and top dressing to establish and maintain the permanent grasses on the course.
63. In their erosion control plans, the Applicants have removed all references to fertilizers but one. Exhibit **A19J** states that wood chips used in mulch material will include 11 pounds of nitrates per ton.
64. The Neighbors have provided no evidence that the current design of the project has not considered water conservation, will affect necessary wildlife habitat, or will affect the ability of Huntington, Hinesburg, Richmond, or the Chittenden County region to accommodate growth from this project pursuant to 10 V.S.A. § 6086(a)(1)(C), (8)(A), and (9)(A).
65. The Applicants will locate a log landing approximately 1,640 feet from the property of party Paula Kelley. This landing is closer to Ms. **Kelley's** property than the closest landing per the project's original design. There is a rise in the land and trees between the project site and Ms. **Kelley's** property. Ms. Kelley has a logging road already on her property.

V. CONCLUSIONS OF LAW

A. Scope of Review

1. Analysis on Reconsideration

On February 17, 1989, the Board issued a decision denying this application. That decision was not appealed to the Supreme Court. It is therefore final and binding. It sets forth specific and **detailed** information which must be supplied in order to evaluate the application's compliance with Criteria 1(B), 1(E), 3, and 4.

The Applicants seek reconsideration of their application pursuant to 10 V.S.A. § 6087(c), which provides:

A denial of a permit shall contain the specific reasons for denial. A person may, within 6 months, apply for reconsideration of his permit which application shall include an affidavit to the district commission and all parties of record that the deficiencies have been corrected.

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Based on this provision, the Board has promulgated Rule 31(B), which also requires that applicants using the reconsideration procedure certify that they have "corrected the deficiencies which were the basis of the permit denial." Rule 31(B)(1). In addition, Rule 31(B)(2) provides:

The district commission may, but need not necessarily, limit its scope of review to those aspects of the project or application which have been modified to correct deficiencies noted in the prior permit decision. The findings of the board or district commission in the original permit proceeding shall be entitled to a presumption of validity in the reconsideration proceeding, insofar as those findings are not affected by proposed modifications in the project. However, those presumptions may be rebutted by the district commission or by any party upon a showing that the circumstances of the application have changed, or upon a review of evidence not previously presented.

The reconsideration procedure thus confers a substantial benefit on applicants who are denied permits. It allows them to modify their projects to meet criteria pursuant to which their applications were found deficient without wholesale review of the modified project under all ten **criteria**. Instead, the review of the modified project is limited to the correction of the deficiencies under the criteria pursuant to which the application was denied. With regard to other criteria, affirmative findings for the original project follow through, unless the district commission determines that it is necessary to review those other criteria. However, even under such expanded review, the previously-issued affirmative findings carry a presumption of validity which transfers the burden of proof to any persons opposing the project.

While the statute and the rules clearly contemplate conferring a benefit on applicants, it is equally clear that to obtain this benefit, applicants must correct the deficiencies set out in the original permit denial. Section 6087(c) and Rule 31(B)(1) both state that certification of such correction is required. This is consonant with 10 V.S.A. § 6086(a), which requires that affirmative findings be made on all criteria prior to issuing a permit. The deficiencies referred to in § 6087(c) and Rule 31(B)(1) consist of specific findings of noncompliance with some or

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all of the criteria and therefore § 6086(a) cannot be met unless the deficiencies are corrected. Moreover, requiring that the deficiencies be corrected serves the important policy of preserving the integrity of Act 250 **decision-**making by preventing relitigation of issues addressed in the original decision.

In this case, the deficiencies found consist of lack of sufficient information to issue affirmative findings on Criteria 1(B), 1(E), 3, and 4. Detailed lists of the information needed are set out in the original denial. Thus, in accordance with the Board's March 19, 1991 memorandum of decision, the Applicants are subject to a **two-**step analysis. First, they have to show that they corrected the deficiencies by providing the information listed as necessary in the original denial. Second, the Board reviews the information provided to determine whether the project will comply with the criteria at issue. The Board may decline to review compliance with the criteria where it determines that insufficient information was provided to meet the deficiencies.

The March 19 memorandum of decision also addresses additional criteria concerning which the Neighbors seek review: 1, 1(C), 8(A), 9 (A). These are criteria on which affirmative findings have previously been issued. In accordance with the Board's March 1991 decision, these criteria are also subject to a two-step analysis. First, the Neighbors have to overcome the presumption of validity by showing that re-opening these criteria is justified by changed circumstances or presentation of evidence not previously presented. Second, if the presumption is overcome, the Board reviews the project's, compliance with the criteria.

## 2. Motions to Dismiss

Prior to evidentiary hearings in this matter, both the Applicants and the Neighbors filed motions to dismiss. Each side argues that the other did not meet the burdens set out by the Board in the March 1991 memorandum of decision. By letter dated June 25, the Board informed the parties that it would review the Applicants' motion following the hearings. The Board treats the Neighbors' motion in the same way.

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Rule 18(D) governs dismissals of appeals. It provides:

The board may, on its own motion or at the request of a party, consider the dismissal, in whole or in part, of any matter before the board for reasons provided by these rules, by statute, or by law.

Under this rule, consideration of dismissal is discretionary. The Board decides not to exercise its discretion.

B. Review of the Criteria

1. Criterion 1(B) (Waste Disposal)

a. Submission of Information

In its February 1989 denial, the Board stated that the Applicants must submit certain information with regard to Criterion 1(B). The information the Applicants were to submit and the evaluation of their compliance are as follows:

- (1) A list of the pesticides and fertilizers that could be applied to the golf course, with information about the characteristics of each, including its mobility and solubility.

The Applicants argue that it is no longer necessary for them to supply this information. They state that they will use no pesticides or commercial fertilizers on the site and instead will use GLC, which they say is an "organic" soil conditioner and is "non-toxic." They also state that they will use top dressing and have provided the ingredients of the dressing.

The Applicants' argument is semantic rather than substantive. Labeling GLC a non-toxic soil conditioner does not defeat the need for this information. The clear intent of the 1989 decision is that, to evaluate water pollution impacts, the Board must know what is being applied to the land and what its characteristics are. GLC is analogous to fertilizers because it is a substance applied to land to promote plant growth. Thus, the Board considers GLC to be a fertilizer within the meaning of the **1989 decision**. The fact that GLC may not be what is commonly **thought of** as a commercial fertilizer is irrelevant; the language of the decision is not limited to commercial fertilizers.

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Further, the Applicants have not substantiated their statement that **GLC** is organic and non-toxic. They have not provided a list of the ingredients of **GLC**, asserting instead that these ingredients are trade secrets.

In place of a list of ingredients, they have provided a product label from the manufacturer and a priority pollutant scan. But there is no way of knowing whether the product label is complete and the Applicants' trade secret claim suggests that it may not be complete. The label also does not provide a percentage breakdown of the ingredients listed there.

In addition, the priority pollutant scan constitutes a significantly incomplete test. The scan basically asks whether certain compounds are present in **the lab** sample being tested. At best, the scan tells the analyzer what is **not** in a compound if the result is that none of the compounds tested for are found to be present. It does not tell the analyzer what the ingredients actually are.

Thus, some form of additional evaluation is needed to determine water pollution impacts. If **GLC** were a compound with a long track record, that record might be helpful if sufficient observation had been made of the compound's effects. However, **GLC** is recently developed and at best can be described as experimental. There is not much history of use. The history that exists is mixed: Several golf courses have used **GLC**; some of those continue to use the compound while others have discontinued its use; and no courses outside California have used it.

Accordingly, the Board believes that the ingredients of **GLC**, along with percentage breakdowns, must be disclosed so that they may be confirmed through testing. With such an experimental compound, this kind of disclosure and confirmation is an essential first step in determining the compound's characteristics. Disclosure and confirmation may reveal a harmless combination of benign elements, but without that first step, a reliable determination of the compound's characteristics cannot be made'. Without those characteristics, the Board cannot determine whether the project will or will not create undue water pollution.

The Board therefore concludes that the Applicants have not submitted sufficient information about the characteristics of **GLC** as required by the 1989 decision. In making this determination, the Board is **cognizant** of the Applicants' trade secret claim, but does not believe that

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such a claim requires the Board to issue a permit allowing application of an experimental substance whose ingredients are not disclosed.

- (2) Results of a groundwater study that includes specific borings to determine the rates and directions of flow throughout the site, depth of the water table, and the general zones of influence.

The Applicants have supplied this information. The results are detailed in the Findings of Fact.

- (3) Soil types throughout the site, with particular attention to the native soils at the areas of the proposed greens and tees.

The Applicants have supplied this information and the results are detailed in the Findings of Fact.

- (4) Construction details for the greens and tees, including soil types.

The Applicants have submitted this information which is detailed in the Findings of Fact.

- (5) A revised groundwater monitoring program that includes assurances that all proposed pesticides and fertilizers are capable of being detected with lysimeters **OR** monitoring wells, and that the lysimeters and wells are located so that they will detect any pollution in a timely fashion.

The Applicants have not submitted a revised groundwater monitoring program to the Board, arguing that one is not needed because they plan to use no pesticides and fertilizers.

The Board continues to believe that a revised groundwater monitoring program is required. GLC is analogous to a fertilizer, and therefore the language of the 1989 decision applies to GLC. GLC is also an experimental substance. A groundwater monitoring program is therefore even more necessary to establish whether the substance will or will not cause undue water pollution.

Moreover, the Applicants have indicated that they may use pesticides and fertilizers. During questioning of Paul Truax, President of Sherman Hollow, Inc., he stated:

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Sherman Hollow has committed, in current and previous hearings, to employ every alternative method before using pesticides and commercial fertilizers to manage the golf course.

Thus, it is implied that if alternative methods do not work, pesticides and fertilizers will be applied. If the Board were issuing a permit, a groundwater monitoring program would therefore be necessary to ensure that the Applicants do not apply pesticides and fertilizers without first applying for and obtaining a permit amendment.

- (6) Information on the effects of using bacteriological controls, or assurances that these will be reviewed by experts if used.

The Applicants argue that such information is no longer required because they will not use bacteriological controls. They also state that they will seek *review* by experts and by the District Commission prior to any use of such controls.

Without knowing what GLC is, the Board *cannot say* that the Applicants are not using bacteriological controls. The Applicants have submitted claims that GLC works on microbes in the soil to free nutrients for plant consumption. If this is true, then use of GLC will have a significant bacteriological aspect. Accordingly, the Board concludes that the Applicants have not met this deficiency because, without information on GLC's ingredients, its effects cannot be known.

- (7) Designs of the drains at the greens and tees and designs and locations of the outfalls.

The Applicants have submitted information on drain and outfall design and locations for the greens but not for the tees. The designs and locations are detailed in the Findings of Fact.

- (8) Specific plans for dealing with pesticide spills or fires at the pesticide storage building.

The Applicants argue that these plans are no longer needed because they will not use pesticides. The Board agrees that such plans are not pertinent to use of GLC and, if it were issuing a permit, would require that the

Applicants submit such plans to the District Commission for review and approval as a permit amendment prior to any use of pesticides on the golf course.

- (9) Information to demonstrate that the pesticides and fertilizers to be used will not adversely affect the aquatic biota of the streams and groundwater.

The Applicants argue that this submittal is not needed because they are not using pesticides and fertilizers. They also argue that it is met with respect to GLC based on the submission of the priority pollutant scan.

For the reasons discussed above with respect to deficiency (1), the Board does not consider the priority pollutant scan to be a sufficient test. Instead, to demonstrate that GLC will not adversely affect aquatic biota, the ingredients of GLC must be disclosed, and specific information must be submitted on the effects on aquatic biota of GLC as a compound and of its ingredients separately. Since the Applicants have not submitted this information, the Board concludes that deficiency (9) is not met.

- (10) Specific procedures intended for handling the wash and rinsewater from cleaning pesticide application equipment and the methods for disposing of this water.

The Board treats this deficiency the same as deficiency (8), above.

b. Analysis of Criterion 1(B)

As discussed above, the Applicants have not met deficiencies (1), (5), (6), and (9). Therefore, the Board denies the application pursuant to Criterion 1(B) because the Applicants have not met their burden of proof.

The Applicants contend that they have met their burden of proof under the criterion and make several arguments in support of that contention. These are addressed below.

(1) Rebuttable Presumption

In their proposed findings, the Applicants argue that they have created a rebuttable presumption of compliance because they have received a letter from Dr. William Bress of the Vermont Department of Health stating his belief that

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the application of GLC to the site will comply with the Vermont Drinking Water Health Advisories and because they applied to the Agency of Natural Resources for a discharge permit and received a draft permit from that agency. On October 21, following the hearings, the Applicants submitted by letter a final discharge permit to the Board. The permit states that it is issued under the Agency of Natural Resources' rules for direct and not for indirect discharges. Presumably, the Applicants intend that this permit creates a presumption of compliance.

The Board has an independent duty to make its own findings of compliance with Act 250. 10 V.S.A. § 6086(a). The Board also has an oversight role with respect to other agencies. In re Hawk Mountain Corp., 149 Vt. 179, 185 (1988); In re Agency of Transportation, No. 90-299, Slip op. at 6 (July 12, 1991). The Board is permitted by statute to adopt rules which give presumptive effect to other state agency permits. 10 V.S.A. § 6086(d). Consistent with the Board's independent duties and oversight role, the Board has adopted Rule 19, entitled "Compliance with Other Laws - Presumptions." This rule grants presumptions to various state and local permits but provides that they may be challenged and rebutted by parties or by the Board itself.

There are two documents which the Applicants claim create a rebuttable presumption under Rule 19: the Bress letter and the discharge permit. The Board analyzes each in turn.

With respect to the Bress letter, Rule 19(E) lists which other permits are given presumptive effect. The rule, does not anywhere state that a letter from a state official creates a rebuttable presumption. Accordingly, the Bress letter does not 'create such a presumption.

Turning to the discharge permit, the Applicants have stated that their project is subject to the requirement to obtain such a permit pursuant to 10 V.S.A. § 1263. The permit is issued by another state agency, the Agency of Natural Resources..

Rule 19(A) provides three alternatives for an applicant whose project is subject to review by other state agencies. Two of these alternatives involve using permits issued by those other agencies as presumptions of compliance. The third alternative is to prove compliance without the benefit of another agency's permit. Specifically, under Rule 19(D),

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an applicant may, without obtaining the other state permits, elect to provide independent testimony or other evidence demonstrating compliance.

The Applicants chose the third alternative of independently demonstrating compliance. The Applicants' offer of proof, filed April 29, 1991, states that they will meet their burden under Criterion 1(B) through implementing an "Organic Turf Management Program" which will use a "non-toxic" soil conditioner. Nowhere in the offer of proof is there mention of relying on a discharge permit to meet the burden. Further, the Applicants' provision of the priority pollutant scan and the testimony of Dr. Bress, as well as other testimony submitted concerning Criterion 1(B), demonstrates a clear intent to use this third alternative and not to rely on a discharge permit.

Now, subsequent to the hearings and to the filing of proposed findings on September 5, 1991, the Applicants appear to argue that the Board must give the discharge permit presumptive effect under Rule 19(E)(1)(e), which provides that a discharge permit creates a presumption that waste materials and wastewater can be disposed of through collection, treatment, and disposal systems without resulting in undue water pollution.

This position, however, is contradicted by the Applicants' clear choice earlier in these proceedings to provide independent evidence of compliance. It also is undermined by the fact that final written arguments, in the form of proposed findings, were due and filed on September 5.

Moreover, Rule 19(E) expressly states that the presumption is created when the permit is "entered into the record pursuant to Rule 17(B) ...." Rule 17 is entitled "Evidence at Hearings." Rule 17(B) states that documents are entered into the record when the Board accepts them and "shall be subject to evidentiary objections by parties to the proceeding."

Thus, Rule 17 intends that documents are to be entered into evidence during the hearings and be subject to evidentiary objections. As Rule 19(E) indicates, documents must be entered this way in order to create presumptions.

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The only alternative open to the Board is to convene another hearing to accept the permit into the record. The Applicants have not requested another hearing and the Board declines to convene one ~~for two~~ separate and independent reasons.

First, introduction of the discharge permit will *not* satisfy the Applicants' burden to meet the deficiencies by providing the information set forth in the February 1989 denial. 10 V.S.A. § 6087(c) requires that these deficiencies be met and Rule 19 cannot be interpreted to supersede this statutory provision. The Board has concluded above that the ingredients of GLC must be disclosed in order for the deficiencies to be met. Since the ingredients of GLC are trade secrets, they cannot have been known to the Agency when it issued the discharge permit. The Board is not concluding that the permit was inappropriately issued but rather is stating that the permit cannot replace the provision of information regarding GLC and therefore cannot meet the deficiencies.

Second, the Applicants made a choice to provide independent evidence of compliance and did not request delay in the hearings pending receipt of the discharge permit. Under such circumstances, the application must stand or fall on the independent evidence presented and further delay to convene another hearing is not warranted.

(2) Meetina the Vermont Water Quality Standards and the Vermont Drinking Water Health Advisories

Criterion 1(B) is one of several criteria which the Board must review in determining whether a project will cause undue water pollution. See 10 V.S.A. § 6086(a)(1)(A) - (G). Criterion 1(B) requires the Applicants to make two demonstrations. First, they must demonstrate that the application complies with any applicable health and environmental conservation department regulations regarding the disposal of wastes. Second, they must demonstrate that the application will not involve the injection of waste materials or any harmful or toxic substances into ground water or wells. 10 V.S.A. § 6086(a)(1)(B). Thus, Criterion 1(B) requires that the application satisfy two separate and independent tests.

The Applicants argue that they meet Criterion 1(B) because they have demonstrated compliance with the Vermont Quality Standards issued by the Vermont Water Resources

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Board and the Vermont Drinking Water Health Advisories issued by the Vermont Department of Health. The Applicants make this argument based on a comparison of the compounds found in the priority pollutant scan with a list of maximum allowable concentrations which is Appendix C to the Water Quality Standards, and a comparison done by Dr. Bress of the pollutant scan results to a list of maximum allowable compounds contained in the advisories.

The Neighbors argue that the Applicants do not meet the Water Quality Standards. They also argue that the Applicants must *not only* meet these standards but meet other requirements in the Indirect Discharge Rules issued by the Agency of Natural Resources.

The arguments concerning the water quality standards, the health advisories, and the indirect discharge rules relate to the first Criterion 1(B) test (compliance with applicable standards). While these arguments would have to be addressed prior to issuing a permit, the Board need not reach them here because the Applicants' failure to meet the deficiencies means that the second Criterion 1(B) test (injection of materials) is not met.

The second test is not met because the Applicants' comparisons do not establish that the application will NOT involve the injection of waste materials or harmful or toxic substances into groundwater or wells. To establish that proposition, the contents of GLC must be disclosed and tested. That is the only way that the Board can determine whether GLC is harmful or toxic.

Further, as described in Findings 24, 29, and 30, above, water containing GLC will flow into the shallow weathered till layer, become groundwater, and then flow through the shallow soil layer flow towards the on-site watercourses and Sherman Hollow Brook. This means that waste material (the water containing GLC) will be injected into the groundwater. Without sufficient information on the ingredients or effects of GLC, the Board cannot assess whether this injection will cause undue water pollution.

(3) Dilution of GLC

The Applicants argue that they will significantly dilute GLC when applying it and that this dilution will ensure that no undue water pollution will result.

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The Board does not accept this proposition. One cannot argue that a diluted substance is harmless when one does not know what that substance is or what its characteristics are. Only if these data are known can it be said what **GLC's behavior** will be in any environment, diluted or non-diluted.

(4) Density of the Basal Till

The Applicants argue that water pollution effects are unlikely because the deep aquifer is protected by a layer of dense basal till which will prevent GLC from reaching the aquifer.

This argument ignores the fact that several area wells are located in the shallow aquifer above the basal till. Discharges from the project will run toward the Sherman Hollow Brook area where the shallow aquifer is located. The wells, the shallow aquifer, the Brook, and the on-site watercourses are not protected by the basal till.

Moreover, there is a significant defect in the Applicants' analysis of soil types. Specifically, they have characterized the valley floor where Sherman Hollow Brook runs as having three layers from top to bottom: glaciofluvial soils, dense basal till, and bedrock. Yet there is a large area of untested land between test pits which includes most of the valley floor. On one end of that area, two layers were found and a third inferred at TP #55: the glaciofluvial soils, dense basal till, and bedrock. At the other end of the area, only two layers were found at TP #53: glaciofluvial soils and bedrock, with the bedrock sloping downward, away from the valley floor.

Thus, it is entirely possible that as the bedrock approaches the valley floor, it slopes upward toward the glaciofluvial soils, resulting in the occurrence on much of the valley floor of only the two layers found at TP #53 rather than the three layers found at TP #55. Without further testing of **the valley floor**, a certain determination as to the soil types cannot be made. It therefore cannot be said that the basal till underlies and protects the deep aquifer in that area. Instead, like the project's well 1B, which is recharged by water flowing vertically through bedrock fractures (see Finding 43, above), it is possible that water containing GLC will reach the deep aquifer through bedrock fractures under the valley floor.

(5) Travel Time

The Applicants argue that they have met their burden of proof with evidence that groundwater travel time between the 12th tee and the nearest well is 27.1 days. The implication

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of this argument appears to be that all contaminants in groundwater will be removed by the time the groundwater reaches a well because the soil will have removed the contaminants.

Providing evidence of travel time to wells is not sufficient to meet the burden. Criterion 1(B) concerns the injection of wastes or harmful or toxic substances into groundwater or wells. Accordingly, the possibility of undue groundwater pollution must be examined in addition to undue well-water pollution.

Moreover, the travel time figure is meaningless without information on the propensity of GLC to be removed by the soil. That propensity cannot be determined without information on the ingredients and characteristics of GLC, including its mobility and **solubility**.

2. Criteria 1(E) (Streams) and 3 (Existing Water Supplies)

a. Submission of Information

In its February 1989 denial, the Board stated that the Applicants must submit certain information with regard to Criteria 1(E) and 3. The information the Applicants were to submit and the evaluation of their compliance are as follows:

- (1) A revised site plan showing at least **a 50-foot** buffer between greens and tees and all watercourses.

The Applicants have not met this requirement. As shown in Finding 35, above, several of the greens are either on watercourses or within 50 feet of a watercourse. Because this finding means the deficiency is not met, the Board has not evaluated whether any tees are within 50 feet of a watercourse.

- (2) The locations of the outflows for the drains under the greens and tees.

The **Applicants** have submitted the locations of the outflows for the greens but not the tees as discussed above with respect to Criterion 1(B), deficiency (7).

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- (3) The information used to calculate the amount of water needed to irrigate the greens and tees.

The Applicants have submitted this information, as detailed in the Findings of Fact.

- (4) Plans showing where and how the irrigation pipes will cross the streams.

The Applicants have submitted this information, as detailed in the Findings of Fact.

- (5) Final designs for the irrigation system.

The Applicants have submitted this information, as detailed in the Findings of Fact.

b. Analysis of Criteria 1(E) and 3

The Applicants have not met deficiency (1) with respect to Criteria 1(E) and 3. Accordingly, the Board will deny the reconsideration request pursuant to these criteria because the Applicants have failed to meet their burden of proof by supplying the information which in 1989 the Board found was needed.

An important issue in these proceedings under Criteria 1(E) and 3 has been whether the proposed project will affect nearby streams or water supplies because the Applicants have not provided for sufficient irrigation water to meet their needs and thus will have to use water from nearby streams or other water supplies. Based on Findings 36 and 37, above, the Board concludes that the Applicants will have enough water for irrigation.

3. Criterion 4 (Soil Erosion)

a. Submission of Information

The Applicants have submitted all of the information which the February 1989 decision concluded was needed to remedy the deficiencies pursuant to Criterion 4. Consequently, the Board need not itemize the Applicants' compliance as it has done with respect to Criteria 1(B), 1(E), and 3.

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b. Analysis of Criterion 4

Criterion 4 requires that the Applicants prove that the proposed project will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result. 10 V.S.A. § 6086(a)(4).

There are two areas of focus in reviewing soil erosion in this case: during construction and after construction. The Board examines each area in turn.

(1) Erosion during Construction

With respect to soil erosion impacts during construction, the Applicants will implement an extensive soil erosion control program. However, the Board has serious concerns about this program. To begin with, the Applicants claim that, during all logging and earthwork, they will either maintain a vegetated buffer along all streams or provide a berm, silt fence, or hay bale dike to prevent sediment from entering streams. This claim implies that some kind of barrier is needed to prevent unreasonable soil erosion into the streams. But the Applicants' plans show areas adjoining streams which will be cleared and which will not have any sort of barrier preventing sediment from reaching the streams.

The Applicants also have submitted erosion control plans showing areas of existing tree stands to be preserved. However, other plans submitted by the Applicants show irrigation pipes running through, and stumps being buried in, these areas. Thus, although not intended by the Applicants, soil disruption may occur within the tree stands to be preserved.

Further, during any construction which occurs between October 15 and April 15, the Applicants plan only to use oat seeds to provide temporary grass cover for erosion control. Oat seeds take some time to become established and overland flow and consequent erosion are likely in oat-seeded areas during the period between seeding and establishment. In this regard, the Board notes that soils on-site have limited ability to absorb water, making soil saturation and therefore surface water flow more likely during periods of rain.

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Accordingly, if the Board were issuing a permit, the Board would condition the permit:

- (a) to require the placement of a berm, silt fence, or hay bale during construction along all stream banks which will be cleared of vegetation;
- (b) to prohibit the clearing of trees or burial of stumps within tree stands which are to be preserved; and
- (c) to use grass seed for erosion control between October 15 and April 15 which becomes established at least twice as quickly as oat seed.

(2) Erosion after Construction

The Board concludes that the proposed project will likely cause unreasonable soil erosion after construction. The site has steep slopes going down toward Sherman Hollow Brook. It has a shallow permeable upper soil layer underlain by dense basal till that causes water to flow just under or on the surface to the Brook and on-site water-courses. The soils have limited capacity for absorbing water, increasing the possibility of overland flows.

As part of the project, large areas of the site will be cleared and planted with various grasses. Establishment of these grass areas will be critical to preventing soil erosion after construction.

The on-site soils have poor nutrient quality. The Applicants state that they plan to use no commercial fertilizers to make up for this lack of nutrients, that they will use only 12 cubic yards of top dressing per year, and that they will apply GLC, which they claim adds only trace amounts of nutrients.

The Applicants' plans are unlikely to make up for the poor nutritive value of the soils since they do not explain where the turf will obtain the necessary nutrients and they depend on a soil conditioner which is experimental. The Board understands that the Applicants claim that GLC frees soil nutrients through microbial action for uptake by plants, but this claim has not been substantiated, and even if it were, GLC could not be expected to free nutrients which are not there. Consequently, the Board concludes that the critical component in preventing soil erosion after

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construction, turf establishment, is unlikely to occur. The result will be large areas with insufficient turf cover and exposed soil. On a site with steep slopes running downward toward Sherman Hollow Brook, with soils which allow water to run just under or on the surface to the Brook and **other** watercourses, and with a limited capacity to absorb water, unreasonable soil erosion will be the probable outcome.

4. Criteria the Neighbors Seek to Re-open

The Neighbors seek to re-open Criteria 1 (air pollution), 1(C) (water conservation), 8(A) (necessary wildlife habitat) and 9(A) (impact of growth).

The Board concludes that the Neighbors have not met their burden to provide evidence to show that re-opening Criteria 1(C), 8(A), and 9(A) is warranted.

Further, the Neighbors' contentions concerning Criterion 1 center on noise caused by a log landing which the Applicants have relocated so that it will be closer to Paula Kelley's residence. In its February 1989 decision, the Board issued permit conditions which would be included if a permit were issued for this project. The Board believes that those conditions would be sufficient to prevent any adverse noise effect on the Kelley residence from being undue. Accordingly, the Board will not **re-open** Criterion 1.

C. Testina of Green Life Conditioner

Concerned with the lack of information in the record regarding GLC, the Board disclosed to parties that it was considering ordering other state agencies to test GLC. The Applicants strongly oppose such testing. They do not want it. They challenge the Board's authority to have it done.

The Board clearly has the authority to investigate GLC and to have other state agencies perform tests. 10 V.S.A. § 6083(b) provides:

The board and district commission may conduct such investigations, examinations, tests, and site evaluations as they deem necessary to verify information contained in the application.

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In addition, 10 V.S.A. § 6024 provides:

Other departments and agencies of state government shall cooperate with the board and make available to it data, facilities, and personnel as may be needed to assist the board in carrying out its duties and functions.

Accordingly, there is no reasonable dispute concerning the Board's authority here.

Nonetheless, in view of the Applicants' opposition, the Board declines to exercise its authority to order tests Of GLC.

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VI. ORDER

1. Application #4C0422-5R-1-EB is denied pursuant to Criteria 1(B) (waste disposal), 1(E) (streams), and (3) (existing water supplies) because the Applicants have failed to meet their burden of proof.

2. Application #4C0422-5R-1-EB is denied pursuant to Criterion 4 (soil erosion) because the proposed project will create unreasonable soil erosion after construction.

3. The Neighbors' cross-appeal is denied because they have not met their burden to show that Criteria 1 (air pollution), 1(C) (water conservation), 8(A) (wildlife), and 9(A) (impact of growth) should be re-opened.

Dated at Montpelier, Vermont this 19th day of June, 1992.

ENVIRONMENTAL BOARD

*Elizabeth Courtney*

Elizabeth Courtney, Chair  
Ferdinand Bongartz  
Lixi Fortna\*  
Arthur Gibb  
Samuel Lloyd  
William Martinez\*  
Charles F. Storrow  
Steve E. Wright

\*Members Fortna and Martinez concur in the decision with respect to Criteria 1(B), 1(E), and 3 but dissent with respect to Criterion 4. They would conclude that the proposed project will not create unreasonable soil erosion.

Dissenting opinion of Member Martinez on Criterion 4. Erosion. The Applicants plan to have a full-time erosion control officer and forester during logging and clearing operations with authority to implement erosion control measures.

In addition, the Applicants' engineers will inspect the site weekly. The Applicants have agreed to use the State's handbook/guide, "Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont." This guide, along with additional performance conditions, will be consistent with Board actions on previous development proposals.

The Applicants propose to use rye grass and oat seed as temporary vegetation to control erosion until a more permanent grass is developed.

Mr. Michael Sullivan, soil scientist, testified that oat seed mixed with rye grass would provide vegetation capable of controlling soil erosion.

Mr. Peter Andres, P.E. testified he would expect the rate of soil erosion to increase during construction activities but after a grass cover is established the rate of erosion would decrease to less than presently exists under a forest canopy situation.

These facts demonstrate to me that there will not be unreasonable soil erosion either during or after construction of this project. I believe that, even if the permanent turf does not become established, other grasses can be used to prevent erosion after construction.

sherman.dec(awp4)

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