ML

Hanover

1979

Proposed Counter findings &
Conclusions - Twp of Hanover.
"Hanover is a Developed Community."
by Catlin, Salzman & Goodfriend

pgs. 46

ML0007042

PROPOSED COUNTER FINDINGS AND CONCLUSIONS

TOWNSHIP OF HANOVER

HANOVER IS A DEVELOPED COMMUNITY

ROBERT CATLIN, P.E.: FLETCHER PLATT, P.E.:

GARY SALZMAN, P.E.: WILLIAM KIRK
LEWIS E GOODFRIEND P.E.

1. Hanover Township's population has increased on a very limited basis during the last 20 years and the rate of growth during the last 10 years has been at a rate of less than 1% per year.

1950 - 3,756 1970 - ~~8,329~~ 10,700

1960 - 9,329 1980 - 11,764

Census data and Robert Catlin.

2. Hanover Township has not become the recipient of the outward migration of population from the other counties in Region II. Census data and Official State Estimates at page 6.

3. Construction of dwelling units of any type has been very limited during the last 10 years in Hanover Township.

1970	1971	1972	1973	1974	1975	1976	1977
74	162	135	82	10	9	10	50

1978	1979	TOTAL
61	37	630

Catlin & Public Advocate, Table #2.

4. No new highways have been constructed in Hanover for the last 10 years. Catlin.

5. The Township is composed of some 6,889 acres. Catlin, September 27, 1979, pg. 2.

6. As of September 1, 1979 there were 3,668 structures, which included 3,381 residential structures housing 3,423 dwelling units, utilizing approximately 5,662 acres leaving approximately 1,227 acres vacant. Catlin, September 27, 1979, pg. 1 and 2.

7. There is located within the Township of Hanover two significant generators of noise, namely, the Morristown Municipal Airport located along Columbia Road and Route 287. Lewis S. Goodfriend, September 28, 1979.

8. U.S. Government agencies, including the Environmental Protection Agency (EPA) and the Department of Housing and Urban Development have concurred that a day/night sound level (Ldn) at or below 55 dB(A)[1], is a suitable goal for residential Land Use. Goodfriend, September 28, 1979. (See Fed. Reg., Vol. 44 No. 135 July 12, 1979, page 40863.)

9. The goal of a sound level of less than 55 dB(A) for residential land use is designed to protect against outdoor activity interference, primarily speech communication, to protect against long term hearing loss and to protect against other annoyance - related effects such as interference with sleep or recreation. Goodfriend, September 28, 1979.

1. The day/night sound level (Ldn) is the 24 hour equivalent sound level, i.e., that continuous sound level with the same energy as the time varying sound level with a 10 decibel penalty applied to the nighttime sound levels to reflect peoples increased sensitivity to noise during the nighttime period.

10. The Department of Housing and Urban Development has selected as a criterion a day/night level of 65 or less in order for housing projects to receive HUD financing. Goodfriend, September 28, 1979 and 24 CFR, Part 51, July 1979.

11. A reasonable day/night sound level for Hanover Township above which areas should not be utilized for residential development would be 60, a noise level based midway between the EPA goal and the HUD criteria for funding of multi-family dwellings. Goodfriend, September 28, 1979.

12. Noise impact at a level greater than 60 dB(A) from the utilization of the Morristown Airport effects a large area of the southeastern area of the Township when the criteria of a level of 60 is applied. Goodfriend, September 28, 1979. See also "Impact of Environmental Noise Due to Aircraft Operations at Morristown Airport," Lewis S. Goodfriend, January, 1978. See attached Exhibit 1.

13. Sound levels exceeding the level of 60 dB(A) are generated by traffic on Route 287 for a distance in excess of 1,500 feet from the centerline of the roadway and, therefore, are not suitable for residential development. Lewis S. Goodfriend, September 28, 1979 and "Acoustical Impact of Route 287 Upon the Environment of the Township of Hanover", Lewis S. Goodfriend, October, 1975.

14. While multi-family residential use could be built in areas with sound levels higher than 60 dB(A) substantial

additional costs would have to be incurred to mitigate the effects of the high sound level. Goodfriend, September 28, 1979.

15. Construction within a flood way, flood plain or flood fringe area is either prohibited or tightly restricted today by regulations issued at all levels of government. Fletcher Platt, November 2, 1979. See also Executive Order 11988; New Jersey Public Law 1962 c. 19 as amended by Public Law 1972 c. 185; Hanover Township Flood Plain Ordinance No. 26-77.

16. The primary purposes in prohibiting development in the flood way, and the flood plain area is to permit water to flow freely. Fletcher Platt, Jr., November 2, 1979.

17. The regulations cited above are similarly designed to prohibit construction in the flood fringe areas for two reasons, (a) to avoid increased downstream flooding resulting from increased storm runoff from a development site as well as the displacement of the natural storm water retention capacity of the development site; and (b) flooding of the specific construction site. Fletcher Platt, November 2, 1979.

18. The construction of buildings, roads, parking lots, and associated facilities increase the amount of impervious surface area. Fletcher Platt, November 2, 1979.

19. An increase in the impervious area reduces the infiltration of rainfall and increases the quantity of storm water runoff. Fletcher Platt, November 2, 1979.

20. Runoff from impervious materials involves approximately 90% of the rainfall while runoff from natural soils is only about 10% to 20%. Fletcher Platt, November 2, 1979.

21. Intense development of the nature recommended by the Morris County Fair Housing Council would result in approximately 70% to 80% of the rainfall being discharged as runoff. Fletcher Platt, November 2, 1979.

22. Dense development necessitates the utilization of engineering techniques such as storm water retention facilities to control storm water runoff. Fletcher Platt, November 2, 1979.

23. The utilization of storm water rentention facilities requires a significant reduction in the land area that can be built upon, approximately one-third, and the cost of installation would be significant. Fletcher Platt, November 2, 1979.

24. The net effect is a reduction in the number of units that can be built on a per acre basis and a significant increase in the cost per unit or the rental price. Fletcher Platt, November 2, 1979.

25. Construction within the flood plain causes an increase in downstream flooding conditions by displacing naturally stored waters as well as increasing the runoff from that specific development site. Fletcher Platt, November 2, 1979.

26. Construction of residential units within the floodplain is particularly serious because of the 24 hour occupancy

but in addition the mixing of sanitary waste water with the storm water runoff in flooded areas creates significant health hazards which may persist for long periods of time after the flooding has receded. Fletcher Platt, November 2, 1979.

27. Zoning for dense residential development within the flood fringe areas is not in the public interest as it creates a hazard to public health and safety. Fletcher Platt, November 2, 1979.

28. Parcels 75 through 99 on the attached Map, Exhibit I being an area located in the northwesterly portion of the Township bounded by Route #10, Route 287 and the Township of Parsippany-Troy Hills composed of 290 acres is restricted for development purposes because of the lack of sanitary sewers. Fletcher Platt, November 2, 1979.

29. To provide adequate service to this area, it would be necessary to construct approximately 6,000 linear feet of interceptor sewer under Route 287 and North Jefferson Road and along Malapardis Brook to near the intersection of Parsippany Road and Route 10. This is a major porject with very significant costs. Fletcher Platt, November 2, 1979.

30. The existing storm drainage servicing parcels #1 through #6, comprising approximately 70 acres of vacant land is inadequate and portions of these tracts are low,subject to occasional overflow of the streams and a high ground water table. Fletcher Platt, November 2, 1979.

*Exhibit II discloses all vacant parcels in Township.

31. In the event that parcels #1 through #6 are developed, extensive land storm water retention facilities as well as off site structural improvements would be required to provide adequate storm drainage all at significant costs. Fletcher Platt, November 2, 1979.

32. Parcels 78 through 83 are all contiguous, located in the northwesterly area between Route 10 and Route 287. These parcels are subject to frequent storm overflows, have a high ground water table and lie within the flood plain. Fletcher Platt, November 2, 1979.

33. Construction of dense residential development on these parcels (#78 through #83) would necessitate that significant portions be dedicated to storm water retention facilities and significant fill or diking will have to be placed to adequately protect any structures, all at very significant costs. Fletcher Platt, November 2, 1979.

34. Parcels 75 and 77 are subject to seasonal storm overflow and a high ground water condition will necessitate significant drainage improvements, including storm water retention facilities at great costs. Fletcher Platt, November 2, 1979.

35. No Federal Assistance would be available for the development of Parcels #75 through #83 because of Executive Order 11988. Fletcher Platt, November 2, 1979.

36. Parcels #31 through #34 lie along Malapardis Brook between Route #10 and Parsippany Road. The central portion of the tract is subject to flooding by Malapardis Brook and seasonal high water table and increased run off from the development of this tract would adversely effect the existing flooding problems in Whippany Center. Fletcher Platt, November 2, 1979.

37. Similar conditions to those described in paragraphs 35 and 36 above exist on parcels 27, 28, 29, 30, 39, 40, 70 - 74, 76 and 124. Fletcher Platt, November 2, 1979.

38. Significant portions of parcels 109, 111 and 113 lie within the flood plain. Thus the development of these parcels would require local storm water retention facilities and major drainage improvements to provide adequate protection of the development and to avoid the aggravation of existing downstream drainage problems. Fletcher Platt, November 2, 1979.

39. Parcel #121 is the remains of a major quarry. There is no positive drainage from the site and significant storm drainage at great cost would be necessary. Fletcher Platt, November 2, 1979.

40. Parcels #43 through #58, #122 and #123 lie within the Flood Plain and is low marsh land along the Whippany River and Black Brook. It is inappropriate to develop these lands for residential purposes and the costs are prohibitive. Fletcher Platt, November 2, 1979.

41. In the event that parcels 42, 65 - 69, 72, 88 - 92, 100 - 105 are developed for dense residential purposes, site retention

and off site drainage improvements would be required. Fletcher Platt, November 2, 1979.

42. Parcels #12 through #18 and #20, if developed for dense residential development, would require the construction of local retention facilities and off site drainage improvements, at great cost, since existing drainage is inadequate and the parcels are subject to stream over flow and a seasonal high water table. Fletcher Platt, November 2, 1979.

43. Foundation and site preparation costs for housing are affected by soil and water conditions as well as general site characteristics. Salzman 12 December 1979, page 2.

44. Modern engineering techniques make possible the development of virtually any site, regardless of existing conditions, however, the greater the degree of engineering sophistication and site alteration required to achieve development, the greater the cost to develop. Salzman, 12 December 1979, page 2.

45. Poor surface drainage results from topographic constraints and relatively impermeable near surface soils. Salzman, 12 December 1979, page 2.

46. Topographic depressions and level slopes tend to trap and retard surface run off originating from off site as well as on site. Salzman, 12 December 1979, page 2.

47. When the near surface soils are relatively impermeable, thus permitting negligible and very shallow surface

water infiltration, a marshy or wet surface condition will exist. Salzman, 12 December 1979, page 3.

48. Under conditions where poor surface drainage exists, in order to minimize floor dampness and flood potential, to protect amenities from damage due to frost heave, and to alleviate wet surface conditions, sites with poor surface drainage should be filled with engineered backfill after the removal of any soft soils. In addition, a subdrainage system, consisting of porous pipe, french drains or open trenches may also be necessary to control water perched in the engineered backfill and dewatering for foundation excavations would also be necessary. Salzman, 12 December 1979, page 3.

49. The above site preparations are prerequisites for site develop in those areas where poor surface drainage exists and are in addition to normal development costs and will add substantially to the cost of site development. Salzman, 12 December, 1979, page 3, and William D. Kirk.

50. High ground water tables occur as a result of low topography, artesian conditions, in recharge zones, or other causes. Salzman, 12 December 1979, page 3.

51. Perched water tables occur due to the presence of an impermeable stratum beneath a permeable material, thus trapping water above the impermeable material at a level higher than the water level in deeper layers. Salzman, 12 December 1979, page 3.

52. Where high ground water table or perched groundwater table exists, conventional spread footing foundations may be utilized, but only if preceeded by dewatering of excavations. Salzman, 12 December 1979, page 3.

53. Where high ground water table or perched ground water table exists, slap-on-grade construction will be adversely effected due to dampness and potential local flooding therefore, raising of grade with engineered fill and permanent dewatering systems will be needed. Salzman, 12 December 1979, page 3.

54. Where high ground water table or perched ground water table exists, if basements are planned, a dewatering system will be required during construction and a permanent dewatering system will be needed after construction to maintain dryness. Salzman, 12 December 1979, page 4.

55. Where high ground water table or perched ground water table exists, the site preparations described above will add to the cost of construction and maintenance. Salzman, 12 December 1979, page 4.

56. The most common soft or weak soil in New Jersey is organic silt, which forms from the decay of vegetation in a swampy environment. Salzman, 12 December 1979, page 4.

57. Soft or weak soils have minimal bearing strength, therefore, when construction is contemplated, soft or weak soils must be removed, dewatering where needed followed by the installation of engineered compacted fill prior to the placement of conventional footings. Salzman, 12 December 1979, page 4.

58. Sites containing thicker organic soils or fills overlying the organic soils often require more sophisticated deep foundation systems or piles. Salzman, 12 December 1979, page 4.

59. Where soft or weak soils exist, the site preparation and/or deep foundation systems required for development increase the cost of construction, depending on the thickness of the organic soils. Salzman, 12 December 1979. page 4.

60. Sites which have been filled with "uncontrolled fills" usually necessitate the removal of old fill which in turn must be replaced with engineered back fill or be passed with piles. Salzman, 12 December 1979, page 4.

61. A series of field inspections, test probes, etc. were performed within the Township of Hanover to determine the reliability of the Morris County Soils Conservation Service reports, hereinafter referred to as S.C.S., made by the U.S. Dept. of Agriculture dated October 1974. The results of those field inspections substantiate the correctness and reliability of the information and data contained in the S.C.S. reports. See Exhibit #3 (being G-2 at Deposition of Salzman on January 23, 1980) and Salzman 12 December 1979, page 5. See also Appendix of Salzman Report, 12 December 1979.

62. The types of soils found within the Township of Hanover and their characteristics for construction are set forth in the exhibit entitled "Township of Hanover Soils" attached to Catlin Report of September 1979 and attached hereto as Exhibit IV.

63. The Carlisle series of soils consist of deep, nearly level, very poorly drained organic soils with the water

table at or above the surface of the ground most of the time. Salzman, 12 December 1979, page 5.

64. Development of sites with Carlisle series soils will be impeded with and incur additional costs because of poor surface drainage conditions, a high groundwater table and significant deposits of organic soils and oil fills. Salzman 12 December 1979, page 5.

65. Carlisle series soils are found on the following parcels of vacant land, See Exhibit II. Parcel Nos. 22, 48 - 56, 58, 122 and 123 in general these sites are located in the southeastern portion of the Township, in the vicinity of Morristown Airport. Salzman, 12 December 1979, page 6.

66. The Alluvial land, Biddeford, Parsippany and Preakness Soil Series exhibit conditions involving a high water table, frequent inundation, poorly drained soil; are typically marshy with ponded water and most contain thin to moderate (0 - 4') surface zones of organic or other soft soils. Salzman, 12 December 1979 page 6.

67. Development of sites with Alluvial land, Biddeford, Parsippany and Preakness soils will be impeded and have severe limitations regarding foundation support, roadways, parking, lot support and landscaping due to frequent flooding and a seasonal high ground water table. Salzman, 12 December 1979, page 6.

68. Alluvial Land, Biddeford, Parsippany and Preakness soil series are found on parcels 2, 3, 7, 18, 21, 24 - 27, 34, 45,

47, 57, 59, 61, 70, 71, 73, 74, 76, 78 - 80, 82, 83, 88 - 92, 102 - 104, 108, 109 and 114. Salzman, 12 December 1979, page 6. See Exhibit II.

69. The Boonton, Haledon, Hibernia, Minoa and Whippany soil series are characterized as having seasonably high or perched ground water tables. Salzman, 12 December 1979, page 6.

70. Sites on which Boonton, Haledon, Hibernia, Minoa and Whippany soil series are found all have seasonably high or perched ground water tables and, therefore, as a result these sites have severe to moderate limitations regarding foundation support, roadway and parking lot support, and landscaping due to the seasonal or high perched ground water tables. Salzman, 12 December 1979, page 6.

71. Sites having the Boonton, Haledon, Hibernia, Minoa and Whippany soil series are parcels 1, 4 - 6, 8 - 11, 13 - 17, 20, 23, 28, 30 - 33, 35 - 39, 42, 72, 75, 77, 84 - 87, 106, 107, 113, 117 and 124. Salzman, 12 December 1979, page 6. See Exhibit II.

72. Sites having Riverhead and Rockaway soil series have moderate limitations regarding foundation support, roadways and parking lot support and landscaping, necessitating additional costs for site development. Salzman, 12 December 1979, page 6.

73. The Riverhead and Rockaway Soil Series are to be found on parcels 65 - 69, 95 - 98, 115 and 116. Parcel No. 97 had a water table at a depth of 1'4" during the month of November when

water tables are normally low. Salzman, 12 December 1979.

74. Parcels 12, 40, 41, 43, 44, 46, 60, 62, 63, 81, 93, 94, 99, 100, 101, 105, 110 - 112 and 118 - 121 are classified as Urbanized Land and Pits, meaning that the sites have been disturbed to the extent that the natural soils can no longer be identified. As a result these parcels generally require that all uncontrolled old fills, necessitating that the old fills be removed and be replaced with controlled fills. Salzman, 12 December, 1979, page 7. See Exhibit II.

75. The types of soils located on each vacant parcel in the Township has been indexed on Exhibit V. Salzman, 12 December, 1979, Appendix B.

76. Most of the vacant sites or parcels within the Township of Hanover will require dewatering and/or filling to compensate for high ground water conditions. Salzman, 12 December, 1979, page 7.

77. Development of most of the vacant land without taking the steps set forth above will result in damage to building frames and slabs from settlement to utilities, roadways, parking lots, etc. from frost heaving and to landscaped areas from muddy conditions. Salzman.

78. The cost of remedying the conditions caused by high water tables, perched ground water table, weak soils, old fills, etc. is substantiate thereby eliminating the sites utility for least cost or low or moderate cost housing. Salzman and Kirk.

79. In addition to the restraints placed on the development of land by the elements described above, there are certain other environmental restraints, i.e. (a) stream overflow; (b) 100 year storm; (c) excessive slopes and swamplands; and (d) seasonal high water table less than 2 1/2 feet below the surface of the ground. Catlin, September 27, 1979.

80. "Stream Overflow" is defined as those areas along streams or water courses, where stream overflow is likely, more often than once in two years. More County Soils Conservation Service and Catlin, September 27, 1979.

81. Of the 1,227.40 acres of vacant land in Hanover Township 614.23 acres or over 50% fall within the category of being subject to "Stream Overflow". Catlin, September 27, 1979.

82. "100 - Year Storm" are those vacant lands within the Township that will be impacted by flood waters of a 100 year storm and the development of structures within an area impacted by a 100 year storm should be prohibited. Of the 1,227.40 acres of vacant land in Hanover Township 418.83 fall within this category. Catlin, September 27, 1979, page 4.

83. Of the 1,227.40 vacant acres approximately 298.44 acres, which represents 24.3% of all vacant land is swamp land as defined by S.C.S. Catlin, September 27, 1979, page 6.

84. "Excessive Slope" is defined as land having a grade of greater than 15%. Based upon the Township's Topography Map 20.36 acres of the 1,227.40 are thereby encumbered. Catlin, September 27, 1979, page 5.

86. Of the 1,227.40 vacant acres, some 894.53 acres are impacted by a seasonal high water table of less than 2 1/2 feet, according to S.C.S. which represents almost 73% of all vacant land. Catlin, September 27, 1979, page 6.

87. The Morris County Soil Conservation Study, denotes that some 893 acres of the 1,227.40 acres in the Township are classified as having severe limitations for the construction of foundations as a result of poor soil drainage, high water table, excessive slope, depth to bedrock rockiness and flood hazard. Catlin, September 27, 1979, page 6.

88. Of the 1,227 vacant acres 967.38 acres are environmentally impacted by one or more environmental restraint which either prohibit the utilization of the land for residential development or make it impossible to utilize the land for least cost housing because of the cost of overcoming the impact of the environmental restraint effecting the land or mitigating the effects of the development of the land on other lands is so great that the vacant acreage could never economically be developed for least cost housing or low or moderate income housing. See Exhibit VI denoting environmental restraints, etc. effecting the vacant parcels. See Catlin Exhibit VIII.

89. Of the approximately 259.62 acres not impacted by the above environmental restraints, approximately 60 acres consists of parcels that are less than 1 1/2 acres, are scattered

spot - lot parcels and are surrounded by homes having resale values between $85,000.00 and $125,000.00.

The average spot lot has sold at the rate of $70,000.00 per acre. Kirk, October, 1979 and see listing of parcels Exhibit VIII.

90. As a result, because of the smallness of these lots or parcels and the average cost per acre, the cost and the established neighborhoods where they exist prohibit their utility for least cost housing. Kirk, October 1979.

Conclusion. Although it may appear at first that there is a great deal of vacant, developable land within Hanover Township, such is not the case. Nearly all of the vacant land within the Township is severely impacted from the standpoint of development, either making it undesirable for residential development or prohibitive from the standpoint of costs to develop for least cost housing.

Hanover Township is a developed community.

ZONING MAP

EXHIBIT I

Lewis S. Goodfriend & Associates

FIGURE 1 - AREAS OF HANOVER TOWNSHIP WHICH ARE NOT RECOMMENDED FOR FURTHER RESIDENTIAL DEVELOPMENT DUE TO NOISE FROM:

MORRISTOWN MUNICIPAL AIRPORT FLIGHT OPERATIONS

TRAFFIC ON INTERSTATE HIGHWAY 287

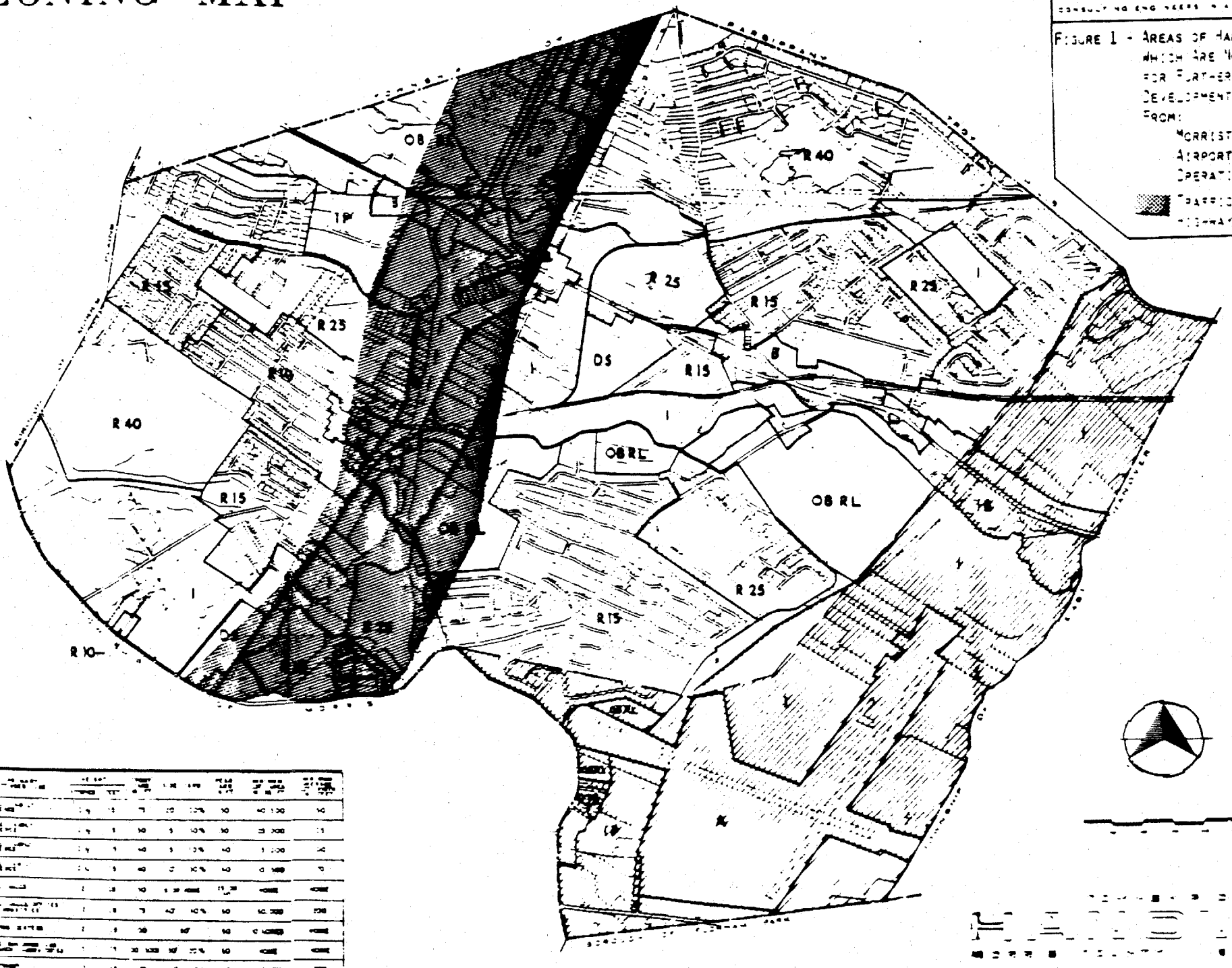

EXHIBIT III

CATLIN DATA-BASED ON MORRIS COUNTY SOILS CONSERVATION SERVICE

G.S.#2 at Depositions
Color Code:
G - Site Conditions are as mapped by Robert Catlin
B - Site Conditions better than as mapped by Robert Catlin
R - Site Conditions worse than as mapped by Robert Catlin

ROBE NO.			0 - 2½' SCS High GW	SCS Frequent Stream Overflow	SCS Severe Restric.	Photos and Topo Swamp	SCS Soil Type	Remarks:
'-1 ·50 .ot 1, Blk 6201	X	G	X	X	X		Pk/MS/ Cm.	Some marshy areas and sluggish small streams; Catlin transfer okay; Probe agrees with gw.
'-2 :51 .ot 1A, Blk 5801	X	B	X	X	X	X	Ms/Cm	Catlin transfer okay; Probe did not encounter gw to 2'4"; Probe did not indicate swamp deposit; no ponded water; soil samples do not necessarily indicate seasonally high gw; Deeper probe needed.
'-3 :54 .ot 16, Blk 6301	X	R	X	X	X		Pk/Ms/ Cm	Catlin transfer okay; Probe agrees with gw level; Additional Restriction-poor surface drainage-ponded and wet surface conditions seen after rain; swamp deposit; note rotted fallen trees.
'-4 :18 .ot 6, Blk 8001	X	G	X		X		Hob/Pk	Catlin transfer okay; P-4 plots just outside stream overflow zone; Hob soils are not subject to flooding; Pk soils are subject to flooding; Probe agrees with gw level.
'-5 :80 .ot 1, Blk 3401	X	G	X	X	X	X	Pk/Bd	Catlin transfer okay; Probe did not encounter gw to 2'0", however brown and gray soil suggests a seasonally high water table at other times of year; Surface conditions are very wet and marshy; Possible swamp-edge deposit; Deeper probe may be needed.
'-6 :80 .ot 1, Blk 3401	X	G	X	X	X	X	Bd	Catlin transfer okay; Probe agrees with gw level; Surface conditions very wet and marshy; swamp vegetation noted; swamp deposit; Great Blue Heron observed on site.
'-7 :77, Lot 7, Blk 3002 Lot 17, Blk 3001	X	R	X	X	X		Pk/Wib	Catlin transfer okay; Probe did not encounter gw to 2'0"; Deeper probe may be needed; Motted soil suggests that gw may be higher during other times of year; Surface is wet and mudd, after rain; Additional restriction-considerable filling has been done on the south end of the site; A large pond (250' x 50') of undetermined depth has been excavated; the excavated material has been stockpiled in 2 large mounds about 30' high; Other areas have been moderately filled.

PROBE NO.	SCS High GW	SCS Frequent Stream Overflow	SCS Severe Restrict.	Photos and Topo Swamp	SCS Soil Type	Remarks:
P-8 X R #109 Lot 9, Blk 2104		X	X		Ae	Catlin transfer not okay; Ae soils have seasonal high water table (2-4'); Probe encountered gw at 2'0"; Probe encountered organic soils 2'4"-4'0"-organics may be deeper; Probe refused on roots; Stream nearby (40-50' wide, about 4' deep)
P-9 X R #97 Lot 8, Blk 0902			X		RpC	Catlin transfer not okay; Rpc soils have only moderate restrictions; Probe encountered gw at 1'4"; Additional restrictions-surface conditions are marshy
P-10 X R X #47 Lot 7, Blk 6001		X	X		Ms/Bd/Pk	Catlin transfer okay; Probe agrees with gw level; Additional restrictions-some ponded water on surface. Also gas lines running N-S on or near the west side of the site; Site is 3-4' lower than road; Surface soils very soft; Site is filled 3-4' on east side.
P-11 X R X #34, Lot 11, Blk 8901 Lot 6, Blk 9001			X		HaB/BoC/Pk	Probe plots on HaB-BuC border; Assume HaB soils; Catlin transfer okay; Probe did not encounter gw to 3'10"; Surface soils (organic) suggest seasonally high water table at other times of year; Additional restrictions-site slopes down from road to 8-10' below road where surface is moist with reed type vegetation.
P-12 X R X #89 Lot 1, Blk 2903		X	X		Pk	Catlin transfer okay; Probe agrees with gw level; Additional restrictions-wet surface conditions-ponded water visible-reed vegetation; water at 1'.
P-13 X R X #34, Lot 11, Blk 8901 Lot 6, Blk 9001		X	X		Pk/HaB	Probe plots on the border of HaB-Pk soils; Assume Pk. Catlin transfer okay; Probe agrees with gw level; Additional restriction-several topographically depressed areas filled with 1"-2" of water.
P-14 X G X #83 Lot 1, Blk 3401		X	X	X	Ph	Catlin transfer okay; Probe agrees with gw level; Surface soils are swamp deposit; Site is somewhat marshy.
P-15 #51						NOT IN UNDEVELOPED AREA.
P-16 X R X #51 Lot 1A, Blk 5801		X	X		HaB Pk	Probe plots on HaB Pk border; Assume Pk soil; Catlin transfer okay; Probe did not encounter gw to 2'4"; deeper probe may be needed; Organic surface soils may indicate seasonally high water table at other times of year; Additional restrictions- site is about 3' lower than road level; ponded water ob-

OBE NO.	SCS High GW	SCS Frequent Stream Overflow	SCS Severe Restrict.	Photos and Topo Swamp	SCS Soil Type	Remarks:
-17 X R 68 ot 17, Blk 4402	COULD BE AN ISOLATED AREA					RmC/Rmb Catlin transfer okay; Additional restrictions-Probe indicates gw level to be 1'5" below surface; shallow water condition.
-18 X R 3 ot 3, Blk 3101	X		X			HaB/Ph Catlin transfer okay; Probe agrees with gw level; Additional restriction-ponded surface water.
-19 X G 119 ot 1A, Blk 0601						Va/BuB Catlin transfer okay; Industrial and office buildings surround site; Probe agrees with lack of high groundwater table.
-20 XX B/R 84 ot 10, Blk 1002	X		X		HaB/ MiB	Catlin transfer okay; Probe did not encounter gw to 3'2"; Soil samples do not necessarily indicate seasonally high gw at other times of year; Possible additional restriction-isolated concentration of boulders may indicate previous filling.
-21 X B 112 ot 22, Blk 1502	X		X		RIB	Catlin transfer okay; Probe did not encounter gw to 2'6"; Surface soils do not necessarily indicate seasonally high gw at other times of year.
-22 X R 117 ot 9, Blk 0701			X		Rpc	Catlin transfer NOT okay; RpC soils have moderate restrictions; Additional restrictions-Probe encountered gw at 0'4" below surface; Surface soils indicate border swamp conditions (Organic soils); Surface is wet at lower elevations.
-23 X R 58 ot 2, Blk 6401	X	X	X	X	Ma/Cm	Probe plots at Ma-Cm border; Assume Cm soils; Catlin transfer okay; Probe did not encounter gw to 0'8"-deeper probe is needed; Additional restrictions - site has been filled with organics, brick, blacktop, etc.
-24 X R 58 ot 2, Blk 6401	X	X	X	X	Cm	Catlin transfer okay; Probe did not encounter gw to 7'6"; Soil samples indicate a seasonally high gw table at other times of year; Swamp deposit; Additional restrictions-most of the site has been filled with stone, cement, tar paper, etc.
-25 X G 121 ot 1, Blk 3602					Ps	Catlin transfer okay; Probe did not encounter gw to 2'0"; Soils do not necessarily suggest seasonally high gw table at other times of year; Site soils can be highly variable; SCS suggests site investigation.

EXHIBIT III

PROBE NO.	SCS High GW	SCS Frequent Stream Overflow	SCS Severe Restrict.	Photos and Topo Swamp	SCS Soil Type	Remarks:
P-26 X R =36					BoB/ BuC	Catlin transfer okay; Additional Restriction-Probe encountered gw at 2'1" below surface
P-27 X R =51 Lot 9, Blk 4001	X		X		HaB	Catlin transfer okay; Probe did NOT encounter gw to 1'6"-deeper probe may be needed; Additional restrictions-ponded water noted after rain; Fill (2-3') dumped on southwest border of site.

EXHIBIT IV

TOWNSHIP OF HANOVER SOILS

Map Symbol	Soil Names	Depth to Bed Rock	Depth to Seasonal High Water Table	Slopes	Erosion Potential K - Factor	Natural Drainage: Internal Drainage	Natural Drainage: Permability	Natural Drainage: Stream Overflow	Suitability For Construction W. Basement
Ae	Alluvial Land	More Than 6'	1' - 4'	0 - 3	-	Mod. well to poor	Moderate	Frequent	Severe (stream) r-flow hazard
Am	Alluvial Land Wet	More Than 6'	0	0 - 3	-	Very Poor	Moderate	Frequent	Severe flooding, seasonal high water table at surface
Bd	Biddeford (Muck)	More Than 10'	0	0-3	-	Very Poor	Slow	Frequent	Severe flooding, seasonal high water table at surface)
BoB BoC	Boonton (Gravelly Loam)	More Than 6'	1 1 2'-6'	3 - 8 8 - 15	0.43	Well & Mod. Well	Slow	None	Moderate seasonal high water perched over Fragipan at 1 1/2 to 2 1/2' leteral seepage likely)
Cm	Carlisle (Muck)	More Than 10'	0	0 - 3	-	Very Poor	Rapid	Frequent	Severe Seasonal high water table at surfac frequent flooding along streams.
HaB HaC	Haledon (Silt Loam)	More Than 5'	1 1 -1 1 2'	3 - 8 8 - 15	0.37	Poor	Moderate to Slow	None	Severe Seasonal hig water perched at 1 2 to 1 1 2'

	(Stony Loam)	10'							water level at 1/2' - 1 1/2'
Ma	Made Land (Sanitary Land Fill)	Too variable to rate							Severe Uneven settling, subject to gas formation.
MnB	Minoa (Silt Loam)	More Than 10'	1/2'-1 1/2'	3 - 8	0.43	Poor	Moderately slow to Moderate	None	Moderate Seasonal high water table at 1/2' - 1 1/2'
Ms	Muck (muck shallow over clay)	More Than 10'	At Surface	0 - 2	-	-	Rapid in org. material	Frequent	Severe Seasonal high water table, at surface frequent flooding low bearing, severe subsidence.
OtD	Otisville (Gravelly Loam Sand)	More Than 10'	More Than 10'	15-25	0.17	Excessive	Rapid	None	Severe Steep slopes.
Ph Pk	Parsippany Silt Loam, Sandy Loam substratum	More Than 10'	0 - 1	0 - 3	0.43	Poor	Slow	Frequent	Severe Frequent flooding seasonal water table 0 - 1.
PtA PtB	Popton Sandy Loam	More Than 10'	1/2-1 1/2	0 - 3 3 - 8	0.24	Poor	Moderately Rapid	Seldom	Severe Seasonal high water table 1/2' - 1 1/2' foundation drains needed
PvA	Preakness	More Than 6'	0 - 1	0 - 4	0.28	Poor	Moderately Rapid	Frequent	Severe Seasonal high water 0 - 1' frequent stream over flow.
Ps	Pits	To variable to estimate							
RlB	Ridgebury (Extremely Stony Loam)	More Than 10'	0 - 1	3 - 10	0.24	Poor	Slow	Seldom	Severe Seasonal high water table 0 - excessive stone.

mB mC	Riverhead Gravelly Sandy Loam	More Than 10'	More Than 10'	3 - 8 8 - 15	0.20	Well	Moderately Rapid	None	Slight Moderate Strong Slopes.
pC rD	Rockaway Very Stony Sandy Loam	More Than 10'	1 1/2 - 10 Short Period	(No inf.)	0.17	Moderatly	Slow	None	Moderate Strong Slopes Very Stony Extremely Stony
Ja Jb Jh Jp Uw UrC UrD	Urban Land an Urban Land Complexes	To variable to rate							
Whb W1A W1B	Whippany Silt Loam, Sandy Loam substratum	More Than 10'	1/2 - 1/2	3 - 8 0 - 3 3 - 8	0.43	Poor	Slow	Seldom	Severe Seasonal high water table 1/2' - 1 2'.

FROM: Soil Conservation Service, USDA cooperation with Rutgers University.

APPENDIX B - SITE CONDITIONS

SUMMARY

The Soil Conservation Service soil types and associated site conditions of all of the parcels in question are summarized below. Sites not field investigated, but mapped as the same soil type as sites visited in the field, are considered to display similar site conditions as observed in the field. Where more than one soil type per site was referenced, the poorer condition was considered.

Site No.	Carlisle, etc.	Alluvial Land, etc.	Boonton, Etc.	Riverhead, etc.	Urbanized Land, etc.	Poor Surface Drainage	High Groundwater	Weak Soils	Old Fills
1			x				x		
2		x				x	x		
3		x				x	x		
4			x				x		
5			x				x		
6			x				x		
7		x				x	x		
8			x				x		
9			x				x		
10			x				x		
11			x				x		
12					x				x
13			x				x		
14			x				x		
15			x				x		

Site No.	Carlisle, etc.	Alluvial Land, etc.	Boonton, Etc.	Riverhead, etc.	Urbanized Land, etc.	Poor Surface Drainage	High Groundwater	Weak Soils	Old Fills
16			x				x		
17			x				x		
18		x				x	x		
19	NO PARCEL								
20			x				x		
21		x				x	x		
22	x					x	x	x	
24		x				x	x		
25		x				x	x		
26		x				x	x		
27		x				x	x		
28			x				x		
29	NO PARCEL								
30			x				x		
31			x				x		
32			x				x		
33			x				x		
34		x				x	x		
35			x				x		
36			x				x		
37			x				x		
38			x				x		
39			x				x		
40					x				x

Site No.	Carlisle, etc.	Alluvial Land, etc.	Boonton, Etc.	Riverhead, etc.	Urbanized Land, etc.	Poor Surface Drainage	High Groundwater	Weak Soils	Old Fills
41					x				x
42			x				x		
43					x				x
44					x				x
45		x				x	x		
46					x				x
47		x				x	x		
48	x					x	x	x	
49	x					x	x	x	
50	x					x	x		
51	x					x		x	
52	x					x	x	x	
53	x					x	x	x	
54	x					x	x		
55	x					x	x	x	
56	x					x	x	x	
57		x				x	x		
58	x					x		x	x
59		x				x	x		
60					x				x
61		x				x	x		
62					x				x
63					x				x
64	NO PARCEL								

Site NO.	Carlisle, etc.	Alluvial Land, etc.	Boonton, Etc.	Riverhead, etc.	Urbanized Land, etc.	Poor Surface Drainage	High Groundwater	Weak Soils	Old Fills	
65					x					
66					x					
66					x					
67					x					
68					x					
69					x					
70			x				x	x		
71			x				x	x		
72				x				x		
73			x				x	x		
74			x				x	x		
75				x				x		
76			x				x	x		
77				x				x		x
78			x				x	x		
79			x				x	x		
80			x				x	x	x	
81						x				x
82			x				x	x		
83			x				x	x		
84				x				x		
85				x				x		

Site No.	Carlisle, etc.	Alluvial Land, etc.	Boonton, Etc.	Riverhead, etc.	Urbanized Land, etc.	Poor Surface Drainage	High Groundwater	Weak Soils	"Old Fills
86			x				x		
87			x				x		
88		x				x	x		
89		x				x	x		
90		x				x	x		
91		x				x	x		
92		x				x	x		
93					x				x
94					x				x
95				x					
96				x					
97				x			x		
98				x					
99					x				x
100					x				x
101					x				x
102		x				x	x		
103		x				x	x		
104		x				x	x		
105					x				x
106			x				x		
107			x				x		
108		x				x	x		
109		x				x	x		
110					x				x
111					x				x

Site No.	Carlisle, etc.	Alluvial Land, etc.	Boonton, Etc.	Riverhead, etc.	Urbanized Land, etc.	Poor Surface Drainage	High Groundwater	Weak Soils	Old Fills
112					x				x
113			x				x		
114		x				x	x		
115				x					
116				x					
117			x			x	x		
118					x				x
119					x				x
120					x				x
121					x				x
122	x					x	x	x	
123	x					x	x	x	x
124			x				x		

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS (See classification last page)	COMMENTS
3101 - 14	1	1, 3, 4, 7	Subject to occasional overflow of the streams and a high ground water table. Extensive local storm water retention facilities and off site improvements necessary to develop.
3101 - 12A	2	1, 3, 4, 7	"
3101 - 12	3	1, 3, 4, 7	"
9304 - 2	4	1, 4, 7	"
8203 - 2	5	4, 7	"
9304 - 7	6	1, 4, 7	"
3102 - 1	7	1, 3, 4, 7	---
9201 - 5, 6, 7 and 8	8	1, 4, 7	---
9201 - 15	9	4, 7	---
9303 - 19	10	4, 7	---
9202 - 14	11	4, 7	
8305 - 2	12	1, 4, 7, 8	Subject to seasonal stream overflow conditions and seasonal highwater table. Unrestriction portion of parcel too small and isolated to be cost effective.
8305 - 6	13	1, 4, 7, 8	"
8305 - 8	14	4 , 7	Subject to seasonal stream overflow and conditions and seasonal high watertable.
8305 - 7	15	4, 7, 8	Subject to seasonal stream overflow conditions and seasonal high water table. Unrestricted portion of parcel too small and isolated to be cost effective.

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
8104 - 7	15	4, 7, 8	Subject to seasonal stream overflow conditions and seasonal high water table. Unrestricted portion of parcel too small and isolated to be cost effective.
8104 - 1	16	4, 7, 8	Subject to seasonal stream overflow conditions and seasonal high water table.
8401 - 3	17	1, 4, 7	"
8001 - 6	18	1, 4, 7	"
8001 - 6	19	1, 4, 7	---
7703 - 29	20	4, 7	Subject to seasonal stream overflow conditions and seasonal high water table.
7002 - 21	21	1, 4	---
7201 - 1	22	1, 2, 3, 4, 6, 7	---
7702 - 6, 8	23	4, 7, 8	---
7601 - 44	24	4, 7	---
7601 - 42	25	1, 4, 7	---
7601 - 40A, 41	26	1, 4, 7	---
8701 - 1	27	1, 4, 7, 8	Unrestricted portion of parcel too small and isolated to be cost effective.
8701-- 41	28	1, 4, 7, 8	"
---	29	---	Number not assigned.
8503 - 17	30	1, 7, 8	---
8901 - 3	31	4, 7, 8	Subject to flooding by Malapardis Brook, seasona high water table, increas run off from development would adversely impact

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
			Whippany Center. Unrestricted portion of parcel too small and isolated to be cost effective.
8901 - 7	32	4, 7	Subject to flooding by Malapardis Brook seasonal high water table, increased run off from development would adversely impact Whippany Center.
8901 - 9	33	4, 7	"
8901 - 11 & 9001 - 6	34	1, 2, 4, 5, 6, 7	"
4001 - 14	35	--	Increased run off from development would adversely impact Whippany Center.
4001 - 9	36	1, 4, 7	"
4001 - 5	37	4, 7, 8	"
4001 - 10	38	4, 7	"
4101 - 7	39	2, 5	---
7502 - 16	40	5	---
75-2 - 21, 22, 22A, 23	41	2, 4, 5, 7, 8	---
4301 - 5	42	4, 7	---
7301 - 38A	43	1, 4, 7	Low marsh land, within flood plain established by Hanover Twp.
7301 - 9A	44	1, 2, 3, 4, 7	"
6601 - 7	45	1, 3, 4, 6, 7	"
6201 - 1	46	1, 2, 3, 4, 7	"
6001 - 7	47	1, 2, 3, 4, 6, 7	"
6202 - 2	48	1, 2, 3, 4, 6, 7	"

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
6202 - 2	49	1, 2, 3, 4, 6, 7	"
6201 - 1	50	1, 2, 3, 4, 5, 7	"
5801 - 1A	51	1, 2, 3, 4, 6, 7	"
6301 - 17	52	1, 2, 3, 4, 6, 7	"
6301 - 16	53	1, 2, 3, 4, 6, 7	"
6301 - 16	54	1, 2, 3, 4, 6, 7	"
6301 - 15	55	1, 2, 3, 4, 6, 7	"
6301 - 14	56	1, 2, 3, 4, 6, 7	Low marsh, within flood plain established by Hanover Township.
5801 - 6	57	4, 7	"
6401 - 2	58	1, 2, 3, 4, 6, 7	"
5302 - 1	59	1, 3, 4, 5, 7, 8	---
4704 - 8	60	1, 3, 4, 7, 8	Unrestricted portion of parcel too small and isolated to be cost effective.
6301 - 14, 15, 16, 17	61	1, 2, 4, 7	---
4701 - 30	62	3, 8	---
2005 - 12	63	1, 3, 4, 7	---
4402 - 14	64	4, 7	---
4301 - 7	65	4, 7	---
4402 - 14	66	4, 5, 7	---
4402 - 15	67	4, 7	---
4407 - 17	68	4, 5, 7	---
4402 - 17	69	4, 7	---
3901 - 26	70	1, 4, 7	---
3901 - 27	71	1, 4, 7	---

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
3901 - 25, 26	72	1, 4, 7	---
3001 - 7	73	1, 2, 3, 4, 7	---
3001 - 7	74	1, 2, 3, 4, 7	---
3001 - 15	75	3, 4, 7	Seasonal stream over flow, high ground water condition no sanitary sewers, require larage water retention facilities and significant fill or diking to protect structures
3001 - 9	76	1, 3, 4, 7	No sanitary sewers, require large water retention facilities and significant fill or diking to protect structures.
3002 - 7 & 3001 - 17	77	1, 3, 4, 7	Seasonal stream over flow high ground water condition no sanitary sewers, requires large water retention facilities and significant fill or diking to protect structures
3201 - 3	78	1, 3, 4, 6, 7	Swamp land, subject to frequent stream over flows, high water table, lies within flood plain established by Hanover Twp., no sanitary sewers, requires large water retention facilities and significant fill or diking to protect structures.
3201 - 2	79	1, 3, 4, 6, 7	"
3201 - 1	80	1, 2, 3, 4, 6, 7	"
3301 - 4	81	1, 2, 3, 4, 6, 7	Swamp land, subject to frequent stream over flows, high water table, lies within flood plain established by Hanover Twp., no sanitary sewers, requires large water retention facilities and significant fill or diking to protect structures.

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENTAL & COST DEVELOPMENT RESTRICTIONS	COMMENTS
3401 - 2	82	1, 2, 3, 4, 6, 7	"
3401 - 1	83	1, 2, 4, 6, 7	"
1002 - 10	84	4, 7	No sanitary sewers, requires large water retention facilities and significant fill or diking to protect structures.
1002 - 9	85	1, 4, 7	"
1102 - 1, 2, 3, 4, 5	86	1, 3, 4, 7	"
2901 - 1	87	3	"
2903 - 22	88	1, 3, 4, 7	"
2903 - 23	89	1, 3, 4, 7	"
2904 - 1	90	1, 3, 4, 7	"
2602 - 11	91	1, 3, 4, 7	"
2602 - 10	92	1, 3, 4, 7	"
0101 - 12	93	4, 7	"
0101 - 13	94	4	"
0903 - 10, 11, 12, 13	95	7	No sanitary sewers, requires large water retention facilities and significant fill or diking to protect structures
0902 - 6, 7	96	7	"
0902 - 8	98	7	"
0901 - 7	98	7	"
1204 - 14	99	8	"
2601 - 23	100	1, 3, 4, 7, 8	---
2701 - 8	101	3, 4, 7, 8	Unrestricted portion too small and isolated to be cost effective.
2601 - 14	102	3, 4, 7	---

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENTAL & COST DEVELOPMENT RESTRICTIONS	COMMENTS
2601 - 4	103	1, 3, 4, 7	---
2504 - 3	104	1, 3, 4, 7	---
2503 - 6	105	1, 3, 4, 7	---
2301 - 3	106	3, 4, 7	Requires local storm water retention facilities and major drainage improvements to protect development.
2102 - 7	107	1, 3, 4, 7	"
2103 - 3	108	1, 3, 4, 7	"
2104 - 9	109	1, 2, 3, 7, 8	Requires local storm water retention facilities and major drainage improvements to protect development within flood plain established by Hanover Twp.
1702 - 10	110	2, 4, 7	Requires local storm water retention facilities and major drainage improvements to protect development.
1702 - 1, 12	111	1, 2, 4, 7	Requires local storm water retention facilities and major drainage improvements to protect development, within flood plain established by Hanover Twp.
1502 - 22	112	4, 7	Requires local storm water retention facilities and major drainage improvements to protect development.
1701 - 13	113	1, 4, 7	Requires local storm water retention facilities and major improvements to protect development, within flood plain established by Hanover Twp.
1603 - 5	114	1, 4, 7	Requires local storm water retention facilities and major drainage improvements to protect development.

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENTAL & COST DEVELOPMENT RESTRICTIONS	COMMENTS
0601 - 6	115	5, 7	"
0601 - 3	116	5, 7	"
0701	117	5, 7	"
0701 - 15	118	5, 7, 8	Requires local storm water retention facilities and major drainage improvements to protect development, unrestricted portion too small and isolated to develop.
0601 - 1A	119	4, 7	Requires local storm water retention facilities and major drainage improvements to protect development.
1603 - 1	120	--	"
0601 - 1	121	4, 5	Requires local storm water retention facilities and major drainage improvements to protect development. Ground elevation 30 feet below surrounding land.
6401 - 13	122	1, 2, 3, 4, 6, 7	Low marshland, within flood plain established by Hanover Twp.
6401 - 2A	123	1, 2, 3, 4, 6, 7	---
8701 - 30	124	1, 4, 7, 8	Unrestricted portion too small and isolated to be cost effective.
101 - 5	125	8	"
701 - 2	126	8	---
301 - 5A	127	8	---
301 - 10	128	8	---
301 - 14	129	8	---
303 - 5	130	8	---
902 - 11, 12, 13, 14, 15, 16, 17, 18	131	8	---

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
902 - 57, 58, 59, 60, 61, 62	132	8	---
1201 - 1, 2, 3, 4	133	8	---
1204 - 7B	134	8	---
1204 - 14A	135	8	---
1204 - 18	136	8	---
1204 - 19	137	8	Unrestricted portion too small and isolated to be cost effective.
1302 - 20	138	8	---
1303 - 13	139	8	---
1304 - 1	140	8	---
1306 - 10	41	8	---
1307 - 17, 18	142	8	---
1311 - 12A, B	143	8	---
1311 - 20, 21	144	8	---
1402 - 7A	145	8	---
1402 - 8	146	8	---
1501 - 1A	147	8	---
1501 - 17A	148	8	---
1502 - 2	149	8	---
1502 - 2A	150	8	---
1502 - 22	151	8	---
1801 - 2	151	8	---
'101 - 7	153	8	---
'301 - 8	154	8	---
'301 - 12	155	8	---

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
2501 - 9	156	8	---
2701 - 23	157	8	Unrestricted portion too small and isolated to be cost effective.
3501 - 5	158	8	---
3501 - 10	159	8	---
3501 - 11	160	8	---
3503 - 37	161	8	---
3503 - 28	162	8	---
4204 - 8	163	8	---
4601 - 31	164	8	---
4601 - 33	165	8	---
4601 - 34	166	8	---
4701 - 26	167	8	---
4701 - 27	168	8	---
4704 - 5	169	8	---
4704 - 6	170	8	---
4704 - 7	171	8	---
4901 - 2	172	8	Unrestricted portion too small and isolated to be cost effective.
6001 - 1	173	8	---
6001 - 3	174	8	Unrestricted portion too small and isolated to be cost effective.
6801 - 2	175	8	"
7501 - 2	176	8	---
7703 - 32C	177	8	Unrestricted portion too small and isolated to be cost effective.

EXHIBIT VI

TAX MAP BLOCK & LOT #	PARCEL # EXHIBIT II	ENVIRONMENT & COST DEVELOPMENT RESTRICTIONS	COMMENTS
----	178	----	No number
8601 - 7	179	8	---
8803 - 6A	180	8	---
8803 - 10	181	8	---
8901 - 8	182	8	---
8901 - 11	183	8	Unrestricted portion too small and isolated to be cost effective.
8901 - 32	184	8	"
8901 - 6	185	8	"

Category #	Classification
1	Frequent stream over flow.
2	100 year storm.
3	Noise impacted areas - sound levels greater than 60 dB(A).
4	Seasonal high water table.
5	Slopes of 15% or greater.
6	Swamplands.
7	Severe restriction on basement construction.
8	Cost restriction due to small size and isolated nature of parcel.

EXHIBIT VII

ROSTER OF SPOT-LOT VACANT PARCELS

HANOVER TOWNSHIP
MORRIS COUNTY, NEW JERSEY

BLOCK	LOT
101	5(Portion)
701	2
701	15
801	5A
801	10
801	14
803	5
902	11-18
902	57-62
1201	1-4
1204	7B
1204	14
1204	14A
1204	18
1204	19(Portion)
1302	20
1303	13
1304	16
1306	10
1307	17-18
1311	12A-B
1311	20-21
1402	7A
1402	8
1501	1A
1501	17A
1502	2
1502	2A
1502	22
1801	2
2101	7
2104	9
2301	8
2301	12
2501	9
2701	8(Portion)
2701	23(Portion)
3501	5
3501	10
3501	11
3503	27
3503	28
4001	5
4204	8
4601	31
4601	33
4601	34
4701	26
4701	27
4701	30
4704	5
4704	6
4704	7
4704	8(Portion)
4901	2(Portion)
5302	1
6001	1
6001	3(Portion)
6801	2(Portion)
7501	2
7502	21
7502	22A
7702	8
7703	32C(Portion)
8104	1(Portion)
8305	2(Portion)
8305	6(Portion)
8305	7(Portion)
8503	17
8601	7
8701	1(Portion)
8701	30(Portion)
8701	41(Portion)
8803	6A
8803	10
8901	3(Portion)
8901	8
8901	11(Portion)
8901	32(Portions)
9001	6(Portions)

EXHIBIT VIII

TOWNSHIP OF HANOVER
VACANT LAND DEVELOPMENT POTENTIAL
SEPTEMBER 1, 1979

Zone	Acres Vacant	High Water Table 0'-2 1/2'	Stream Overflow	Flooded In 100 Yr. Storm	Swamplands	Over 15% Slope	Severe Restriction	Developable Land
R-10	7.68	1.24	-	-	-	.34	.99	6.11
R-15	77.91	40.24	18 18	1.65	-	4.55	42.69	26.03
R-15	197.41	124.71	40.33	20.66	3.30	1.58	130.58	48.50
R-40	126.37	81.25	37.19	-	-	-	96.10	30.89
B	15.19	1.65	-	.82	-	3.31	2.08	9.26
OS	39.41	13.80	16.53	-	-	-	22.64	14.21
OSRL	240.99	185.20	134.71	89.26	128.93	1.38	180.49	42.97
I	348.08	254.95	265.90	209.68	113.40	8.84	170.57	14.11
I-B	42.69	30.24	29.42	34.38	.49	-	34.37	0
I-P	134.56	161.25	71.97	61.98	52.32	.36	111.99	16.53
Total	1,227.40	894.53	614.23	418.43	298.44	20.36	891.75	259.62*

*This is 3.77 per cent of total Township area.