RVLS - AD - 1984 - 50

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- letter report on water issues
  - w/ resume of Robert Horden

Pgs. 13

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RULS - AD - 1984 - 50

January 13, 1984

Joseph L. Basralian, Esq.
Winne, Banta & Rizzi
25 East Salem Street
Hackensack, New Jersey 07602

Dear Mr. Basralian:

I was retained in 1981 as a consultant on water resources issues that pertain to the development of the Dobbs' site in Bedminster Township and the Township's proposed compliance with the Mt. Laurel II opinion, more specifically as described in the report of G.M. Raymond to the Court, dated January 10, 1984. My specific areas of concern are water supply, wastewater disposal, and stormwater management. The comments contained herein are based on information obtained from review of official state reports on wastewater facilities for the Upper Raritan, personal interviews, telephone calls and on-site investigations.

My review included the January 8, 1984 letter from R. T. Coppola to G. M. Raymond re: Bedminster Township's Zone Plan: Meeting its "Mt. Laurel II" Obligations and my analysis indicates a number of discrepancies, as follows:

1. The EDC plant is designed to treat 850,000 gpd. Any expansion to 1,250,000 gpd will necessitate construction of an additional facility contiguous to the present site. Mr. Coppola incorrectly states in his letter that "The EDC plant is designed to accommodate 1,250,000 gpd***." In fact the plant is designed to treat 850,000 gpd and any expansion thereof will require, at a minimum, construction of additional facilities contiguous to the present plant which can only take place after the receipt of numerous approvals from various governmental agencies.

2. The current allocation of the EDC plant is as follows:

Hills Development:	800,000 gpd
Pluckemin Village:	27,500 gpd
City Federal :	22,500 gpd
	850,000 gpd

3. The actual needs for the Hills' development will probably be higher than the aforementioned 800,000 gpd. For example, if we assume 240 gpd/DU, the expected effluent generation at build-out would be as follows:

Bedminster:	1287 DU at 240 gpd/DU =	308,880 gpd
Bernards:	1913 DU at 240 gpd/DU =	459,120 gpd
Commercial:	350,000 $ft.^2$ at 0.125 $gpd/ft.^2$ =	43,750 gpd
	Total	811,750 gpd

Note that the effluent generation value for Bernards is on the low side if the type of housing is expected to be single family. The usual estimator for single family is 360 gpd/DU. In any case, the estimated effluent generation of 811,750 gpd from the Hills' development is clearly in excess of 800,000 gpd.

4. It is unclear in the Coppola letter of January 8, 1984 how the sewerage treatment needs for the EDC franchise area is expected to be 858,488 gpd, especially when one includes sites I, J, and L within the franchise area in addition to the Hills site on site K. It is worth noting that no attempt was made to disaggregate the 858,488 gpd estimate in the Coppola letter.

5. The 27,500 gpd residual reserved for Pluckemin is already earmarked for existing residential and commercial units within the Pluckemin area. Accordingly, the expectation of sewering Site L to provide 177 housing units is unrealistic as these units alone would require 42,500 gpd.

6. The Bedminster/Far Hills (BFH) plant had an average flow of 155,000 gpd in 1983 which reflects the essentially zero flows of AT&T on the weekend. Using this average in itself is misleading since the average 5-day average flow to the BFH plant is 190,000 gpd. Therefore, the presumed "surplus" of 55,000 gpd in the Coppola letter of January 8, 1984 is really only 10,000 gpd. However, the 30-day average flow to the plant was 199,700 and 204,400 gpd in March and April of 1983, respectively. These high 30-day average flows reflect infiltration/inflow problems in the Far Hills system.

The 5-day average flow from AT&T varies from 70,000 to 110,000 gpd. Therefore, it is unrealistic to expect that AT&T can release its "excess capacity" as such excess capacity does not exist.

7. a) In conclusion, it is apparent that the Bedminster plant is at or near its design capacity of 200,000 gpd. Any additional flow coming into the plant would necessitate expansion.

b) It is unclear how the EDC plant can accept additional effluent beyond the current allocation of 850,000 gpd for Hills, Pluckemin and City Federal without the construction of additional facilities on land contiguous to the present site.

c) In my opinion, there is inadequate capacity within the BHF and EDC plants to accommodate the wastewater from any further development beyond that which is already allocated.

Very truly yours,

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Dr. Robert M. Hordon is an Associate Professor, Department of Geography, Rutgers University, New Brunswick, New Jersey.

He has a Bachelor Degree (1959) from Brooklyn College and a Masters and Ph.D. (1965, 1970) from Columbia University.

Dr. Hordon is a member of several professional societies including:

- American Association for the Advancement of Science
- American Geographical Society
- American Geophysical Union - Hydrology Section
- American Water Resources Association
- Association of American Geographers
- Society of Sigma Xi
- University Seminar on Water Resources, Columbia University

And has held positions in the following professional organizations:

- President-Elect and President, New Jersey Section, American Water Resources Association, 1972-74.
- Secretary-Treasurer, Vice-President, and President, Middle States Division of the Association of American Geographers 1976-78.
- Rutgers University representative to the Inter-Agency Advisory Group to the Statewide Comprehensive Water Supply Master Plan, 1978-79.

Dr. Hordon has served as consultant on several governmental projects. Representative water resources planning work includes:

- Havens & Emerson, Inc., New Jersey
- Mendham Township, New Jersey
- Round Valley, Inc.
- State of New Jersey, Department of Community Affairs
- State of New Jersey, Division of Water Resources

- Sutton Construction Co., Inc., New Jersey
- U.S. Army Corps of Engineers, New York District
- U.S. Department of Agriculture

ROBERT M. HORDON

ROBERT M. HORDON is a faculty member in the Department of Geography at Rutgers University, New Brunswick, New Jersey. His teaching responsibilities include undergraduate and graduate courses in physical geography, land use systems, water resources management, and fluvial processes. Dr. Hordon also is a consultant in the areas of environmental management and water resources management.

Dr. Hordon has been a participant in two water research projects sponsored by the Office of Water Resources Research (now called the Office of Water Resources and Technology) of the U.S. Department of the Interior. The first project concerned the development of a simulation model for the water supply networks of the New York-New Jersey metropolitan area. The same region (with all of its associated complexity) was used as a case study for an empirically-derived water quality simulation model. In both projects, Dr. Hordon was responsible for the acquisition, storage and retrieval of the pertinent hydrologic and geologic data.

Another study, sponsored by the Center for Urban Policy Research of Rutgers University, concerned an environmental assessment of a large housing development proposed for a site in Mahwah, New Jersey. Both on-site aspects and regional issues of water supply and wastewater disposal were considered.

Dr. Hordon was a consultant to the Special Studies Branch of the Northeastern Water Supply Study (NEWS) of the U.S. Army Corps of Engineers in New York. He prepared a report on water supply agency interconnections in northern New Jersey. Additional consulting experiences include participation in a Natural Resources Inventory (NRI) for Chatham Township, New Jersey and the preparation of a draft NRI sourcebook for the Institute of Environmental Studies at Rutgers University. The latter work was sponsored by the Department of Community Affairs in Trenton.

Academic degrees include a B.A. from Brooklyn College and an M.A. and Ph.D in Geography from Columbia University. He has authored a number of technical reports and journal articles. Recently, he was President of the New Jersey Section of the American Water Resources Association. Dr. Hordon is a member of the Association of American Geographers, American Geophysical Union, American Geographical Society and Sigma XI.

PUBLICATIONS

1. Articles in The Encyclopedia of Atmospheric Sciences and Astrogeology, Encyclopedia of Earth Science Series, Vol. II, edited by R.W. Fairbridge, Reinhold Publishing Corporation, New York, 1967:

   "Evapotranspiration," pp. 372-373
   "Icelandic Low," pp. 474-475
   "North American High," pp. 689-690
   "Pacific High (Hawaiian High)," pp. 722-723
   "Siberian High (Asiatic High)," pp. 863-865

2. "The Response of the Northeastern New Jersey Water Transfer Network to the 1962-1966 Drought," Proceedings, 4th Annual Meeting of the American Water Resources Association, Nov. 18-22, 1968, New York City, pp. 500-510.

3. Benefits from Integrated Water Management in Urban Areas -- The Case of the New York Metropolitan Region, A Report submitted to the Office of Water Resources Research, U.S. Department of Interior (Grant No. 14-01-0001-1583), April 1969. Joint authors: L. Zobler, G.W. Carey, M.R. Greenberg and R.M. Hordon.

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5. "A Geographical Systems Analysis of the Water Supply Networks of the New York Metropolitan Region," The Geographical Review, Vol. 61, No. 3 (July 1971), pp. 339-354. Joint authors: M.R. Greenberg, L. Zobler, G.W. Carey and R.M. Hordon.

6. Urbanization, Water Pollution, and Public Policy. Center for Urban Policy Research, Rutgers University, April 1972, 214 pp. Joint authors: G.W. Carey, L. Zobler, M.R. Greenberg and R.M. Hordon.

7. "Changing Watersheds in Metropolitan Areas: A Statistical Analysis of Selected Basins in New Jersey," Proceedings, National Symposium on Watersheds in Transition, American Water Resources Association, Fort Collins, Colorado, June 19-22, 1972, pp. 394-399.

8. Articles in The Encyclopedia of Geochemistry and Environmental Sciences, Encyclopedia of Earth Science Series, Vol. 1VA, R.W. Fairbridge, (ed.), Van Nostrand Reinhold Company, New York, 1972:

   "Hydrologic Cycle," pp. 515-519
   "Water Balance," pp. 1248-1252

9. "Water Quality in a Polluted Estuary: A Preliminary Analysis of the Arthur Kill," Proceedings, 13th Annual Meeting, Middle States Division, Association of American Geographers, Geneseo, New York, October 20-21, 1972, Vol. 6, May 1973, pp. 29-36. Joint authors: M.R. Greenberg and R.M. Hordon.

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11. "An Evaluation of Water Quality Information: A Case Study of Streams in Metropolitan New Jersey," Transactions, Illinois State Academy of Science, Vol. 66, Nos. 3-4, 1973, pp. 105-114.

12. "Water Trends in New Jersey," in New Jersey Trends, T.P. Norman, (ed.), Institute for Environmental Studies, Rutgers University, 1974, pp. 213-234. Joint authors: M.R. Greenberg and R.M. Hordon.

13. "Environmental Impact Statements: Some Annoying Questions," Journal of the American Institute of Planners, Vol. 40, No. 3, 1974, pp. 164-175. Joint authors: M.R. Greenberg and R.M. Hordon.

14. "Water Quality Monitoring and River Basin Planning: A Critique and Some Recommendations," Journal of Environmental Management, 1974, Vol. 2, pp. 319-330. Joint authors: M.R. Greenberg and R.M. Hordon.

15. "Selected Trends in Metropolitan Water Supply: A Case Study of the New York and New Jersey Metropolitan Area," Proceedings, Annual Meeting of the Association of American Geographers, Milwaukee, Wis., April 1975, Vol. 7, pp. 96-100.

16. "LOIS and LORDS - Two New Land-Use Information Systems for New Jersey," Professional Geographer, Nov. 1975, Vol. 27, No. 4, pp. 485-487.

17. Environmental Factors Which Shape Local Planning. Report to the Department of Community Affairs, State of New Jersey, Grant No. 00518, Institute for Environmental Studies, Rutgers University, 1975, 441 pp. Joint authors: L. Douglas, M.L. Granstrom, R.M. Hordon, L.G. Merrill, Jr., T.P. Norman, and A.H. Stukey.

18. "Application of Factor Analysis to Water Quality Data: The Passaic River Basin," in Urbanization and Water Quality Control, W. Whipple, Jr., (ed.), American Water Resources Association, 1975, pp. 245-251.

19. "A Geographical Systems Analysis of the Water Disposal Networks of the New York Metropolitan Region," Geographical Review, Jan. 1976, Vol. 66, pp. 32-47. Joint authors: L. Zobler, G.W. Carey, M.R. Greenberg, and R.M. Hordon.

20. "North Jersey Watersheds Management," in Field Guidebook, J.E. Brush and G.W. Carey, (eds.), Annual Meeting of the Association of American Geographers, New York City, April 1976, pp. 32-35.

21. Water Supply Planning: A Case Study and Systems Analysis. Center for Urban Policy Research, Rutgers University, 1976, 166 pp. Joint authors: M.R. Greenberg and R.M. Hordon.

22. "Factor Analysis of Water Quality Data in New Jersey: Evaluation of Alternative Rotations," Proceedings, International Geographical Congress, Moscow, USSR, Vol. 2 (Climatology, Hydrology, and Glaciology), 1976, pp. 243-245.

23. "A Test of Alternatives for Meeting Public Potable Water Requirements," Water Resources Bulletin, Aug. 1976, Vol. 12, No. 4, pp. 669-680. Joint authors: M.R. Greenberg and R.M. Hordon.

24. A Guide to the Environmental Aspects of the Local Planning Process. State of New Jersey, Department of Community Affairs, Local Planning Assistance Unit, September 1976, 196 pp. Joint authors: R.M. Hordon (Senior Editor) L.G. Merrill, Jr., and T.P. Norman, Esq.

25. Current Planning Capacity: A Practical Carrying-Capacity Approach to Land-Use Planning. Rutgers University Extension Bulletin no. 413, June 1977, 103 pp. Joint authors: G.H. Nieswand, P.J. Pizor, B.B. Chavooshian, T. Norman, R.M. Hordon, M.P. Bolan, and H.J. Goller.

26. "Water Supply as a Limiting Factor in Developing Communities: Endogenous vs. Exogenous Sources," Water Resources Bulletin, October 1977, 13(5): 933-939.

27. "Water Supply as a Limiting Factor in Developing Communities: Local vs. Regional Sources," Proceedings of the Amsterdam Symposium on the Effects of Urbanization and Industrialization on the Hydrological Regime and on Water Quality, International Association of Hydrological Sciences, Publication no. 123, 1977, pp. 520-525.

28. Data Needs of the Passaic River Basin Study. Report prepared for the U.S. Army Engineer District, New York. September 1978, 116 pp.

PAPERS PRESENTED AT PROFESSIONAL MEETINGS

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2. April 21-25, 1969. "The Application of Graph Theory to Metropolitan Water Supply Agency Transfers," Paper No. H-35 presented at the 50th Annual Meeting of the American Geophysical Union, Hydrology Section, Washington, D.C. Abstract published in Transactions, American Geophysical Union, April 1969, 50(4):146.

3. April, 1972. "A Factor Analysis of Selected Water Quality Variables in Central New Jersey During 1960-1969," Paper No. H-58 presented at the 53rd Annual Meeting of the American Geophysical Union, Hydrology Section, Washington, D.C. Abstract published in Transactions, American Geophysical Union, April 1972, 53(4):378.

4. April 21, 1972. "Water Supply and Pollution Control Data Bank of New Jersey," Frontiers of Urban Planning Conference, Bureau of Government Research, Rutgers University.

5. January 17, 1973. "An Analysis of Water Quality in the Major River Basins of Metropolitan New Jersey, 1960-1969," Seminar on Pollution and Water Resources, Columbia University.

6. March 31, 1973. "A Study of the Longitudinal Distribution of Velocity in the Upper Whippany River, New Jersey," Annual Meeting of the New Jersey Academy of Science. Abstract published in the New Jersey Academy of Science, 1973, 18(1):22. Joint presentation with W.R. Samsel.

7. April, 1973. "A Comparison of Orthogonal and Oblique Factor Analytic Rotations," Annual Meeting of the Northeastern Section of the Regional Science Association, Syracuse, New York. Abstract published in the Northeastern Regional Science Review, 1973, 3:103.

8. May 23, 1973. "Water Pollution and Public Policy," Public Forum, Morris County College, New Jersey.

9. October 15, 1973. "Public Potable Water Demand for New Jersey," State Task Force on Planning, Trenton, New Jersey. Joint presentation with M.R. Greenberg.

10. November 1, 1973. "Water Quality Monitoring in the New York-New Jersey Metropolitan Region," Environmental Monitoring Conference sponsored by the National Science Foundation and the Regional Plan Association, New York City.

11. February 19, 1974. "The Use of Statistical Analysis for Water Quality Data," NSF Chautauqua Short Course on Water Pollution. University of Maryland.

12. October 18-19, 1974. "A Preliminary Critique of LOIS - A New Land Oriented Information System for New Jersey," Annual Meeting of the Middle States Division of the Association of American Geographers, West Point, New York. Abstract published in the Proceedings, Middle States Division of the Association of American Geographers, 1974, 8:141.

13. December 17, 1974. "New Jersey Water Supply Agency Interconnections Northeastern New Jersey Water Supply Advisory Committee to the Department of Environmental Protection, State of New Jersey, Chatham, New Jersey.

14. January 28, 1975. "Selected Trends in Metropolitan Water Supply," Annual Meeting of the American Association for the Advancement of Science, New York City.

15. April 18, 1975. "Floodplain Delineation and Computer Graphics," Institute for the Development of Riverine and Estuarine Systems, Hershey, Pennsylvania.

16. May 7, 1975. "Possible Canadian-U.S. Water Transfers," Canadian Studies Conference, Jersey City State College.

17. June 16, 1975. "Water Supply Modeling in New Jersey," Invited presentation (with M.R. Greenberg) before the Water Policy and Supply Council of the Department of Environmental Protection, State of New Jersey, Trenton.

18. October 20-22, 1975. "Multivariate Analysis of Environmental Factor Maps: Application to a Land Use Suitability Rating System," Annual Meeting of the Geological Society of America, Salt Lake City, Utah. Abstract published in Geological Society of America Abstracts with Programs, Salt Lake City, 1975, 7(7): 1120-21.

19. April 11, 1976. "The Natural Environment of the New York Metropolitan Region," Plenary Session, Annual Meeting of the Association of American Geographers, New York City.

20. April 12, 1976. "Problems in Urban Environmental Conservation," Annual Meeting of the Association of American Geographers, New York City.

21. May 17, 1976. "Water Supply Planning in New Jersey," Invited presentation (with M.R. Greenberg) before the Assistant Commissioner (and his staff) of the Department of Environmental Protection, State of New Jersey, Trenton.

22. July 16-26, 1976. "The Major Environmentally-Based Land Use Issues on the Urban Fringe," Invited paper, Precongress Symposium No. K-10 "Man and Environment," International Geographical Congress, Volga River, USSR. Abstract published (in Russian) in Man and Environment Symposium, 1976, Moscow, pp. 154-156.

23. October 13, 1976. "The International Geographical Congress and its Hydrologic Sections, Moscow, Summer 1976," Seminar on Pollution and Water Resources, Columbia University.

24. April 27, 1977. "Is the Water Crop Theory Tenable for Growth Control," Annual Meeting of the Association of American Geographers, Salt Lake City. Abstract published in AAG Program Abstracts, 1977, pp. 132-133.

25. October 21, 1977. "Future Exogenous Sources of Water for Nassau and Suffolk County, Long Island," Annual Meeting of the Middle States Division, Association of American Geographers, C.W. Post College, Greenvale, Long Island, New York.

26. November 1, 1977. "Water Supply and Water Quality: Two Key Factors for Establishing a Quantitative Framework for Land Use Planning Decisions," Annual Meeting of the American Water Resources Association, Tucson. Joint authors: R.M. Hordon and G.H. Nieswand.

27. April 9-12, 1978. "An Assessment of the Potential Ground Water Yield of the Stratified Drift Deposits in the Northeastern U.S.," Annual Meeting of the Association of American Geographers, New Orleans.

28. November 6-10, 1978. "Application of the Douglas Nutrient Dilution Model to the Non-Sewered Areas of Central New Jersey," Annual Meeting of the American Water Resources Association, Orlando, Florida. Joint authors: R.M. Hordon and G.H. Nieswand.

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2. Film Review. "Eternal Change: Story of a Mountain" (Mt. Rainier). AAAS Science Books and Films, May 1975, 11(1):47.

3. Book Review. Mitchell, C.W. Terrain Evaluation: The World Landscape. Professional Geographer, 1975, 27(2):249-250.

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6. Book Review. R. DeMoyer, Jr. and L.B. Horwitz. A System Approach to Water Distribution Modeling and Control. Water Resources Bulletin, June 1977, 13(3):636.

7. Film Review. "Incident on Cannon Mountain." AAAS Science Books and Films, December 1977, 13(3):177.