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1/5/84

~~Report on Sewer Infiltration~~

- Letter to mayor of Far Hills
  - w/ report on sewer infiltration

Pgs. 9

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January 5, 1984

Honorable Harry L. Hoffman, Jr.
Mayor, Borough of Far Hills
Prospect Street
Far Hills, New Jersey 07931

Dear Mayor Hoffman:

Enclosed herewith are three copies of the most recent report on Infiltration Investigation prepared by CFM, Inc. Based upon this study my comments are as follows:

1) The major source of inflow into the sewer system appears to be from the storm sewer system on Spring Street. With the planned reconstruction of this storm sewer system, the majority of the inflow should be eliminated. Plans for this project are complete and contract specifications are presently being prepared.

2) The house connection from the Schiavone residence on Lot 6, Block 16 continues to be a source of constant inflow into the sewer system. Mr. Schiavone was notified of this condition almost two years ago but it appears no corrective work has been done.

3) The manhole covers in Peapack Road where significant inflow was observed should be raised and watertight manhole inserts installed. It is estimated this work would cost approximately $200 - $300 per manhole.

4) A meeting with Mr. Flood be arranged in order to discuss his report and obtain a proposal for the cleaning and internal inspection of the 1700 feet of sewer recommended for internal inspection.

If you should have any questions concerning this matter, please do not hesitate to call.

Very truly yours,

Aidan T. Murphy
Borough Engineer

ATM/j

Enc.

cc: Mary Bowker
John Todd

REPORT UPON
SEWER INFILTRATION INVESTIGATION
BOROUGH OF FAR HILLS
SOMERSET COUNTY - NEW JERSEY

DECEMBER 28, 1983

Prepared By:

CFM Incorporated
628 Route 10
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628 ROUTE 10 WHIPPANY, NJ 07981 (201) 884-2111

December 28, 1983

Yannaccone Murphy & Hollows, Inc.
52 Bernards Avenue
Bernardsville, New Jersey 07924

Attention: Mr. Thomas Murphy, P.E.
Borough Engineer - Far Hills

RE: SEWER INFILTRATION INVESTIGATION - BOROUGH OF FAR HILLS

Gentlemen:

Our report upon sewer infiltration investigation (undertaken during late spring of this year and dated June 8, 1983) suggested flow observations be made during a period of significant rainfall, to locate areas of the system prone to inflow. Further our report recommended additional low flow measurements be made at a second period of high groundwater conditions, to verify the measurements made during May, 1983. It was suggested that these measurements be made in the late fall or early winter period, in that dry summer conditions were evident at the completion of the initial investigation.

Our recommendations were discussed with the mayor and several councilmen and it was agreed that these recommendations would be followed. We have recently completed this phase of the investigation including both low flow measurements and observations during significant rainfall events. This work was undertaken during the month of December, 1983 following

an extended dry period during the summer and the increase of significant rainfall events starting in November, 1983. The results of this investigation follow:

LOW FLOW MEASUREMENTS

Low flow measurements were made during the early morning hours of December 2, 1983. The measurements were made at the locations corresponding to the measurements made during our previous investigation, and were made during the early morning hours when the system is not utilized extensively (if at all). The measurements obtained are shown on the attached Plan. This plan is the same as included in our first report, with the exception that the more recent flow measurements have been added for comparison.

An initial measurement was made at the perminent flow metering station before the investigation was made. This measurement was approximately 18,500 Gallons Per Day (the total low flow of the system). Low flow measurements upstream of the perminent meter, (as shown on the attached Plan), were generally similar to the measurements made during May of this year; suggesting that the system responds the same under similar seasonal conditions. Several manholes were paved over since our last investigation and as such measurements could not be made at these locations. Nevertheless, the general low flow pattern appears to be the

same as reported in our first report, and as such, our recommendations for further investigation utilizing internal television inspection are still appropriate.

RAINFALL OBSERVATIONS

Observations of sewage flow were made during two rainfall periods to identify locations in the system where significant inflow appears to be occuring. The rainfall observations were made during two storms that occured on December 12 and 13, 1983 when rainfalls of over one inch were recorded. During these two storms, field crews were able to be at the site during the heaviest rainfall, to observe the impact of the rainfall on the system. Several other attempts had also been made during the months of November and early December, however, the attempts did not produce data that was useful since the anticipated significant rainfall did not materialize when the crew was at the site, or occured well after the crew left.

Manholes where rainfall observations were made during the two significant events are shown on the attached Plan. Observations included flow measurements at those locations where the flow appeared to include storm related flow from direct connections or sump pumps. Most observations indicated typical sewage flow, especially considering the fact that the observations were made during the daytime, when the system

was in use. Two locations, however, were observed with high flow and evidence of direct storm water connection (leaves and muddy water). These locations correspond to manholes Nos. 8 and 9 of the Borough's system. Observations made at manhole No. 8 indicated significant flow occuring both on the Peapack Road sewer and at Spring Street sewer. Dyed water placed in the culvert adjacent to the sanitary sewer on Spring Street was observed in the flow between manholes Nos. 8 and 8-1. Likewise, dyed water appeared to be observed in the Peapack Road sewer in manhole No. 8. Depth of flow and velocity measurements were made to estimate the flow. These estimates are shown on the attached Plan. Flow rates of about 70,000 GPD were measured in manhole No. 8 from both the Spring Street and Peapack Road sewers. This compares to the recorded peak flow at the perminent meter during the time of the observations of about 120,000 GPD. Normal peak flows that occur at the time of day when the measurements were made approximate 50,000 GPD; suggesting that a majority of the inflow recorded at the perminent meter was occuring from the interconnection of the storm sewer on Spring Street and possibly from the crossing of the storm sewer on Peapack Road. Some inflow was noted as occuring from the sewer upstream of manhole No. 10 on Peapack Road, as shown

on the attached Plan. Observations upstream of manhole No. 10 were difficult due to paved over manholes and the exact location of inflow sources could not be determined. Constant flow from a connection in manhole No. 10 was also observed, however, the field crew did not determine if this flow was storm related. Ponding of water in the manholes along Peapack Road was also observed as sources of direct inflow.

CONCLUSIONS AND RECOMMENDATIONS

This second investigation verifies the results of our first investigation concerning infiltration to the system and provides additional data on the sources of inflow to the system. We feel that infiltration to the system of about 20,000 GPD, is occuring in about one quarter of the piping system and that a significant portion of inflow to the system is occuring from the inter-connection of the storm and sanitary sewers on Spring Street and Peapack Road.

To finalize our investigation, the cleaning and internal inspection of the sewers shown on the attached plan should be pursued as soon as possible to take advantage of high groundwater conditions that will prevail during the next month and again during the spring thaw in early March and April. This inspection should identify sources of infiltration and as such, should

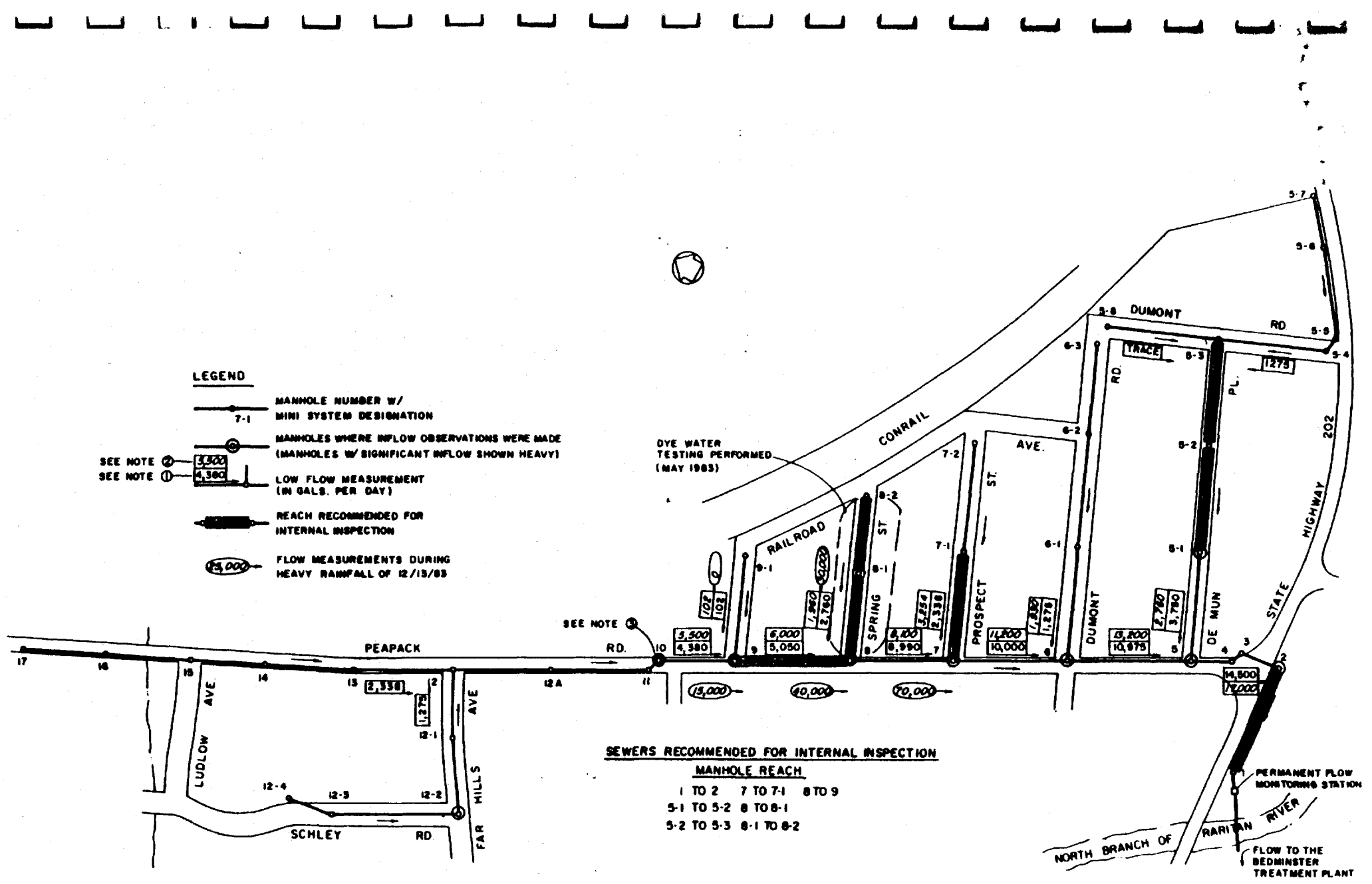
be recorded on video tape for perminent reference. Additional testing should be made during the Spring Street and Peapack Road investigation to determine the exact locations of cross connections causing the inflow observed. No direct evidence of sump pumps connected to the system was observed, however, we would recommend a house by house inspection be made by the plumbing inspector to determine if some houses might have sump pumps connected. If sump pumps connected to the sanitary sewer are located, these should be disconnected, where feasible, and the connection sealed to prevent there reconnection.

In summary, therefore, we feel that about 20,000 GPD of infiltration exists in the Borough of Far Hills sewer system. Cleaning and internal inspection of approximately 1,700 feet of the system is recommended to locate the sources of infiltration. Inflow to the Borough's sewer system appears to be caused primarily from the storm sewer system on Spring Street and from low set manholes along Peapack Road. Correction of the problems on Spring Street should be pursued along with raising and sealing of covers along Peapack Road. Should you have any questions on this report, please advise.

Very truly yours,
CFM INCORPORATED

John J. Flood, P.E.

JJF:car
Attachments



PLAN

SCALE 1" = 200'

NOTES

① LOW FLOW MEASUREMENTS ON 5/13/83

② LOW FLOW MEASUREMENTS ON 12/2/83

③ CONNECTION TO MH HAS STEADY FLOW- POSSIBLY STORM RELATED

REVISED 12/28/83- TO INCLUDE ADDITIONAL FLOW MEASUREMENTS

BOROUGH OF FAR HILLS

SOMERSET COUNTY NEW JERSEY

INFILTRATION INVESTIGATION

CFM INCORPORATED

ENVIRONMENTAL ENGINEERING SERVICES