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How was the terrain or geography, including the water systems, changed in the building of the industrial park?

Huntington Expressway Industrial Park was built next to Mashapaug Pond in the early 1960s. It was intended to be a companion project to the West River Industrial Park, which was built around the same time. Huntington Expressway was designed to accommodate larger-sized industries while West River was used for medium-sized industries. The Providence Redevelopment Agency spearheaded the effort to build the park. They reasoned that it would create thousands of jobs and increase the city's tax base. 496 families and 6 businesses had to be relocated to make room for the industrial park and by January 1961 the Providence Redevelopment Agency had acquired this land (see Figure 1).

The area acquired for the park itself was 117.36 acres, bounded by Huntington Avenue to the north, Niantic Avenue to the west, Swanton Street to the south, and Mashapaug Pond to the east. Part of this area was the pond itself, as evident in Figure 1. A study by the Rhode Island Division of Fish and Wildlife in 1957 yielded the following basic pond measurements:

- Surface Area: 69 acres
- Average Depth: 7 feet
- Maximum Depth: 17 feet

A more recent survey in 2001 yielded the following values:

- Surface Area: 77 acres
- Average Depth: 9.8 feet
- Maximum Depth: 16 feet

The increase in surface area is peculiar because the industrial park clearly encroached on the pond (see Figures 2-4). This observation casts some doubt on the accuracy of the data collected in 1957. The study from 2001 utilized GPS technology, but the study from 1957 did not and this may have contributed to the discrepancy. Figure 5, however, shows an accurate model of pond depth taken from the 2001 study.

When the industrial park was built, the terrain sloped down in the southeast direction. The highest point in the project area was 75 feet above sea level and the lowest point (pond level) was 37 feet above sea level. Construction of the park involved flattening this area, but remnants of the old sloping terrain can still be seen at the site of the baseball field by the pond.

The pond was modified substantially by the construction of the industrial park. Although it may not be evident in the surface area measurements, a significant portion of the pond was filled. The filling method used on Mashapaug Pond is called partial excavation and backfill. A schematic showing this method is provided in Figures 6 and 7. Although these diagrams provide only limited details, the method seems to work as follows:

1. Build up soil on embankment by the pond.
2. Partially excavate the muck under the embankment.

3. Detonate explosives under the embankment to form a cavity.
4. Allow the soil from the embankment to settle into the cavity, effectively moving in the edge of the pond.

Mashapaug Pond had muck as deep as 50 feet separating the soft bottom from the firm bottom of the pond, so this process was extensive.

The pond receives water from several sources. Precipitation, storm sewer drainage, land runoff, groundwater, and Mashapaug Brook all feed the pond. Unfortunately, it is difficult to find resources providing detailed information on these things pre-1960. Figure 8 shows the stormwater drainage system put in place when the industrial park was built and denotes where previous stormwater drainage systems were. However, I am unable to interpret how these changes affected long-term terrain and water system changes in and around Mashapaug Pond (although perhaps an expert could). The figure shows how stormwater drainage systems changed, but not the impact that this had on the hydrology of the pond.

References

- "1951-1952 Digital Aerial Photography." Map. *Rhode Island Geographic Information System*. Web. 12 Mar. 2013. <<http://www.edc.uri.edu/rigis/data/imagery/BaseMapsEarthCover.html>>.
- "1962 Digital Aerial Photography." Map. *Rhode Island Geographic Information System*. Web. 12 Mar. 2013. <<http://www.edc.uri.edu/rigis/data/imagery/BaseMapsEarthCover.html>>.
- "1976 Digital Aerial Photography." Map. *Rhode Island Geographic Information System*. Web. 12 Mar. 2013. <<http://www.edc.uri.edu/rigis/data/imagery/BaseMapsEarthCover.html>>.
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Appendix

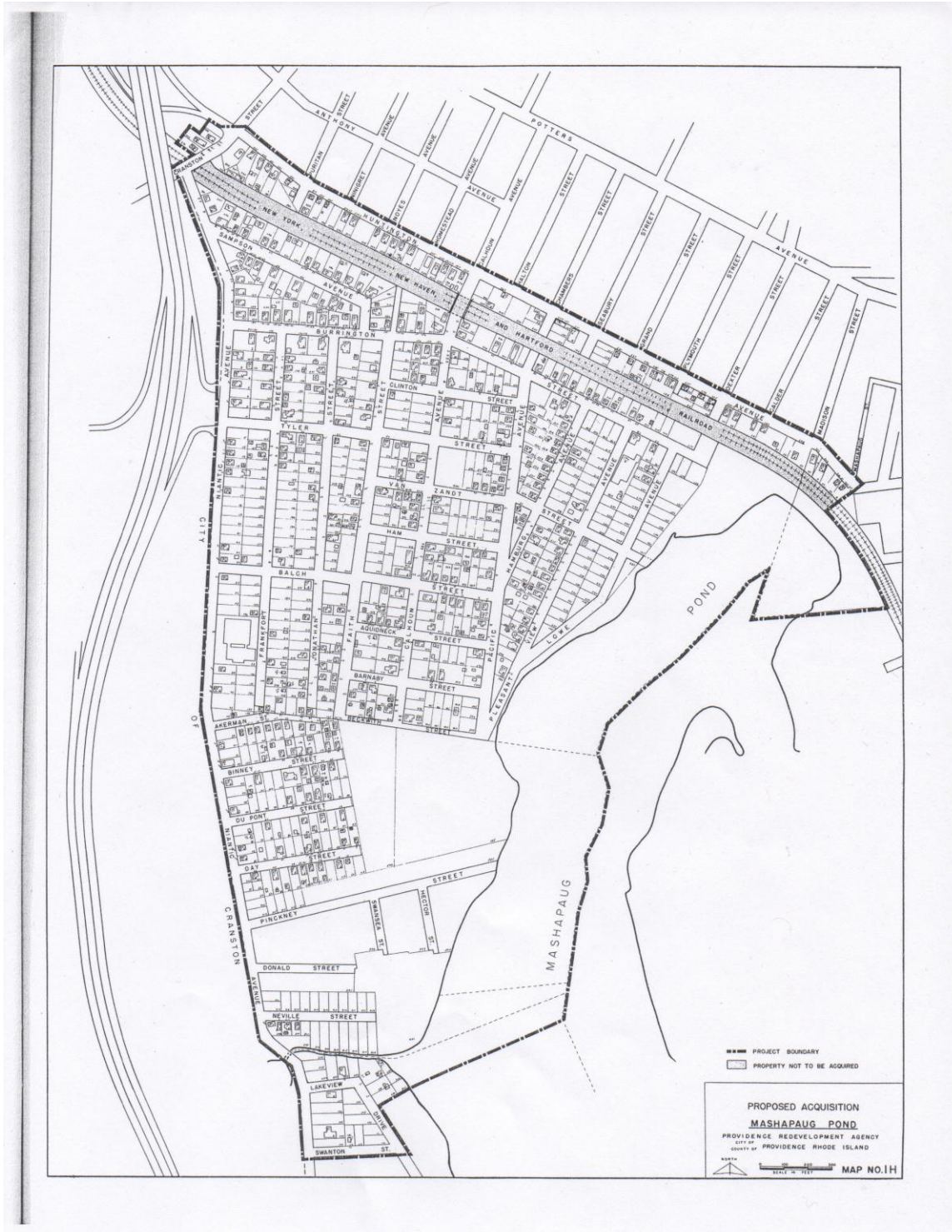


Figure 1: Proposed acquisition of land for Huntington Expressway Industrial Park.



Figure 2: RIGIS Digital Aerial Photography, 1951-1952.



Figure 3: RIGIS Digital Aerial Photography, 1962.



Figure 4: RIGIS Digital Aerial Photography, 1976.

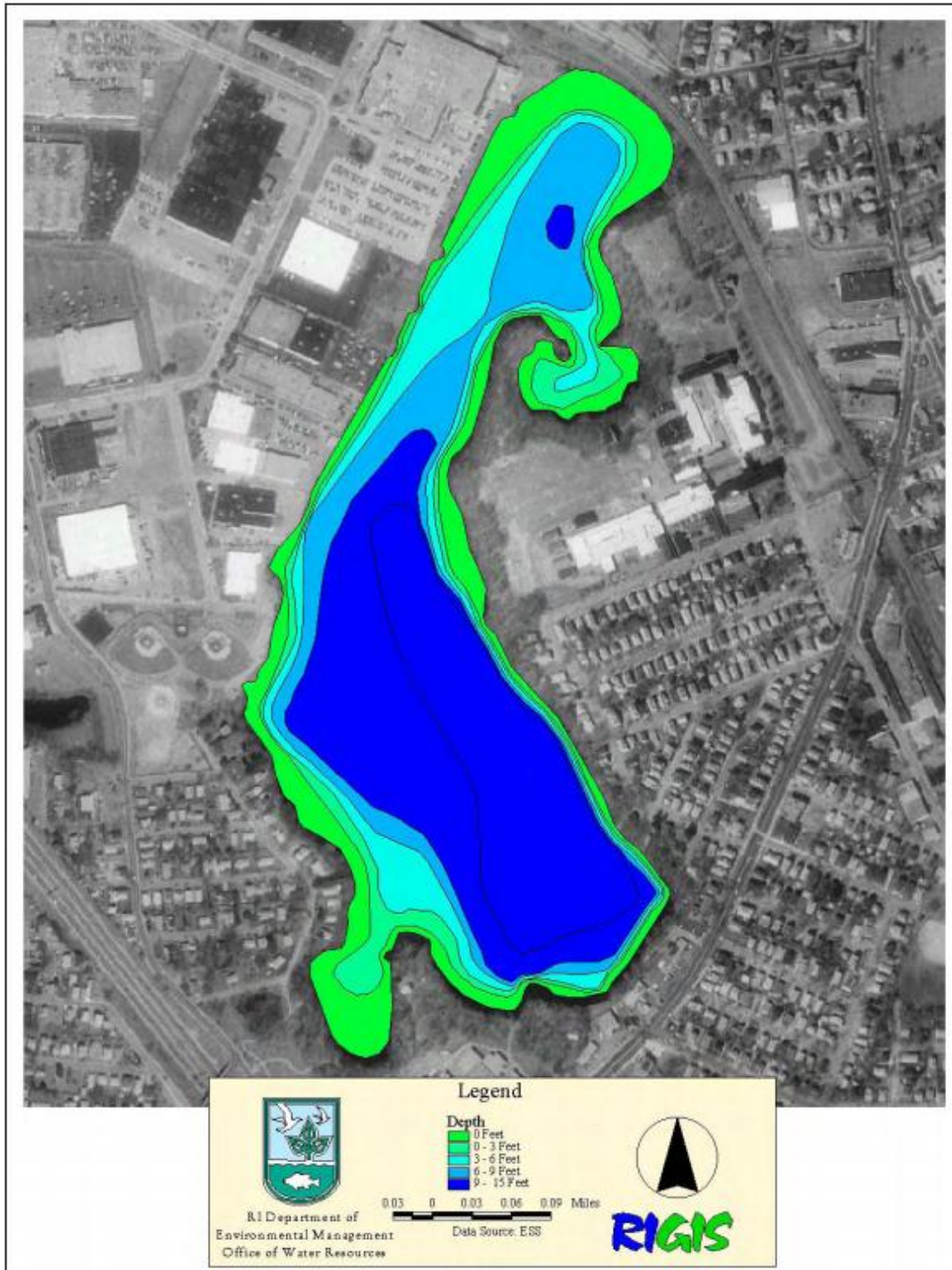


Figure 5: Depth map of Mashapaug Pond, 2001.

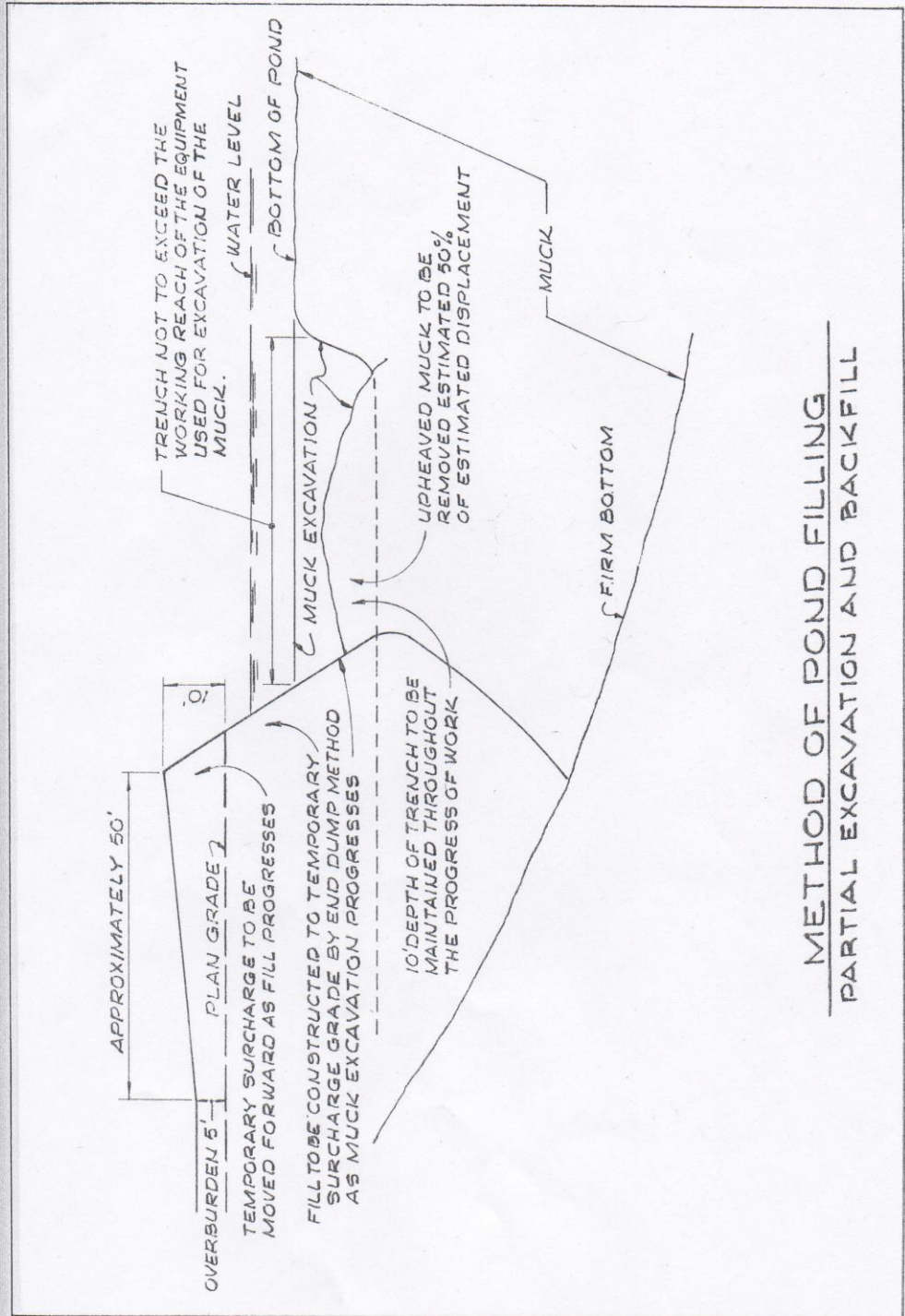


Figure 6: Method of pond filling used for Mashapaug Pond (Part I).

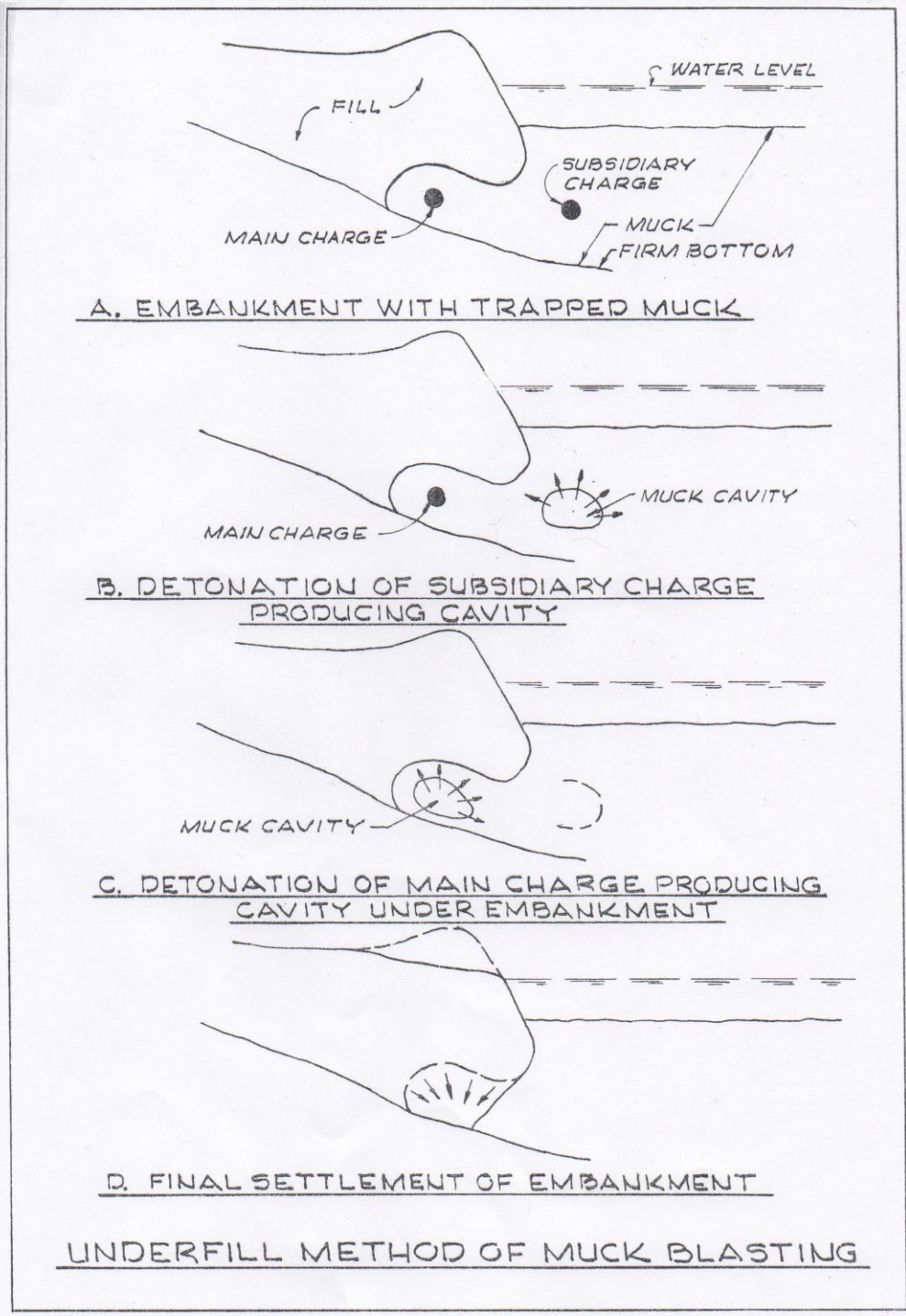


PLATE NO. II

Figure 7: Method of pond filling used for Mashapaug Pond (Part II).

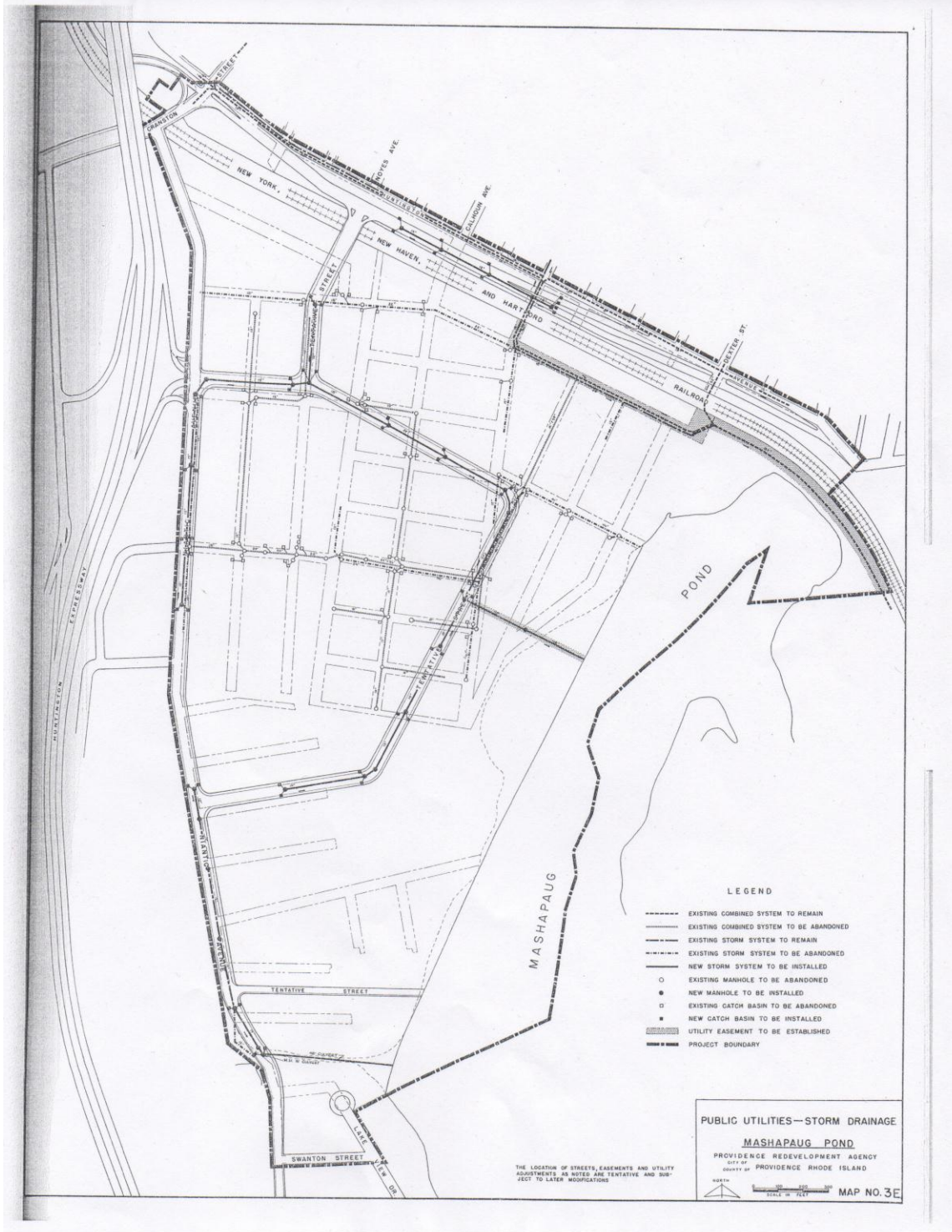


Figure 8: Stormwater drainage systems before and after construction of the industrial park.