FOR CITY COUNCIL PACKAGE. Stephen H. Kaiser

January 31, 2003

Stephen H. Kaiser
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Cambridge, Mass. 02139

To : Owen O'Riordan
Cambridge City Engineer

From : Stephen H. Kaiser

SUBJECT*: *MAKING SENSE OF MILLERS RIVER MAPPING

I know that your task of defining an authentic boundary line based on the old channel of the Millers River is very complex. I have found over 25 different map representations of the river channel, including the 1903 Boundary Book for Cambridge which shows an extremely wavy boundary line – quite different from anything I have ever seen before.

Our challenge is to deal with the many baffling differences among the historical maps of the past two centuries. The increasing political and economic influence of the Boston & Maine Railroad may also have had a strong effect on how the maps were drawn, and thereby tended to reduce the integrity of the map-making profession. We learn from the recent case of the Mystic River, with the Somerville-Medford boundaries after 1840 showing how dredging of new river channels caused mapmakers to move the city boundary into the preferred new channel. In the ensuing years, almost every map showed a different geometry of the boundary. This practice of shifting municipal boundaries goes back over 150 years.

The Mystic history bears many similarities with that of the Millers River, but with major differences. There is a period of "smooth curve" river channels at the Millers from the 1770s to the early 1850s. Thereafter, the channel has usually been represented as a series of wavy lines, with various attempts to arbitrarily straighten out the boundary ..... most recently in 1998. I am happy to report that the latest editions of the Cambridge Zoning Code include maps which show the more traditional wavy boundary, and that the illegally straightened boundary appears to have no defenders at the moment – at least no public ones.

Our challenge is to select which curved boundary makes sense : the single gradual curves shown in the Harvard maps of 1770 and 1775, the Hales maps of 1830 (for both Cambridge and Somerville), Mason's 1852 version and the 1854 Walling map of Cambridge..... or the wavy line which I have traced back as early as 1848 in Felton Parker's map of Charlestown. The change in the shape of the river channel is dramatic and represents a real challenge for any modern interpretation of where the old river channel was located.

I have been bothered by not finding any usefulness in the traditional reference "bible" of coastal mapping : the 1847 U.S. Coast Survey map which is routinely used as an authoritative reference by the Mass DEP Waterways Division. This 1847 map shows no defined channel for the Millers River, with only the stub of a channel extending into the basin area. Everything else is represented as mud flats.

Even the 1847 stub channel appears silted in. What happened? Were the cartographers too lazy or pressed for time to draw a channel for the Millers River? Or is their representation of the basin area accurate? What caused these changes?

I believe the answer may lie in the number of bridges built between 1830 and 1846 and the inhibition of natural flushing action in the estuary of the Millers River. In 1830 when Hales drew his maps there were only 2 bridges across the basin. By 1847 there were ten bridges, including long railroad fills. In retrospect, the bridges chopped up the Millers River basin into a series of silt traps, with the original channel of the Millers River being filled in by the siltation of Nature (not by man's direct filling) during the early 1840s. It is possible that a large coastal storm had deposited much ocean or river silt in the basin, filling in any channel, so that the wavy line channel shown in Parker's 1848 map was the first effort of the Millers River to erode a new channel for itself through the mud flats. I also have an 1845 map fragment of the channel near Water & Third Streets, showing a very meandering path for the channel.

It is possible that as this process continued over the years with the combined effects of siltation, shoreline filling & added docks, and new stream channel erosion, there could be new patterns for a wavy river channel cut through the mud flats. If so, channel location would have been a matter of continual change from the 1840s into the 1880s ... as shown in Parker 1848, Bowker 1873, Hopkins 1874, Cambridge City Engineer 1877, and Hopkins 1884. By 1867 the Harbor Line had been established, so that within the next 10-20 years a series of seawalls and docks had been created -- now allowing for straightened river channels with easier flushing and dredging.

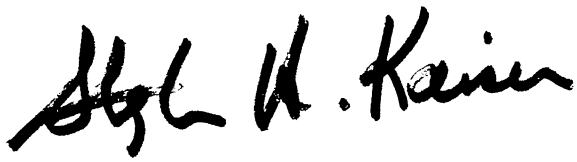
As the evidence now stands, I can think of no rationale for the constantly shifting channel of the Millers River except for this siltation of mud flats and erosion of a new channel, possible as frequently as every year, and even after every major storm. The only map which caught the basin in its fully silted stage with no new cut channel was the 1847 Coast Survey.

If City engineers have met with the developer's surveyor to identify an historical boundary line, and if that line comes close to (but is not an exact copy of) the 1848 Parker map, it may well be that all we have accomplished is to represent a brief snapshot in time during the many decades when the Millers River channel wandered about from year to year. This is not a city boundary methodology.

While my historical, cartographic, and hydrological/geological analysis is not the only conceivable explanation of the information at hand, it is the only one that makes sense in explaining all of the extraordinary map variations we have been seeing over the years. The North Point Land Company has been singularly ineffective at providing any public justification for the boundary they have been proposing. The NPLC proposal serves as the basis for the preliminary Cambridge/ Somerville agreement. When I think of the kindest way to describe the developer's stance in documenting their mapping, there are two words : "stunningly reclusive."

All of this analysis makes me wonder once again why it has taken so long to achieve a *legislative* definition of the boundary at North Point, as was done with Boston's borders in the area in 1891 and 1910. We should start this proper and legal process, even if we are a century late, and not pursue a strategy of trying to tie down a shifting river channel from a century and a half ago.

Sincerely,



Stephen H. Kaiser, PhD
Traffic & Transportation Engineer

cc. Assoc. of Cambridge Neighborhoods
Spaulding & Slye
Adams & Rafferty
Cambridge Community Development
Cambridge Planning Board
Cambridge Conservation Commission
Cambridge Historical Commission
Somerville Planning Department
State DEP, Wetlands & Waterways

S-48

Consent Communication #1

A communication was received
from Stephen H. Kaiser, regarding
Millers River Mapping.

In City Council February 10, 2003

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