

MEMO FOR RECORD

SUBJECT: Meeting at Oil City, PA to discuss whitewater park on Oil Creek.

DATE: 12 Dec. 2006

Attendees:

Thomas Rockovich	Oil City Manager	814-395-3012
Christina Sporer	Oil City City Engineer	814-678-3019
Janet Gatesman	Assistant City Manager	814-395-3018
Butch Truitt	Oil City Public Works	814-395-7287
Sonya Hawkins	Oil City Council	
Neil McElwee	Oil City Council	
Andrew Tuthill	USACE CRREL Ice Engineering	603-646-4225

Andy Tuthill traveled to Oil City on 30-31 Oct. to meet with members of the Oil City government to discuss plans to build a whitewater park on Oil Creek. These projects are increasingly popular on western rivers and the trend is quickly moving east. In addition to improving the accessibility and aesthetics of the downtown portion of Oil Creek, the project would hopefully draw recreational boaters in significant numbers, boosting the local economy. Oil City contracted Recreational Engineering and Planning (REP) of Denver, CO to develop a preliminary design of a whitewater park to be located on the lowermost 1500 ft of Oil Creek. Following initial discussions with the Pittsburgh District, CRREL developed a proposal to study potential ice impacts of the proposed in-stream structures.

The Oct. 31 meeting at City Hall began with a discussion of the proposed Whitewater Park on Oil Creek adjacent to the downtown area (Figs. 1 and 2). As in a previous phone discussion with Chris Sporer and Tom Rockovich, concerns arose about the city's liability should, an ice jam flood occur in the section of river hosting the whitewater structures. Although Oil City has not experienced an ice jam flood since the construction of the Allegheny Ice Boom and the Oil Creek Weir in the 1980's, there have been some near misses. For example, an ice jam in 1996 filled the river to its banks with water and ice before releasing at the last minute into the Allegheny. Attendees speculated that, in addition to the ice control structures, milder winters may have also contributed to the lack of severe ice events at Oil City in the last two decades.

In any case, the group agreed that, given the right set of conditions, an ice jam flood is still possible at Oil City, even with the ice control structures in place. Should this occur following construction of the proposed whitewater park, it would be difficult to prove definitively that the whitewater structures did not play a roll in ice jam formation, and the city could be held liable. As mentioned above, I had earlier proposed a study using ice-hydraulic computer models to examine the effect of the proposed structures on ice passage through this reach with and without the structures in place. Although these models are the best available, I am uncertain whether the study results would provide sufficient confidence to go ahead with construction of the whitewater park in its current proposed location.

In addition to the to the chance of increasing ice jam flood potential, Tom Rockovich expressed concern about possible ice damage to the whitewater structures and their long-term maintenance. Once built and permitted, the city would assume responsibility for the upkeep of the structures and adjacent walkway. Those having witnessed the dynamic nature of ice jam formation and release on Oil Creek believe that the proposed whitewater park would experience some ice damage, citing as an example a large hole punched in the side of a brick building at the bankfull elevation by the 1996 ice jam (Fig. 3b). Fig 3b shows an ice jam on Oil Creek in the early 1980's giving an idea of the ice jam stages that are possible.

According to the REP preliminary design proposal, similar whitewater parks on western rivers do not impede ice passage or sustain significant ice damage. It should be noted that the runoff patterns and ice regimes in western mountainous regions are typically quite different from those in the northeast. In the west, the climate is drier and the spring rise to peak snowmelt-driven and drawn out. Dynamic breakup ice events are uncommon as western rivers usually melt out gradually in the late winter and early spring. In contrast, northeastern rivers can breakup suddenly and destructively any time during the winter as a result of rainfall and rapid snowmelt. Breakup ice jams result when the ice run encounters an obstacle or the ice concentration simply exceeds the conveyance capacity of the river channel. The main point is that, although these in-stream structures appear to be relatively trouble-free on western rivers, they may be less successful ice-wise on northeastern rivers where ice conditions are quite different.

Following the meeting, we walked along Oil Creek from near its mouth up to the White Bridge at the upstream of the downtown area. Unfortunately, water levels were high, hiding most of the river bank features. We looked at an alternative whitewater park site upstream of the White Bridge (Fig. 4). In-stream structures at this location would pose much less of an ice jam flood threat since the site lies well upstream of the traditional ice jam reach and also upstream of the location where the ice jam flood waters typically escape Oil Creek onto Seneca St. (near the site of the Pizza Hut Restaurant).

We also visited a possible whitewater park site on the Allegheny upstream of the Veterans Bridge (Fig 5). Sonya Hawkins explained benefit of having two parks, one on Oil Creek to provide boating opportunities during low flow periods, and the other a "safe chute" on the Allegheny for higher flow conditions. The Allegheny project might encounter permitting problems since it would be located in or near an area known to host a species of endangered mussels.

We viewed the Allegheny Ice Boom which, after more than 20 years, is nearing its design life (Fig. 6). We discussed the option of replacing the foam-filled rectangular pontoons with ones made of steel pipe. The steel pile pontoons would be much less expensive than fabricating new rectangular ones. Steel pipe booms have proved successful at many sites in Canada. The Lake Erie Boom at Buffalo is an example where steel pipe pontoons have replaced rectangular timbers, greatly increasing the ice retention capacity and reducing the frequency and severity of ice runs from the lake into the Upper Niagara

River. Further cost savings could be realized as the intermediate floats on the current Allegheny boom could be eliminated in the retrofit to the steel pipe pontoons.

Respectfully Submitted,

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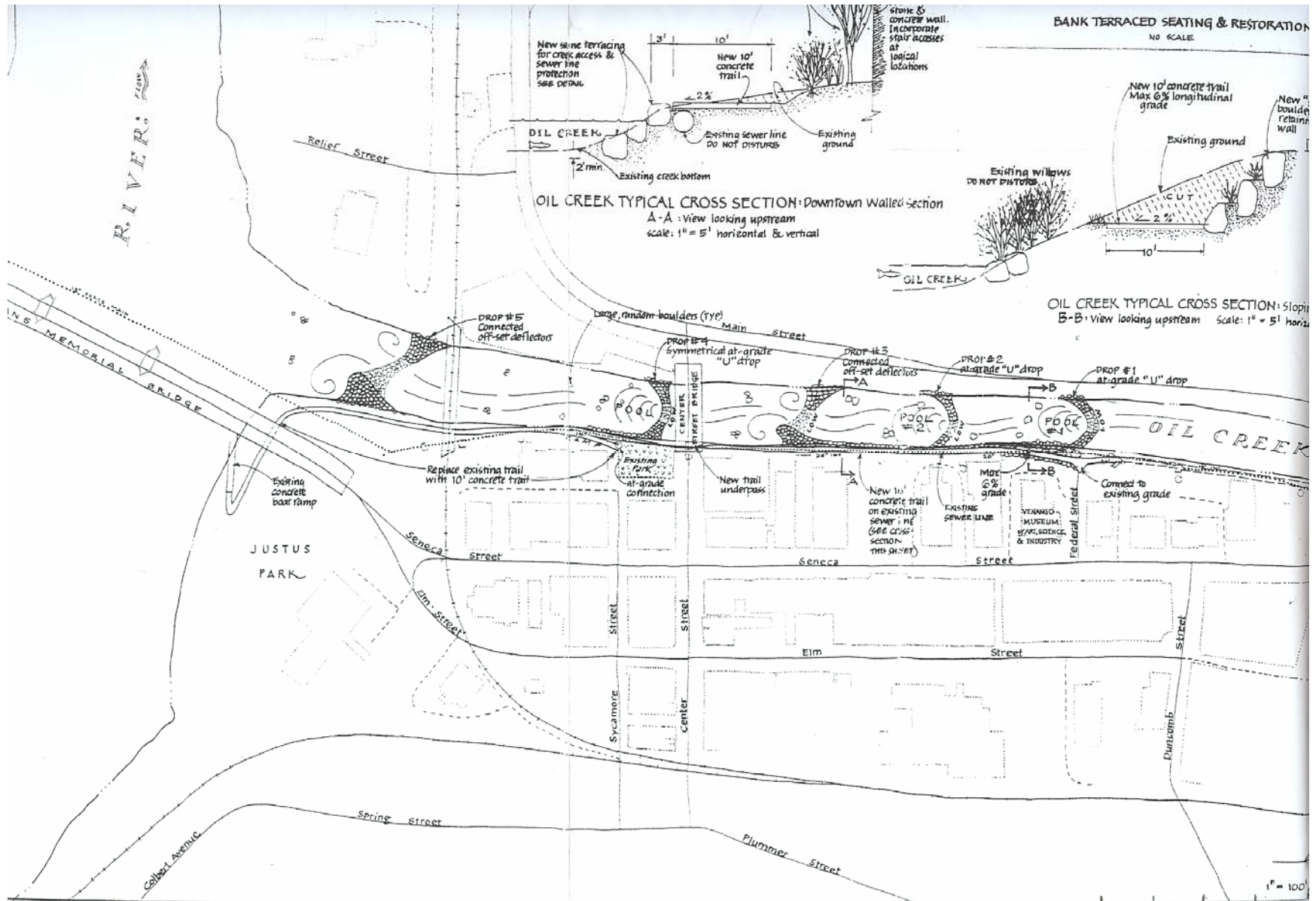


Fig. 1. Conceptual plan for whitewater on Oil Creek in Oil City, PA. by Recreational Engineering and Planning. Boulder, CO.

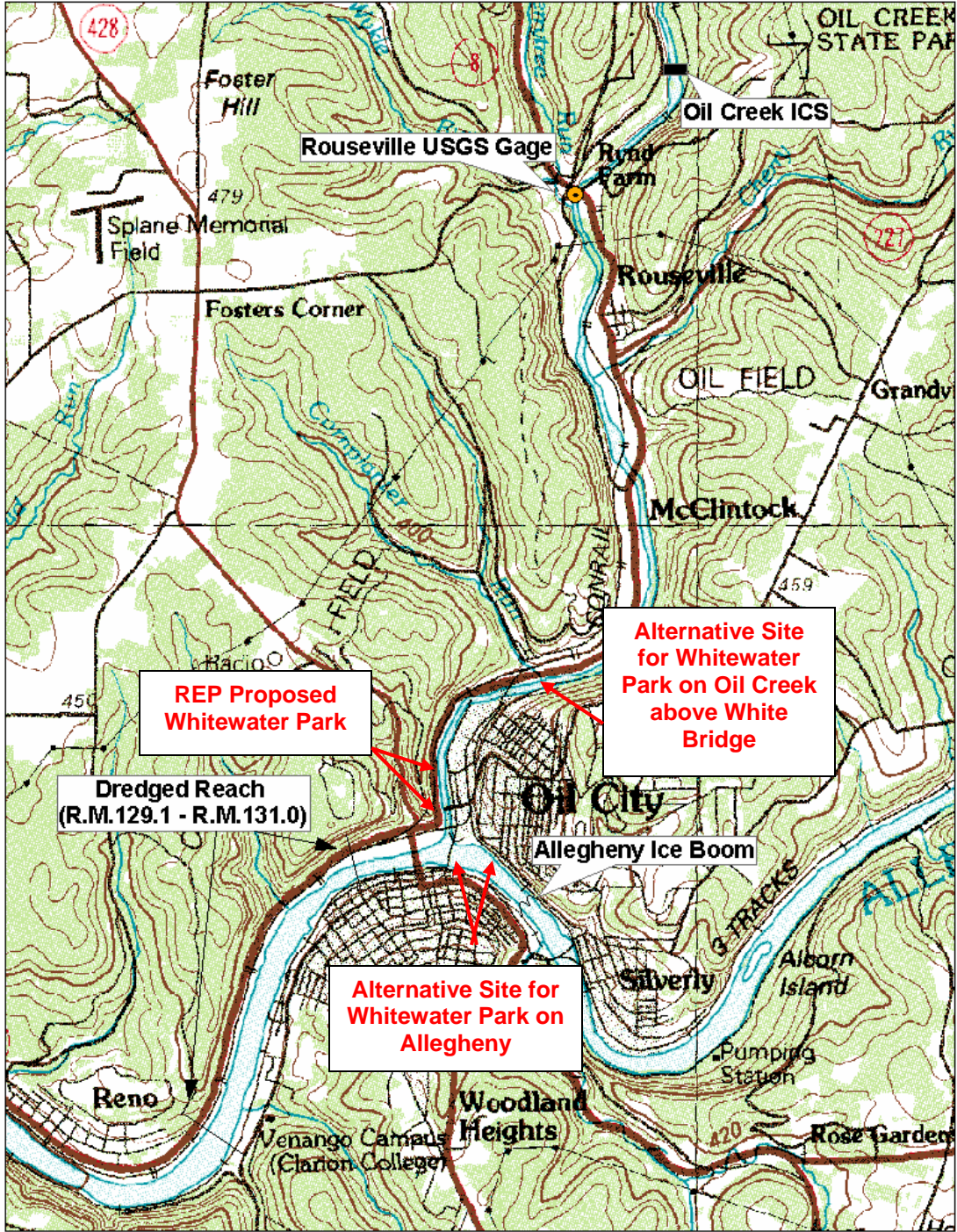


Fig. 2. Site map showing locations of possible whitewater park projects.



Fig 3a. Lower Oil Creek looking downstream. Patched hole in brick building can be seen on the right.



Fig. 3b. Looking upstream at an ice jam on lower Oil Creek in the early 1980's.



Fig. 4. Alternative location for whitewater park on Oil Creek upstream of the White Bridge.



Fig. 5a. Downstream end of alternative whitewater park location on the Allegheny at Veterans Memorial Bridge. Mouth of Oil Creek can be seen in distance.



Fig. 5b. Allegheny under high flow conditions looking upstream from Veterans Memorial Bridge. Ice boom is visible in distance.



Fig. 6. Allegheny River Ice Boom spans trailing in the current from the central anchor. Spans are pulled to shore and anchored to the banks.