

Serene Alternatives, by Dr. Ed Holroyd

The conservation easement for the Serene Conservancy specified that the 5 acres near Indiana Street could be developed, and the interior 13 acres should be restored to natural habitat with trail access. The initial water rights (insufficient for the former farming activity) were doubled, approximately, with an additional purchase. The water rights are a valuable asset.

Aerial imagery shows that the upper (southern) pond is much older than 1979. The land use was all pasture, apart from the buildings and a few mature trees. The lowland ponds, western and eastern, and connecting drainage ditch were created within the twenty subsequent years. The three gravel loops and the Van Bibber trail were established before 1999, as were additional buildings. A 2004 image is the last to show the buildings, which were all gone in a 2005 image.

Over recent years the upper pond was made more attractive by the removal of dead willows from its interior banks. The three drain pipes were cleaned and made functional with screens to block debris. It was recognized that the full pond leaked its water, though low water levels remained stable. So an idea was considered to line the upper pond to retain its water better.

During the investigations and designs of the construction plan it was discovered that the water rights did not permit the steady retention of water in a pond. It had to be released for a purpose. Otherwise it was a “use-it or lose-it” situation. In the pattern of businessmen eager to retain an important asset, the plan was specified (1) to line the upper pond to reduce water loss, (2) to send water to the lowland eastern pond to make it a better wetland, and (3) to irrigate the lowlands, in keeping with the experience that typical suburban lawns (Kentucky bluegrass) need lots of irrigation water.

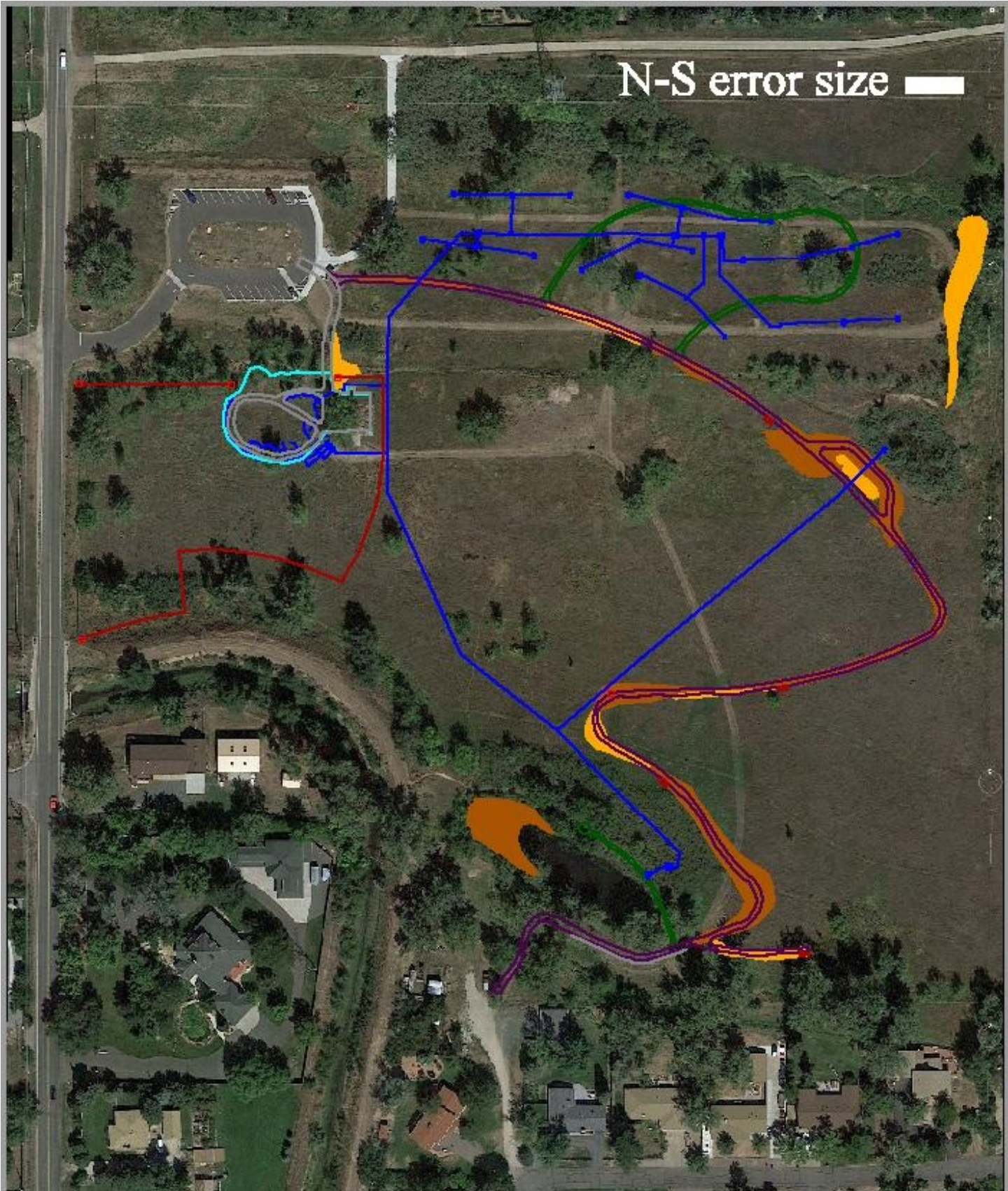
However, steady retention of water in the lower pond would not be allowed either. And no one seemed to question if prairie and pasture grass in the Van Bibber valley needed irrigation. As shown by the grassland areas of Van Bibber Open Space Park, the grasses do quite well without being irrigated. After the weed suppression, soil amendments and prairie grass seed distributions over the past several years, the grassland areas of the Serene Conservancy are also doing very well without irrigation. In addition, irrigation is not natural and is likely a violation of the conservation easement for natural habitat restoration. Irrigation promotes the growth of invasive species.

The release of water from the upper pond has promoted aggressive growth of the willow thicket which is now sheltering several invasive noxious weed species. The leakage of water from the irrigation ditch onto the southeast part of the property has been enlarging the cattail swamp and encouraging the continued presence of the purple loosestrife noxious invasive weed that must be eradicated. These growths are not natural for an upland slope and are promoted by the artificial release of water.

During the flooding of September 2013 the gravel loop trails functioned as a levy, confining most of the water to the sides of Van Bibber Creek. Some water escaped by reverse flow through a drain under the northern part of the loops. That water was thereafter contained by the levy action of the middle part of the loops, diverting it back into the Creek through an eastern drain pipe. The levy action is perhaps an unanticipated benefit of those gravel loops.

During the COVID-19 the public has had unrestricted use of the Serene Conservancy areas. The three gravel loops have had much use by walkers and their pets. The loops have a very durable surface, and the traffic has minimized a former need for mowing. The trail from the highlands to the lowlands has less durability. It is strong dirt when dry but is muddy when wet. There are a few areas where additional narrow paths in the grass have developed from frequent use by walkers and pets.

N-S error size 



cut fill trails: gravel grass irrigation
concrete playground fence bench

50 m G=100 ft=1 in

The illustration on the previous page mostly shows the areas affected by the present construction plan. That plan has a north-south major position error of about 5.5 meters (18 feet), illustrated by the height of the white rectangle, whereby the overlay features are positioned too far north on the 2019 aerial image. Modern surveying standards are good to a fraction of an inch, making these plans greatly flawed!

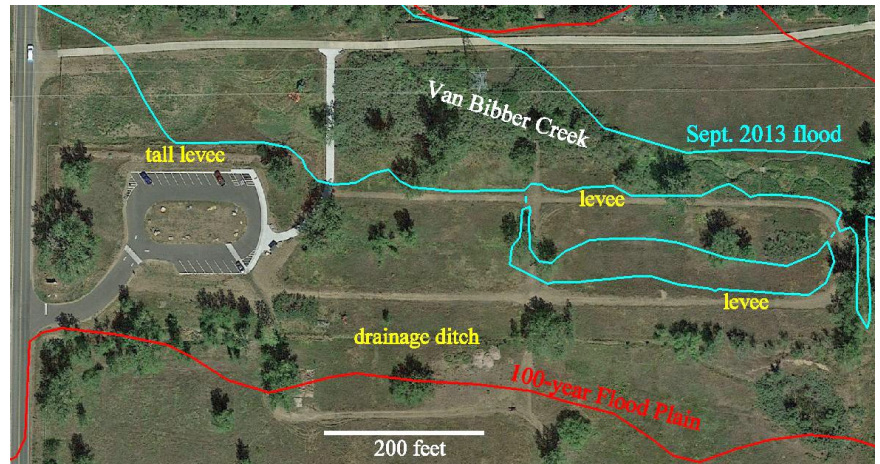
The upper pond was not colored in this illustration but is to be excavated and lined to prevent leakage. Just its western part is to be filled according to the plan. Execution of the entire plan will be very expensive. Its high costs will be a burden on the district tax payers through their property mil levies.

ALTERNATIVES:

1. The ponds are not allowed to retain irrigation water. The grasses present in the lowlands do not need to be irrigated. There is no other need for keeping the water rights. Therefore **sell the water rights** asset and thereby cease the wasting of precious water. The income can be invested in other purposes.

That eliminates the expensive excavation and lining of the upper pond and the filling of its western end. It eliminates the extensive network of pipes for irrigating the lowland areas. With no water flow to the eastern lowland pond, the excavation of a drainage channel towards the Van Bibber Creek becomes unnecessary.

2. This map shows with cyan the edges of the flooding of September 2013. The gravel loops successfully acted as levees to contain the spread of the water. Those **3 loops should be retained**, not removed as in the construction plans. That preserves their function as levees. It also preserves their use as very durable pathways for people and their pets walking. The 3-loop design is much more interesting for walkers than the single crusher-fine proposed path to the highland. It is also more durable than the proposed grass-based loop in the eastern lowlands. That eliminates the expensive removal of perhaps thousands of cubic yards of rock and gravel.



3. The proposed engineered **path** through the lowlands to the highlands should be abandoned. Its design is artistic rather than practical. I recognize the looping as what is necessary for ADA compliance, but as Jeffco Open Space trails show, such compliance is not required. The present temporary path connecting the highlands to the lowlands can be strengthened with a crusher-fine coating without any cut-and-fill excavations. (An underlying fabric may be needed.) The public already uses it for a simple and direct pathway. The cost of making that existing path more durable should be minor.

4. The **leakage** of ditch water into the highland cattail swamp in the southeast needs to be stopped. I suggest the insertion of half-pipe sections in the existing irrigation ditch. The water comes across the Croke Canal in a 12-inch pipe. A half-pipe of similar capacity needs to be about 15 inches in diameter. Here I illustrate a 2-inch half-pipe I inserted in a neighbor's lawn to cure their drainage problem. Another photo shows Mr. Alan's bandsaw capable of sawing logs, adjacent to the southwest entrance to the Serene Conservancy area. Perhaps that saw can be rented to cut the pipes in half. The third photo shows the path of the ditch as it enters the area, but not where the leak needs to be plugged. The use of half-pipes will make the Spring ditch cleaning much easier.





Besides the location of the main leakage, a further option might be to line the ditch with half-pipe sections all the way to the Croke Canal. Mr. Alan's property (behind the saw) is flooded with ditch water every Summer. Ms. Ward's property was flooded with ditch water several years ago when the ditch had a major flow.



5. The **concrete wall** between the ditch and the path can be eliminated. It is not needed now, though seepage from the ditch makes the ground soft. If the ditch is lined with a half-pipe, that softening will go away. So will seepage into the upper pond.

6. **The picnic area should be constructed** as indicated in the plan, while correcting for the surveying errors. It is likely to be useful to the public.

7. The construction of the playground should be postponed until a need is well established. There will be no irrigation water. Its position needs to be shifted south to correct for the surveying error. In keeping with the conservation and education desires, perhaps a different design is more appropriate than just an exercise area for children. The safety fence presently around the western entrance pond needs to be retained to keep children and others from accidents at its banks. It also makes the proposed fence line in that area unnecessary.

8. The fence line in the southwest may be optional. Right now with unrestricted access, the public is not using that area, so the boundary between park and canal properties does not need to be marked apart from the existing T-posts. As drawn, that fence line only partly marks that boundary anyway, not going all the way to the upper pond area.

9. The eastern lowland pond area needs to be **cleaned** of man-made debris and dead material. This should be done after or before the nesting season of the Red-winged Blackbirds. That will make the pond more attractive and provide easier access for the elimination of the invasive Purple Loosestrife. The bank on the north side needs prairie grass seeding, possibly buffalograss and blue gramma, both ideal for such dry sunny clay.

10. With the correction of the water leak and the intentional disposal of water rights, the willow thicket north of the upper pond and the cattail swamp in the southeast will both die out. The existing noxious invasive noxious weeds then will be easier to control and eliminate. The resulting dead willow and cattail materials can be removed and the landscape will restore to mostly grassland.

COMMENT

This set of alternatives is much less expensive than the proposed construction plan, retaining only some of the plan proposals. It is in better keeping with the intents of the conservation easement, letting the interior 13 acres restore to natural habitat. It greatly eliminates environmental damage that would be caused by the proposed construction plans. The sale of the water rights will offset (completely?) the minor costs of the alternatives.

prepared by Dr. Ed Holroyd, previous caretaker of the property for more than fifteen years, and a local taxpayer
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