Serene Review

for Prospect Recreation and Park District and Prospect Foundation

by Dr. Ed Holroyd, 23 September 2021

As has been reported previously, there are several reasons to modify the construction plans for the Serene Conservancy and limit its scope. These have been addressed in documents that are now posted on my web site at www.EdHolroyd.info/Serene.

The conservation easement specifies that the five acres near Indiana Street can be developed for several purposes. The new parking lot built by Jeffco Open Space has been an excellent addition to the property. The proposed picnic shelter and educational playground are also in accord with the easement.

The interior thirteen acres are to be limited to either an educational agricultural usage or restored to natural habitat. It appears that the prior agricultural attempts were not a good sustainable economic activity, likely contributing to the favorable conditions for the Prospect acquisition of the property. Prospect has not pursued the agricultural option since the acquisition nor is it in the present construction plans.

Water Rights

The easement allows that the previous water rights permit irrigation water from the Alford Selman Lateral Ditch be distributed anywhere throughout the property. Irrigation is appropriate for agriculture and for lawns. By definition of "natural", irrigation is an artificial water source for areas that are supposed to be natural. Natural areas are to be watered by precipitation and ground water table seepage only.

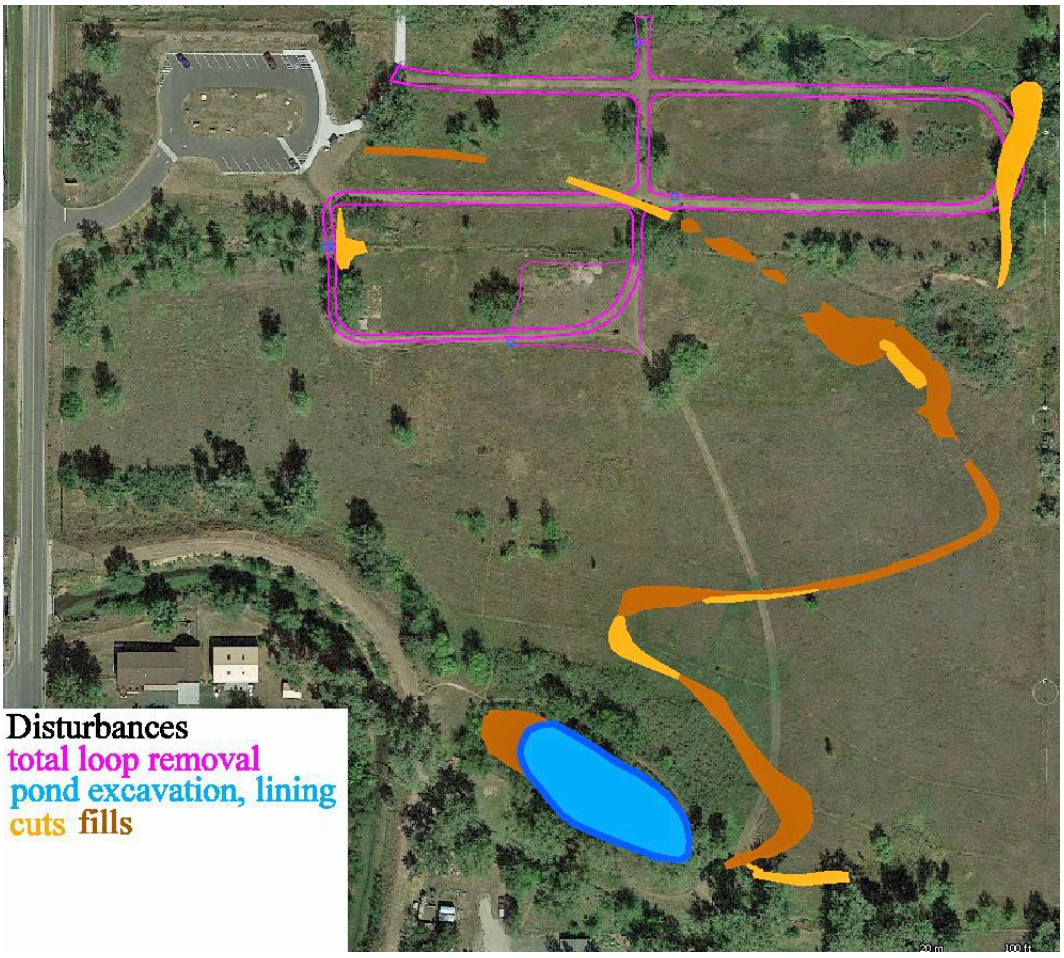
As I recall, since acquisition of the Serene Conservancy property by Prospect, additional water rights were acquired by purchase.

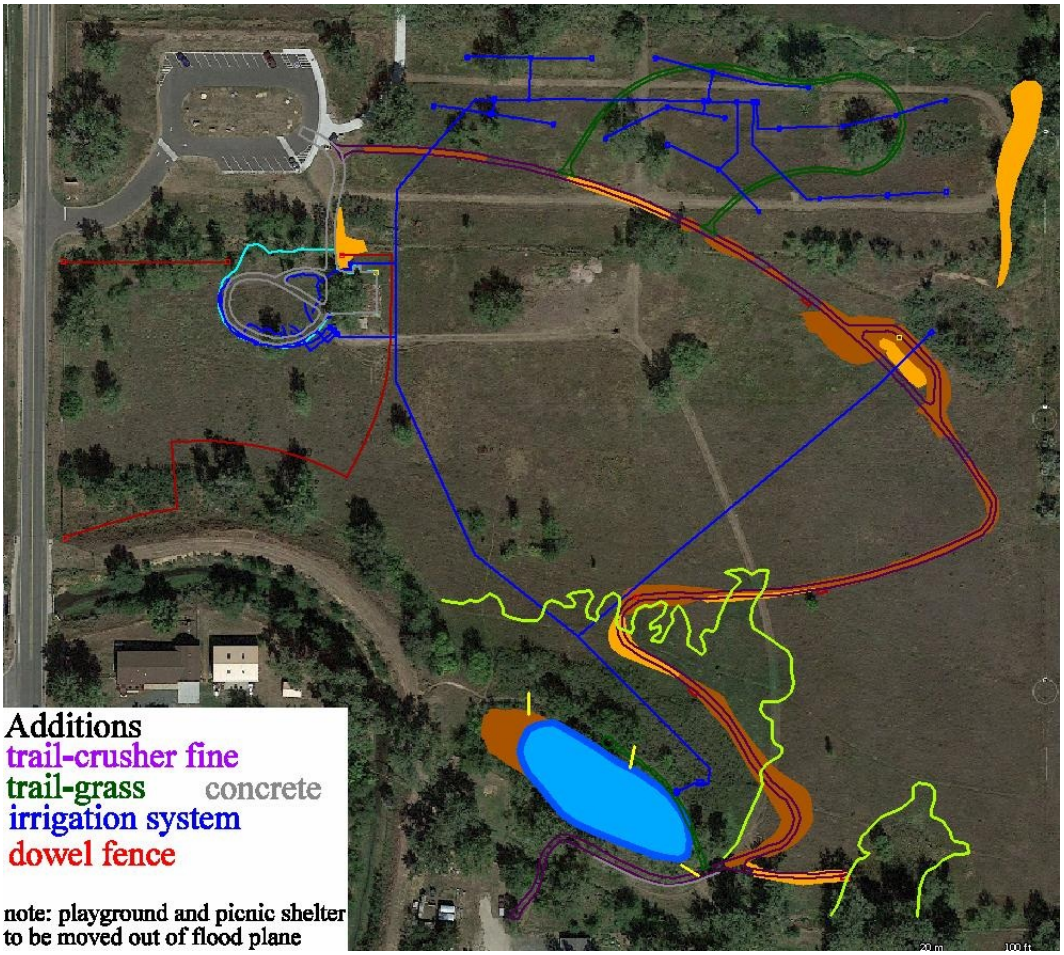
Meanwhile over the past fifteen years or so the weed-infested lowlands (see 2007 aerial imagery) have been transformed into a natural prairie grassland without the use of irrigation water. As can be readily observed throughout the Van Bibber valley, including the Jeffco Van Bibber Open Space Park, the natural environment has no need of irrigation water.

For many years it has been recognized that the upper (southern) pond leaks water when it is mostly or entirely filled with water from the Alford Selman Lateral Ditch. Therefore it has always been in mind that the pond eventually should be lined to reduce that leakage. In addition, the past impression was that Prospect could fill that pond every season and maintain it full. However, it was revealed during the design of the construction plans that the type of water rights does not allow for continued storage of water in any ponds. The water must be used right away for some beneficial purpose. Therefore Prospect is not allowed to maintain a full pond at that southern highland location, nor in the eastern lowlands.

When this restriction was revealed to the Foundation Board it was also mentioned that water rights have a "use it or lose it" stipulation. So the Board had the bright idea of pumping water from the upper pond into the lowlands to irrigate that area. They also thought of sending water to the eastern intermittent pond to possibly create a wetland. Such ideas then went into the present construction plan. No one even brought up a question of seeing if the lowlands or any other part of the property actually needed irrigation water. Perhaps the common experience that lawns need irrigation water was sufficient justification. The question asking if there would be sufficient irrigation water for eastern wetland development was quickly dismissed with presumed adequacy.

The next page has two images summarizing the disturbances and the additions specified in the 2020 version of





the construction plans overlaid on a 2019 Google Earth image. The 2021 version is similar apart from the picnic and playground locations.

There have been some recent tests to see the extent of irrigation water effects on the property. In 2017 irrigation water in excess of the normal allowance was released into the upper pond. It then flowed out 3 drainage pipes into the upper hillside. That improved the green shades about halfway down the hillside, to about the elevation of the cluster of 5 trees and shrubs. The benefit then disappeared farther north until the reappearance of water at the bottom near the two cottonwood and willow trees and the green around them.

Under normal water allowance through the 2-inch pipe from the Lateral Ditch it took about a month for the upper (southern) pond to be filled to capacity in 2020.

This September 2019 image shows the benefit of a normal allowance of irrigation water. Around the southern pond the 3 yellow lines mark the locations of the 3 drainage pipes. The bright yellow-green irregular lines show the extent of enhanced vegetation green-up from the season's irrigation water. The larger green-up area is from water discharged from the pond

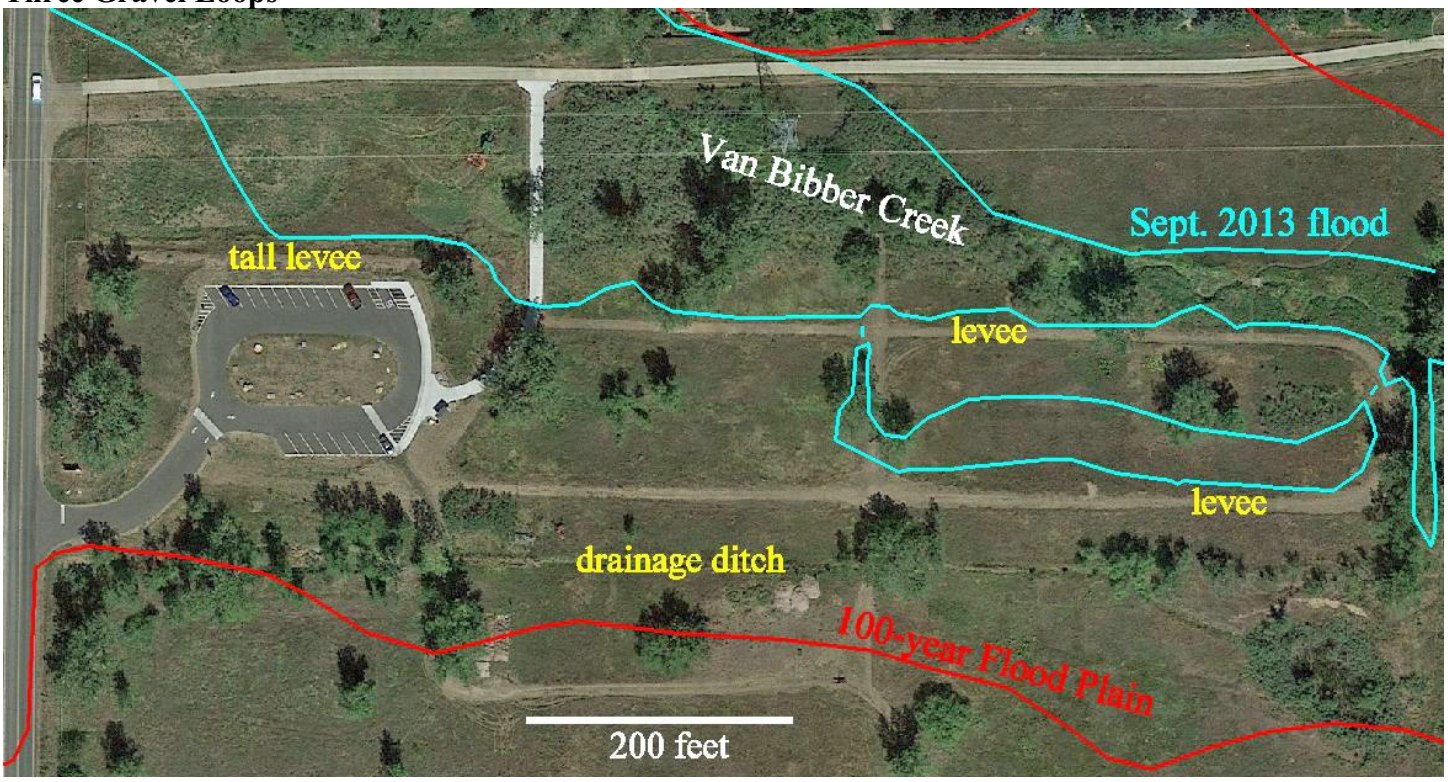
after the normal input from the Ditch through the watering season. The smaller green-up area to the east is from the leak in the Alford Selman Lateral Ditch that has been increasing over at least the past two decades.

From the illustration it is obvious that the water rights do not deliver enough water to irrigate the entire Serene Conservancy property, even with the prior purchase of additional water rights. That is consistent with the failure of the agricultural attempts of the previous ownerships. It is also a warning that the amount of water available for irrigating the lowlands is limited. The proposed construction plan produces a waste of water delivered to an area that does not need it, and a waste of construction costs, to create a violation of the "natural" mandate of the conservation easement.

The illustration also shows a blue diagonal line running downhill to the eastern intermittent pond in the lowlands. The yellow-orange area extending northward from that eastern pond towards the Van Bibber Creek is a proposed excavation to drain that eastern pond, negating any benefit of water delivering to that pond. The water rights do not allow water storage in any ponds anyway. So that part of the construction plans is worthless and wasteful of water and construction costs.

Therefore the Prospect Recreation and Park District should abandon all parts of their proposal involving irrigation use of water from the Alford Selman Lateral Ditch, thereby greatly decreasing the construction costs. Prospect should be encouraged to sell or otherwise transfer their water rights to properties that can responsibly use the valuable irrigation water rather than wasting it on this natural prairie grass area.

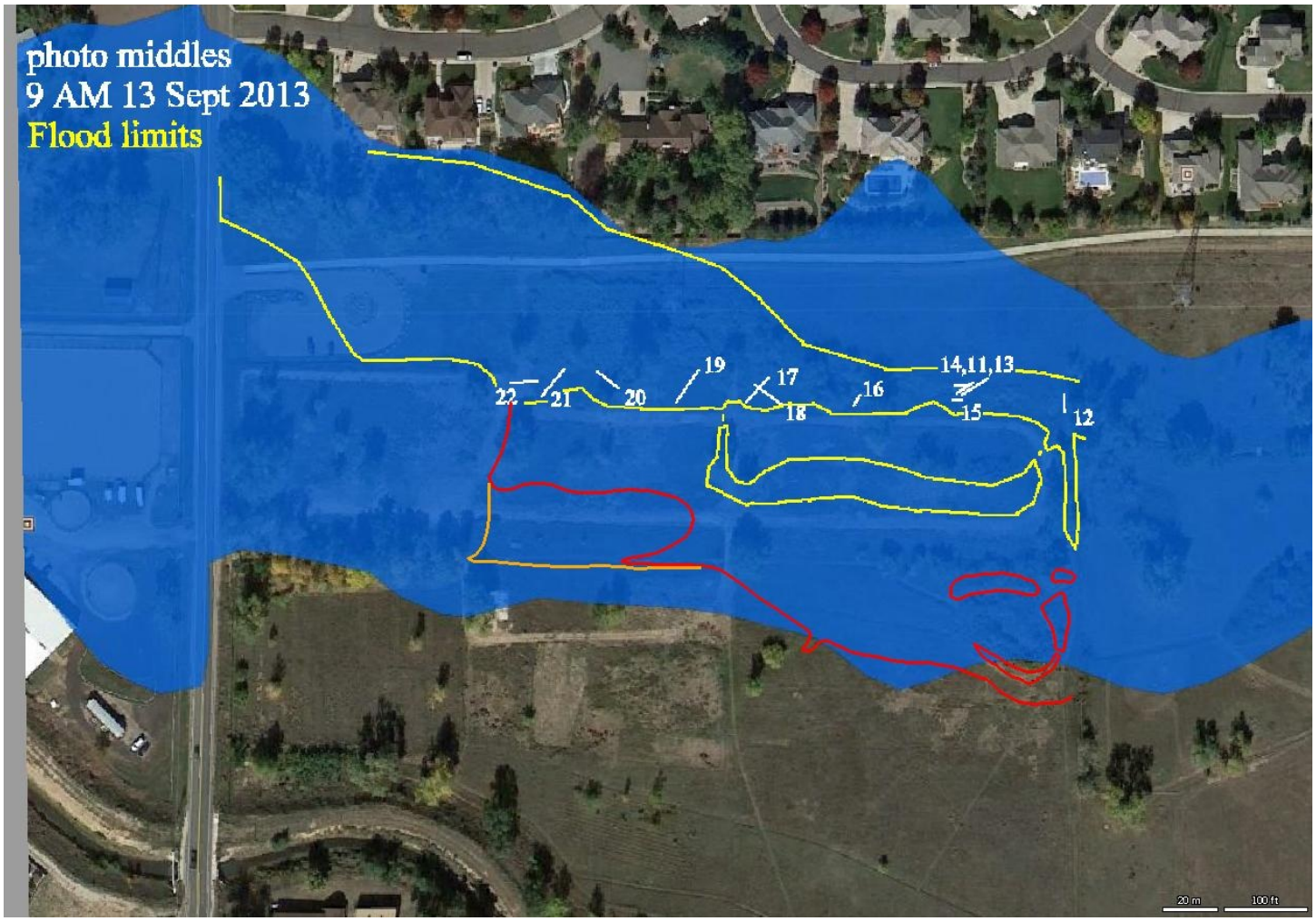
Three Gravel Loops



The construction plan specifies the total removal of the three gravel loops in the lowlands, including any fabric. That means down to the dirt, a depth change of perhaps a foot. The lateral extent of the gravel loops is much greater than shown in the construction plan drawings and in the aerial imagery, such as that above. The drawings and imagery show only the mowed pathway. The drawings do not include the large rectangular gravel patch interior to the lower loop, just south of the yellow "ditch" word, but that shows in this aerial image.

In the September 2013 flooding of Van Bibber Creek the gravel loops performed well as a set of levees. The

edges of the flood were mapped at 9 AM on 13 September 2013, as the waters started to recede, visually noting affected vegetation patterns, and taking photos. The cyan lines in the above illustration show the maximum flood edges on a recent aerial image that shows the new parking lot. The scars of the old parking lot are visible with a flood edge crossing it. Water backed through a drainage pipe under the northern loops, allowing flood water into the eastern loop. That water then went through another drainage pipe in the far east and returned to Van Bibber Creek.



This image repeats the 2013 flood edges on an older aerial image, with semi-transparent blue showing the official flood plain. The white numbered lines show the lateral extents and frame number endings of photos taken at the indicated time and date. (All photos are included in a document available on the web site.) The slopes along the flood edges were measured to be about 16 feet per 1000 feet, which is 1 foot per 62.5 feet. Using the lidar 1-foot contours of the construction proposal and a similar slope for most of the water edge, it was estimated how a similar flood might extend southward if the gravel levees are removed. That is represented approximately by the red line. The loops in the eastern part would be islands around the pond from the mounds of dirt already there. If the next flood is slightly higher its extent might reach the orange line. It is recommended that the gravel loops **not** be removed, thereby eliminating the great costs of their removal.

There is another reason to retain those loops. After the beginning of COVID-19 restrictions the public was allowed unofficial and unlimited access to the Serene Conservancy property. The loops became desirable paths for people walking themselves and their pets for exercise. The 3-loop design gave opportunity to walk any or all of the loops and in any direction. The gravel loops are very durable, even under horse traffic. The abundant use of the loops has worn down the vegetation, making it nearly unnecessary to mow the pathways. Removal of those walking paths would be greatly displeasing to the present walkers. The path replacement design in the

construction plan is very unattractive to the walking public.

Proposed Pathways
The construction plan proposes a single new pathway through the lowlands with switchbacks up the hill to the south. This is to be surfaced with crusher fine gravel. There is one side loop in the lowlands that is grass-based on dirt and less durable.


Eastern paths in Two Ponds National Wildlife Refuge

Though the uphill pathway looks artistic in design, its shape is based on having a slope not to exceed 5 degrees. That is similar to ADA requirements, as for wheelchair access. That aspect was discussed by the Foundation Board. Though Jeffco Open Space does not usually have a similar slope restriction in their rugged ground locations, indicating that it is not a requirement, the Prospect plan put in that restriction anyway. At Two Ponds Refuge (east of 80th & Kipling in Arvada) there are two pathways going up an eastern hillside, shown in this illustration. There is a gravel-based set of switchbacks with such slope restrictions. Through the middle is a direct path of mowed vegetation. Weeds and other vegetation tend to encroach the switchbacks because they are rarely used. They have been resurfaced with more fine gravel since this aerial image. The public likes the direct, shorter path to get to and from the higher terrain.

At the Serene Conservancy there is a slightly curved direct route between the highlands and lowlands. During this period of unrestricted access to the property, this is the route that the neighbors use and like. No one creates an alternate pathway by repeated use. Therefore the existing path is being preferred by the public. It can be improved and made more durable with a coating of crusher fine gravel in the future with much less effort and cost than the pathway proposed in the construction plan. The pathways in the construction proposal should be abandoned in favor of retention of the existing gravel loops and existing direct pathway between high and low terrain.

The unrestricted access has resulted in two narrow pathways by public use. There is one in the lowlands at the far east, running from the eastern gravel loop, along the fence line east of the eastern pond, and then into the open field with no final connection to anything else. The other runs from the western end of the upper pond, down an existing ramp on canal property, downward across the field through the small grove of trees and shrubs, finally connecting to the southern gravel loop in its middle. These narrow pathways are used by walkers and their dogs. The eastern path was mowed in the past and connected to the highlands. No action is recommended for these two minor pathways, as the public use of them is minimal.

Public Meeting
As part of the planning process, Prospect had one public meeting at which the contractor for the construction plan presented two possible plans. There was minimal public participation, and the present plan resembles one of the two presented. The major reason for the low turnout is that before COVID-19 the public was not supposed to be on the Serene Conservancy property. Therefore they had little to no knowledge of its features and therefore not much interest in its development, and minimal basis for qualified opinions. After the start of COVID-19 confinements, the use and appreciated interest in the property has increased greatly. In general, the public likes the property left in its present form, rather than with the developments in the proposed plan.

In addition, the neighborhood composition has been changing, with an increase in young families. The children enjoy running freely and safely in the adjacent highlands. The new property owners and taxpayers are displeased with the proposed changes and especially with the possible costs. They are also annoyed that they are not allowed a voice in a new Public Meeting.

The Prospect Foundation Board members who approved the construction plans rarely, if ever, visited the

property for their own enjoyment (with one notable exception). They appear to the neighborhood as absentee landlords who disrespect local preferences. There should be another Public Meeting at which the construction plan and its numerous impacts are discussed and modified, long before the plan is sent out for bids, contracts, and construction. I suspect that it is likely that only the picnic shelter and maybe the playground (without the un-needed irrigation) will be approved by the public.

Future Adjustments

Leaving the eastern thirteen acres in their present natural condition avoids much environmental damage and costs. Eliminating the irrigation part of the construction plan will, as a byproduct, reduce the presence and health of noxious invasive weeds, of which there are several species on the State's weed control list. The direct pathway between high and low terrain should remain in place with a possible increase in durability with crusher fine gravel. The eastern pond in the lowlands needs to be cleaned of debris, but not during the seasons in which Redwing Blackbirds are using that area.

The Alford Selman Lateral Ditch itself leaks water. During maximum flow in the Ditch the first two private properties south of the Ditch after it crosses the Croke Canal experience flooding of parts of their land. Mr. Allan's meeting and relaxation area is thereby restricted by the resulting water pool. Ms. Ward's beautiful garden area suffers plant death from the excess water. The Ditch leak farther to the east, shown in the illustration, and promotes the continuing expansion of the extent of the cattail swamp and the healthy presence of the invasive noxious weed Purple Loosestrife. That weed is on the State's A list for mandatory weed eradication. Some water seeps underground into the upper pond, maintaining a shallow breeding puddle for mosquitos. (No mosquito dunks were supplied by Prospect for deployment in that pond this past year.)

My personal recommendation is that the Alford Selman Lateral Ditch be lined along its extent from the Croke Canal to at least south of the southeastern corner of the Serene Conservancy property. Initially I had thought of cutting 16-inch PVC sewer pipe into half-pipe sections, screwed together at the joints and opening upwards for easy cleaning. However, Mr. Allan, a contractor, suggests that thinner flexible and durable sheets would cost much less and be easier to install. Lining the Ditch would also make it much easier to clean in the Spring before water flow begins. It would stop or reduce the seepage of water to the areas adjacent to the Ditch.

Please consider these things to reduce the waste of valuable water. I recommend that the Prospect Recreation and Park District revise their construction plans accordingly, and before contracting and construction begin. Neighboring property owners will also be appreciative of a wiser use of their property tax money. They already prefer that the Serene Conservancy area be left alone, as the natural area that it is, and not developed according to most of the Prospect construction plan.