



**PUBLIC WORKS DEPARTMENT**

CITY HALL

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**CITY COUNCIL STAFF REPORT**

Meeting: May 17, 2011

Subject

Report on the Golf Course Irrigation Upgrade – SCCP Phase II Trail & 8<sup>th</sup> Hole Conflict Mitigation Alternatives.

Recommendation

Receive Report.

Discussion

In June of 2010, Council approved the CIP for fiscal year 2010/2011. The FY 10/11 CIP included a \$550,000 project to upgrade the 40 year old irrigation system at the golf course. The existing irrigation system is the original that was installed by the former private owner in the early 1960s. Over the years, the lines, joints and sprinkler heads have deteriorated and cracked to such an extent that leaks and operational repairs are frequent and expensive. With the recent large increases in the cost of water, it has also become imperative to make the system more efficient.

The golf course was originally irrigated with water taken from a well, constructed in the 1940s, located at the back of the concession stand in Blackberry Farm. The water was pumped upstream to a large steel holding tank and then pumped back down to the golf course irrigation lines. In 2002, the tank bottom and side wall were discovered to have rusted out beyond repair and it was taken out of service. Irrigation of the golf course was then switched over to the City's potable water system from San Jose Water Company. During construction of SCCP Phase I, the tank was removed and recycled.

Before construction of SCCP Phase I, the golf course ponds were fed directly from an "intake gallery" on the bank of Stevens Creek, near the current educational access point. The gallery was positioned near the bottom of the creek but during low creek flow in the summer months, very little and sometimes no water flowed into the ponds. This irregular and low flow of water contributed to the choking growth of cattails in the ponds. The alternative domestic water source was also considered too expensive to use as a water source for the ponds and very little was ever used. The ponds will continue to deteriorate until they are cleaned out and a new water source is provided.

When the golf course irrigation project was under consideration, staff from Parks and Recreation and Public Works began to consider the possibility of reactivating the well and using the water to fill the ponds, with the potential of using that pond water to irrigate the golf course. The City is still has water rights to the well water, as determined by the former City Attorney. A water line was installed in Phase I between the well and the upper pond in anticipation of one day using the well water to fill the ponds.

The proximity conflict between the 8<sup>th</sup> hole and the trail for Phase II is made more difficult by the location of the lower pond, reducing the alternatives for additional separation. Parks & Recreation staff have long had the desire to clean up the lower pond and reconfigure it to a better shape and size. The Golf Course Irrigation Upgrade project was seen as an ideal opportunity to not only reconfigure the pond for irrigation purposes, but to also change its shape to allow more space between the 8<sup>th</sup> hole and the trail.

Unfortunately, the Golf Course Irrigation Upgrade project is not sufficiently funded to accomplish all of the goals stated above. The original \$550,000 budget was established to replace the main and lateral irrigation lines, provide new sprinkler heads and automated controllers, clean out the ponds, and reactivate the well to fill the ponds. For this limited scope of work, the budget is sufficient.

Following Council's direction to investigate alternatives to mitigate the potential conflicts with the 8<sup>th</sup> hole and the trail, staff conducted a "design charrette" with key design members of both the Phase II project and the Irrigation project. That all day effort produced several golf course reconfiguration alternatives and cost estimates that address all of the goals listed below:

- Reduce or eliminate the impact of the trail location on the 8<sup>th</sup> hole
- Replace the outdated and inefficient irrigation lines
- Fill the ponds with less expensive natural water rather than expensive domestic water
- Rehabilitate the ponds and create native habitat
- Use the ponds as an irrigation reservoir and line them to reduce water leakage
- Substantially reduce the annual water bill for irrigation
- Prevent chlorinated water from potentially entering into Stevens Creek

The design team identified three concepts that accomplish all of the goals listed above (Attachments C-1, C-2 and C-3). They range in cost between \$1.1M and \$1.25M, of which the City has already budgeted \$550K. The budget shortfall ranges between \$550K and \$700K.

Given that the shortfall is a substantial amount of additional money, staff looked into the possibilities of breaking the project into basic elements relative to potential savings in annual operational expenses.

The cost of watering the golf course this past year was about \$60,000. In 2002, when the irrigation water source was switched over to San Jose Water, the annual cost was about \$30,000,

because 40% of the water was supplied by the well and the other 60% came from San Jose Water, which has generally cost twice as much as well water. In 2001, relying almost entirely on well water, we paid only \$19,000 to irrigate the golf course.

The current irrigation upgrade project, budgeted at \$550,000, will replace all the irrigation lines and may reduce the annual expense of water by about 15% by preventing leaks and inefficient watering cycles. It will also reactivate the well head and allow water back into the two existing ponds, but it does not include the funds necessary to prevent the ponds from leaking.

Substantially higher savings in water costs can be achieved by changing the source from domestic water back to well water. This change might result in an initial 55% savings, or about \$35,000. The cost of the well water is not likely to be subject to dramatic annual increases like those forecast for domestic water.

Irrigating the golf course requires a little more than 16 million gallons of water per year. Approximately 90% of that water is consumed during the six months of May 1<sup>st</sup> through October 31<sup>st</sup>.

The following alternatives provide outline scopes of work and budget shortfall information for consideration. It should be noted that Alternatives A and B will continue to rely entirely upon domestic water from San Jose Water Company for the golf course irrigation requirements.

#### Alternative A

This project is currently scoped and underway. It includes the reactivation of the existing well head, the rehabilitation of the ponds, and the replacement of the irrigation main line and the laterals, sprinkler heads and controllers. The well water will be pumped to the upper pond and allowed to run down to the lower pond. The lower pond will no longer overflow into the creek, but should that happen inadvertently, the water will not have any potential to contaminate the creek or harm the fish. It is currently budgeted at \$550,000 and scheduled for completion in the fall of 2012. **Shortfall: none**

#### Alternative B

This alternative would include reactivating the well head, cleaning the ponds, replacing the irrigation main line and laterals, sprinkler heads and controllers, and making minor adjustments to the 8<sup>th</sup> hole tee box, fairway, and green. The lower pond would be reconfigured to allow the entire 8<sup>th</sup> hole to move further away from the anticipated trail alignment. The lower pond would be prevented from overflowing into the creek as in Alternative A, but would need additional funding of about \$75,000 for a project total of \$625,000. **Shortfall: \$75,000**

#### Alternative C-1

This alternative is fundamentally different from the previous two in that the upper existing pond would be converted to a bio-swale and the lower existing pond would be completely reconfigured into a single 350,000 gallon reservoir lake, fed by the well head. The reservoir lake would then supply regular irrigation water through a series of pumps and supply lines to a new irrigation system of mains, laterals, sprinkler heads and automated controllers. The potable

water system would remain connected as a backup for emergencies or short term low flow conditions. In this alternative, the 8<sup>th</sup> hole would be moved a little bit further away from the Phase II trail alignment. See Attachment. It is projected to cost \$1,100,000. **Shortfall: \$550,000**

#### Alternative C-2

This alternative is different from C-1 in that the lower lake would be reconfigured into two separate lakes, with one of the lakes being located between a re-located 8<sup>th</sup> hole and the anticipated trail alignment. The lakes would together provide the reservoir capacity for the irrigation system and would be connected to each other by an underground pipe. See Attachment. It is projected to cost \$1,175,000. **Shortfall: \$625,000**

#### Alternative C-3

This two lake alternative is different from, and more expensive than, C-2 in that holes 5, 6, 7, and 8 are reconfigured and played in the reverse direction with rebuilt tees and greens that need improvement now. The reverse play of hole #5 reduces the need for ball protection on or near the bridge and also provides good separation from the trail. The lake configuration is also deemed to be a little more challenging. See Attachment. It is projected to cost about \$1,250,000. **Shortfall: \$700,000**

#### Sustainability Impact

Any one of the Golf Course Irrigation Upgrade alternatives will fully support the City's sustainability goals.

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Attachments: Alternatives C-1, C-2, and C-3