ITEM#: 29
DATE: 11-24-20

COUNCIL ACTION FORM

SUBJECT: REQUEST FOR CITY OF AMES TO PURCHASE ROSE PRAIRIE PROPERTY

BACKGROUND:

On August 31, 2020, City Council received correspondence (Attachment A) from the Board of Directors of the Friends of Ada Hayden Heritage Park (FAHHP) requesting the City to acquire the 170-acre parcel of land known as Rose Prairie. FAHHP believes this is a golden opportunity to expand Ada Hayden Heritage Park and there are several reasons to do so:

- Storm water runoff from this property continues to flow into Hayden Park carrying silt and nutrients and degrading the wetlands that were designed to protect the lake, Ames' back-up water supply.
- Converting this property to native prairie and other perennial vegetation would help ensure that the water quality in Hayden Park lake remains high.
- Expanding the park would remove some of the growing pressure of public use that is already beginning to show effects on the wildlife.
- At least three developers have attempted to build on Rose Prairie spanning nearly 20 years and failed. The most recent developer intended to locate a convenience store over or right next to the creek that flows through the property. A store with underground storage tanks would pose a long-term threat to the park.

On October 11, 2020, City Council received a letter (Attachment C) from the Friends of Ada Hayden Heritage Park (FAHHP) in response to the Staff Report provided to Council regarding the request to purchase the Rose Prairie Property. On October 13, 2020, City Council directed staff to place this item on a future agenda.

On November 20, 2020, City Council received additional correspondence (Attachment D) from FAHHP. This response comes after FAHHP had an opportunity to review the Staff Report. Jim Pease, President of FAHHP, also met with City staff to further understand the report findings before sending his response on the 20th.

To aid Council in assessing the feasibility of an alternate use of this property, staff feels it is important to provide information regarding three areas; 1) Water quality in the Ada Hayden Watershed; 2) Park needs in this north growth area; and 3) Development impacts of making the Rose Prairie property a park.

WATER QUALITY IN THE ADA HAYDEN WATERSHED:

Ada Hayden Watershed - Background

The total watershed that drains through the lake is approximately 2,200 acres. The watershed is roughly bounded on the south by 24th Street, on the east by U.S. Highway 69/Grand Avenue, on the north by 180th Street, and on the west by George W. Carver Avenue. The majority of the topography in the watershed is gently sloping, changing to moderately steep at the central creek that runs from the southwest corner of 190th Street and Grant Avenue and ultimately empties into the central wetland complex. The soils in the watershed range from very poorly drained to well drained, with the majority being poorly drained.

Presently, the land draining to Ada Hayden Heritage Park Lake from the west are dominated by agricultural land uses; primarily row crops and pasture. Drainage coming from the north and south is largely residential with some commercial uses.

For reference, the drainage from Rose Prairie originally (prior to Ada Hayden Heritage Park construction) dumped directly into the south lake via a channelized ditch. As part of the park construction, the channelized drainage ditch was intercepted and routed through the west central constructed wetland complex prior to discharging into the southern lake.

Over the years, there have been multiple assessments of the lakes at Ada Hayden and the water quality entering them. A very brief synopsis of each study is provided in Attachment B. In general, the studies have shown that the lake is overall healthy. Studies have shown highly variable performance of the constructed wetlands in the early years. A 2005 assessment showed a high-performing central wetland complex. A 2010 study, though, showed significant impacts of the wetlands as a result of the very wet summer, with the wetlands being a net exporter of nutrients. A 2017-2018 assessment determined that "…the Ada Hayden Lake is a 'healthy' lake, especially as it relates to nutrient concentrations." However, there is evidence that the nitrogen-to-phosphorus ratio is trending towards a level that would become more favorable for cyanobacteria (blue-green algae) to form. While not all blue-green algae are toxic, some can form microcystins, a liver toxin. These toxins, when produced in mass during a large-scale algal bloom, can pose a major threat to drinking water supplies and to humans and wildlife that are exposed to them. (It is important to understand that the Ames Water Plant does not take water directly from the lakes at Ada Hayden. The lakes are used in times of exceptional drought to artificially augment the flow in the South Skunk River, which in turn helps recharge the underground aquifer.)

Water Quality Modeling

Staff from the Water & Pollution Control Department utilized several different modeling tools to estimate the water quality leaving the Rose Prairie site under four different scenarios. The baseline scenario looks at the water quality leaving the site under the existing row-cropped agricultural conditions. The second scenario looks at the likely

water quality leaving the site based on the "Rose Prairie – Revised Master Plan" dated August 10, 2016. The third scenario looks at the water quality that could be expected to leave the site if the entire parcel were converted to a combination of beneficial treatment practices. The fourth scenario looked at the possibility of making additional targeted water quality improvements while working within the general land uses laid out in the Rose Prairie master plan.

The results of the modeling (shown in Table 1) suggest that the stormwater management included in the Rose Prairie Developer's revised master plan (second scenario) would make a significant improvement in the amount of nutrients and sediment being transported off the site, as compared to current conditions (baseline scenario).

Staff next attempted to determine what theoretical pollutant export could be achieved utilizing multiple common-use urban stormwater facilities across the entirety of the Rose Prairie parcel. Based on simulated models, the pollutant export for nitrogen, phosphorus, and sediment could theoretically be completely eliminated. For this scenario, the pollutant reduction was achieved by a combination of land conversion to restored native prairie, a nitrifying bioreactor (to treat the subsurface drainage coming from off-site tile drainage from the north), a constructed wetland along the central drainageway, an iron-enhanced sand filter (to target phosphorus runoff from the golf course), and two sedimentation basins.

Table 1: Nutrient Reduction Likely as a result of Rose Prairie Development

	Sediment (lbs/yr)	TN (lbs/yr)	TP (lbs/yr)
Loading Entering Rose Prairie From Northern Tile Drainage and Golf Course Runoff	13,218	8,075	323
Rose Prairie Property As It Exists Today (in row crops)	74,595	6,518	245
Current Pollutant Load Leaving Rose Prairie Property (Baseline Scenario)	**87,813**	**14,593**	**568**
Estimated Pollutant Load Leaving Rose Prairie if Developed "As Proposed" (Second Scenario)	**4,195 (95%↓)**	**1,513 (90%↓)**	**143 (75%↓)**

Table 2: Theoretical Nutrient Reduction That Could Be Achieved by Placing the Entire Rose Prairie Development in Best Management Practices

	Sediment (lbs/yr)	TN (lbs/yr)	TP (lbs/yr)

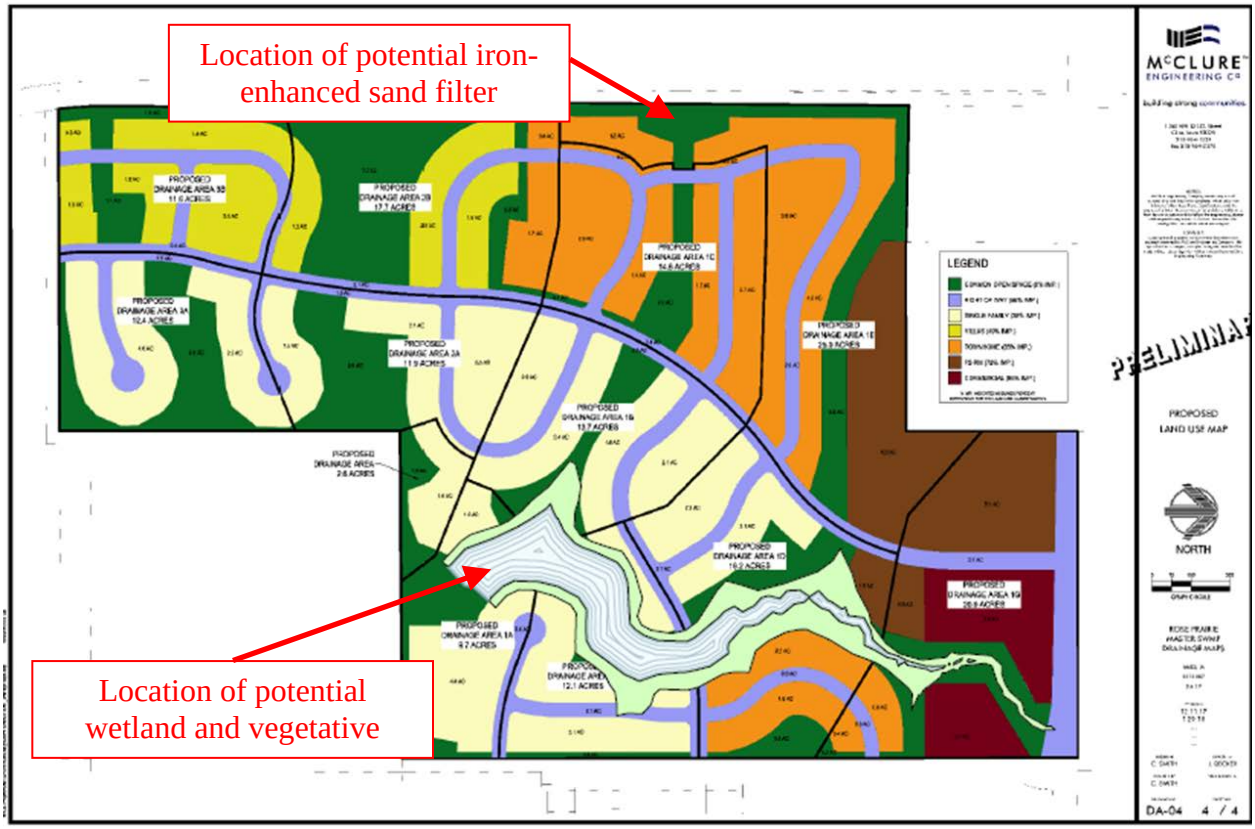
Estimated Pollutant Load Leaving the Rose Prairie Parcel with Maximum Water Management Practices Implemented (Third Scenario)	**0 (100↓)**	**0 (100%↓)**	**0 (100%↓)**

The fourth scenario looked for targeted opportunities to achieve specific water quality improvements while not significantly changing the overall site development concept. Staff determined that targeting the off-site pollutant loadings entering the Rose Prairie parcel would offer the greatest water quality improvements with the least land requirements and the least disruption to the proposed development plans.

- **Implementing a wetland-sedimentation basin around the Ada Hayden tributary would offer added stability and less erosion.** The wetland-sedimentation basin would also serve a second purpose to treat the subsurface flows from the Story County tile drain. (See the Rose Prairie stormwater management plan below with the wetland overlaid.) **However, this would still pose a challenge for constructing the east-west road that the developer has expressed concern about.**

- **Targeting the off-site phosphorus loading from the golf course with an iron-enhanced sand filter would significantly decrease the phosphorus export into Ada Hayden Park.** It should be noted that even without this sand filter (also shown on the following stormwater management plan, the modeled phosphorus export after the Rose Prairie development is complete would be 143 pounds per year. The wetland complex inside Ada Hayden that the Rose Prairie tributary discharges into was designed to accommodate a load of 670 pounds per year.

Thus, the modeling suggests that if/when the Rose Prairie development is complete, the existing wetlands are sufficiently protective of water quality in the lakes without the installation of any additional water quality practices that target phosphorus.



When considering the range of possible water quality impacts, one additional water quality issue was considered. The proposed site development plan allocated a portion of the northwest corner for commercial development to include a gas station. The commercial area as proposed would straddle the tributary that ultimately drains into Ada Hayden Park. Gas station runoff can be a heavy contributor of gasoline, chloride, and oil and grease to receiving waters. While less likely, leaking underground storage tanks (USTs) have historically been a cause of contamination of shallow groundwaters.

A 2011 Stream Assessment by Iowa State determined that the Ada Hayden tributary located on the Rose Prairie Property is one of the least stable streams in Ames, with over 70% of the channel categorized as downcutting or widening. A 2008 study by Iowa State determined that the shallow groundwater in this area would ultimately end up in the lake itself due to the direction of groundwater flow.

The risk of a leak here is no greater than a leak from a new gas station anywhere else in the community. There are existing gas stations in Ames that are situated such that any leaks would travel directly towards a drinking water well; so the risk on the Rose Prairie parcel is not unique and appears to be a risk that has been accepted in other settings. But, the proximity to the lake and the groundwater flow directly towards the lake might be a factor to consider.

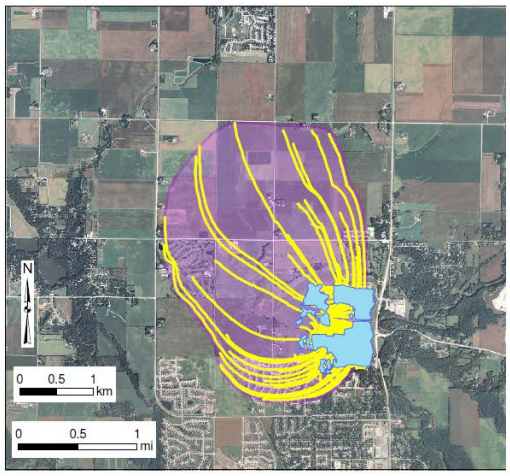


Figure 37. Particle tracks originating from the lake (layers 1-4) traced back to their point of origin (ground surface). Particle tracks define the groundwater capture zone for the lake or the ground-watershed (purple shading).

Christianson, Evan. 2008. A Hydrogeological Investigation of Ada Hayden Lake.

It is staff's opinion that an engineering assessment of the existing wetlands' nutrient reduction capacity is not necessary. The modeling just performed by City staff shows a capacity very similar to what the wetlands were designed nearly 20 years ago to accommodate. The wetlands have been monitored in back-to-back years on multiple occasions since the City acquired the property. The results show, within an expected range of seasonal variation, that the wetlands are performing as envisioned.

It is reasonable to expect that the wetlands will need to be periodically "refreshed" due to sediment loading, similar to other stormwater basins around the City. This is a normal maintenance activity for a wetland in a developing watershed.

PARK NEEDS IN THE NORTH GROWTH AREA:

As Council has been developing the Ames Plan 2040, discussion has occurred regarding what principles related to 1) Parks, Trails, and Open Spaces; and 2) Environment; should be included in the plan. Since this plan will direct growth, park development, and environmental sustainability, some elements of the draft plan need to be considered regarding FAHHP's request.

Park, Trails, and Open Spaces Principles and Actions

Eight principles were discussed on May 19, 2020 and are shown below as a refresher:

I. Reflect community values with public space for social and physical wellbeing that private open space alone cannot accomplish
II. Accessible and desirable open space opportunities
III. Concurrent growth of park land with development
IV. Maintain and expand the system of park types to varied needs of the community overall
V. Plan a system of interconnected greenways
VI. Stewardship and variety of open space
VII. Fiscally Responsible
VIII. Support Partnerships

In addition to this, seven actions are being proposed to accomplish the principles. These actions follow with some listing additional information:

1. Maintain a high quality and ample park system and recreation facilities as the City grows.
    A. Plan for new 40-60-acre community parks with recreational facilities in larger growth areas. This area is part of the North Growth Area proposed in Ames Plan 2040.

    B. Strive to maintain an overall open space similar to the current ratio of approximately 18 acres per 1,000 people (include public land, partnerships, greenways, parks, special facilities).

2. Plan for park dedication as part of the development process with parkland dedication based upon Neighborhood Park needs.

3. Provide a park system that supports a variety of user needs.

    A. Utilize a hierarchy of Regional, Community, Neighborhood, Specialty Parks, and Recreation Facilities to serve the various needs.

4. Support the experience.

5. Support Parks and Open Space environmental opportunities.

    A. An open space framework is valuable to the character of the community. In some instances, open space may provide primarily environmental benefits rather than recreation benefits.

    B. Designing for environmental priorities includes:
        - Natural stream way preservation and water quality enhancement for supporting human and aquatic life (Ada Hayden Watershed)

- Natural resources/habitat areas conservation

6. Apply conservation standards in growth areas.

7. Identify partnerships for meeting service needs.

Based on the above information, one could make the argument that acquiring the Rose Prairie property makes sense. A portion of the land could be used for a community park with community amenities (sport fields/courts, playground, etc.) that are not part of the philosophy for Ada Hayden heritage Park. Much of the north growth area is within the Moore Memorial Park service area of two miles, however, Moore Memorial Park has a similar philosophy as Ada Hayden with prairies, trails, and no community amenities besides shelters and playgrounds.

In the latest Rose Prairie plan, the Developer has set aside five acres for a neighborhood park. This park would serve all of Rose Prairie and most of the Hunziker development to the south. Quarry Estates and Hayden's Crossing homes will be on the fringe of the service area of this park.

Ada Hayden Heritage Park for many is the crown jewel of the park system and because of this, it gets plenty of use. Expanding the park across Hyde would provide additional opportunities for park users and additional habitat for wildlife and potentially alleviate some of the pressure on Ada Hayden Heritage Park. There will be additional operational costs in terms of staffing and equipment because current levels of each are not enough to maintain an additional 170 acres of park land.

In addition to the purchase price, which is listed at $3,700,000, there could be development costs as much as $7,200,000 plus utilities (See Attachment E) depending on which features are selected for the new park. In comparison, the cost to purchase Ada Hayden was approximately $2.9 million and development costs were approximately $3.8 million.

DEVELOPMENT IMPACTS:

The Rose Prairie site was most recently approved for development with a Master Plan in 2016. The Master Plan requires development as a Conservation Subdivision and permits a variety of housing types for up to 620 units and a small commercial node. The plan also includes dedication of a neighborhood park and extensions of bike trails and sidewalks**. Importantly, the mandatory Conservation Subdivision standards and the City's Post-Construction Storm Water Management standards of Chapter 5b are designed to improve water quality and reduce runoff that results from development of a site. Protection of the Ada Hayden watershed was at the forefront of creating the Conservation Subdivision standards and development of the site is seen as a benefit to water quality compared to existing conditions**.

In support of the development of the site, the City installed water and sewer mains and paved Hyde Avenue, assigning proportional costs to developers of property located along

Hyde Avenue. The City will be repaid for these investments as development occurs. The Rose Prairie site has an estimated outstanding assignment of cost that includes a $866,000 street assessment, water connection fees of $240,000, and sewer connection fees of $363,000. Additionally the City would need to support the extension of a sewer line to the west for future development of the Borgmeyer property if it does not occur as part of a development project.

City Council identified the Rose Prairie site as part of our Tier 1 growth in relation to Ames Plan 2040. This means it is viewed as an area that is readily developable through logical extensions of services or based upon prior extensions of infrastructure. Rose Prairie is currently the single largest piece of vacant land in the City that is zoned for development**. Acquiring the whole site for a park would stress our current vacant land inventory to find replacement land resources to meet near term development needs. In essence, there is no other obvious additional area of equal size that is immediately able to be developed as a replacement for housing needs if the land was utilized for a park. In addition to making up for the costs of prior investments, the City would need to proactively look at facilitating other development with near term infrastructure extensions to address housing supply needs if this site was no longer available for housing.**

Based upon the Tier 1 scenario analysis from Ames Plan 2040, the City would need to plan to extend water and sewer infrastructure to the south or west at a cost of between $2.5 to $6 million dollars to create readily developable land similar to the Rose Prairie site. In addition, paving of County Line Road in the West Growth Area would be an additional cost estimated at $1.5 to $2.5 million dollars. Other planned road improvements are not included in these initial costs estimates as they can occur as development occurs.

Some of these estimated costs will be necessary for the City to incur in the future as we expand into the planned growth areas, but the need would be accelerated as soon as the second year of the current CIP if needed to replace available land used for a regional park. Some of the water and sewer costs could be recouped through connection districts as was originally intended with Rose Prairie, but the City would have to spend the money up front to extend some of the infrastructure.

BOND REFERENDUM:

Given the magnitude of the expenditures needed to purchase the land for only wetlands, develop it as a community park, or both; a bond referendum will be needed. The Council will have to decide if these options should take precedence over other projects that will need voter approval in the near future such as a new indoor acquatic center or fire station.

ALTERNATIVES:

1. Do not approve the request from the Friends of Ada Hayden Heritage Park that the City should acquire the Rose Prairie Property.

2. Approve, in concept, the request from the Friends of Ada Hayden Heritage Park to acquire the 170 acres of the Rose Prairie property for purposes of a wetland and a community park, and direct staff to prepare an action plan to implement this alternative.

3. Approve, in concept, the request from the Friends of Ada Hayden Heritage Park to acquire the 170 acres of the Rose Prairie property for purpose of wetlands and native vegetation and direct staff to prepare an action plan to implement this alternative.

4. Approve, in concept, the request from the Friends of Ada Hayden Heritage Park to acquire the 40 to 60 acres of the Rose Prairie property for purpose of community park and direct staff to prepare an action plan to implement this alternative

5. Direct staff to evaluate other options as determined by City Council.

CITY MANAGER'S RECOMMENDED ACTION:

The Rose Prairie developers have been in contact with City staff to discuss moving forward with their project. They have indicated an interest in modifying their approved Master Plan (but still retain the conservation subdivision and maximum of 620 units) and development agreement in the coming months in order to initiate development of their property in 2021. Therefore, it continues to appear that the primary goals for protecting the quality of Ada Hayden can be accomplished without the acquisition of the 170 acres of Rose Prairie land. The City's development standards will yield improvements to current water quality by replacing the unmitigated field runoff with modern control measures.

The City has already invested a significant amount of money in support of housing development in this area that makes the land expensive to purchase on the open market and would require the City to absorb the street assessment and utility connection costs that have been apportioned to the developer. Although part of the site could be developed as a 40 to 60-acre recreational/community park, filling that need is more necessary with the buildout of North Growth in the future and could still be accommodated by securing land north of 190th Street if it is needed.

Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1, as noted above.

Attachment A

31 August 2020

Dear Mayor Haila and City Council Members:
Adjoining Ada Hayden Heritage Park on the western boundary is a 170-acre parcel of ground that developer, Matt Eller, called *Rose Prairie*. There are signs on the property that it is for sale. Several of us with Friends of Ada Hayden Heritage Park believe this is a golden opportunity to acquire the property and expand the park. There are several good reasons for doing this:

- Storm water runoff from this property continues to flow into Hayden Park carrying silt and nutrients and degrading the wetlands that were designed to protect the lake, Ames' back-up water supply.
- Converting this property to native prairie and other perennial vegetation would help ensure that the water quality in Hayden Park lake remains high.
- Expanding the park would remove some of the growing pressure of public use that is already beginning to show effects on the wildlife.
- At least three developers have attempted to build on Rose Prairie spanning nearly 20 years and failed. The most recent developer intended to locate a convenience store over or right next to the creek that flows through the property. A store with underground storage tanks would pose a long-term threat to the park.

In 2001, as a Commissioner for Story County Soil and Water District, Erv Klaas was successful at getting funding for the Hallett's Quarry watershed to implement soil conservation practices on farmland in the watershed. Several farmers north of 190th Street participated, and the District installed grass waterways and helped the farmers develop nutrient management practices. We quickly became aware that the land south of 190th and adjoining the park to the west was crucial to protecting water quality in the park. That area, in fact, had the highest potential for sediment loss on the whole watershed. However, the property was owned by a developer who did not wish to participate in government programs. Sean McCoy, who conducted the watershed assessment on behalf of the Conservation District, stated that conservation practices on the Rose Prairie property were crucial because surface water drainage from the farmland to the north flows through the Rose Prairie property via a small creek which then enters directly into the park on the west side. When the city of Ames later annexed and zoned the property, they rightly placed an overlay requirement that all development next to the park be developed with Low-Impact Designs (aka Conservation Designs). Rose Prairie has been farmed for many years without soil conservation practices. The constructed wetlands within the park undoubtedly are being impacted by silt deposition from Rose Prairie that will shorten the effective ability of the wetlands to remove nutrients and other impurities from surface run-off before the water enters the lake. This serves as Ames' critical secondary drinking water supply.

In addition to surface water runoff, the lake at Ada Hayden is fed by groundwater in the porous landscape. Since 2006, Dr. Bill Simpkins, a professor in groundwater and

geochemistry from ISU, has conducted studies on wells surrounding the park and found that a plume of water-soluble phosphorus was migrating toward the lake from the west, likely sourced from agricultural land and the fertilizers applied to it there. While most phosphorus is known to come from surface waters where it is attached to soil particles, this phosphorus is in an ionic, water-soluble form that moves in groundwater. As a result of the particular geology of the area, it is a potential threat to the water quality in the lake, adding nutrients which promote algae growth. Putting the Rose Prairie area under perennial vegetation rather that row-crops would help address this problem.

Rose Prairie has changed ownership at least three times since the park was formed. None of these developers have been successful in designing a residential development that would be compatible with protecting the park and give them their desired return-on-investment. We don't expect the next owner to be any more successful.

Based on nearly 20 years of biological surveys, Ada Hayden Heritage Park is a microcosm of biodiversity in the midst of an expanding urban area. We have documented over 360-winged species—birds, butterflies, dragonflies, and damselflies—using the park, and the list is growing. In addition, it is a haven for mammals, including river otters, mink, badgers, beavers, deer, and many other species. The possibility to see these species enhances the lives of Ames citizens and brings them outdoors to the park.

Hayden Park has been extremely popular with the public who owns and uses it. Many are concerned about the increased public use that would be added with further development that would come from Rose Prairie. Thus, park expansion would help to preserve additional habitat for the wildlife that people enjoy so much and provide additional recreational space for an expanding population. Having the land in perennial vegetation would also help maintain water quality in the lake by reducing surface water runoff from impermeable surfaces (roads, houses, etc.), by absorbing more water and reducing stress on the constructed wetlands designed to protect the lake's water.

One potential source of funding to acquire the land would be a loan from the State Revolving Fund for Source Drinking Water Protection. The payback would be over 20 years likely at zero percent interest, we believe. There may be other sources to acquire a right of first refusal on the property to give us some time to organize funding for acquiring the property. We would happily assist city staff in connecting with those entities. We believe this would be a forward-looking acquisition for the City of Ames that demonstrates the City's ongoing concern for water quality and the health of its citizens.

We believe that it is imperative that the city takes steps to preserve and enhance the park, adding to the rich heritage that Ames City Council and Ames citizens created in 2004 when they dedicated the park in August of that year. The Friends of Ada Hayden Heritage Park has been a partner in ongoing efforts to enhance, manage, and educate our fellow citizens about the park. We hope you will partner with us in 2020 to help ensure the park's future and acquire this 170-acre addition to the park.
Sincerely,

Jim Pease, President
Board of Directors, Friends of Ada Hayden Heritage Park
Erv Klaas, Past President and Friends Founder
Wolf Oesterreich, Vice President
Stephanie Fox, Secretary-Treasurer
Paul Domoto
Kevin Kane
Robert Klaver
James Patton
Tana Tesdall

Attachment B

EXCERPTS FROM WATER QUALITY STUDIES AT ADA HYDEN PARK

2001-2004 study by Iowa State (J. Downing, "Final Report – Ames Quarry Lakes Diagnostic Study"). This was the primary investigative report that constituted the "due diligence" efforts of the City prior to acquisition of the former quarry as a park.

> *"The south basin of Ames Quarry is a relatively nutrient-poor water body, but it is much more nutrient-rich than the north basin…Nitrate-nitrogen seems to be fueled by watershed inputs, particularly rain events…The highest total phosphorus concentrations were seen following rain events, suggesting transport by precipitation or erosional activities…the south basin is normally P-limited, and is almost never N-limited. This indicates that nutrient conditions are not conducive to Cyanobacterial blooms…The prevalence of inorganic forms of nitrogen and phosphorus at site A (the tributary that drains Rose Prairie), as well as high concentrations of these constituents, indicate nutrient losses from over-application of fertilizer on the agricultural fields in the watershed…"*

2005 study by Iowa State (T. Stewart, "Pollution-filtering Capacity of Ada Hayden Wetlands: An Assessment Focusing on Biological Components") included these high-level observations regarding the wetland complex where the Rose Prairie drainage discharges:

> *"…positive signs included establishment of aquatic plant populations…relatively high invertebrate biomass and abundance, and occurrence of large-bodied invertebrates. Additionally, turbidity in these ponds usually met water quality standards established by the United States Environmental Protection Agency."*

Later in the report, the following observation was provided:

> *"A variety of larval and adult amphibians were observed or captured in wetland ponds. Because the presence of amphibians is indicative of good environmental health, the high abundance and diversity of frogs and toads was a sign that the Ada Hayden wetlands can support aquatic life. Occurrence of the northern cricket frog was particularly encouraging, since populations of this species have declined or disappeared across much of North America."*

2006-2007 study by ISU (W. Simpkins, "Water supply for Ames in the 21st Century: A Comprehensive Reassessment of the Ames Aquifer") provided these observations regarding Ada Hayden Heritage Park.

> *"…Wetlands receiving overflow from Tributary A (Rose Prairie drainage ditch) are recharging the water table…It appears that phosphorus is also being transported with that recharge water…*

"…it was estimated that the wetlands are able to capture 50 percent of the total P in the streams, which is a typical value for constructed wetlands…

"…data suggests that the aquifer is not connected hydraulically with the lake or the wetlands…

"…Total P and soluble reactive P (ortho-P) is present in all samples…suggesting that the lake could also be a source of P in the South Skunk River…groundwater accounts for between 14 and 54 percent of the total P load to the lake…Above-ambient Cl concentrations at shallow depths on the up-gradient side of the lake suggest contamination from agricultural activities or road salt.

2009-2010 study by ISU (J. Downing, "Ada Hayden Heritage Park 2009-2010 Water Quality Monitoring") included the following passage in the executive summary.

"Despite construction of the wetland complexes in 2003, there have not been noticeable improvements in lake water quality yet. Oxygen concentrations were rapidly depleted in deeper waters during summer months, which restricted the availability of deeper waters to aquatic life. These anoxic zones, which occupied 46% of the South basin's volume and 31% of the North basin's volume, appeared to be growing in volume compared to past years. Total phosphorus concentrations in the lakes were relatively low compared to average concentrations from all Iowa lakes. However, nutrient concentrations in deeper waters were relatively high and have increased through time. Total nitrogen and nitrate concentrations and nitrogen-to-phosphorus ratios have significantly declined in the South basin from 2001 to 2010 which will increasingly favor nitrogen-fixing Cyanobacteria through time."

2017-2018 study by State Hygienic Laboratory (J. Luzier, "Water Quality Sampling at Ada Hayden Heritage Park: May 18, 2017 to October 11, 2017 and April 5, 2018 to September 27, 2018")

"Average concentrations of ammonia-nitrogen, chlorophyll α, E. coli, total Kjeldahl nitrogen, orthophosphate, total suspended solids, total volatile suspend solids, and turbidity were generally less than or equal to the state-wide median value reported by the Iowa Department of Natural Resources (IDNR) (https://programs.iowadnr.gov/AQuIA/Programs/Lakes). The average trophic state indices, an indicator of the level of nutrients and algal productivity, were also less than the state-wide average reported by the IDNR.

"In both years, the phytoplankton community in both cells was dominated by cyanobacteria (blue green algae) for most of the field season. … Microcystin concentrations were highest in the spring of 2017 when algal biomass was the greatest. In 2018, microcystin concentrations were above the quantitation limit in

all nine samples collected from the south cell and in eight of the nine samples collected from the north cell.

"During both years, microcystin concentrations were less than the Iowa warning level and the 10-day drinking water health advisory for school age children and adults. Microcystin concentrations were greater than the 10-day drinking water health advisory for bottle-fed infants and pre-school children twice during 2017 and six times in 2018.

"Ada Hayden Lake was previously sampled by the Iowa State Limnology Laboratory from 2001 to 2006 and in 2009 and 2010. A comparison of data collected by the State Hygienic Laboratory and the Iowa State University Limnology Laboratory showed that the concentrations of nutrients and solids have not changed significantly since 2001. Although the results for some parameters appeared to trend up or down over time, none of the trends were statistically significant. Overall, the results of the 2017 and 2018 sampling indicate that Ada Hayden Lake is a "healthy" lake, especially as it relates to nutrient concentrations."

Attachment C

DATE: 11 October 2020

TO: Ames City Council

FROM: Jim Pease, President
Erv Klaas, Past President
Friends of Ada Hayden Heritage Park

RE: Rose Prairie Property

Thanks to Ames City Staff for giving a thoughtful analysis of our request for the city to acquire the 170-acre property to the west of Ada Hayden Park now called Rose Prairie. We concur that the three elements they have examined are critical in assessing our request: 1) water quality in the Ada Hayden watershed; 2) park needs in the north growth area; and 3) development impacts of making the area a park. They did not address the enhancement of the area's biodiversity.

City staff have presented a brief history of the watershed and some of the scientific studies which have been conducted. There is at least one study, however, that they have not cited, that of the Soil and Water Conservation District in 2004 that we believe is also a helpful analysis. It notes that some of areas of highest potential erosion and nutrient loss are within the current Rose Prairie property. Further, while we believe that the conservation overlay and a resulting low density development could, in fact, result in runoff that is significantly less degrading to the wetlands than agricultural runoff, the park's wetlands may or may not be sufficient to handle the increase in water due to an increase in impermeable surfaces.

The four scenarios for nutrient loading presented by staff from the Water and Pollution Control Department are an interesting analysis. We would like time to review these models with them and examine the methodology. We would respectfully disagree with the conclusion that the existing wetlands are sufficient to protect the lakes without an additional water quality practices. We'd also like to examine the data regarding the conclusion that the wetlands are functioning well. To our knowledge, no regular current sampling is done for N and P runoff into and out of the wetlands nor have they been measured for silt loads.

Thus, we encourage Council members to choose Option 1 and place the item on a future agenda to allow for further discussion of our proposal.

Attachment D

DATE: 18 November 2020

TO: Mayor Haila and Ames City Council

FROM: James Pease, President, Friends of Ada Hayden Heritage Park

Thank you for the opportunity to respond to the Staff Report on our 31 August 2020 request for the City to purchase the 170-acre parcel now known as Rose Prairie. As indicated in our 11 October letter to you, we needed time to assess the models used in that report. Our response follows.

As the Staff Report indicates, the best protection for the park and the lakes is to acquire the parcel and convert the entire 170 acres to some form of permanent vegetative protection. This protection would likely include prairie, wetlands, and some trees, as well as some amenities not found currently in the Ada Hayden Heritage Park (AHHP), those more typical of a community park. This is clearly the best way to protect the park and its resources.

Why? Human need for parks

AHHP is certainly one of Ames' most used and popular parks. Developments to the north boundary of the park have increased human usage of the park's trails, fishing and paddling opportunities, wildlife-watching and other resources. Indeed, the use of public parks in Ames, in Story County, in Iowa, and across the nation have increased dramatically in the last 10 months, as COVID-19, a highly divisive election, a derecho, and other calamities have struck the nation. Parks—whether neighborhood, community, regional, county, or state—are the places to which we retreat to find peace, to find recreation, to find connection to nature.

Why? Biodiversity

Hundreds of other species also use the park, as documented by our on-going record-keeping of species in the park (see https://adahaydenpark.blogspot.com/). To protect this wild resource in the midst of urbanization is a continual challenge. The management plan we wrote is being implemented as well as possible by the City and by the Friends. As urbanization increases, habitat for other species decreases. Acquiring this additional acreage for biodiversity—something the Staff Report did not address—is clearly important and critically needed as the human population of Ames increases.

Why? Lake protection

The model that staff has used, the *Model My Watershed* web-based tool put out by the EPA, is a fairly robust tool for people to assess various theoretical impacts on a given watershed. It uses USGS, USDA, EPA and other local data to simulate various scenarios on a given watershed. Like all models, it works best by inputting real data. Much of the data used in the Staff Report is real, but it is not long-term data. Rather, the important reports used are points in time—a season, a month, a year—not longitudinal data. The scenarios they examined and the outputs obtained are not inaccurate but they are outputs based on limited time data, not longitudinal data. As you

will see later in this letter, we suggest that we try to obtain more long-term data to give us a more accurate picture of what we must do to protect the park and its waters.

The report to the Soil and Water Conservation District by McCoy (2004) of the AHHP watershed shows clearly that most of the most highly erodible land in the AHHP watershed is within what is now the Rose Prairie development (see attached figure in Appendix A). That erosion potential is in the range of 0*.3 to 1.5 tons per acre per year.* While the conservation overlay that the city has imposed on the development will help limit the soil and storm water runoff, it will not eliminate it, with or without additional measures within the development (like those in the Fourth Scenario in the Staff Report).

In his M.S. thesis, ISU graduate student Evan Christianson (a graduate advisee of Dr. Bill Simpkins at ISU), showed high mean concentrations of total and soluble reactive P in groundwater at depths of 35 ft. and 64 ft. on the west side of the north cell of the lake. Groundwater at these depths flows beneath the surface wetlands, thus bypassing them and going directly into the lake. He also found that total and soluble reactive P in water in the wetland water was ending up in the groundwater beneath it, which also flows to the lake. In a recent personal communication with Dr. Simpkins, he recalled that they discussed the implications of finding deep groundwater with high P coming into the west side of the lake. Because the groundwater P input cannot be controlled, adding *more* P from surface sources to the lake would not be a good idea.

We ALL agree—FAHHP, city staff, the City Council, Ames citizenry—that we must protect the park, the wetlands, and the lake. The whole existence of the park is predicated on that protection. The 2040 Ames citizenry would never forgive any of us if we failed in that mission. Our disagreements are based on how *best* to do that.

Would a Rose Prairie housing development protect the Park *better* than the agricultural land as it currently exists? We think there is no doubt that it would, at least in some respects. This is especially true since the developer who owned the land in the early 2000s refused all of the cost-shared conservation improvements offered on the ag land at the time by the Soil and Water Conservation District and it has continued to be row-cropped (see the report by McCoy). The modeling the city staff has done—even though it is limited by the amount of real longitudinal data they have for input—shows clearly that the N, P, and sediment loads would be lower in this development than off of agricultural land. Due to increased impermeable surfaces (roofs, roads, sidewalks, etc.) the water run-off increases, putting more water into the wetlands through the surface stream. The conservation overlay is intended to account for some of that, certainly. Land-owner education (like what we have tried to do with our recent AHHP Neighbors brochure) may further assist that. Climate change will, however, exacerbate it with an increasing number of large rainfall events.

The model does not account either for the new run-off pollutants that human development brings—the salts, the hydrocarbons, the plastics—and their impacts on wetland macro-invertebrate diversity and wetland functions. These are *not* negligible impacts and are not accounted for in the models presented. Remember: not only is this an important recreational

resource for the City, but also the backup water supply. The public would likely perceive this as dangerous.

What is also not accounted for in the models is the loss of potential habitat, the loss of biodiversity. Again, while the housing development might be somewhat better than a row-crop field, they both pale by comparison to permanent vegetation on the whole parcel.

The costs of such an acquisition to the city were also mentioned in the Staff Report as an impediment. The $3.7 M the current owners are asking is considerably above their purchase price a few years ago of $2.6 M. We strongly suspect that negotiations will produce a purchase price somewhere between those two figures. Further, the development of this parcel will be well below that of AHHP, since no lakeshore stabilization would be undertaken on Rose Prairie. Whatever other amenities are added—besides native vegetation, some wetlands, and some trails—remain to be designed, engineered, and priced. Again, we suspect it will be at considerably lower cost than indicated in the Staff Report. Although acquisition of this land should easily get a 0% loan from the Source Water Protection portion of the State Revolving Fund, a bond issue to repay it over 20 years would be necessary. Ames has the bonding capacity to handle it. A campaign for public support should be based on source water protection for AHHP and the lakes. Conservation is not free—we understand that. But neither are clean water and a high quality of life for Ames citizens.

For increased biodiversity of the area, for future recreational opportunities for Ames citizens, and for the <u>best</u> protection of the waters of Ada Hayden Heritage Park, the BEST alternative is to purchase the Rose Prairie land and convert the 170 acre property into a park.

Whatever decision you make regarding our request to purchase the whole of the 170 acres of Rose Prairie and make it into a park, we must act soon to make certain that we continue to thoughtfully protect the waters and land of Ada Hayden Heritage Park. Ames Citizens of 2040 and beyond are counting on us to do so.

We believe that several steps must be taken:

1) An engineering assessment of the current condition of the wetlands (perhaps by the firm that designed them) in their silt and nutrient processing capabilities should be made. Dredging of Pond G, for example, may be in order as considerable siltation (see photo, Appendix B) has taken place there. The original estimate for these wetlands to be re-dredged was, we believe, 20 years and we are approaching that. Continued agricultural use of the Rose Prairie land without any conservation interventions, plus the paving of Hyde Road, have likely both exacerbated that time-line, increasing siltation. Landowners of the Jensen property (now Quarry Estates and Hayden Crossing) and agricultural fields north of 190th both implemented conservation practices on those lands in 2004 to limit soil erosion. Rose Prairie did not.

2) There's a popular Chinese proverb that says: *"The best time to plant a tree was 20 years ago. The second best time is now."* The same is true for water quality sampling. We wish it had begun 20 years ago. We would have better longitudinal data for making

decisions today. While several single-year studies have been done and referred to in the Staff Report, they are points in time, not long-term data. Nutrient-levels, macro-invertebrates, bacteria and other critical factors that impact streams, rivers, lakes, and wetlands all have seasonal and annual variations based on precipitation, temperature, and other factors. Tracking those over years gives better data upon which to base decisions—decisions like whether the Rose Prairie land should be put into housing or a park.

Therefore, we recommend the City of Ames organize an on-going volunteer network to sample water coming into and exiting from the wetland complexes on the west and south sides of the Ada Hayden Lakes. There are existing models and protocols for such a progrm through the *IoWater Program* and the *SOS Program* of the Izaak Walton League for such sampling. We don't have to reinvent the wheel. The Friends of Ada Hayden Heritage Park, Skunk River Paddlers, Story County Outdoor Alliance, Ames Anglers, and others are likely sources of dependable and capable volunteers to fill the ranks of such a group (and many are already *IoWater*-trained). As noted in Tim Stewart's 2006 report:

> *"Monitoring of physical, chemical and biological components of Ada Hayden wetlands should continue in 2006 and beyond. These wetlands are only a few years old, and abundance and diversity of organisms responsible for filtering pollutants should increase over the next several years. However, an increasingly larger quantity and variety of pollutants will enter the Ada Hayden wetlands as the human population in the watershed continues to increase. Without periodic biological assessment of wetland condition and pollution-filtering capacity, we have no way of knowing if these wetlands are protecting the water quality of Ada Hayden Lake."*

3) Despite the Staff Report's finding that "the risk of a leak here is no greater than a leak from a new gas station anywhere else in the community", we find <u>any</u> such risk unacceptable and avoidable by placing it elsewhere. The fact is, nearly all underground storage tanks eventually leak, as noted in the Iowa Groundwater Protection Act. Even with newer fiberglass tanks, leaks are likely. To put one anywhere in the Ada Hayden Park watershed is simply poor planning and irresponsible. Even the Staff Report notes that "the proximity to the lake and the groundwater flow directly towards the lake might be a factor to consider." Indeed. Consider it and find an alternative site out of the watershed, please. We rightly prohibit motorboats on the lake to prevent gas and oils from polluting the lakes directly. Why would we even think of risking such an indirect source to our back-up water supply?

Attachment E

ESTIMATED PARK DEVELOPMENT COSTS FOR ROSE PRAIRIE PROPERTY

Item	Quantity	Unit Measure	Unit Cost	Total Cost
Park Road	8,667	Sq Yd	$ 150	$ 1,300,050
Trails	21,120	Sq Yd	$ 75	$ 1,584,000
Bridge	1	Each	$ 200,000	$ 200,000
Wetlands & Water Quality	40	Acre	$ 10,000	$ 400,000
Prairie Development	75	Acre	$ 2,000	$ 150,000
Playgrounds	4	Each	$ 75,000	$ 300,000
Softball Complex				
Fencing	4	Field	$ 25,000	$ 100,000
Irrigation	4	Field	$ 25,000	$ 100,000
Lights	1	Complex	$ 350,000	$ 350,000
Parking (200 Spots)	6,000	Sq Yd	$ 100	$ 600,000
Restroom	1	Bldg	$ 350,000	$ 350,000
Field Development	4	Field	$ 50,000	$ 200,000
Disc Golf Course	1	Course	$ 100,000	$ 100,000
Shelters				
Shelter Structure	3	Each	$ 60,000	$ 180,000
Concrete Pads & Walkways	625	Sq Yd	$ 50	$ 31,250
Restroom	3	Bldg	$ 300,000	$ 900,000
Parking	4,500	Sq Yd	$ 100	$ 450,000
Utilities (Unkown)				$ -
Total Estimated Development Costs				**$ 7,295,300**