

Staff Report

**REQUEST FOR CITY OF AMES TO PURCHASE ROSE PRAIRIE PROPERTY**

October 13, 2020

**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.

To aid Council in assessing the feasibility of this request, 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 24<sup>th</sup> Street, on the east by U.S. Highway 69/Grand Avenue, on the north by 180<sup>th</sup> 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 190<sup>th</sup> 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 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 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 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
<b>Current Pollutant Load Leaving Rose Prairie Property (Baseline Scenario)</b>	<b>87,813</b>	<b>14,593</b>	<b>568</b>
<b>Estimated Pollutant Load Leaving Rose Prairie if Developed "As Proposed" (Second Scenario)</b>	<b>4,195 (95%↓)</b>	<b>1,513 (90%↓)</b>	<b>143 (75%↓)</b>

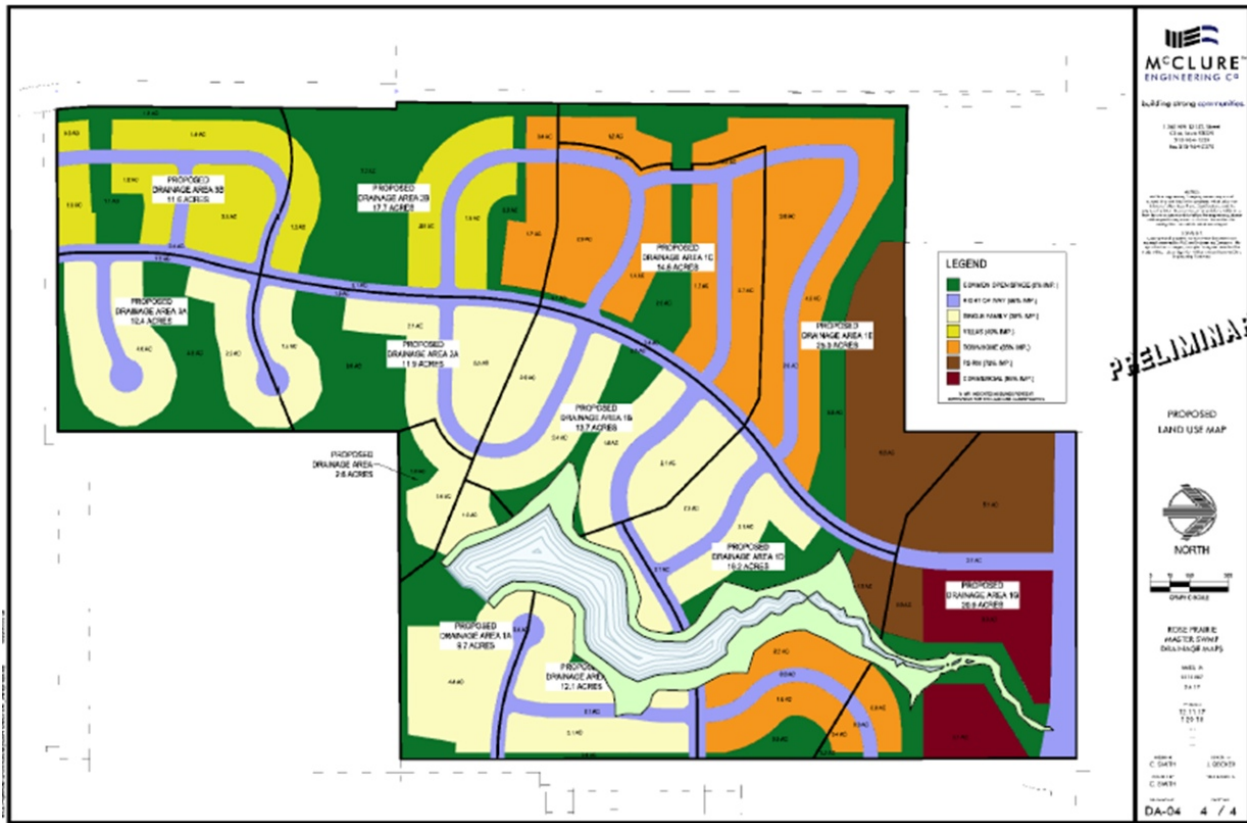
**Table 2: Theoretical Nutrient Reduction That Could Be Achieved by Placing the Entire Rose Prairie Development in Best Management Practices**

	Sediment (lbs/yr)	TN (lbs/yr)	TP (lbs/yr)
<b>Estimated Pollutant Load Leaving the Rose Prairie Parcel with <u>Maximum</u> Water Management Practices Implemented (Third Scenario)</b>	<b>0 (100↓)</b>	<b>0 (100%↓)</b>	<b>0 (100%↓)</b>

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 attached 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 north west 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.

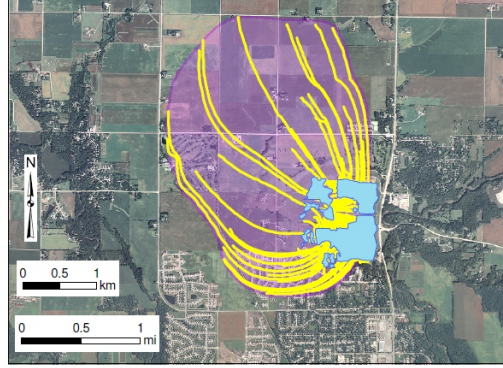
A 2011 Stream Assessment by Iowa State determined that the Ada Hayden tributary located on the Rose Prairie Property is one of the least stable streams in Ames, with over 70% of the channel was categorized as downcutting or widening. A 2008 study by Iowa State determined that the shallow groundwater 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.



Chris

lake.



**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).

**PARK NEEDS**

As Council has principles relate in the plan. sustainability, some elements of the draft plan need to be considered regarding FAHHP’s request.

regarding what could be included environmental

**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 outside 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 \$3.7 million, there will also be development costs for a 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.

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.**

#### **OPTIONS:**

1. If Council agrees with the request from the Friends of Ada Hayden Heritage Park that the City should acquire the Rose Prairie Property, it should direct staff to place this item on a future agenda and provide direction as to what further information is needed for Council to make a decision.
2. If Council does not agree with the request from the Friends of Ada Hayden Heritage Park that the City should acquire the Rose Prairie Property, it needs to take no action.

#### **STAFF COMMENTS:**

##### **To summarize:**

- 1) **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. A portion of the site being discussed could be used for a community park with active recreation amenities (sport fields/courts, playground, etc.) that are not part of the philosophy for Ada Hayden heritage Park.**
- 2) **In addition to the purchase price, which is listed at \$3.7 million, there will be development costs for a new park. In comparison, the cost to purchase Ada Hayden was approximately \$2.9 million and development costs were approximately \$3.8 million.**
- 3) **The proposed site is designated as a Tier 1 development area of the 2040 Plan based upon prior substantial infrastructure investments that have**

already been made. Acquiring the site for a park/wetland would stress our current vacant land inventory since there is no other obvious additional areas of equal size that are immediately able to be developed as a replacement for housing needs.

- 4) The results of modeling suggest that when the Rose Prairie's conservation subdivision is completed in accordance with their Master Plan, the existing wetlands are sufficiently protective of water quality in the lakes without the installation of any additional water quality practices, such as the proposed wetlands, that target phosphorus.



## 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 190<sup>th</sup> 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 190<sup>th</sup> 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 than 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

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**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..."*

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**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."*

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**2006-2007** study by ISU (W. Simpkins, "Water supply for Ames in the 21<sup>st</sup> 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.*”

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**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.”*

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**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  $\alpha$ , E. coli, total Kjeldahl nitrogen, orthophosphate, total suspended solids, total volatile suspended 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 (bluegreen 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.”*

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## Attachment C