

DAKOTA COUNTY PLANNING COMMISSION

Dakota County Western Service Center – Room L139

14955 Galaxie Avenue

Apple Valley, MN 55124

Thursday, September 22nd, 2022

7:00 PM – 9:00 PM

Agenda

I. Call to Order

II. Pledge of Allegiance

III. Public Comments:

Anyone wishing to address the Planning Commission on an item, not on the agenda may address the Planning Commission at this time (comments are limited to 5 minutes).

IV. Approval of the Agenda

V. Approval of Previous Meeting Minutes (June 23, 2022, and August 25, 2022)

VI. Recommend Approval of Agricultural Chemical Reduction Effort Plan – Action
(Valerie Neppel and Jill Trescott – Environment and Natural Resources)

VII. Planning Manager Update and County Board Actions at Physical Development Committee

- New County Commissioner Districts for 2023 - map
- Reviewed Lebanon Hills Sustainable Trails Study – written report
- Adopted North Creek Greenway Natural Resource Management Plan
- Adopted All-Hazard Mitigation Plan

VIII. Upcoming Public Meetings – Community Outreach

Meeting	Details
Lake Marion Greenway Improvements Pop Up Event	Saturday, September 17, 1030am- 12:30pm Lakeville Parks Pioneer Plaza (Dntn Lakeville) 20785 Holyoke Ave
Dakota County Crisis and Recovery Center – Guild West St. Paul City Council Work Session	Monday, September 26, 5:00pm West St. Paul City Hall
Vermillion Highlands Greenway – Rosemount Segment Pop Up Event	Friday, September 29 th , 4:00pm-6:00pm Allesbury Park in Rosemount
117 th Street Improvements (CSAH 32) Open House	Wednesday, October 5, 4:30pm-6:30pm Veterans Memorial Community Center Inver Grove Heights
Oakdale/Thompson Roundabout Improvements Open House	Wednesday, October 12, 5:00pm-7:00pm Wentworth Library (Large Mtg Room)

IX. Topics for Next Meeting (Thursday, October 27th, 2022)

- Review Updated Draft Parks Ordinance

X. Planning Commissioner Announcements/Updates

XI. Adjourn

DAKOTA COUNTY PLANNING COMMISSION

DATE: SEPTEMBER 22, 2022

AGENDA ITEM: Recommendation on Agricultural Chemical Reduction Effort (ACRE) Plan Adoption (*action*)

PREPARED BY: Mary Jackson

PURPOSE

Provide Planning Commission:

1. Summary of ACRE Plan 45-day public review process and comments
2. Draft Plan revisions made based on comments
3. Request for Commission recommendation on plan adoption

BACKGROUND

The ACRE Plan is a targeted initiative from the 2021 Dakota County Groundwater Protection Plan. As introduced to the Commission at its May 2021 meeting, the ACRE Plan seeks to reduce harmful nitrate, pesticide, and chloride levels in drinking water through enhanced adoption of agricultural best management practices and partnerships with the Soil and Water Conservation District, state agencies, and watershed organizations.

Potential new strategies and tactics were presented to the Commission at its January 2022 meeting. The draft ACRE Plan presented to the Commission at its June 23, 2022 meeting, included four strategies with implementation tactics: 1) improve data analyses through enhanced data collection and modeling, 2) provide education and engagement on agricultural water quality practices that reduce contaminant levels, 3) provide technical assistance to farmers to facilitate conversion to preferred practices, and 4) ensure equitable financial incentives that encourage ongoing use of water quality practices. Potential regulations are held in reserve for future consideration if shallow groundwater quality trends do not improve after at least five years. Plan implementation will be subject to County Board approval; budgets will be amended through annual processes as needed.

The Commission recommended release of the draft ACRE Plan for public review and comment, which was held from July 20 to September 3, 2022. No comments resulted in substantial changes to the goal, strategies, or tactics. Staff request the Commission's recommendation on adoption of the ACRE Plan.

ATTACHMENTS

1. *Plan review public engagement methods*
2. *Plan Response to Comments*
3. *Plan Summary of Changes*
4. *Revised draft ACRE Plan:*

<https://www.co.dakota.mn.us/Environment/WaterResources/Agriculture/Documents/ACREPlanDraft.pdf>

QUESTIONS

The following questions are intended to help assist in review of the packet materials.

1. Does the Commission have any concerns on the public engagement methods and audiences?
2. Have plan revisions adequately addressed substantive comments from the public?
3. Does the Commission have any concerns or recommendations on the plan content, approaches, or implementation?
4. Does the Commission find that 2022 ACRE Plan is complete and ready for County Board adoption?

Attachment: Draft ACRE Plan Public Review Outreach

July 20 – September 6, 2022

EVENT/ACTIVITY	DATE
Project webpage update	July 20
Media release, social media posts	July 20-September 6
Notification to targeted stakeholders	July 20-September 6
Lunch & Learn with co-ops and agronomists	July 26
Public Zoom Webinar for ACRE Plan Q&A	August 4
Display at County Fair	August 8-14
Township Presentations	July 18-September 1
Sciota Township Board Meeting	July 18
Marshan Township Board Meeting	July 19
Hampton Township Board Meeting	July 19
Empire Township Board Meeting	July 26
Eureka Township Board Meeting	July 26
Douglas Township Board Meeting	August 1
Castle Rock Township Board Meeting	August 8
Waterford Township Board Meeting	August 8
Ravenna Township Board Meeting	August 11
Nininger Township Board Meeting	August 16
Randolph Township Board Meeting	August 16
Greenvale Township Board Meeting	August 18
Vermillion Township Board Meeting	September 1

Attachment: Draft ACRE Plan Response to Comments

Source	Page, Chapter & Section	Comment	County Response
J. Clark and M. Hoffman, Met Council 8/31/22	General Comment	Thank you for providing the Met Council the opportunity. Neither of us have any specific comments or concerns. The plan is considered, has valuable and useful goals, and reasonable strategies for meeting those goals informed by residents and technical experts. We appreciate that the plan acknowledges and has strategies to build relationships with farmers, landowners, and rural communities. We too recognize the need to build trust within and help support these communities through our regional planning work and hope that the Council can learn and benefit from your efforts. We also want to recognize your identification of agency partnerships as a part of achieving the plan's outcomes. We look forward to supporting your efforts and collaborating as you proceed with plan implementation. As the 2050 regional development guide and regional policy plans are developed in the coming years, we hope that you will help them to align with local needs and Dakota County's plans and goals.	Thank you for your kind and supportive remarks! We look forward to continuing to work together toward our common goals.
S. Christopher, Board of Water and Soil Resources 9/1/22	General Comment	Thank you for the opportunity to comment on the Dakota County Draft Agricultural Chemical Reduction Effort (ACRE) Plan. I would like to acknowledge the hard work that the County has done. The ACRE Plan is well-informed through data and the strategies & outcomes for implementation are defined and include quantifiable measures which will assist the County in evaluating its effort and progress. The approach to addressing an issue that may impact many stakeholders of the County is forward-thinking and will be an example for other areas around our state and region.	Thank you!

Source	Page, Chapter & Section	Comment	County Response
K. Cervantes, Conservation Minnesota 9/6/22	General Comment	We applaud Dakota County for attempting to further build on the MN Department of Agriculture’s Groundwater Protection Rule (GPR) and implementation of the Nitrogen Fertilizer Management Plan (NFMP) to address the very serious issue of nonpoint pollution in agriculture and its impacts on water quality throughout the county. We especially support the plan’s measurement of results-based contaminant reduction to protect the integrity of groundwater, and to consider private drinking water wells when measuring the plan’s outcomes. Much of the success of the county’s goals will depend on education and implementation, and we support the urgency of helping incentivize and provide assistance to farmers to reduce or eliminate the use of agricultural chemicals that ultimately contaminate the groundwater. Nitrogen-based fertilizers that are used to increase crop yields are important to farming operations but drinking water high in nitrates has been linked to different types of cancer, potentially fatal children’s health issues, and elevated heart rates. Rather than continuing to invest money in denitrification systems to clean up water contamination, we support the county’s effort to begin to eliminate the causes, such as over-application and nitrogen leaching into soil, which leads to these costly impacts on human health and groundwater. As water quality is an essential human right, Conservation Minnesota aims to ensure clean, safe drinking water in communities throughout the state of Minnesota. We support the ACRE plan as a solutions-based approach, especially creating models for cover and perennial crop adoption rate goals and the evaluation of agricultural practices. It will be vital to implement the “exploring ways” section of the plan and to secure funding to implement water quality practices on rented farmland and provide financial incentives to farmers for adopting healthy soil and groundwater practices. Conservation farming practices are proven to impact higher profits and we support the ultimate impact this new program will have on Minnesota’s farm economy, water quality, and natural resources.	Thank you! Please let us know if there are ways that Conservation Minnesota would like to be more involved with this effort.

Source	Page, Chapter & Section	Comment	County Response
C. Congdon, County Resident 7/20/22	General Comment	Good Morning, While I agree that the agricultural reduction of nitrates is important to help save wells and health, I would also urge the county to mandate similar or same requirements of homeowners who are dumping these same chemicals and types on their lawns and gardens multiple times per season. This is also washing into our lakes and groundwater, continuing to add to the issue. This is not a farmer's issue alone. Commercial residences (apartment, townhomes, etc) use sprays and chemicals. A large number of my neighbors use chemicals on their lawns and we live right next to a lake. I've even seen our county parks and rec areas with signs to warn people to stay off the grass until chemicals are dry. So, it would seem farmers are only a PART of the problem and should not be held accountable to limitations and new rules, without also having the rest of the community in the same boat. Thank you for your time.	Thank you for your interest in the Dakota County Agricultural Chemical Reduction Effort (ACRE) Plan. The ACRE Plan stems from the Dakota County 2020-2030 Groundwater Plan, which addresses a wide range of potential sources of groundwater contamination, including lawn and landscape maintenance chemicals. The ACRE Plan is specific to agricultural chemicals. The Groundwater Plan is available online. It was developed with input from interested residents and other stakeholders, the Dakota County Planning Commission, and a technical advisory group. The Groundwater Plan was approved by the Minnesota Board of Soil and Water Resources (BWSR) in December 2020 and was adopted by the Dakota County Board of Commissioners in January 2021.
S. Peterson, County Resident 7/23/22	General Comment	Dakota County looks like it wants to replicate what the Netherlands is doing--which is killing farming! Stop this "green" nonsense!	Your concern is noted. The strategies proposed in the ACRE Plan are all voluntary and provide farmers with flexibility in what practices to adopt to improve groundwater quality, technical assistance, and financial incentives.

Source	Page, Chapter & Section	Comment	County Response
Various, Township Board Meetings	General Comment	Private wells with high nitrate in some cases may be a result of failing septic systems, especially in areas where there is a large cluster of septic systems.	Septic systems can be a source of elevated nitrate on a highly localized basis. However, septic systems are more often a health concern for infectious agents such as bacteria or viruses than as sources of nitrate contamination. For example, Inver Grove Heights is the community in the county that has the most households that use septic systems and private wells and it has very little row crop agriculture. Extensive testing of private wells there has found few wells with nitrate over the drinking water guideline. The county Groundwater Plan includes tactics for minimizing septic system impacts on groundwater quality. The County is responsible for directly regulating septic systems for the cities of Randolph and New Trier, Randolph and Waterford townships, and the shoreland/floodplain areas in unincorporated portions of the county, a total of approximately 980 households. Cities and townships regulate septic systems in most of the county; their ordinances are required to be consistent with the County's septic system ordinance (County Ordinance 113) and with State law. To address failing septic systems, the County administers a septic system low income grant program and a tax assessment program. In coming years, data collected from the county's new network of monitoring wells will help county staff to differentiate between elevated nitrate due to row-crop agriculture and that due to other sources. The monitoring wells are being located adjacent to cropland to evaluate the shallow groundwater that is being most impacted by cropping practices.
Various, Township Board Meetings	General Comment	What is Dakota County doing to address contaminants as a result of lawn fertilizer and landscape chemicals?	See answer to #4, above.

Source	Page, Chapter & Section	Comment	County Response
M. Ryan/T. Thiel, VRWJPO 8/29/22	References P. 26, Chapter 1, Strategy 4, Financial Incentives	In general, there is a lack of information on how agricultural pesticides and chlorides will be reduced in the identified strategies. One can assume that activities that retire farmland/convert farmland to non-agricultural uses will reduce the use of these chemicals, but there are no other activities identified that reduce the use of or mitigate the impact of these chemicals.	Please note the Plan Purpose (page 1) and Chapter 2 (page 35) states the focus of ACRE is on reducing nitrate contamination in groundwater and addressing other agricultural contaminants where practical. Practices discussed under Strategy 4, Chapter 1 that reduce nitrate contamination will also reduce other agricultural contaminants such as pesticides and chloride. More explanation was added to page 1. Regarding chloride specifically, Tactic 3G calls for educating farmers about potassium fertilizer BMPs. At this time, farmers do not have a practical alternative source of potassium besides potassium chloride.
M. Ryan/T. Thiel, VRWJPO 8/29/22	P. 26, Chapter 1, Strategy 4, Financial Incentives	All the other quantitative measures listed have some means of quantification. This measure does not quantify anything and simply states it "will decrease." Can you specify how this will be quantified? Will decrease based on the existing groundwater concentrations in wells? We suggest being more specific about how these contributions will decrease, how that decrease will be measured, and establish the baseline for which it will be measured against. In addition, will a selection of wells/groundwater data be used to analyze this measure due to the potential for road salt use to impact some agricultural areas near larger and/or paved roads?	Chloride levels will be evaluated in comparison to baseline. Clarification was added to Quantitative Measure 5. As of August 2022, County staff have limited baseline information about chloride levels in groundwater. In the next few years, the environmental well network and Community Focused Sampling program will provide a much more complete understanding of "where we're starting from." In the longer term, these two ongoing sources of information will show the seasonal and annual trends in chloride levels. For practical reasons, both the county and the Minnesota Department of Agriculture are installing their collaborative environmental well network in public rights-of-way, for the most part. As a result, the chloride levels in these wells may be higher than what would be found in shallow groundwater wells further away from roads, especially in the spring sampling event. Staff will keep this in mind when evaluating the chloride results and will be looking for relative decreases over time rather than hitting specific targets.

Source	Page, Chapter & Section	Comment	County Response
M. Ryan/T. Thiel, VRWJPO 8/29/22	P. 12-13, Chapter 1, Section C, Strategy 1	Related to the comments later in this letter on pesticide reduction, there is not much in the way of sampling for pesticide breakdown products in the monitoring well network. While sampling drinking water sources gets at the high-risk locations for exposure, analyzing monitoring network samples from the shallow groundwater might indicate whether any pesticide application reduction efforts (or land conversion programs) are having an impact.	Amended Tactic 1G to include environmental well network. This is also addressed on p. 44, Chapter 3, Background Information: "Dakota County's extensive sampling for crop herbicides and herbicide breakdown products through its Ambient Study has documented the environmental fate of common herbicides in groundwater in the county over time, but is not necessarily geographically representative. In particular, the extent and concentrations of cyanazine breakdown products in private well water are not yet comprehensively understood. To date, cyanazine has been found above the drinking water guideline of 1 µg/L in 11 townships (Table 13). In late summer 2022, the MDA will be sampling private wells in Dakota County for the herbicides cyanazine, and atrazine, and related chemicals. When the results of the 2022 sampling are available, the information about cyanazine in private wells may be quite different from what is currently shown in Table 13 below. In addition, if feasible, the County's rotating private well sampling program will be expanded to include cyanazine breakdown products and other frequently detected pesticides and pesticide breakdown products, in accordance with the Groundwater Plan."
M. Ryan/T. Thiel, VRWJPO 8/29/22	P. 21, Chapter 1, Strategy 4, Financial Incentives	The summary indicates the County and SWCD will partner with state funding agencies and others to promote and fund BMPs and AMTs. BMPs and AMTs are terms used in MDA's Groundwater Protection Rule and are the means identified to comply with the Rule. The VRWJPO and other agencies often do not provide technical or financial assistance for practices meant to comply with or meet regulatory requirements. Funding for BMPs and AMTs may be in conflict with the policies of partner organizations and this strategy should be considered further given this potential conflict. It will be critical to identify when a practice is being implemented to meet minimum requirements of the Groundwater Protection Rule versus voluntary implementation.	The ACRE Plan itself comprises voluntary practices. Clarification was added to the ACRE Plan (page 21). However, to implement the Groundwater Protection Rule, the MDA is in the process of developing BMP requirements for the Hastings Drinking Water Supply Management Area (DWSMA) that will effectively be regulatory. (The Hastings DWSMA covers a large portion of the Vermillion River watershed but is only in the Vermillion River watershed.) BMPs proposed for nitrogen fertilizer usage per se (for example, using less fertilizer or splitting fertilizer applications during the growing season) would not depend on cost-share funding in any case. Nevertheless, Environmental Resources, SWCD, VRWJPO, and MDA staff should meet to clarify the

Source	Page, Chapter & Section	Comment	County Response
			BMPs and AMTs that will be promulgated for the Hastings DWSMA and how financial incentives might be impacted.
M. Ryan/T. Thiel, VRWJPO 8/29/22	P. 26, Chapter 1, Strategy 4, Financial Incentives	It is unclear whether the “optional high priority tactic” of longer funding of initiatives will be made available to those who previously enrolled or even to those farmers who implemented cover crops on their own (without assistance) but may now be interested in cost-share programs (i.e., will people who have been doing the right thing be paid to keep doing the right thing). The table makes it seem as though the optional tactic would be for maintaining existing projects for additional time after having been provided assistance through the first three years.	Edited tactic and added clarification (see page 27). The intent of the tactic is to allow for a broad range of possibilities. Any future incentive programs would be dependent upon the identified need to increase BMP/AMT adoption rates, and County and/or SWCD Board approval. This may include incentives as extensive as providing payments to all farmers implementing cover crops, or only extending projects for additional time after having been provided assistance through the first three years in order to reduce risk of initial adoption.
M. Ryan/T. Thiel, VRWJPO 8/29/22	P. 6, Chapter 1, Section B, Goal	This goal text appears incomplete and we assume it needs something written after “unhealthy levels.”	Corrected.
M. Ryan/T. Thiel, VRWJPO 8/29/22	P.8, Chapter 1, Section C, Introduction	in the second to last paragraph, it is noted that the County and SWCD are the same on the table and that the SWCD “was identified as a trusted resource to the agricultural community.” It is recommended that this be changed to “is a trusted resource...” to get rid of confusion about the working relationship (and check for similar identity references elsewhere in the document).	Text edited.

Source	Page, Chapter & Section	Comment	County Response
M. Ryan/T. Thiel, VRWJPO 8/29/22	P.11, Figure 4	Recommend changing one of the colors of the County or MDA wells on the map for those that are visually impaired (i.e. colorblindness).	Map updated.
Various	P. 22, Chapter 1, Strategy 4, Financial Incentives	Please clarify what is meant by "perennials."	Clarification has been added to the ACRE Plan (page 22). The term "perennials" refer to the following: • land enrolled in the Conservation Reserve Program or Conservation Reserve Enhancement Program; • prairie restorations; • grass hay, alfalfa, or pasture; • Kernza™ or other perennial crops; • other vegetation where the root structure is left in place all year round.
Various	P. 22, Chapter 1, Strategy 4, Financial Incentives	Please clarify what is meant by "cover crops."	Clarification has been added to the ACRE Plan (page 22). Cover crops are plants seeded into agricultural fields, either within or outside of the regular cash crop growing season. Cover crops are used to slow erosion, prevent nutrient losses, improve soil health, enhance water availability, smother weeds, help control pests and diseases, increase biodiversity, and bring other benefits to cropland (Sustainable Agriculture Research and Education). In regard to nitrate, cover crops can help retain nitrogen in fields, rather than allowing the nitrogen to be converted to nitrate and leach into the groundwater. The cover crop will use whatever nitrogen is still available from the fertilizer applied for the current growing season, plus the nitrogen that continues to mineralize via soil organic matter. That nitrogen will be protected from leaching and denitrification losses. Farmers have many choices among cover crops, depending on their priorities for the planting, the cash crop that preceded the cover crop, and the crop to be planted after the cover crop. The most common cover crops in Dakota County are Winter Cereal Rye, oats, or an oat and radish mix (Dakota SWCD staff). Dakota County SWCD staff or UMN

Source	Page, Chapter & Section	Comment	County Response
			Extension Educators can assist farmers with selecting an appropriate cover crop for their farm.
L. Gunderson, MDA 9/9/2022	P. 4, Executive Summary	The ACRE Plan proposes four strategies including: 1) collect information for decision making; 2) communicate and educate; 3) provide technical assistance; and 4) provide financial incentives. In general MDA agrees with these overall concepts and supports working with the local agricultural community to address water quality concerns and help provide funding where needed to implement BMPs and other recommended practices. MDA considers these strategies to be extremely important when working with farmers to reduce nitrate in groundwater. They are key strategies in the MDA's Nitrogen Fertilizer Management Plan and Groundwater Protection Rule.	Thank you.
L. Gunderson, MDA 9/9/2022	P. 31, Potential Future Strategies.	MDA notes that there is limited discussion on how agricultural practices might be evaluated. The MDA supports University of Minnesota recommended BMPs and other practices which have sufficient documentation to be proven to be economically viable, implementable and can improve water quality. MDA suggests that the plan emphasize that recommended or required practices will be economically viable or subsidized so they are profitable, with adequate consideration of some of the practical challenges for their implementation such as adverse weather.	Text edited on p. 31, Potential Future Strategies: "Evidence is growing that farms that adopt practices to improve water quality (such as participating in the Minnesota Agricultural Water Quality Certification program) are more profitable than farms that do not (Minnesota State, 2022). That said, any requirements imposed by the county would respect that farming requires economic sustainability to support and maintain environmental sustainability."
L. Gunderson, MDA 9/9/2022	P. 29 (30), Chapter 1, Potential Future Strategies	Text on page 29 of the plan states that Dakota County may explore regulatory options "If, after five years (five complete growing seasons), groundwater nitrate conditions show a stable or upward trend (by township or city), County staff may recommend to the County Board ordinance amendments that require agricultural	As MDA indicates, more than 5 years of data may be needed to determine the normal range of variation, especially due to weather conditions. Text amended to "If, after at least five years (five complete growing seasons, or sufficient time to identify statistically significant trends, whichever is longer),

Source	Page, Chapter & Section	Comment	County Response
		practices to reduce nitrate contamination.” There is limited detail provided on how the water quality trends will be evaluated or if 5 years is an appropriate period of time to ensure that changes in nitrogen management at the land surface could improve water quality in the aquifer being monitored. Since private wells are included, it is unclear if the analysis might include wells which are constructed in different aquifers which may contain water which is potentially older than 5 years. There can be significant variability in water quality monitoring data from year to year especially when comparing wet years to dry years. The plan does not appear to consider that. In addition, it is unclear what the term “stable” means for the purposes of potential regulation. If stable means that there is not a significant downward trend in water quality, then it appears there could be a move towards regulation even if recommended practices are being implemented. These issues are complex but significant. MDA recommends that the plan consider these factors and that the plan should support and reward farmers who adopt recommended practices and not move to regulation unless other efforts are not successful.	groundwater nitrate conditions show a stable or upward trend (by township or city), County staff may recommend to the County Board ordinance amendments that require agricultural practices to reduce nitrate contamination. In this context, "stable" means that no statistically significant upward or downward change over time beyond the normal range of variation can be determined. Also, it should be understood that this refers to groundwater that is not improving toward the ACRE Plan's quantitative outcome measures (p. 7), not groundwater that already meets those criteria." The text indicates "... staff may recommend to the County Board ordinance amendments that require agriculture practices to reduce nitrate contamination." Text has been edited to reflect that the Plan does call for using both private and public drinking water and shallow groundwater monitoring well results. In addition, ACRE Tactic 1A calls for collecting and evaluating information on what agricultural practices are being implemented and maintained in the county. Staff will use the preponderance of the evidence before recommending any regulation. The ACRE Plan is designed to do as MDA recommends, to support and reward voluntary activities to improve groundwater quality and only adopt regulatory measures if groundwater fails to improve in a reasonable number of years.
L. Gunderson, MDA 9/9/2022	P. 33 (35) Chapter 2, Planning Process (Table 9)	Text on page 33 of the plan states that the outcome measures for the ACRE Plan are results-based since Dakota County is relying on contaminant reduction and the MDA's Groundwater Protection Rule is performance-based by evaluating BMP adoption. The Groundwater Protection Rule also includes results based elements by 1) moving a DWSMA from mitigation level 2 to a mitigation level 3 if the statistical analysis of the nitrate-nitrogen concentration is increasing for the public well or groundwater monitoring network; OR moving a mitigation level 2 DWSMA to mitigation level 1 if the statistical analysis of the nitrate-nitrogen concentration in the	MDA comment has been added to the text.

Source	Page, Chapter & Section	Comment	County Response
		public well is not projected to exceed the health risk limit of 10 mg/L in ten years and the groundwater nitrate-nitrogen concentration has been below 8.0 mg/L for ten years. These two results based factors are evaluated separately from BMP adoption, although the two evaluations can occur in tandem.	
L. Gunderson, MDA 9/9/2022	P. 8, Chapter 1	Page 8 fifth paragraph – the last sentence includes an extra “a” and “rates” should be “rate”.	Text edited.
L. Gunderson, MDA 9/9/2022	P. 21	Page 21 under Summary – “alternate management tools” should be “alternative management tools”.	Text edited.

Attachment: Draft ACRE Plan Summary of Changes

The 2020-2030 Dakota County Groundwater Plan identified agricultural chemicals, especially nitrate and crop herbicides, as a significant drinking water concern for much of rural Dakota County. Reduction of agricultural chemical contamination is a high-priority strategy in the Groundwater Plan (Strategy 1B1); specifically, tactic 1B1 states that the County will develop an ACRE Plan.

The purpose of ACRE is to reduce agricultural chemicals in groundwater to levels that no longer pose threats to human health and the environment. The ACRE Plan was developed through extensive research on current Minnesota programs and other state programs focused on improving water quality from agricultural operations, completion of a groundwater nitrate model, a robust stakeholder engagement process, and guidance provided by the County Board, County Planning Commission, and an Agricultural Advisory Group.

By Resolution No. 22-289 (July 19, 2022), the County Board authorized release of the draft ACRE Plan for a 45-day public review period from July 20 to September 3, 2022. County staff posted the draft ACRE Plan online during the review period and submitted it to the Metropolitan Council, the state review agencies, the Board of Water and Soil Resources, the Dakota County Soil and Water Conservation District, cities, townships, and watershed organizations. Staff distributed the draft ACRE Plan through extensive electronic communications, including social media, news releases, and emails to partners; stakeholders; state; regional; and local agencies and officials; and others including agricultural and farm service agencies. Staff offered a Lunch and Learn opportunity for agricultural agencies (e.g., co-ops, agronomists) on July 26, 2022; conducted a Zoom Information Webinar for the general public on August 4, 2022; and provided information briefings at 13 township board meetings.

Comments were received from the county residents and the following organizations:

- Board of Water and Soil Resources (BWSR)
- Conservation Minnesota
- Metropolitan Council (Met Council)
- Minnesota Department of Agriculture (MDA)
- Vermillion River Watershed Joint Powers Organization (VRWJPO)

Changes to the ACRE Plan

Notable revisions to the draft ACRE Plan as a result of 45-day public review comments or County staff modifications/corrections are listed in the below table and highlighted yellow in the revised ACRE Plan posted to the [ACRE Website](#). No comments received resulted in substantial changes to the proposed goal, strategies, or tactics. Any changes not listed below, or highlighted in the revised ACRE Plan, were non-substantive grammatical or formatting changes in nature.

No.	Current Page No., Chapter & Section	Change to Plan (as a result of Public Review Comment or County Staff Modification)
1.	Page 1, Executive Summary, Plan Purpose	Clarified that primary focus of ACRE is nitrate reduction, but ACRE strategies/tactics will also reduce pesticides and chloride in groundwater.
2.	Page 2, Executive Summary, Agricultural Chemicals of Concerns	Clarified that sources of nitrate could be a result of septic systems or lawn fertilizer – these are addressed in other Dakota County Groundwater Plan strategies.
3.	Page 7, Chapter 1(B), Qualitative Measures	Clarified qualitative measure #5 – contributions of chloride to groundwater will be evaluated in comparison to baseline conditions described in Chapter 3.
4.	Page 8, Chapter 1(C)	Clarified primary focus of ACRE is nitrate, but ACRE strategies/tactics will also reduce pesticides and chloride in groundwater (see item #1 above).
5.	Page 10, Chapter 1(C), Strategy 1, Notable Components	Information regarding the Dakota County and MDA monitoring well network was updated as of August 2022.
6.	Page 11, Figure 4	Figure 4 replaced with well network information as of August 2022, and updated to be more visually accessible.
7.	Page 14, Chapter 1(C), Strategy 1, Tactic ACRE 1G	Edited tactic to identify that periodic pesticide sampling may occur for both private drinking water wells and the environmental well network – purpose is to evaluate risk to human health and presence in the environment.
8.	Page 21, Chapter 1(C), Strategy 4	Clarified that the County and SWCD will partner to promote <u>voluntary</u> measures since activities that are required under the Groundwater Protection Rule may be ineligible for grant funding.
9.	Page 22, Chapter 1(C), Strategy 4, Notable Components	Add clarifying descriptions of perennials and cover crops.
10.	Page 27, Chapter 1(C), Strategy 4	Clarified intent of optional tactics: ACRE 4F, ACRE 4G, and ACRE 4H.
11.	Page 29, Chapter 1(C), Strategy 4, tactic ACRE 4G	Edited tactic to identify that extending cost-share beyond 3-years is just an example of what the program may entail (see item #10 above).
12.	Page 30-31, Chapter 1(C), Potential Future Strategies	Clarified intent of potential future regulatory options, and when regulatory options may be recommended by staff.
13.	Page 33, Chapter 2(B), Planning Process	Updated Planning Process to include 45-day public review period process and outreach conducted.
14.	Page 34, Chapter 2(B), Table 9	Clarified that the Groundwater Protection Rule does have some elements of results-based measures to determine mitigation levels.



Physical Development Committee of the Whole

Request for Board Action

Item Number: DC-1334

Agenda #: 4.5

Meeting Date: 9/13/2022

DEPARTMENT: Physical Development Administration

FILE TYPE: Consent Information

TITLE

Update On Lebanon Hills Sustainable Trails Study

PURPOSE/ACTION REQUESTED

Receive an update on Phase 1: Existing Trails Evaluation for Lebanon Hills Sustainable Trails Study.

SUMMARY

Background

By Resolution No. 15-156 (March 17, 2015), the Dakota County Board of Commissioners adopted an updated Master Plan (MP) for Lebanon Hills Regional Park (LHRP). By Resolution no. 201-458 (September 21, 2021), the Dakota County Board of Commissioners authorized staff to select a consultant to prepare a Sustainable Trails Study (Study); and by Resolution No. 22-204 (May 24, 2022), the Dakota County Board of Commissioners authorized the Physical Development Director to execute a contract with SRF, Inc., for the Study. The Study addresses the following trail topics: preservation of high-quality trail recreation and nature-based experiences; minimization and mitigation of impacts to natural resources; minimization and mitigation of impacts to culturally important sites; identification of trail use conflicts, safety, and risk concerns; ADA accessibility; reduction of trail-related erosion issues; identification of deferred trail maintenance needs; and improvement of sustainable maintenance practices.

The Study is being conducted in two phases: Phase 1: Assessment (Summer 2022) and Phase 2: Recommendations and Implementation Strategy (Fall 2022). Outreach with Wilderness in the City (WITC), Minnesota Off-Road Cyclists (MORC), and the School of Environmental Studies (SES) students is occurring during each phase.

Phase 1: Assessment (Attachment: LHRP Existing Trails Evaluation Summary)

The first phase of the project, Assessment, is complete. This phase included field assessment of all 50 miles of existing trails in the park and assessment of each trail's ability to provide high-quality trail and nature-based recreation experiences, impact on high-quality natural areas and important cultural sites, ADA accessibility, safety and risk concerns, trail erosion, and deferred maintenance.

SES students were introduced to the project in June and were invited to participate in the field evaluation during July. Additional engagement is planned for the fall semester of 2022. Initial meetings to discuss the project were held with MORC on August 4 and with WITC on August 25.

Key findings:

- West Park. Most of the mountain bike trail system provides a high-quality recreation

experience and is one of the more popular mountain bike destinations in the Twin Cities. Constructed over twenty years ago, some areas need improvements. The designated hiking and skate ski trails have areas of severe erosion due to steep fall line alignments.

- Middle Park. Many of the hiking trails have moderate to severe erosion and direct runoff into lakes and wetlands. The hiking trails lack connectivity to Camp Sacajawea, and there is a lack of accessible trails for campground visitors. The equestrian trails are located on steep topography and are experiencing severe erosion.
- East Park. The east segment of the park has the highest concentration of trails that serve the needs of hikers, skiers, and equestrian riders. Due to more forgiving terrain and sustainably built trails, the majority of erosion issues on the hiking and horseback riding trails are moderate to minor. The portage trails are generally in good condition though some steeper alignments have severe erosion and sediment depositing into lakes. The paved trails are generally in good condition.

Next Steps

Trail recommendations and an implementation strategy will be developed this fall based on the existing trail assessment. The Study recommendations and implementation strategy will be presented to Dakota County Board of Commissioners in December 2022.

RECOMMENDATION

Information only; no action requested

EXPLANATION OF FISCAL/FTE IMPACTS

- | | | |
|--|---|---|
| ☒ None | ☐ Current budget | ☐ Other |
| ☐ Amendment Requested | | ☐ New FTE(s) requested |

RESOLUTION

Information only; no action requested

PREVIOUS BOARD ACTION

15-156; 3/17/15

21-458; 9/21/21

22-204; 5/17/22

ATTACHMENTS

Attachment: Lebanon Hills Regional Park Existing Trails Evaluation Summary

BOARD GOALS

- | | |
|---|---|
| ☒ A Great Place to Live | ☒ A Healthy Environment |
| ☐ A Successful Place for Business and Jobs | ☐ Excellence in Public Service |

PUBLIC ENGAGEMENT LEVEL

- | | | | |
|---|----------------------------------|----------------------------------|------------------------------|
| ☒ Inform and Listen | ☐ Discuss | ☐ Involve | ☐ N/A |
|---|----------------------------------|----------------------------------|------------------------------|

CONTACT

Department Head: Georg Fischer

Author: Lillian Leatham



Memorandum

SRF No. 15650

To: Lil Leatham, Principal Planner
Dakota County, Physical Development Administration

From: Ken Grieshaber, Project Director

Date: August 31, 2022

Subject: Lebanon Hills Regional Park Sustainable Trails Study

Background/Context

The Lebanon Hills Regional Park Sustainable Trails Study is being undertaken to provide a detailed assessment of existing trail conditions in the park, identify opportunities for improving the long-term sustainability of the trail system, and ensuring trail compatibility with the parks surrounding natural and cultural resources and high-quality trail recreation and nature-based experiences. The study is occurring in two phases, Phase I: Trail Assessment and Phase II: Recommendations and Implementation Strategy. This memo is a summary of the Phase I Assessment results. Phase II Recommendations and Implementation Strategy will be based on this assessment and be developed in Fall 2022. Outcomes of this study will help guide priorities, phasing, and funding needs for implementing future trail improvements.

As an initial step for developing trail improvement recommendations for the park, on site field assessments were completed for the approximately fifty miles of existing trails located in the west, middle, and east segments of the park. Field identification of site issues were recorded using hand-held GPS units and photos to document existing trail conditions.

Trail networks serving the needs of hiking, mountain biking, cross-country skiing, and equestrian user groups were all evaluated in three segments of the park, and issues identified in the field for needed improvements. (See Figure 1). To augment the detail field trail assessment, Minnesota Off-Road Cyclists (MORC), Wilderness in the City (WITC), and School of Environmental Studies (SES) are being engaged to provide comment and feedback on existing trail conditions and trail improvement recommendations.

Trail Evaluation Criteria

The following ten criteria were used to evaluate the existing trail system in the park:

- 1. Trail Erosion Issues** – Identification of minor, moderate, and severe erosion issues on trails. (See Figure 2)
- 2. Conflicts Between User Groups** – Trail intersections between user groups which have poor sight lines or approaches pose a higher chance of conflict or collision.
- 3. Safety, Risk, and Hazard Concerns** – Tight turns, steep slopes, or other obstacle which poses a higher chance of injury to trail user.
- 4. Wayfinding and Circulation Issues** – Trail intersections or alignments which are confusing for trail user to follow and stay on intended route.
- 5. Poor Site Drainage** – Trail segments that have low spots that collect storm water or do not allow for cross slope drainage.
- 6. Deferred Trail Maintenance**– Trail segments showing signs of minor degradation due to lack of routine maintenance. These segments will become more serious issues if not addressed.
- 7. Accessibility Issues** – Barriers or locations which do not allow for people living with physical disabilities to access trail system or park amenities.
- 8. Factors Impacting a High-Quality Trail User Experience** – From a trail user perspective, trail alignments which offer exposure to a wide variety of scenic viewsheds, landscape types, and terrain to create a high-quality trail user experience.
- 9. Impacts to Natural and Cultural Resources** – Trail segments which may be impacting high quality vegetation, water, wildlife habitat, or cultural resource areas.
- 10. Long Term Sustainability**-Trail locations which are prone to high use and in need of improvement to require less maintenance and be more sustainable over the long term.

Existing Trail Typologies

The park currently supports both summer and winter use trails in all three segments of the park. Many of the equestrian trails serve as cross country ski trails and hiking trails are used by snowshoers during the winter months. The existing mountain bike trail system is used year-round by riders as fat tire biking has increased in popularity over the last several years. (See Figure 3)

Most of the hiking, equestrian, and ski trails in the park are maintained at an average width of eight feet which allows for maintenance and emergency vehicle access to most of the trail system throughout the park. The mountain bike trails are maintained at an average width of three feet which provides the single-track biking

experience that most users are looking for in a year-round use mountain bike trail system.

Integration of Natural Resources

Existing natural and cultural resources were also evaluated in the park and their compatibility with existing trail alignments and circulation. At the time trails were installed, developed, or inherited, they were not designed with wildlife and habitat requirements in mind. The Phase I assessment evaluated the trail system as a whole to determine how it impacts wildlife and habitat. Phase II recommendations will focus on reducing impacts to natural resources while improving the physical sustainability of the trails. To evaluate how existing trails are impacting natural resources, all trail erosion issues identified within 100 feet of wetlands or lakes were measured. Erosion on trails within 100 feet of wetlands or lakes can negatively influence water quality. In addition to evaluating erosion near lakes and wetlands, the Phase I assessment located all existing steep slopes and highly erodible soils as these areas are more likely to erode overtime (See Figures 4, 5, & 6). Lastly, all significant and sensitive natural resources in the park were identified (See Figure 7). The natural resources identified in the park were grouped into three categories (see list below) to help guide recommendations for trails that currently may be impacting sensitive natural resource areas in the park (See Figure 8).

Natural Resource Category A

- Highly sensitive natural resource areas
- Sensitive wildlife habitat area
- Remnant prairies
- Swamps and peatlands
- Minnesota Biological Survey – site biodiversity significance ranking at moderate or higher
- 50' buffer of lakes and wetlands

Natural Resource Category B

- Sensitive natural resources
- Interior/Old Growth Forests
- Former Oak Savanna
- Recently restored areas

Natural Resource Category C

- Disturbed natural resource areas
- Developed sites (campgrounds, trailheads)
- Previously disturbed agricultural land

General Trail Condition Observations

The following existing trail conditions were observed within each section of the park for trail user groups:

WEST SEGMENT

The west segment of the park serves as the primary year-round destination for all abilities of mountain bike trail users while also accommodating hikers in the summer and skate skiers and snowshoers during the winter months. (See Figure 9)

Mountain Bike Trails

Most of the existing mountain trail system in the park provides a high-quality recreation experience for beginner, intermediate, and advanced riders and remains one of the more popular mountain bike destinations in the Twin Cities.

Constructed over twenty years ago, some portions of the trail system need improvements and on-going maintenance including:

- Removal of buckthorn vegetation at trail intersections and along trail edges to improve sightlines for trail users.
- Several high-speed intersections with the hiking/ski trail pose safety risks for trail users.
- The skills course is situated in a good location but needs improvements. Many features are outdated or in disrepair.
- The current trails system and skills course does not accommodate adaptive biker user needs.
- The trail segment known as the prairie area has constant erosion and needs continual maintenance.
- Embankment turns subjected to more frequent erosion and maintenance.
- MORC volunteer crews are doing an excellent job with ongoing regular maintenance and coordinating with County staff resources.

Hiking/Snowshoe and Skate Ski Trails

- The designated hiking and skate ski trail system in this area of the park have been subjected to more severe erosion over time based on their locations on steeper fall line alignments. Erosion issues include:
 - Deep gullies and washouts causing poor trail surface conditions that do not provide a high-quality trail experience for most users.
 - Severe trail erosion has caused runoff to some surrounding waterbodies and wetlands.
 - Many trail segments in need of realignment to prevent ongoing erosion issues.
- No accessible trails in this area of the park except for access to the trailhead restroom/shelter facility from the adjoining parking lot.

- Steep and challenging topography only accommodates advanced hikers and skate skiers.
- Tight corners on steep downhills are safety concern for beginner skiers.
- Lack of vegetative cover on trails has increased the erodibility of soils.
- Erosion control blanket placed on steep slopes has lost its effectiveness over time.
- Hiking trail network does allow loops of varying distances.

MIDDLE SEGMENT

The middle segment of the park provides trail segments that accommodate hikers, equestrian riders, and cross-country skiers. Both the existing campground and Camp Sacajawea are visitor destinations within this area of the park. (See Figure 10).

Hiking Trails

The hiking trails in this segment of the park primarily serve campground and Camp Sacajawea visitors while also providing a connection to the more expansive trail system in the east segment of the park. Some observations include:

- Many steep fall line trails have moderate to severe erosion and direct runoff to lakes and wetlands.
- Lack of trail connections from Camp Sacajawea to other areas of the park. The current trail connecting the Camp with the middle segment hiking trails is poorly designed.
- Lack of a trail connection to the west segment to accommodate campground users.
- Lack of interconnected looped trails within the middle segment
- Confusing trail circulation and wayfinding east of Wheaton Pond.
- Lack of accessible trails.
- Presence of unofficial trails going down to lakes and connecting to adjoining neighborhoods.
- Trail around Wheaton Pond is less than 50 feet from the shoreline, but trail has minimal erosion and impacts.
- Hiking trail south of Gerhardt Lake extends past a high-quality natural resource (swamp and peatland) and exhibits severe trail erosion.

Equestrian Trails

Many of the equestrian trails have been subjected to severe erosion because of poorly designed trails up steep topography in this area the park. Other observations included:

- Hikers, trail runners, and bikers were observed using equestrian trails.
- Some equestrian riders on the trail at the time of field evaluation commented they liked the steeper terrain in this area of the park for training and conditioning their horses.

- Equestrian use of trails was observed to be higher at the east segment of the park during the field evaluation.
- Most equestrian trails are not in a sensitive natural resource area but the spur trail to Johnny Cake Road extends along a remnant prairie and a swamp and peatland.

EAST SEGMENT

The east segment of the park has the highest concentration of trails that serve the needs of hikers, skiers, and equestrian riders. The gentler topography coupled with trails aligned well with the topography in the east segment coincided with fewer severely eroded trail conditions than the west or middle segments of the park (See Figure 11). The east segment also has the most valuable natural resources in the park with the most lakes, wetlands, rare habitat, and rare/remnant plant communities (See Figure 7). As such, the east segment has the highest percentage of trails in a significant natural resource area.

Hiking Trails

- Most trail erosion issues were moderate and minor in this segment of the park.
- Trails are well aligned with topography.
- Most trail segments with erosion can be corrected through sustainable trail design and maintenance methods that diverge water off the trail in more frequent intervals because trails are generally well aligned with the topography.
- Trail connection transitions to boardwalks need to be improved to minimize tripping hazards.
- Boardwalks are slippery when wet, especially in the winter when ice is present.
- Boardwalks around Jensen Lake have settled creating drainage issues under decking substructure.
- Decommissioned trails and maintenance roads not clearly identified causing wayfinding confusion.
- Lack of accessible hiking trail loops from Jensen Lake Trailhead and Holland Lake Trailhead.
- Lack of accessible trail identification signage.
- Some popular trails such as the Jensen Lake Loop are narrow and do not allow for travelers going different speeds to easily pass.
- Lack of formal connection to park from neighborhood could cause unofficial trails being developed through the remnant prairie north of Buck Pond.
- High concentration of trails through the sensitive wildlife habitat area.

Equestrian/Classic Ski Trails

- Trails well aligned with the topography but lack provisions for controlling runoff down or cross slope of trail.
- More equestrian users observed using the east segment equestrian trails during the field evaluation.
- Most existing eroded trails segments can be corrected without rerouting.
- Decommissioned trails or maintenance roads look like equestrian trails and cause confusion for users.
- Wayfinding is lacking at some trail intersections.
- Much of trail system located in old growth/interior forest areas

Paved Trails

- The paved trails were generally in good condition.
- McDonough Lake trail provides accessible trail loop.
- Some root intrusion of paved trail around the Jensen Lake Trailhead.

Portages

- The portage trails were generally in good condition.
- Low use foot traffic on most portages has minimized erosion issues.
- Some steeper trail access alignments to shoreline edges have caused some sediment run-off into lake basins.

Assessment Results

Based on observations made in the field, trail lengths and points were mapped identifying conflicts and areas in need of improvement to establish a more sustainable and higher quality trail experience in the park. (See Figures 9, 10, and 11)

Physical trail assessment criteria were also quantified for each segment of the park to begin to understand the scope and scale of work needed for trail improvements. Summary tables establish a framework for developing cost estimates, establishing a phasing and funding plan for implementation, and developing a long-term trail maintenance strategy for the park which will be developed in Phase II this fall. (See Figures 12, 13, and 14)

FIGURE 1: PARK CONTEXT MAP

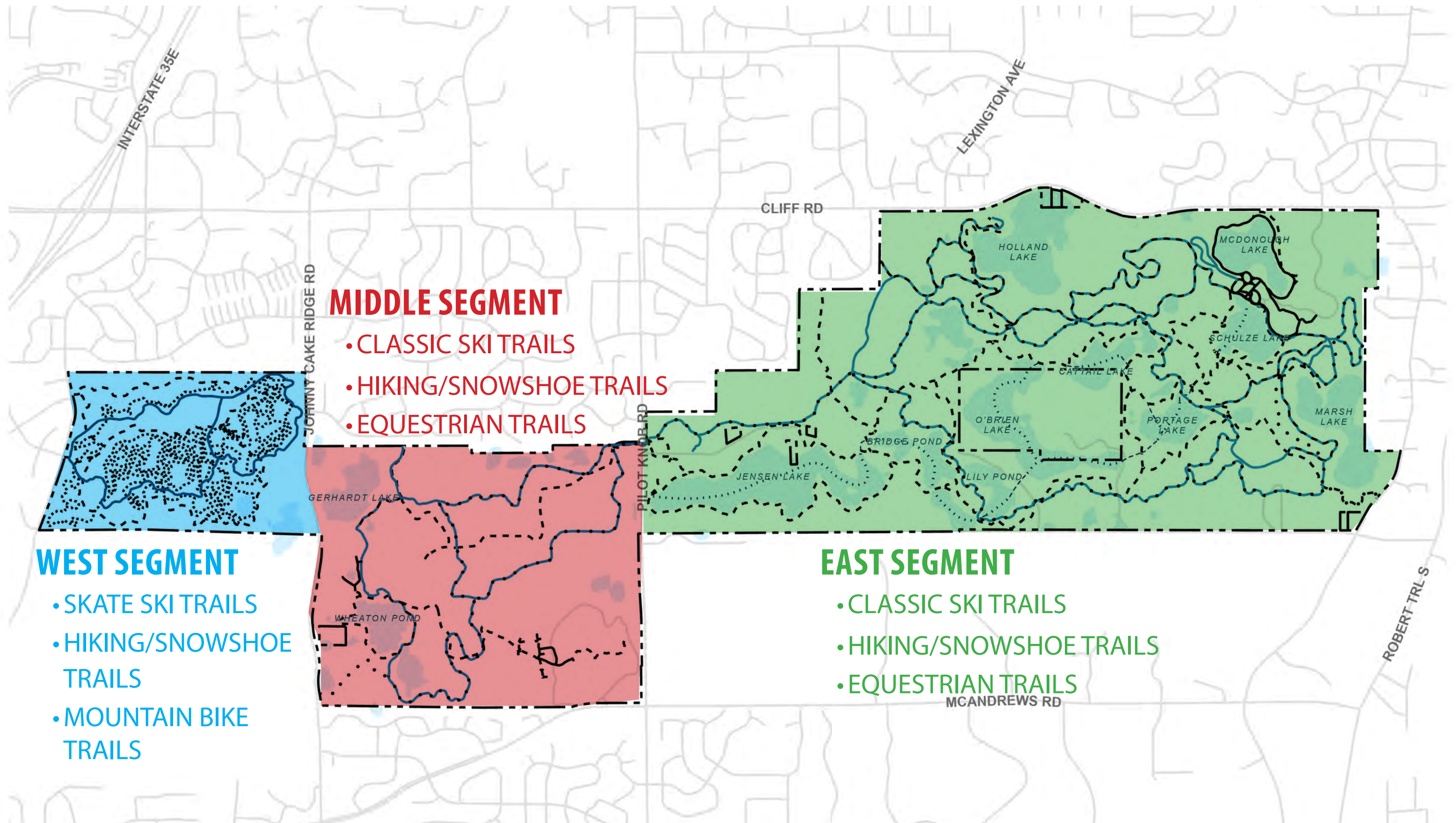


FIGURE 2: TRAIL EROSION

MINOR TRAIL EROSION

- Trail erosion less than 6" deep
- Trace amount of visual erosion



MODERATE TRAIL EROSION

- Trail erosion 6-10" deep
- Significant visual erosion but no deep gullies



SEVERE TRAIL EROSION

- Trail erosion greater than 10" deep
- Deep gully erosion present

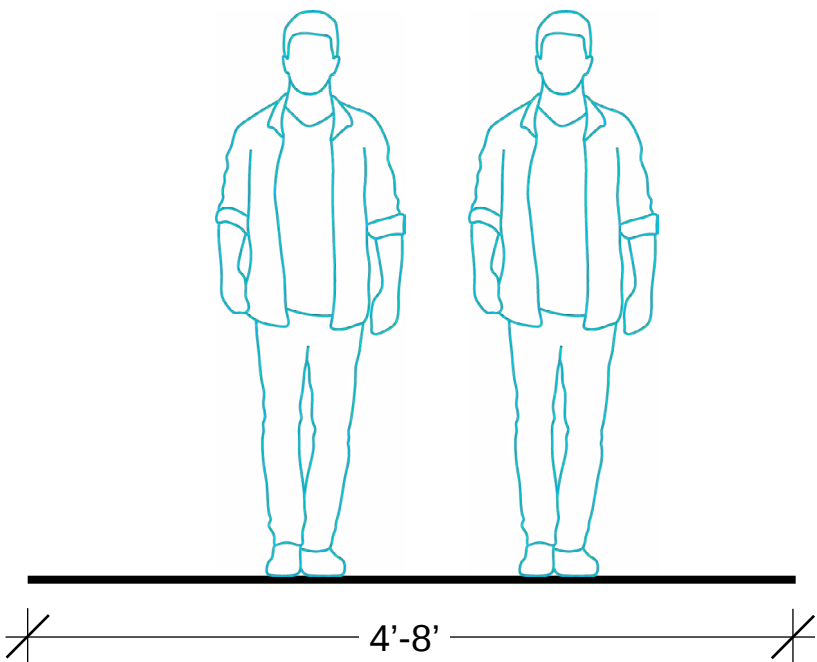


FIGURE 3: EXISTING TRAIL TYPOLOGIES

Summer Use

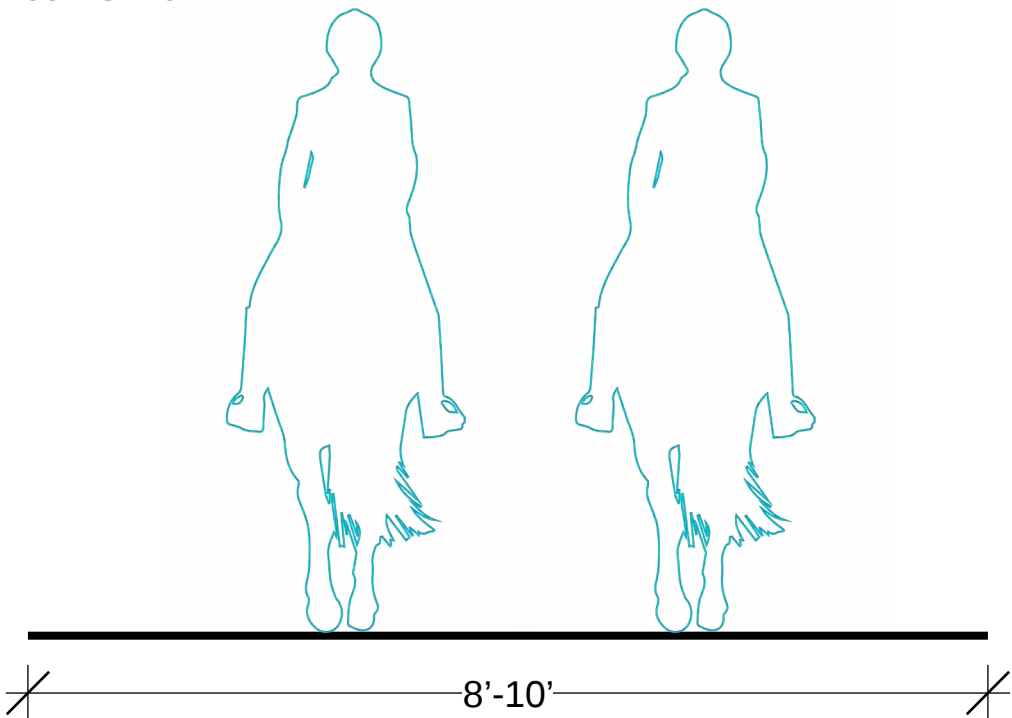
Hiking Trails

Surface: Grass, dirt, gravel
Width: 4'-8'



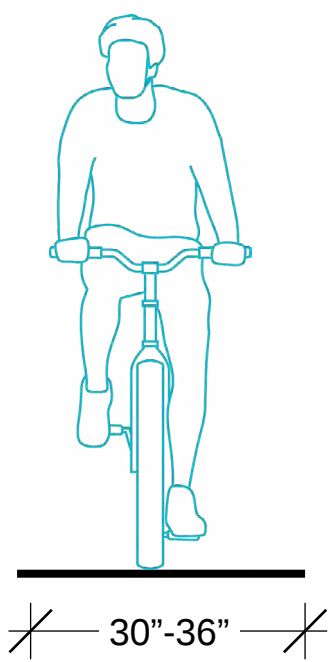
Equestrian Trails

Surface: Grass, dirt, gravel
Width: 8'-10'



Mountain Bike Trails

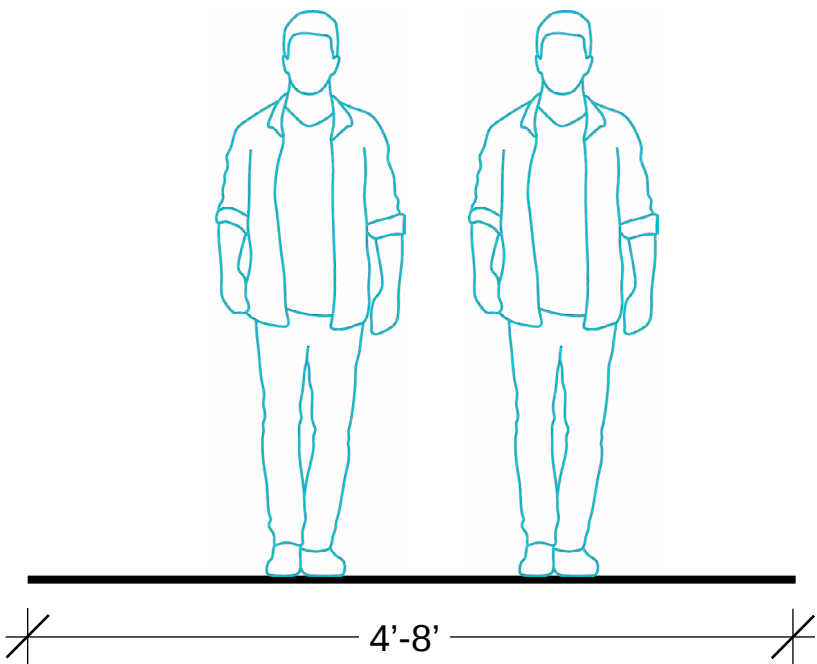
Surface: Dirt (summer) or Snow packed (winter)
Width: 30"-36"



Winter Use

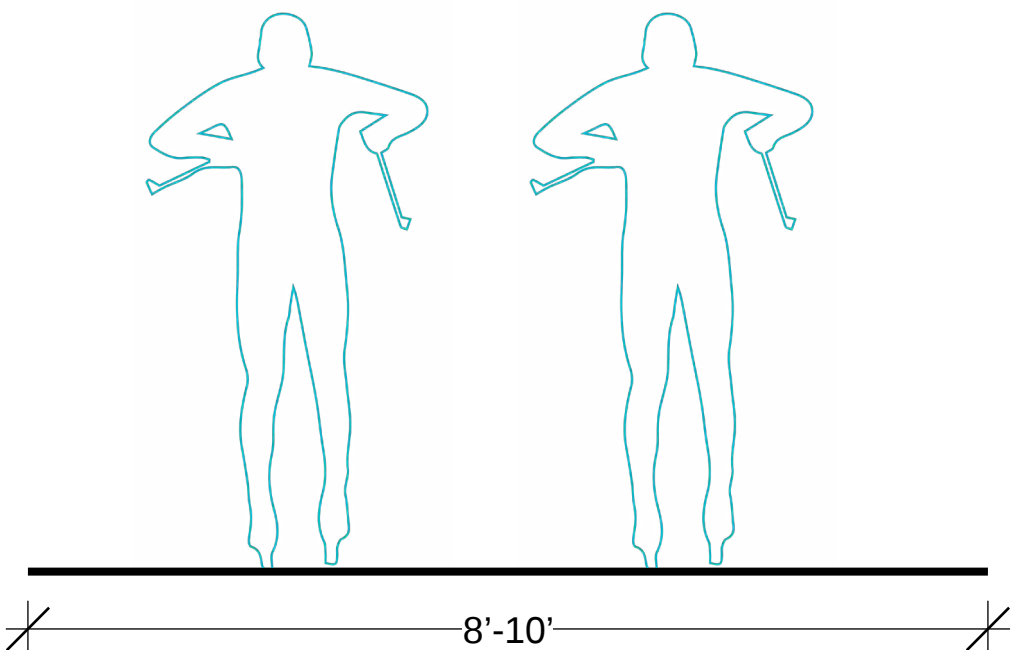
Snowshoe Trails

Surface: Natural snow
Width: 4'-8'



Classic Ski Trails

Surface: Snow tracked
Width: 8'-10'



Skate Ski Trail

Surface: Snow groomed
Width: 8'-10'

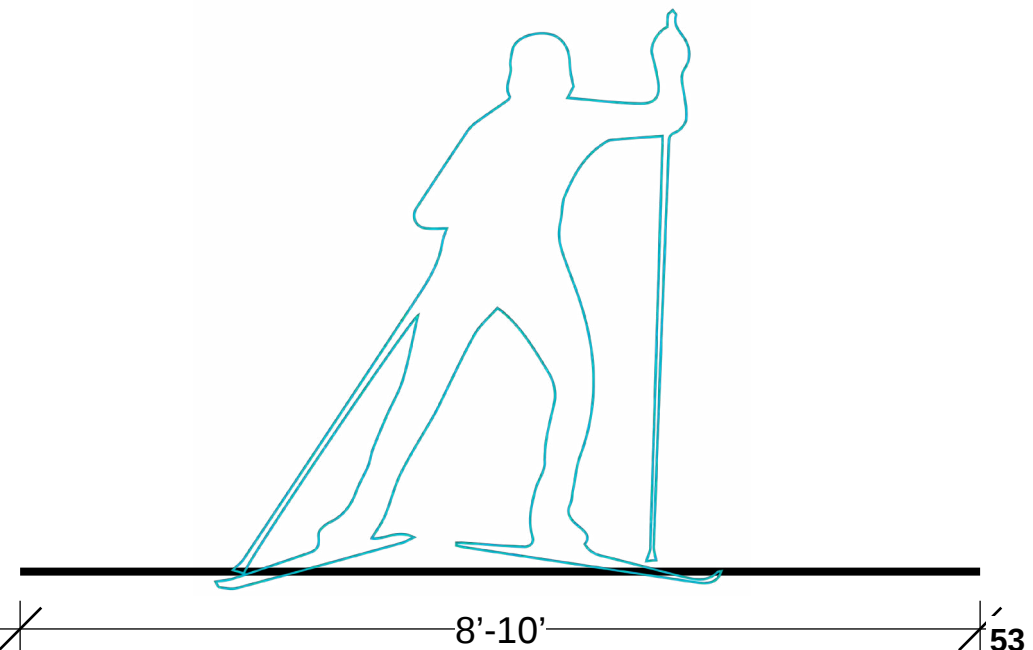


FIGURE 4: SLOPES

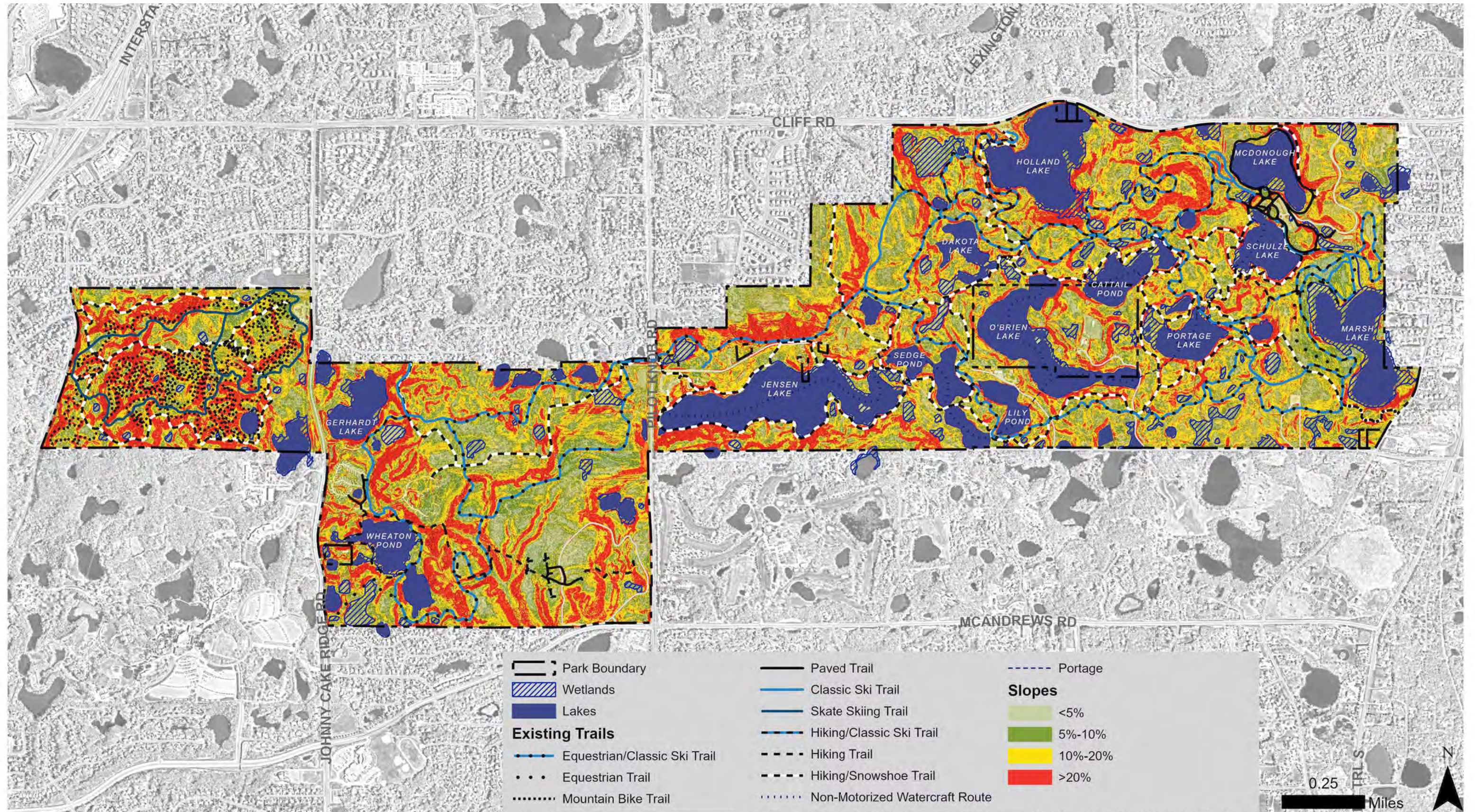


FIGURE 5: SOIL ERODIBILITY (K FACTOR)

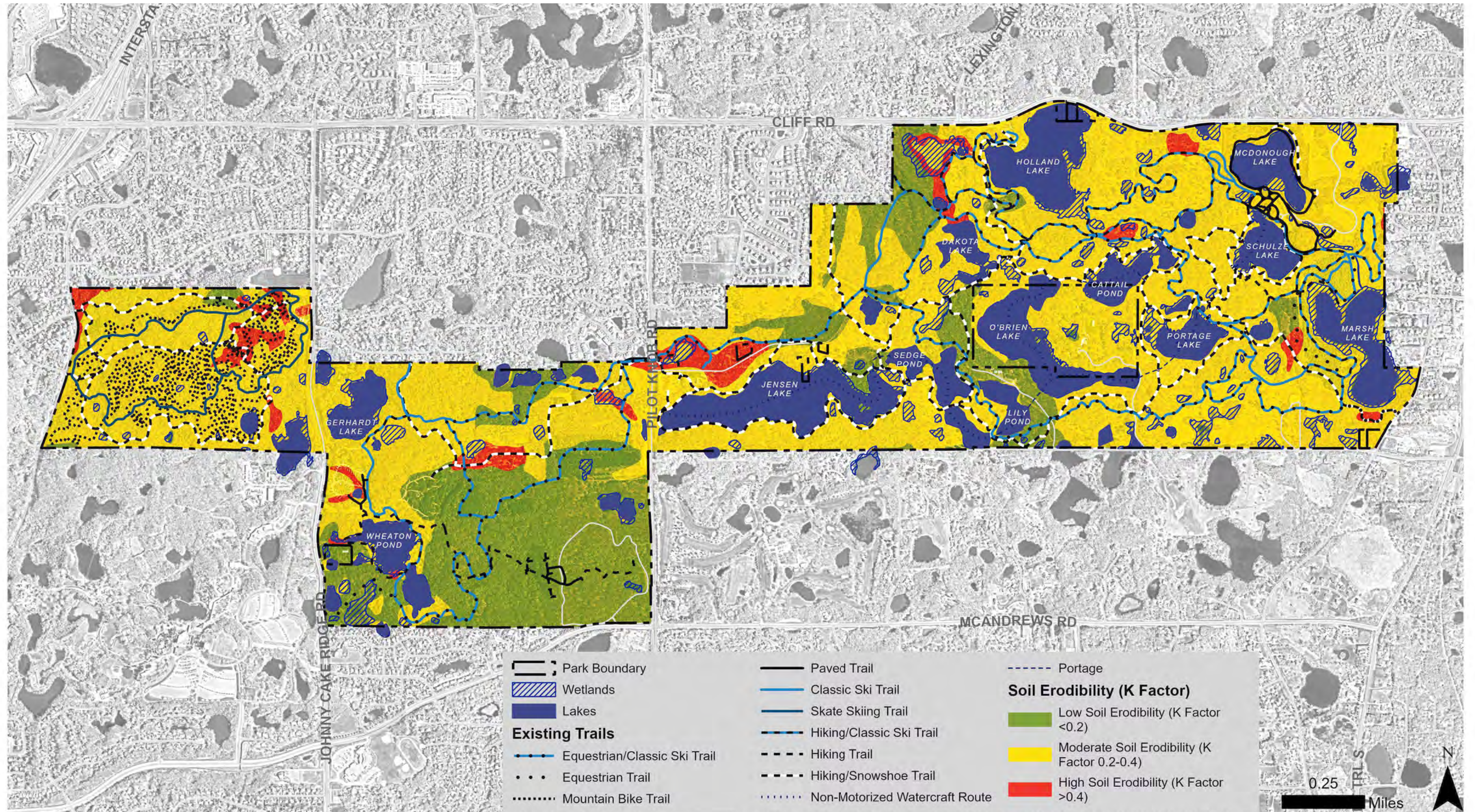


FIGURE 6: SOIL SUITABILITY FOR TRAILS

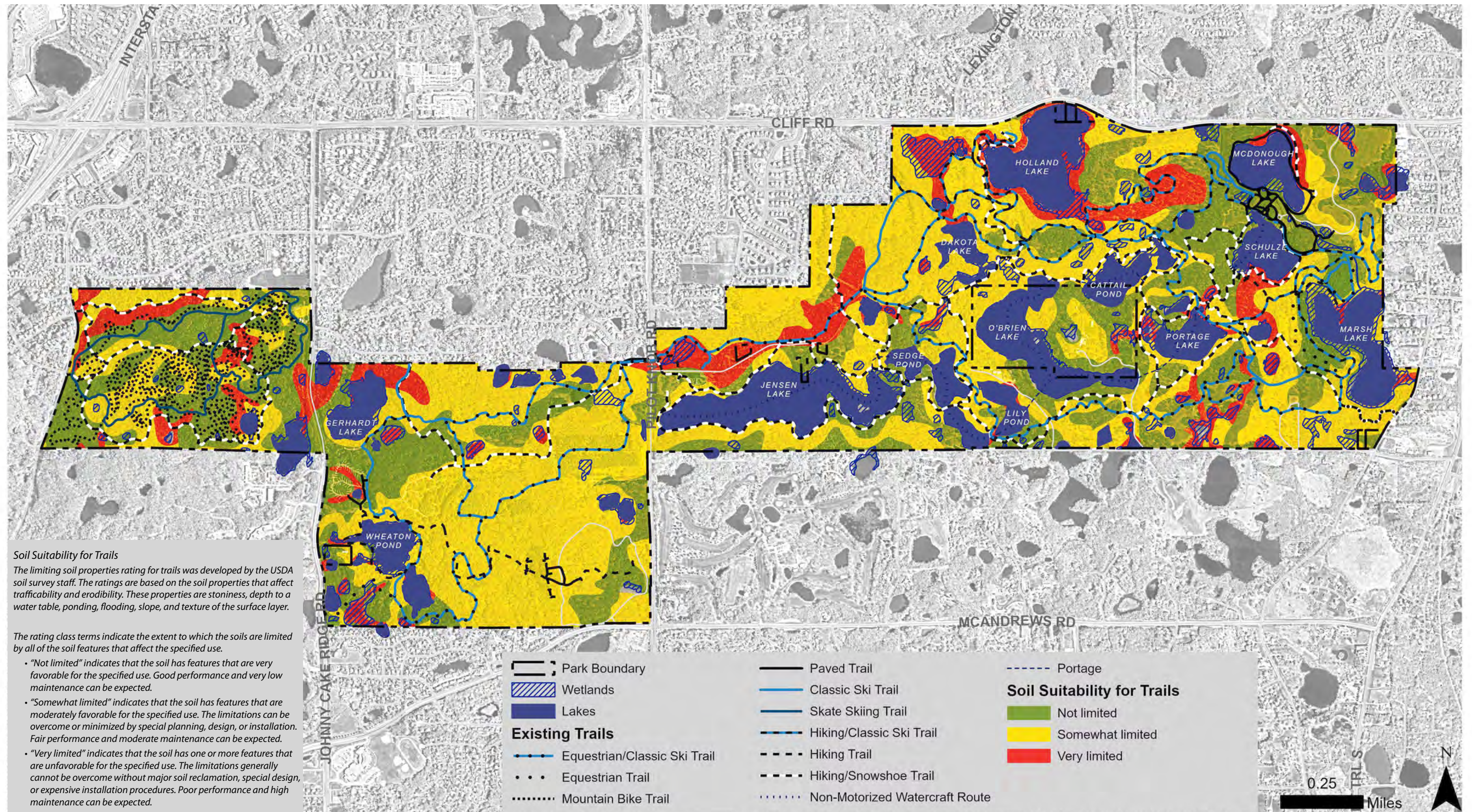


FIGURE 7: SIGNIFICANT NATURAL RESOURCES

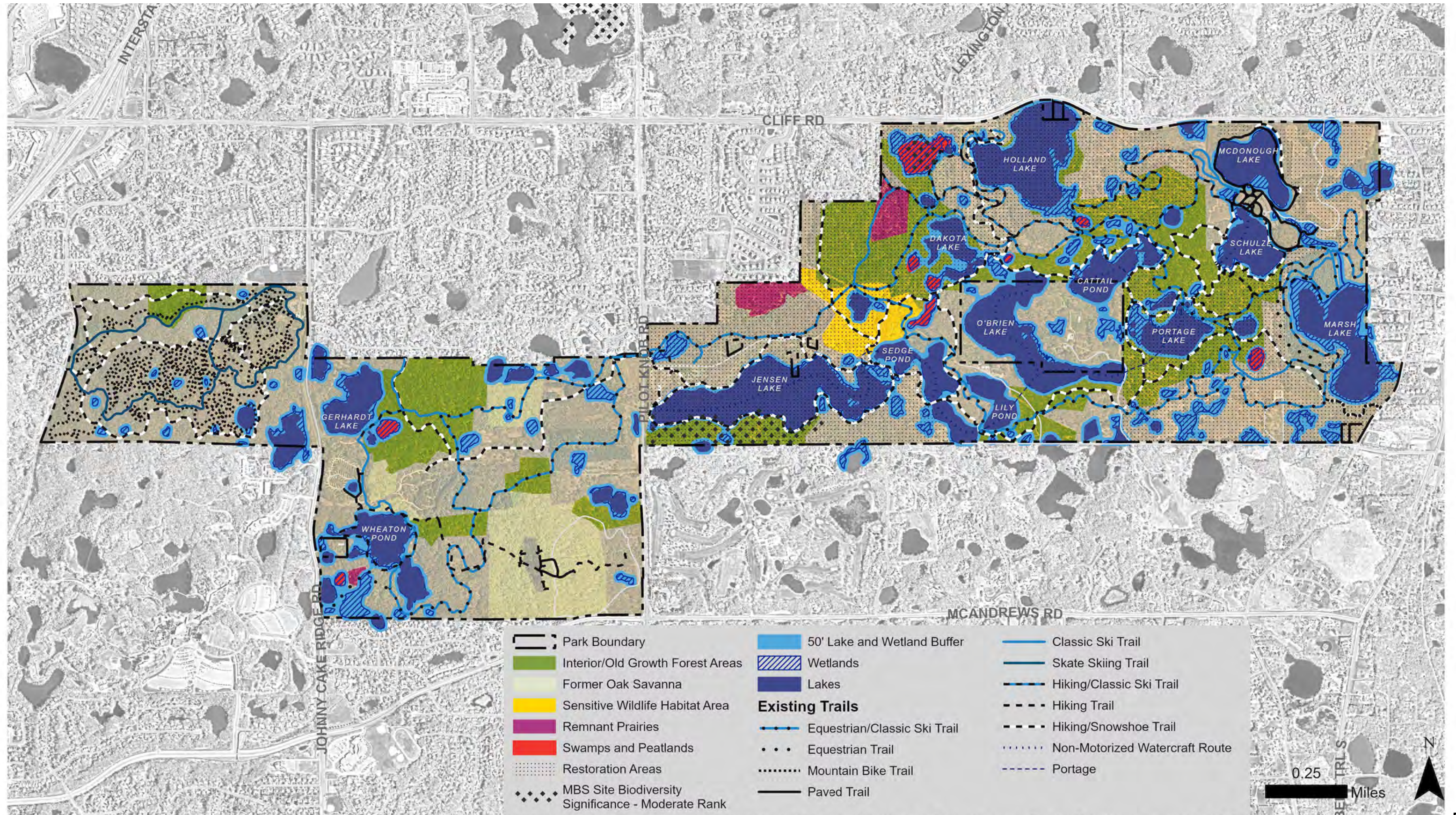


FIGURE 8: NATURAL RESOURCE TYPES

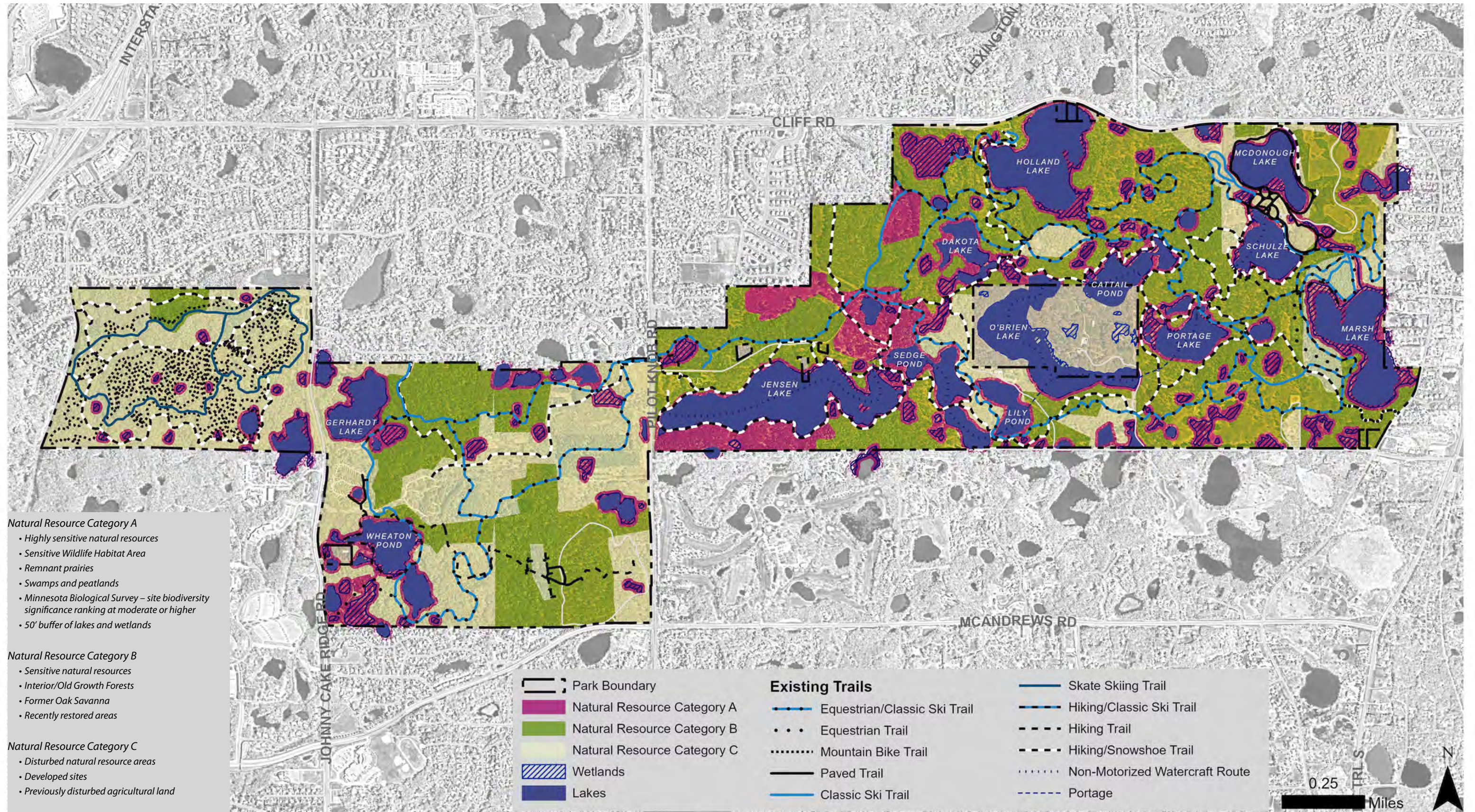


FIGURE 9: WEST SEGMENT TRAIL OBSERVATION MAP

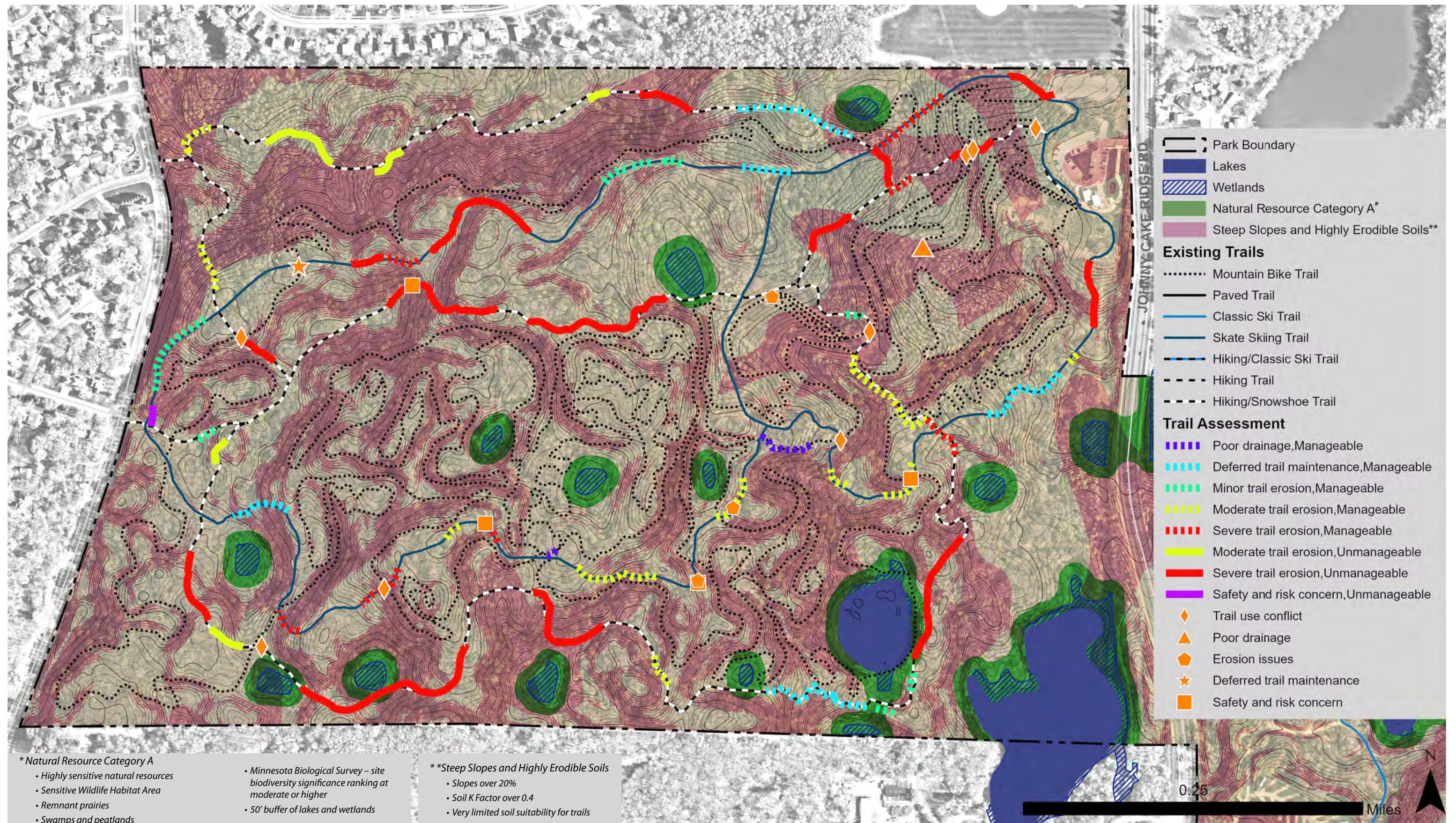


FIGURE 10: MIDDLE SEGMENT TRAIL OBSERVATION MAP

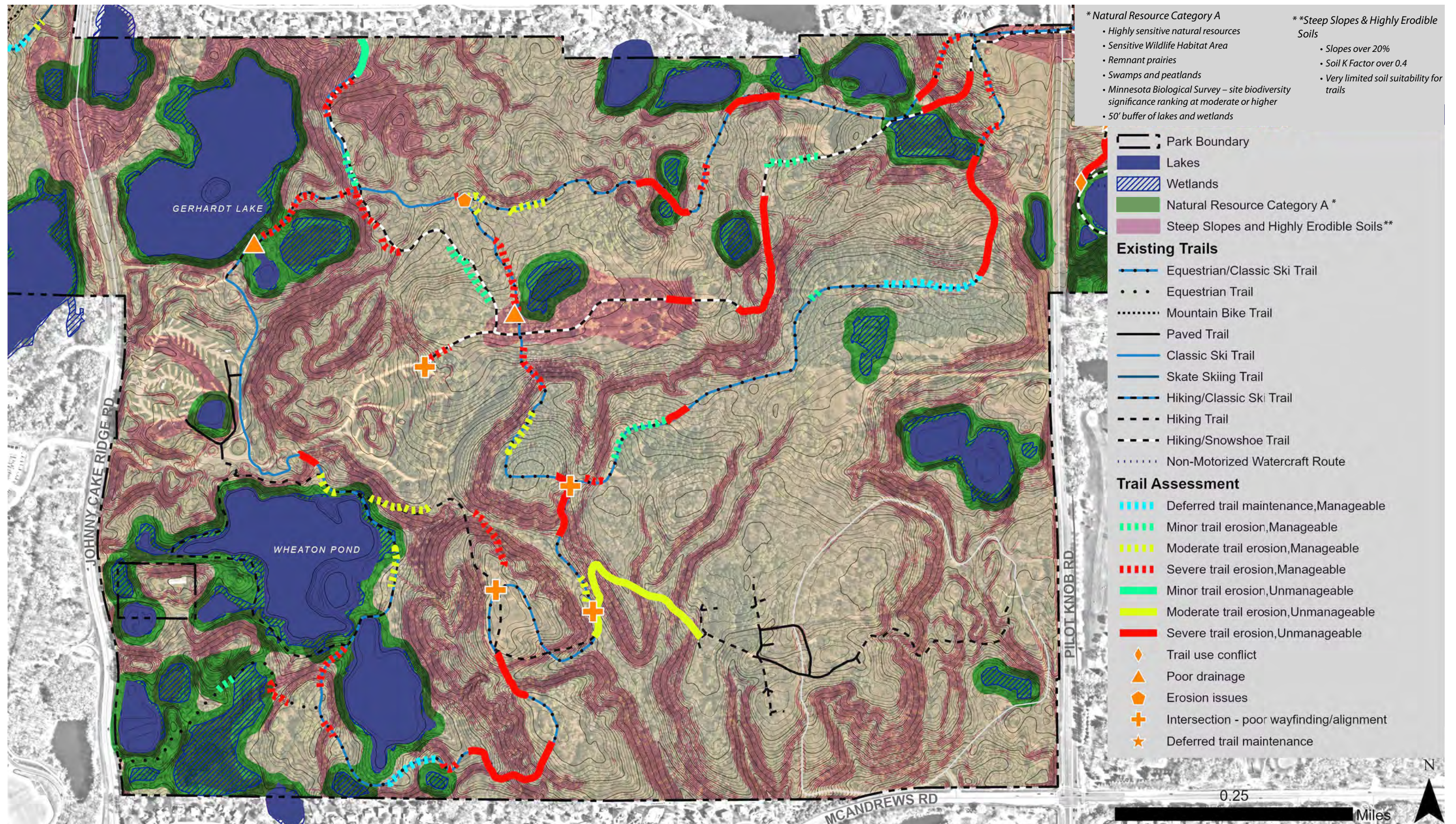
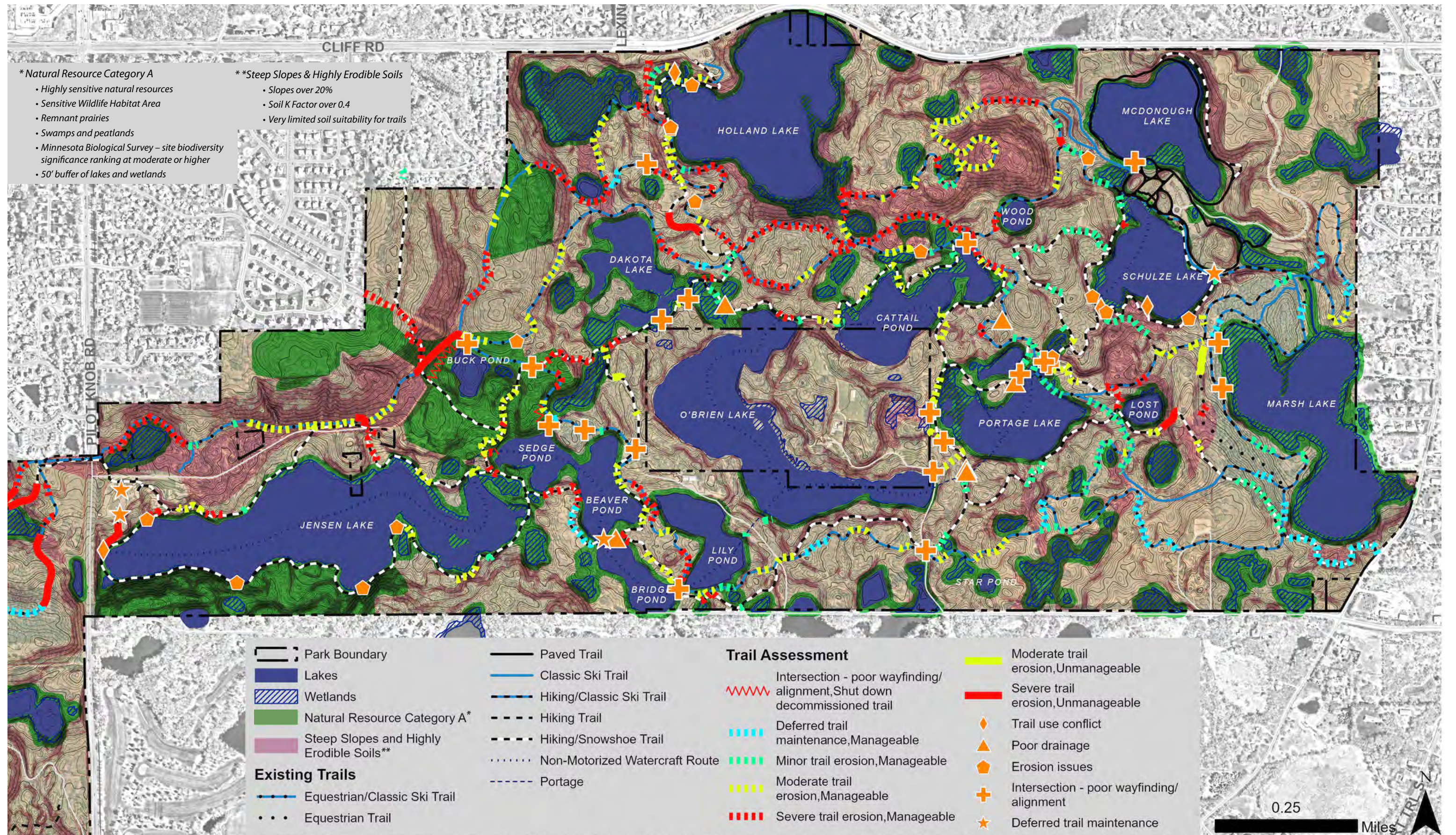


FIGURE 11: EAST SEGMENT TRAIL OBSERVATION MAP



— **FIGURE 12:** WEST SEGMENT TRAIL OBSERVATION SUMMARY TABLE —

TRAIL EVALUATION SUMMARY - WEST TRAIL SYSTEM (86,927 LF or 16.5 mi)					
Observation	Number of Point Features Collected	Number of Line Features Collected	Length (FT)	Percentage of West Trail System (86,927 LF)	Percentage of West Hiking/Sking Trail System (28,128 LF)
Deferred Trail Maintenance*		5	758	0.87%	2.69%
Poor Drainage	1				
Intersection - poor wayfinding/alignment					
ADA Accessibility Issues	2				
Safety/Risk Concern	4	1	35	0.04%	0.13%
Trail Use Conflict	8				
General Erosion Issue	3				
Minor Trail Erosion, Manageable		8	408	0.47%	1.45%
Moderate Trail Erosion, Manageable		11	825	0.95%	2.93%
Severe Trail Erosion, Manageable		7	547	0.63%	1.94%
Moderate Trail Erosion, Unmanageable		5	352	0.40%	1.25%
Severe Trail Erosion, Unmanageable		15	2,323	2.67%	8.26%
TOTALS		52	5,248	6.04%	18.66%

**Only includes trail segments showing significant deferred trail maintenance needs. Majority of trail system is in need of some routine maintenance.*

TRAIL NATURAL RESOURCE SUMMARY - WEST TRAIL SYSTEM (86,927 LF or 16.5 mi)		
Category	Length (FT)	Percentage of West Trail System (86,927 LF)
Trail in highly significant natural resource area (Category A)	2,352	2.71%
Trail in significant natural resource area (Category B)	3,359	3.86%
Trail erosion within 100' of wetland or lake	1,535	1.77%

— **FIGURE 13:** MIDDLE SEGMENT TRAIL OBSERVATION SUMMARY TABLE —

TRAIL EVALUATION SUMMARY - MIDDLE TRAIL SYSTEM (41,134 LF or 7.8 mi)				
Observation	Number of Point Features Collected	Number of Line Features Collected	Length (FT)	Percentage of Middle Trail System
Deferred Trail Maintenance*		2	381	0.93%
Poor Drainage	2			
Intersection - poor wayfinding/alignment	4			
ADA Accessibility Issues	1			
Safety and Risk Concern				
Trail use Conflict				
General Erosion Issue	1			
Minor Trail Erosion, Manageable		6	643	1.56%
Moderate Trail Erosion, Manageable		8	682	1.66%
Severe Trail Erosion, Manageable		19	1,761	4.28%
Minor Trail Erosion, Unmanageable		1	95	0.23%
Moderate Trail Erosion, Unmanageable		1	501	1.22%
Severe Trail Erosion, Unmanageable		13	1,964	4.77%
TOTALS	8	50	6,027	14.65%

**Only includes trail segments showing significant deferred trail maintenance needs. Majority of trail system is in need of some routine maintenance.*

TRAIL NATURAL RESOURCE SUMMARY - MIDDLE TRAIL SYSTEM (41,134 LF or 7.8 mi)		
Category	Length (FT)	Percentage of Middle Trail System
Trail in highly significant natural resource area (Category A)	5,972	14.52%
Trail in significant natural resource area (Category B)	13,273	32.27%
Trail erosion within 100' of wetland or lake	2,394	5.82%

FIGURE 14: EAST SEGMENT TRAIL OBSERVATION SUMMARY TABLE

TRAIL EVALUATION SUMMARY - EAST TRAIL SYSTEM (134,653 LF or 25.5 mi)				
Observation	Number of Point Features Collected	Number of Line Features Collected	Length (FT)	Percentage of East Trail System
Deferred Trail Maintenance*	4	15	1,802	1.34%
Poor Drainage	6			
Intersection - poor wayfinding/alignment	24			
ADA Accessibility Issues	4			
Safety and Risk Concern				
Trail use Conflict				
General Erosion Issue	15			
Minor Trail Erosion, Manageable		54	3,555	2.64%
Moderate Trail Erosion, Manageable		76	6,498	4.83%
Severe Trail Erosion, Manageable		47	6,402	4.75%
Moderate Trail Erosion, Unmanageable		3	173	0.13%
Severe Trail Erosion, Unmanageable		7	788	0.59%
TOTALS	53	202	19,219	14.27%

**Only includes trail segments showing significant deferred trail maintenance needs. Majority of trail system is in need of some routine maintenance.*

TRAIL NATURAL RESOURCE SUMMARY - EAST TRAIL SYSTEM (134,653 LF or 25.5 mi)		
Category	Length (FT)	Percentage of East Trail System
Trail in highly significant natural resource area (Category A)	46,087	34.23%
Trail in significant natural resource area (Category B)	77,715	57.72%
Trail erosion within 100' of wetland or lake	11,414	8.48%