



PATH TO A COMPREHENSIVE BLUFF MANAGEMENT PLAN

A SCOPING PAPER
PRESENTED TO CITY OF LILYDALE

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The Path to a Comprehensive Bluff Management Plan for Lilydale

Proper management will add to the ecological value of the tremendous river bluff natural resource in Lilydale, as well as the larger great river corridor. One of Lilydale's greatest assets is its proximity to, views of, and access to a remarkably scenic and recreational stretch of the Mississippi and Minnesota River confluence. Proper stewardship of the bluff will maintain this positive image for Lilydale, retain Lilydale's proximity to the river bluffs as a community asset and appeal, and contribute to the preservation of Minnesota's natural heritage.

Purpose of this scoping study

A plan for proper bluff management is difficult for a number of reasons, including natural and accelerated erosion, steepness, variety of ownership, and guidelines and regulations. In addition, several of the issues have a contentious history reaching back many years. And in other cases, uncertainty or lack of understanding prevent an easy consensus.

Given this background, it may be overwhelming to gather people together to start writing a comprehensive plan from the get go. Instead, steps can be taken that move the conversation forward and lay the groundwork. The purpose of this report, deliberately titled as a "path," is to scope out the issues and suggest the steps forward. It is not intended as a full study of any particular issue.

In particular, for vegetation management, Great River Greening is confident that the planning, approval, and implementation process can be negotiated, resulting in management that provides a variety of benefits to the spectrum of stakeholders.

Method

Great River Greening undertook the following steps to prepare this assessment:

- reviewed City files, City ordinances, and interviewed City staff, mayor, and Council member;
- conducted several site visits on the Big Rivers trail and along points on the bluff;
- worked with Dakota County GIS to download parcel data and get clarification on several ambiguous parcels, and mapped these parcel lines overlaid onto aerial photos, topographic lines, and Hillshade (LIDAR) images; and,
- conducted phone interviews with Tina Markeson, MnDOT regarding bluff vegetation management; and Hannah Texler, MN-DNR regarding pre-settlement bluff vegetation.

Study Organization

For this scoping of the issues, Great River Greening offers recommendations in five different sections. These same sections may also be useful for the eventual comprehensive bluff management plan.

1. Bluff Stabilization
2. Stormwater Management on Private Land
3. Stormwater Management on Public Land
4. Vegetation Restoration and Management Plan
5. Stakeholder Ownership

1. Bluff Stabilization

Issues

Currently, there is no consensus on the threat of rock failures and what to do about it. There is frequent mention of two mass rockfalls in the early 1990s (e.g. CNA Consulting Engineers, 8/17/92). Gleaned from reports, these most recent two rock failures are summarized as follows:

- 1990, near the western edge of Colony Townhomes Association (CTA), when up to 130 cubic yards of rock fell; and
- April 7, 1992 directly below Unit 4 of CTA, also up to 130 cubic yards.

These two rockfall incidents apparently helped spur a multi-agency initiative to undertake a major stormwater improvement project known as the Mayfield Heights Diversion near Lexington Avenue and Hwy 13.

Various engineering and geological assessments of the bluff erosion and stabilization have been made. The four documents of which we have copies, and have reviewed, are:

- Braun Intertec, February 19, 2010. *Final Proposal for a Design Phase Bluff Stabilization Evaluation: Colony Town House Association.*
- Barr Engineering Company, July 22, 2009. *Memorandum: Preliminary Assessment of the Colony Townhome Bluff Deterioration.*
- Alexander, C.E., Geology and Geophysics Professor, U of M. E-mails dated August 25, 2008 and September 7, 2008. *Bluff Land at 1124 Sibley Memorial Highway.*
- CNA Consulting Engineers, August 17, 1992. *Colony Town Houses Description of Investigations and Recommendations: Work Product Prepared for William F. Orme, Attorney at Law.*

Additional engineering and geological assessments of the bluff erosion and stabilization that are referenced elsewhere include:

- Braun Intertec, August 22, 2008; referenced by Braun Intertec, 2010 and Alexander, 2008.
- Barr Engineering Company, circa 1996. Memorandum regarding bluff weathering referenced in 8/26/96 City Council minutes.
- Dakota County, circa 1995. Several engineering analyses past and future centered on trail construction; referenced in a 4/6/95 letter.
- SEH Engineering, circa 1993; referenced in 11/30/93 City Council minutes.

These studies have addressed how to stop the rock failure issues before there is property damage to the developments along the bluff, and/or injury to trail user(s). There are some similarities in the analysis and recommendations, and some contradictions and differences.

Even if there was consensus on the problem, there is yet no formal approval by the City or MnDOT as to the approved approach for preventing mass rock failures. For example, it is unclear whether or not MnDOT issued a permit around 2010 for private landowners to conduct any of this type work, but whether or not a permit was granted, implementation has not occurred.

Recent observations

Two site visits to the recreational trail in summer indicated the following:

- Some loose erosion onto the trail occurred below Stonebridge in late June / early July 2013;
- A recreational bench was removed from Big Rivers Regional Trail recently, likely as a precautionary safety measure; and
- Over the past few years, at least one bluffline tree fell over and took a sizeable rock slab along with it.

By all accounts, Dakota County is quick to clean up any rock and wood debris from the Big Rivers Trail in Lilydale, keeping the trail open and safe for users.

Thankfully, there have been no reports of any mass rock failures the past several years, including anything associated with the June 20-22, 2013 heavy rainstorm events, which were severe enough to have Dakota County declared a federal disaster area.

Recommendation

Greening recommends the next step is to review the studies with MnDOT, Dakota County, and City engineer, to analyze the similarities and differences, and determine which measures MnDOT will permit or has permitted (e.g. Braun Intertec 2010 requests). If after this review, another engineering analysis is desired or needed, Greening can produce that by partnering with another engineering firm (e.g. American Engineering Testing (AET) or Wenck Engineering).

2. Stormwater Management on Private Land**Issue**

City ordinances address stormwater management on private land. Even though there appears to be agreement that improvements will help slow bluff erosion, there is little documentation as to whether or not bluff owners have implemented the necessary stormwater management improvements. It remains to be determined if bluff owners are in compliance with these ordinances, and if they are being coordinated properly between landowners. A June 2011 photo by MnDOT is a small window into the status of private stormwater practices. Inspection and enforcement may be beneficial.

Recommendation

Lilydale can also provide landowner education resources and programs for proper stormwater management on private land. Education may be particularly important, as proper stormwater management along the bluffs, where infiltration is not allowed, runs contrary to many of the rain garden and other infiltration initiatives that are a major thrust of other stormwater education in the Twin Cities metro. Great River Greening is available on a fee-for-service basis to assist with education initiatives, relying on our vast experience educating homeowners on a one-to-one basis as well as larger gatherings at educational fairs and landowner workshops.

3. Stormwater Management on Public Land**Issue**

As recently as June 2012, CTA made a claim that Hwy 13 runoff affects their stormwater systems; MnDOT disputes that claim as does the City engineer. More data will help clarify the situation and move this along.

Regarding the 1994-95 stormwater improvements, known as the Mayfield Heights Diversion and Lexington Drop Structure, there was apparent consensus that this measure was needed, and resulted in major improvements.

MnDOT has plans for 2015 which include improvements to CTH 13 that will include a sewer upgrade including a larger pipe, and new curb and gutters (Lundberg, personal comm.; <http://www.dot.state.mn.us/metro/projects/hwy13mendota/>).

Recommendation

Many people do not understand public infrastructure; and the opaque nature of how highways are designed contributes to suspicion. The 2015 Highway 13 project provides an opportune moment to offer a public informational meeting well ahead of construction. It will also continue to engage MnDOT and other stakeholders in conversations of mutual concern.

4. Vegetation Restoration and Management Plan**Issues:**

Currently the bluff vegetation is degraded, undermining the aesthetic, ecological and wildlife benefits for the city. The bluff is host to a typical suite of highly invasive non-native species including honeysuckle, buckthorn, and garlic mustard. These plants outcompete native shrubs and flowers, and shade out tree seedlings. Additionally, the lack of native vegetation contributes to soil erosion. As noted before, there are several small ravines along the bluff line that exhibit varying degrees of erosion, and the resulting deposition downhill.

MnDOT, the majority owner of the bluffland west of 35E, has stated a comprehensive plan is required before they will consider allowing any restoration work on their land. Meanwhile, private landowners on the bluff can exercise vegetation management without MnDOT approval, resulting in a current piecemeal approach to bluff management.

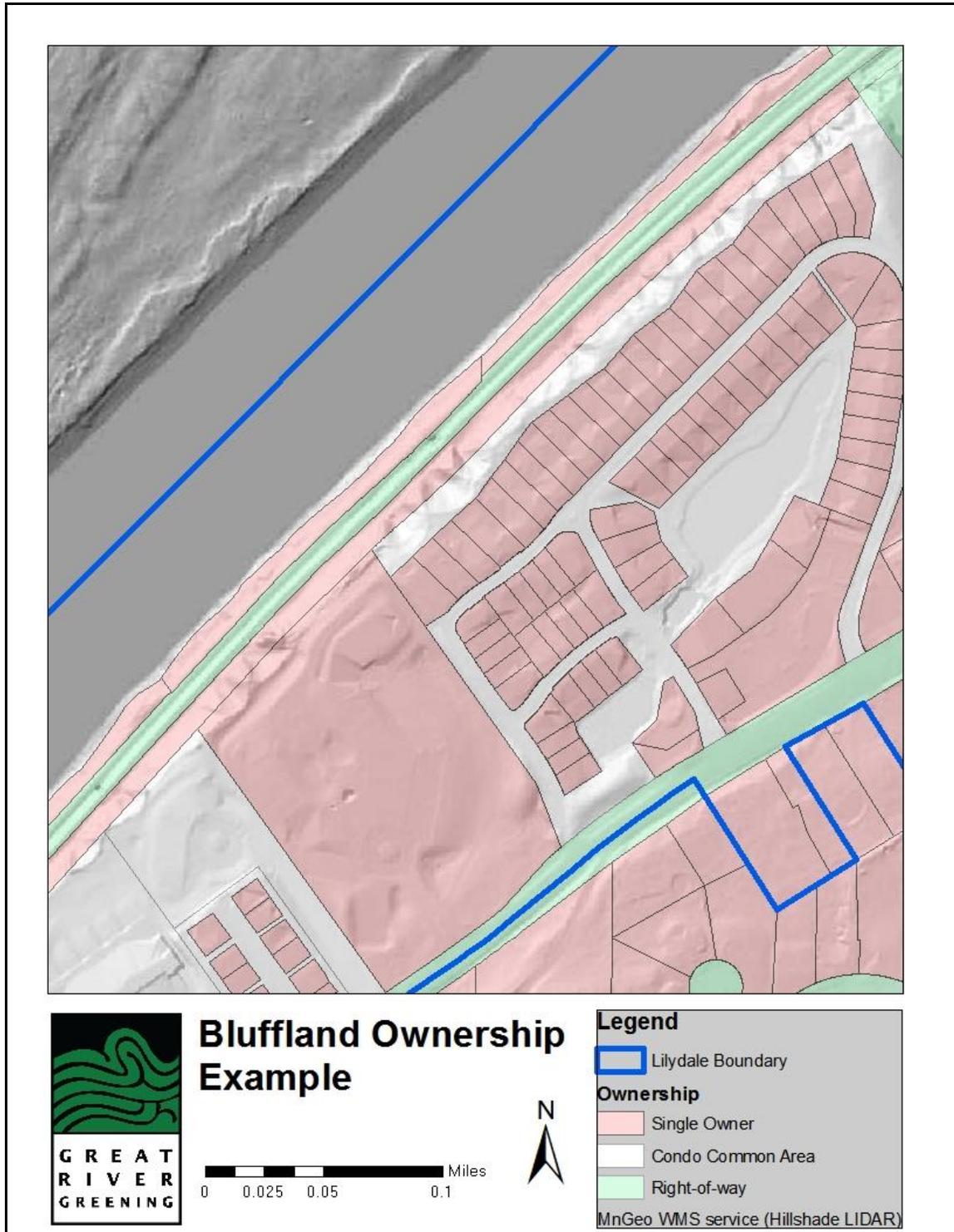


Figure 1: Bluffland Ownership Example

Recommendation

Greening highly recommends major initiatives down the path of the holistic restoration and management approach, which given the scale of the bluff is more effective and compelling. This begins with a restoration and management plan that addresses all of the bluffs within Lilydale limits, and even beyond into adjacent bluffland, identifying project boundaries and prioritizing phases.

Restoring the bluff vegetation will increase habitat value of the bluffs, provide conditions for native tree and shrub regeneration, and has the potential to increase the herbaceous component. Although it should not be considered a solution, herbaceous vegetation is generally considered better at erosion control than heavily wooded communities. While historic views will be investigated as has been done in St. Paul, improvement to views will likely be very modest. Large native trees will very likely remain in place, for example.

Creating the plan

The planning will require extensive analysis by ecologists. The review process will provide landowners, adjacent landowners, and other stakeholders the opportunity to review and comment. The stakeholder element adds to the complexity, but it is necessary and oftentimes results in a better product and new partnerships sharing a common goal. As stated above, Greening is confident that the planning, approval, and implementation process for holistic vegetation management of the bluffs can be negotiated, resulting in management that provides a variety of benefits to the spectrum of stakeholders. In addition to the MnDOT requirement, our experience dictates that a management plan is also the first step to leveraging cost-share funds for implementation.

The comprehensive approach also makes sense ecologically, as wildlife will benefit from large blocks of habitat, and long term management will also benefit from the economy of scale (e.g. by minimizing re-seeding by neighboring buckthorn). While implementation of such a plan will require significant resources sustained over time, implementation can be undertaken in successive phases, identified in the plan by physical boundaries, and prioritized by need, opportunity, and urgency.

Developing and adopting a comprehensive bluff management plan will include reaching agreement on the target vegetation community, methods, and identify potential cost-share opportunities and in-kind services. Any regulations from MNRRA and DNR Mississippi River Critical Corridor Area (currently being revised) and other units of government, will be documented and explained. Initial cost and sustained management costs will be presented in detail. Bluffline vegetation restoration has been identified as an area of potential improvement for rock fracturing (e.g. Braun Intertec, February 19, 2010. *Final Proposal for a Design Phase Bluff Stabilization Evaluation: Colony Town House Association*), where the vegetation is severely infested with non-native invasive shrubs. The differences between areas will be highlighted throughout.

Cost of plan and subsequent implementation

Overall, there are approximately 88 acres of bluffland in Lilydale City limits, covering a number of private and public landowners; approximately 50 acres is currently managed by Saint Paul Parks and Recreation (SPPR) east of 35E. The plan will outline approximately \$500,000 worth of potential restoration and management activities, \$200,000 on non-SPPR land, for both initial work and sustained effort over the next 10 years. The plan will also identify opportunities for safe, meaningful work that can be undertaken by volunteers, a key piece to engaging the community and maintaining support. The estimated cost for the base Vegetation Management Plan, including hosting stakeholder review, is \$20,000. Typically, grants can cost-share a management plan on the condition that implementation is also undertaken at the same time.

Once the plan is adopted, vegetation restoration can begin (or must, if cost share dollars have been brought to the plan development).

Because of the high cost, it will be demonstrated to MnDOT and in the plan that the areas which are to be treated must be prioritized to contain cost. At the same time, the treated area be large enough that seed rain by buckthorn etc. is minimal. Invasive control is more effective at a large scale. The plan will design appropriate phasing to consider all these factors.

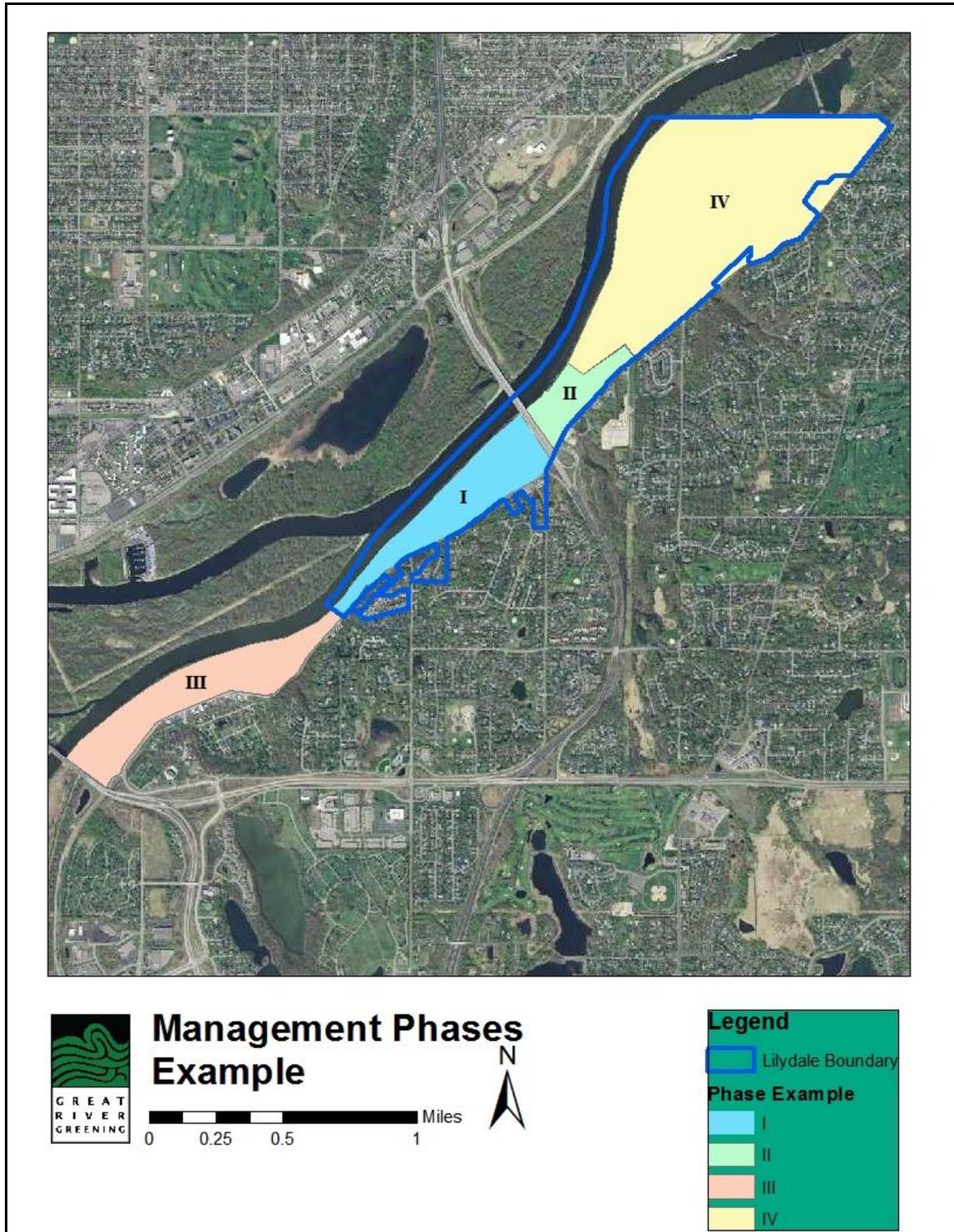


Figure 2: Vegetation Management Phases Example

Woody invasive removal cost share on the bluff can be pursued as a habitat restoration project (control of erosion and mass failure of the rock faces will unfortunately not qualify as a habitat project). Typically, cost share grants require a 1:1 match, and a written commitment for long-term maintenance and sustained effort by landowner or other party willing to take on the responsibility and grant liability if the restoration is not maintained.

5. Stakeholder Ownership

Issue

The purpose of creating a formal stakeholder process, including a possible steering committee and/or technical advisory committee, is to ensure that the eventual comprehensive bluff management plan reflects the full range of community values and desires, as well as official endorsement from land owners and managers. This broad-based participation in developing the plan will also help ensure that it will be implemented; stakeholders are involved in its development and thereby become committed to seeing it through.

As noted in the beginning of this report, it may premature to start a comprehensive bluff management plan at this time. However, many of the first steps, like developing educational workshops and meeting with MnDOT, will lay the foundation.

At the same time, moving forward with the vegetation management plan is a step towards the more comprehensive plan. It also brings the stakeholders together on one of the less controversial topics and enables them to have a positive outcome.

Recommendation

Bringing stakeholders together for a vegetation management plan can be rather straightforward, and Great River Greening has great experience in this area. Great River Greening or another entity would probably work with a technical group, but also gain community support through a combination of workshops, issue conversations, presentations, and review of drafts.

In contrast, when the City and others are ready for the more comprehensive bluff management plan, a process that will take on more controversial topics, Great River Greening recommends using a professional facilitator, perhaps seeing a landscape architecture firm through a formal RFP process. Particularly in complex discussions or those where people have different views and interests, good facilitation can make the difference between success and failure.

For either plan, the list of stakeholders supplied by the City is quite robust. Only a few additions are recommended:

- Al Singer, Dakota County
- Hannah Texler, Minnesota Department of Natural Resources
- City of Mendota
- Justin Miller, City of Mendota Heights
- Adam Robbins, Saint Paul Parks & Recreation
- Mike Goodnature, Ramsey County Parks
- Resource Manager, Fort Snelling State Park
- Lower Mississippi River Watershed Management Organization
- Lower Minnesota River Watershed District

6. Conclusion and Recommended next steps

In this report, Great River Greening has outlined several issues that must be untangled or explored before taking on a Comprehensive Bluff Management Plan. At the same time, we have suggested several steps to lay a foundation towards that end.

In summary:

- City reviews this scoping paper
- Endorses some or all of the recommendations
- Establishes a steering committee and city lead to move on the recommendations
- Continues to partner with Great River Greening for vegetation restoration