# **Cascades Trail Phase 5**

# **Alternatives Review and Recommendations**

# **Prepared for:**



**City of Bloomington** 

**Department of Parks and Recreation** 

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## **Cascades Trail Phase 5**

## **Alternatives Review and Recommendations**

#### **Background:**



The City intends to provide improved access for pedestrians and bicyclists into Cascades Park from the south, linking Miller-Showers Park to the path network already built in the vicinity of Club House Drive. Existing paved trails extend west to Kinser Pike and also north to Griffy Lake. This southward connection out of Cascades Park is the last to be considered due to challenges of topography, space, presence of a sanitary interceptor, need for a roadway bridge replacement, Cascades Creek with its deteriorated walls and erosion problems, potential environmental impacts, and assumed high construction costs. The area being studied is shown on the following page.

The bike/ped facility is intended to be paved path, though it may be provided in one or more forms including using the existing road pavement, a sidepath, or a separated trail. The purpose of this study is to recommend the best options for constructing the bike/ped pavement.

## **Description of Segments of the Trail:**

For the purposes of analyzing the options, the project area was broken into various segments because the characteristics, challenges and opportunities vary widely along the corridor.

## Segment A: Walnut Street to Gourley Pike (775')

Extending from the west edge of Walnut Street to (and including) the intersection with Gourley Pike, the existing roadway provides an important two-way vehicular route that bypasses the intersection of Walnut and SR46, serves as a school bus route and provides local access to residential and commercial properties. It is the primary route used by IMI in getting into the City for deliveries. Traffic on this section might not be entering the park. There is relatively flat and undeveloped land alongside the east side of the road, though an existing ditch which eventually is to join Cascades Creek is paralleling the area on the east side.

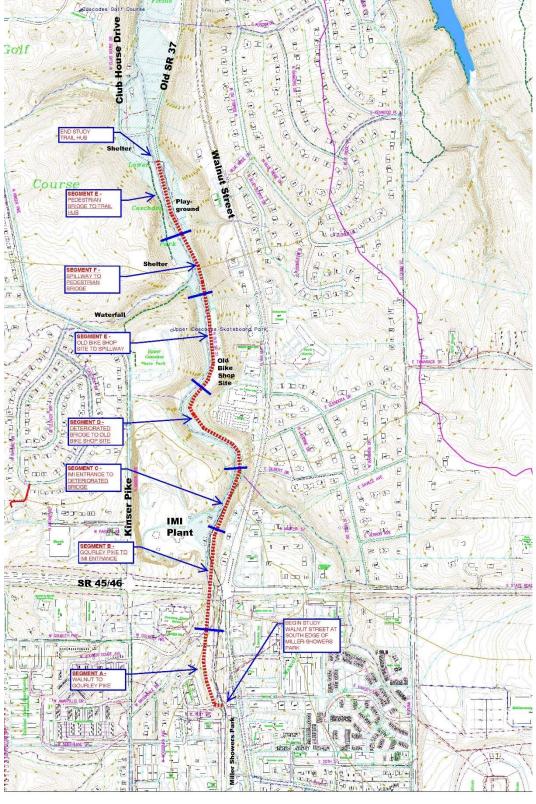
## Segment B: Gourley Pike to IMI Entrance (980')

This segment extends from the north side of the intersection with Gourley Pike to the north side of the IMI entrance. The existing roadway is the primary route used by IMI in getting into the City for deliveries. There is a relatively flat shoulder area next to the road which hosts a shallow ditch and then a nearby hillside leading up to the east. There is room for a sidepath on the east side but some hillside excavation will be needed to make sufficient room. This work would be relatively minor and feasible, similar to work done along Club House Drive in magnitude.

This segment hosts the IMI entrance at its northern end, and goes under the existing SR45/46 bridge between Gourley Pike and IMI. There is room under the bridge to host a sidepath.

## Segment C: IMI Entrance to Deteriorated Bridge (610')

This segment starts just north of IMI and ends just north of an existing concrete bridge/culvert. The bridge structure primarily passes water that comes from an existing 8'x8' box culvert under Walnut Street, flowing west into Cascades Creek.



Cascades Trail Area
Base Map, Topology & Utilities

Important Notice:
The positions of underground utilities are
Please call 811 to have all underground



This narrow section is characterized by the first appearance of Cascades Creek, running parallel to the road along the western edge of the road, and flowing north into the park. The creek bank is very close to the road, ranging from 0-6' from roadway edge. There is a close hillside west of the creek and thus no flat ground west of the creek. On the east side there is also steep hillside leading up, typically 5-15' from the roadway edge depending on the section.



The existing bridge is relatively narrow and has concrete side rails with no approaching guardrail. The eastern concrete rail has broken and partially dropped out of position. It has been braced in place with metal brackets and supported by a crossing pipe. It has been in this condition for many years.

The City Utilities Department is replacing a sanitary sewer interceptor that is to skirt the east edge of the existing bridge footer. It has not been installed yet but is due in May or June of 2019. This sanitary sewer interceptor will need to be considered in future design.

Options for the bridge include replacement of the bridge within the available space between creek and sanitary sewer pipe, or perhaps using a precast concrete box.

At this time there is no way to know whether there will be enough room between the creek and the sanitary sewer to replace this bridge with a structure wide enough to host both the roadway and the proposed bike/ped facility. Another possibility would be to fully enclose the area between the culvert under Walnut and the existing bridge limits, essentially continuing the existing box to directly drain into Cascades Creek. Another possibility would be for two separate structures, with one assumed to be set east of the new sanitary interceptor. This decision is not needed right now. Extending the box culvert is very likely the least expensive of the options.

## Segment D: Deteriorated Bridge to Old Bike Shop Site (1160')

This segment is the longest in the study, and offers several available options. The roadway is very curved throughout this segment. It extends from just north of the previously described bridge and follows the park valley's corridor around large bends until ending just short a paved site that was once a motorcycle repair shop.

For the first time, there is some flat ground available on the west side of the creek (though not for the entire length). East of the road there is still a slope, though farther from the road in some areas. The slopes along the east side of the road are generally not as steep or as tall as in other areas, so if some excavation is needed, the impact would be less extensive.

This segment also offers some limited area between the road and the creek, and hosts the only section of Cascades Creek that has not been walled on the side toward the road. It is approachable by foot and shows what the creek bank looks like when allowed to remain natural.

#### Segment E: Old Bike Shop Site to Spillway Area (650')

The segment begins on the south end at what is currently a wide paved area on the east side of the road. This site used to host a motorcycle repair shop and the pavement serves not only as an informal parking area but also as a cap on the soils in the area which were found to be contaminated. Part of the permanent plan for this area with IDEM is the commitment that the area not be redeveloped for residential or agricultural use, and the City chose to pave it due to a desire for parking in the area. If soils are excavated from this area, they will need to be tested and disposed of as special waste.

The segment offers a viable flat area on the west side of the creek and currently hosts an unimproved path that provides walking access to the passive greenspaces on the west side of the creek. The area also hosts stone picnic tables.

The east side of the road is unique in this area as it provides a wide area of flat ground before the hillside is encountered, up to 80-100'. Much of this space is covered by the concrete pavement cap mentioned above. It is the southernmost location in the park that offers sufficient space for a vehicle turn-around area. It hosts the southernmost parking area in the park, mostly used by those wishing to walk the southern portion of the park and as overflow parking during times when the park is especially busy.

The creek is walled in this section, or at least once was. The creek bends sharply from



northeast to directly north in this area, and the walls have failed in the past at the bend, taking parts of the road with it when those events occurred. The wall has been replaced multiple times and currently has a combination of new concrete segmented wall, cast in place concrete, and also a section of gabion basket wall. This area has been the site of the most severe erosion issues because the events have caused partial collapses of the road, requiring expensive emergency repairs.

There are some areas where the old wall has failed but did not present an immediate problem to the road and have not been replaced. The distance from road edge to wall ranges from about 5-15'. A guardrail would be needed here to bring the roadway to a proper level of protection if the road is kept at the same distance from the creek.

The segment extends northward to a point about 60' south of the existing spillway.

## Segment F: Spillway area to Existing Pedestrian Bridge (700')

Beginning where Segment E left off, this Segment includes the spillway area which is used as a concretepaved ford of the creek. Gravel parking is available on the west side of the creek here which is frequently used and offers the closest access to the waterfall area and shelter.

Segment F offers the broadest area of open flat ground on the west side of the creek and is the primary gathering, recreation and picnic space. The park's primary waterfall feature is west of this segment, up in a narrow valley and accessed by two unimproved footpaths. A small stream enters Segment F from the waterfall and joins Cascades Creek near the spillway. The small creek has stone walls along both

sides, though they are partially collapsed in most areas. A narrow pedestrian bridge crosses the small stream which has steps and is not ADA-compliant.

Cascades Creek is walled through this section but in very poor condition, many sections having at least partially collapsed. Some areas have been replaced over time if they posed an immediate threat to the roadway, others have been left and continue to erode. The creek is not approachable due the sudden drop presented along its banks. Vertical wall sections still stand in some locations.

The segment extends northward about 700' to a point where an existing truss pedestrian bridge provides walking access over Cascades Creek. The end of the segment was set at this bridge because the location might be considered for an upgraded crossing. The bridge is relatively new and could be made ADA-complaint, but is too narrow to host mixed bicycle and pedestrian use.

The roadway continues to be very close to the creek through this segment, with an edge drop in some locations and the creek wall less than 10' from the edge of the road. The vertical drop is 8-10' in this area.

This segment varies from Segment E in that the hillside on the east side of the valley is much closer to the road, generally 10-30' from the roadway edge. Potential shifting of the road away from the creek is possible here, though more limited than in Segment E.

## Segment G: Existing Pedestrian Bridge to Trail Hub (680')

From west to east, this Segment offers an ample width of flat ground west of the creek that currently hosts picnic tables and a crushed stone path. It ends at what is referred to as the Trail Hub, a concrete-paved junction for the Cascades Trail System with connections in all 4 cardinal directions. A stubbed pavement to the south has already been built here in anticipation of future extension to the south.

The walls of the creek are highly distressed through this section, many sections having at least partially collapsed. Some areas have been



replaced over time if they posed an immediate threat to the roadway, others have been left and continue to erode.

The roadway continues to be very close to the creek through this segment, with an edge drop in some locations and the creek wall less than 10' from the edge of the road. The vertical drop is 8-10' in this area.

Segment G offers a much wider area of flat ground east of the road, and this space now hosts the park's accessible playground and two parking lots and a restroom building. It is a key feature for the park and heavily visited. There is some limited space between the roadway and the parking lots/playground space which is occupied by a roadside ditch.

#### Alternatives for Improved Bike/Ped Access:

#### **Shared Road**

The existing condition is essentially a shared road facility where bicyclists and pedestrian have the right to use the existing pavement. With the roadway being only 20-22' wide with no improved shoulders, it does not feel safe or appropriate to support shared use, with the exception of experienced competitive bicyclists, and some runners. Regular pedestrians are less often seen, and families with children are not seen here. Narrow pavements and limited sight distance do not make those activities feel safe.

The overarching goal of this study is to determine how best to provide a dedicated (separated) bicycle/pedestrian path into the park, and a shared road option fails to satisfy the expectation for a dedicated facility. A shared road, even if it were to include widened shoulders, would fail to achieve the goals for this effort. *This option did not receive further consideration.* 

#### Road Closure and Repurposing as a Bike/Ped Pavement

Under this option, a section of the existing road would be closed to vehicles at locations that would need to be determined. Considerations include access to such destinations as the IMI Concrete Plant and the park's limited parking lots. It also needs to consider the use of the roadway as a public road for through travel. The road is an important local collector in addition to a park road.

Another key consideration is the road's use as an emergency response route. Through early coordination, it has been determined that the road must remain two-way from the south to the IMI entrance. In order to avoid a loss of access to parking, it would also be necessary to keep the road open from Club House Drive to the park's parking areas. A closure of the road would need to be limited to the section between IMI and the Bike Shop Site.

In order to prevent motor vehicle access to the closed section, a set of barriers or signs/warnings would need to be erected, possibly including making the way too narrow for vehicles. This normally involves bollards and gates. However, emergency services are strongly opposed to the erection of barriers or gates because of the delay to response times. It's an important consideration, so if this were implemented, the closure would likely need to be accomplished with signage only and still leave a directly accessible opening of at least 12' width.

Early coordination revealed strong and unambiguous opposition to this option amongst those who completed the on-line survey and attended the public meeting. There is evidence that limiting (vehicular) access to the park to the west or north, and not in the direction of the center of the City will likely lead to decreased use and visits to the park. The public makes choices based on convenience, and adding miles to the journey can be expected to have a negative impact to park visits.

Park's Staff is highly opposed to this option because it would eliminate the "eyes on the park" that are provided by the vehicular travelers even if just driving through. This visibility greatly reduces vandalism and other illegal and undesirable activities that tend to develop in isolated park spaces (and that Cascades Park has borne witness to in recent years until Park's staff took actions to reduce it).

It is reasonable to believe that this option would provide the cheapest construction cost of all available options. However, there has never been a strong interest in this option stated by the stakeholders because it is the consensus that the detrimental impacts to the park are too significant to be

implemented. The option was deleted after the early coordination process due to its lack of support. *This option did not receive further consideration.* 

## Change the Road to One-way Vehicular Use and Support Bike/Ped Facility on other Side

Unlike the previous two options, the partial dedication of the existing road to a bike/ped facility does provide some likable qualities that bear additional review. It initially appears likely to reduce construction costs. While still getting some opposition from the public, does not have the same level of opposition. It would avoid the complete loss of "eyes-on" the park space, though it would cut the traffic by half. Emergency services are opposed unless a means is provided for them to travel opposite normal traffic without delaying their trips.

As previously reviewed in early coordination, it has been recommended that a south-bound traffic configuration is the one that should be considered, not northbound. We aren't providing that full analysis here, but it essentially came down to how the roadway is used as a local collector and a viable alternate route for those living west and north of the golf course areas, where traffic at Kinser and SR 46 has become challenging during peak times, and only a southbound pattern on the park road provides a significant benefit to alleviate that problem. A northbound direction will force all the southbound traffic to these other routes and actually make their situation worse. More on this issue was described in the early coordination summary, appended to this report.

## Roadway Width for a One-way Option:

In its simplest form, the roadway would simply be divided in half with one-way vehicular traffic on one side and bike/ped on the other. But from a safety and functionality standpoint, it is not that simple.

In order to safely divide the vehicles from bicyclists and pedestrians, a barrier needs to be placed between them, most likely a concrete curb. The existing roadway ranges from 20-22' wide with no paved shoulders. Due to what is called "shy distance", neither bicyclists nor vehicular drivers will ride next to a barrier. Both will shift away from it to avoid accidental contact. This distance has been found in traffic studies to be about 2'.

For the existing roadway with a curb added in the middle, the halves will be approximately 10' each, but travelers will only use about 8' of it. A 10' lane would be reasonable without a curb, but with the shy distance, the cars will be positioned away from the curb, placing the outside tire at the edge of the existing pavement. That is both less safe and bad for the edge of the pavement which deteriorates more quickly when so loaded. Due to shy distance, the lane should actually be about 12' in order to provide 10' of effective width.

On the bike/ped path side, the same 10'+/- would be available, but the shy distance is again in effect. A minimum path width has been set at 10', suggesting 12' of actual pavement also be provided on the bike/ped side. Some may consider 10' effective width unnecessary, but that figure has been well-established for facilities that offer two-way bicycles shared with pedestrians, walking abreast, pushing a stroller or walking a leashed dog. We strongly recommend this standard be applied here.

So, we are describing a pavement that is, at a minimum, about 25' wide with a curb.

It will not be possible to provide unlimited sight distance through the park, and offering emergency responders the ability to travel in both directions is required. This can either be addressed by allowing

emergency vehicles to use the bike/ped facility when travelling opposite vehicular traffic, or by providing enough pavement on the vehicle side for the public to pull to the side and let them through. This would still suggest a minimum paved width for vehicles of about 18'.

Another issue is presented by northbound competitive cyclists, who strongly prefer a roadway over sharing a path with pedestrians and less experienced cyclists. Competitive cyclists mixed with pedestrians is not advisable. Warning signs cautioning yielding to pedestrians can be used, but are not always effective. If the competitive cyclist opts to remain on the road side against the rules of the road, then they would be riding opposite traffic in the one-way road.

So, possible options include requiring the cyclists to enter the designated bike/ped side of the road with the known safety concerns for that treatment, or, perhaps, providing a bike lane to the east of the vehicles, marking it as a two-way road with only a bike lane going northbound. Southbound competitive cyclists are assumed to already be with the vehicles. Providing a northbound bike lane could work in conjunction with the wider pavement we describe as being needed to offer emergency vehicles a way through. The emergency vehicles could use this bike lane. Under the one-way concept, we prefer this combination because it solves multiple concerns at once.

Thus, the recommended paved width for the one-way option would actually need to be a pavement that is about 31' wide (12' bike/ped plus 1' for curb, plus 18' roadway where 12' is for vehicles southbound and 6' for cyclists northbound – still providing the emergency vehicle space, just marked for bike lane).

Some might argue that if the bike/ped facility could be made available for the emergency vehicles, then the width could be kept at 25'. That's true, but it ignores three important considerations.

First, the emergency services are opposed to having delays for penetrating barriers such as collapsible bollards or gates to enter the bike/ped side. It may be possible to overcome this satisfactorily with aggressive signage and markings, but the way for emergency vehicles onto the bike/ped side would have to be kept open, making it relatively easy for the public to enter the bike/ped side also. If emergency vehicles are to use the bike/ped side, then an emergency vehicle will have to travel more slowly because bicyclists and pedestrians will need to get out of their way, including those that were traveling southbound. Sight distance is limited, making this more hazardous. Bike/ped path users won't be expecting this, and the curves in the park mean that it will be possible for emergency vehicles to come upon bike/ped path users with much less notice.

In the central park areas, there is a strong desire to get the bike/ped side closer to the creek both to eliminate the need to cross the street, and to improve the park experience. That would not be possible in conjunction with keeping northbound emergency vehicles to the right. The bike/ped path would have to be on the eastern side.

And, if 25' total width was maintained, we have still done nothing to address the competitive northbound cyclist; they would be required to join the bike/ped side and share it with the path's normal users.

Speaking only to the issues above, we recommend that the one-way option be deemed to be a roadway pavement of about 31' total width, and our discussion from this point will be based on this assumption. This appears to be the reasonable minimum width for a one-way option because it resolves the issues of emergency vehicles and northbound competitive cyclists. It also allows for the placement of the

bike/ped facility on the creek side of the road. Since the difference is only about 6' of pavement, this seems the much more suitable option.

Aside from these details, considerations for a possible one-way treatment would include making a visit to the park more difficult, additions to travel times and the survey results that revealed some would decrease their usage of the park if trips become less convenient. The fact that the road functions as a local collector should be considered. It is used by a lot of travelers and residents in the area to avoid other congested locations in the City. A one-way treatment also decreases the eyes on the park by about half, which is a concern posed by Park's staff.

The one-way option is worth considering. We simply note at this point that a one-way treatment should be implemented with about 31' of total paved width. This is significantly more than simply splitting the road in two, but the one-way treatment will have multiple problems without this increased width.

## Sidepath

A sidepath facility is a parallel bike/ped pavement placed adjacent to the roadway behind a curb. It is different from the one-way option in that the vehicle side would have two-way traffic. The separation from the curb could vary, from 0-5' being a typical range. Any more than that and we would start to consider it a separated trail.

Given the standard of offering at least a 10' wide bike/ped pavement, we would suggest a width of at least 11' if it is placed next to the curb and at curb level. Shy distance is decreased for those at curb level because it is not a barrier from that side. If the path is separated from the curb, then the 10' minimum would apply. This is consistent with existing trails in the area.

With a two-way road, shy distance still applies but the traffic can shift toward the road centerline except when a vehicle is coming the opposite way. The roadway side that is not next to the curb can be narrower, say 9.5 or 10'. Thus, in summary, the sidepath option would need to be a total roadway width of about 31', with a 9.5' vehicle lane away from the curb, a 10' lane next to the curb, a 6" curb, then at least 11' for the sidepath. (This is preliminary, but we do suggest relatively narrow lanes to help reduce traffic speeds and keep a tight feel to the roadway. City P&T might require some variation on this.)

Most notable is that a two-way roadway with sidepath is going to require about the same space as the one-way treatment because it does not invoke the special concerns for emergency vehicles in the northbound direction, nor concerns about competitive cyclists, both of whom will have a roadway available to them.

Keeping the bike/ped pavement near the road does assist in keeping the total roadway corridor narrower than a separated trail might, but still has considerations including the amount of space available between the roadway and the creek edge or the steep hillside with some rock outcroppings, potential for environmental impacts such as tree removals, and having space to implement needed stream bank stabilization measures. 31' is deemed the minimum width. If the City desired to have separation from the road, then the width of that strip must be added to that.

Sidepath options are under consideration, and might be positioned on either the east of west side of the road depending on site conditions and access needs.

#### **Separated Trail**

For the purpose of this study, a separated trail is considered to be a bike/ped facility that is more than 5' from the road edge, following its own alignment. Width would typically be 10', though is in a location with higher pedestrian use, 12' minimum is recommended. These widths are consistent with common practice and City policy.

Considerations include the availability of space within the narrower portions of the valley and roadway corridor, the possibility of increased environmental impacts including tree impacts and rock/slope excavations and possible higher costs to provide a bridge to access areas west of the creek. Streambank erosion is also a consideration with this option depending on the relative position of the trail to the creek.

The separated trail option is viable in the northern portions of the study area, specifically from the Old Bike Shop area and north from there, which are the sections offering flat ground west of the creek.

## **Combining the Options**

<u>It is important to note that these solutions are not mutually exclusive.</u> The corridor's characteristics vary widely in different sections, and the optimal solution is likely a combination of these options chosen based on the characteristics of that segment of the proposed corridor.

#### **Results of Early Coordination:**

A detailed review of the Early Coordination was previously provided and is included as Appendix A. The conclusions drawn from that process include the following:

## 1) Full-Closure Option Should be Eliminated

The public is highly opposed to this option, the vast majority ranked it last of all available options. It is strongly opposed by emergency services. Park staff are opposed because it would eliminate the trips through the park that help keep "eyes-on" the facilities and space and improve security while decreasing undesirable activities. It would eliminate the utility of the route as a local collector and alternative to Kinser/SR46. While we acknowledge that this would be the least expensive alternative in terms of construction cost, its negative impacts are detrimental to the park and to the residents in the areas west and north of the park. Less than 10% of those surveyed support this option.

#### 2) One-way Direction, if implemented, should be southbound.

Even though the on-line survey results showed a preference for a northbound direction, those results ignore the fact that for the hundreds of nearby residents living west or north of the golf course, the recent I-69 road changes have limited the number of routes into the City. The intersection of Kinser/SR46 already shows the results every day with heavy traffic and IMI's findings that they can't turn left onto Kinser due to the backups. A northbound direction in the park would force drivers to use Kinser, or force them back north to get to Walnut. These choices push traffic into the areas already backing up. A northbound direction in the park will push an additional 500 vehicles per day into these locations. The survey results identified that a large number of residents use the park road for this purpose, and only the southbound direction offers relief to the traffic conditions. All other considerations being equal, southbound provides benefits that northbound does not.

## 3) No change to roadway usage from Walnut to the IMI Entrance should be implemented

That section of the roadway is the primary egress from IMI. IMI's business operations would be severely impacted by such a change, and in my opinion, would likely result in legal challenges, especially when it is considered that a viable alternative has already been identified. (See 5). Impacting this section of roadway is not necessary in order to provide a good bike/ped solution. This does not affect potential options north of the IMI entrance and in the park itself.

## 4) Post a weight limit on the park section of Old SR 37

As an aside, it would be beneficial to the park road pavement, environment and general safety to bar the heavy industrial trucks (including concrete trucks) from the park section of Old SR 37. IMI already discourages the use of that section of road, and a limit could be set that doesn't affect the school corporation's occasional use of the roadway. Such a limit would have no significant effect on IMI operations while providing a significant benefit to everyone else.

# 5) In the segments from Walnut to IMI Entrance, Implement a Sidepath on the East Side From Walnut to the IMI Entrance, only the option for a sidepath on the east side of the road makes sense. The land and space are readily available. Traffic pattern impacts from Walnut to Gourley Pike and extended to IMI aren't necessary or desirable. The appropriate choice seems readily apparent in this south end of the study area.

## 6) The parking at the spillway is needed

In conjunction with whatever solution is identified to address safety and public health concerns for the spillway/slide area, the access of vehicles to the west side of the creek should be provided to preserve a parking neutral impact. Additionally, the fact that the waterfall area was shown to be so popular in the survey and that the adjacent Waterfall Shelter does not have other nearby parking emphasizes the need to keep parking in this area. Trail option selection needs to maintain the ability to have parking in that area.

#### 7) Evaluation of the One-Way Option must include the consideration of subjective elements

While a lot of this evaluation and study process is subjective, the area perhaps must subjective is what will happen in the event a one-way option is implemented. Over 70% of those participating in the survey were found to use a car to access the park's facilities. The decision will impact the majority of park visitors who will find their total trip increased. Total trip distance will increase by only about 1.5-2 miles, but distance and convenience matter to public choice-making. The survey results were clear that the public is generally opposed to roadway use changes. In fact, about 1/3 of respondents said that such changes will result in a decrease to their visits. That doesn't need to be the only consideration, and it is likely that those results are somewhat exaggerated, but it should be a consideration.

It is the position of Park's Department staff that having more "eyes-on" the park's spaces and facilities greatly decreases illegal and undesirable activities in the park. The directional counts available for traffic were nearly an even split and about 1,000 vehicles per day use the road. A one-way treatment will result in cutting vehicle trips through this part of the park by about 500.

It is impossible to know to what degree either decreased visits or reduced park visibility might result in negative impacts to the park in terms of use, quality and attractiveness of the park for its visitors, but they need to be considered.

#### **Considerations:**

First and foremost, the overarching goal for this effort is to provide a dedicated bike/pedestrian facility from Walnut to the Trail Hub. "Dedicated" means it is to be separated from vehicle traffic, not sharing the same pavement. Any options must first provide this element, and from there it is a discussion of how best to offer this facility and making it as enjoyable, accessible, functional, and safe as possible while minimizing the negative impacts of the choice including environmental impacts, construction costs, or potentially reducing visits or enjoyment of the park.

## **Difference between Competitive Bicyclists and Recreational Riders**

A distinction must be drawn between the competitive teams that frequently use the park road, and what we will call recreational riders, perhaps best characterized by a family with a mix of experienced riders and young children. The difference between these rider types has been extensively studied and competitive riders strongly prefer to ride on the road with cars because their speeds and habits are most compatible with vehicles. Competitive riders are frequently travelling at speeds above 20 miles per hour and are not compatible with less-experienced cyclists who move unpredictably, at much lower speeds and usually not in a straight line. Dogs, even if on leashes, are extremely dangerous to fast riders and pedestrians frequently can't hear the approach of a racing bike. Accidents become increasingly likely and more severe where competitive riders and children or pedestrians are forced to share a pavement.

We treat these rider types separately because they have completely different needs and expectations. Providing for each type, and in each direction, is an important consideration in this study.

#### **Streambank Erosion**

Even though this study was initiated to identify the best alternative to provide a bike/ped connection through this part of the park, a significant amount of the early discussions with staff have centered around the problems with erosion of the streambanks that have previously resulted in partial roadway collapse and expensive emergency repairs. The City currently has some funding identified to address streambank erosion issues in the park.

From our perspective, this is a really important

consideration because the bike/ped options available include many that might make the stream problems either harder or easier to resolve depending on the type and especially the location of the bike/ped improvement relative to the creek edge. It is my intention that the solutions for bike/ped can include providing for, or at least not preventing, long-term efforts to make more of the stream approachable and enjoyable as a true enhancement to the park's offerings.

The wall system in the park was originally built to prevent the natural meander and erosion of the stream banks in order to protect what was then SR 37, the primary road between Bloomington and Indianapolis. The primary road has long since been diverted to Walnut Street, the more recent route of SR 37, and now I-69. These higher demands are now in the past, but the road currently serves both as a local collector and as a park road.

Over the years, the wall system has failed in most areas. At these locations, the erosion has



sometimes been severe enough to cause the partial collapse of the roadway. In most other areas, the wall has experienced major deterioration and collapse, some of which have been repaired, and some which have not.

The streambank erosion is an important factor for this effort to provide bike/ped for several reasons:

Ever since the walls were erected decades ago, the stream has been working to reestablish its natural configuration. The walls have failed in many locations, and the City has invested in their repairs in critical areas, sometimes more than once in the same areas. The stream is going to continue to erode and these walls to collapse over time. The City can either choose to continue doing spot repairs as needed, and endure the high expense and never-ending process of doing so, or it can look for a new long-term approach.

The current configuration is not safe for those on the pavement. If it remains it should have a continuous guardrail for almost the entire length of this study.

The walls make the stream unapproachable though most of the park. As a result, a feature that most would consider to be a beautiful and functional part of the natural environment is instead a barrier and a safety hazard. In our opinion the walls served their purpose in their time but are now a limiting factor, reducing the quality of the park.

From the perspective of bike/ped, we suggest that the bike/ped solution should at least cooperate with streambank solutions, and if not fully resolving the issue, at least not lock the City into having to preserve the same configuration of a pavement positioned several feet above and right next to the stream with a vertical wall very close to the road. The roadway has already fallen into the creek in the past and can be expected to do so in the future. If the bike/ped solution is positioned at the same distance from the creek, then the City will have to accept the ongoing work that the walls will need. It's a choice and our intent to ensure that this receives due consideration in recommending bike/ped improvements.

## The Spillway

The Parks Department has stated that it wishes to eliminate the concrete spillway due to its being unsafe. Vehicles who stay too far from the center, or who enter the live flow of water during times when the water is higher and more powerful, have at times ended up washed into the stream. The situation is very similar to roadway overtopping during a flood, and drivers not appreciating the amount of power that fast-moving water has, even on a heavy automobile.



The parking on the west side of the creek is highly important however. It was found to host a full 25% of the surveyed park visitors, and is the nearest and best parking access to the Waterfall Shelter and the waterfall. Early coordination efforts concluded that the availability of this parking should be maintained. This means that the long-term solution for this area needs to include the replacement of the spillway with a bridge, suitable for vehicular traffic. Whether that bridge also

includes space for the crossing of a bike ped/facility or if is designed in cooperation with a broader effort to improve the streambank conditions in this area is to be determined.

This change is likely to result in some public pushback due to local fondness for the feature, but the history of questionable water quality combined with having children near traffic suggests that the area should be reconstructed.

## **Available Funding**

The Parks Department currently has more funding for improvements in this park than it has seen in many years. Three distinct funding sources have been identified:

- Bicentennial Bonds up to \$2,100,000 budgeted for bike/ped facility construction
- Funding for Streambank Erosion \$630,000 budgeted toward making improvements to the streambank
- Grant for Accessible Path \$68,000 earmarked for providing an ADA-accessible path to view the
  waterfall near the Waterfall Shelter. (This is the only fund that is specifically tied to a location,
  but the need in that area is expected to exceed this amount, so the use of trail or streambank
  funding will also be appropriate since these issues will certainly also be involved).

The preferred solution must take these funding limits and intended uses into account, but we also recognize that these needs are mutually supportive, so at this preliminary level we are viewing the maximum budget as the total, \$2,780,000.

For budgeting purposes, the future costs need to include design services, inspection services, land acquisition, and construction:

Design/Permitting Services: \$200,000
 Inspection Services \$200,000
 Land Acquisition (estimated) \$80,000
 Construction \$2,300,000

These numbers are just estimates, but informed estimates, and useful for planning the future project. We will use a target for maximum construction costs of \$2.3M for the purposes of this study.

#### RECOMMENDATION DEVELOPMENT

Identifying the best solution is a process of steps. Because some segments offer a readily apparent solution that is clearly superior, we begin with these Segments.

## Segment A: Walnut Street to Gourley Pike

This segment is one which offers only one acceptable solution that is readily apparent so only a minimal explanation is offered.

The existing road must remain a two-way vehicular roadway. The east side offers open and undeveloped property the City already owns, even if it is a little narrow in the section with a nearby deep ditch/small stream. The path that crosses Walnut from Miller Showers connects to the east side of this road segment, not the west, and if the path were placed on the west, they would need to cross both Old SR 37 near Walnut and then cross Gourley Pike, both of which can be avoided by staying east. The corridor is too narrow to consider a separated trail. *Of the various facility alternatives listed, only an east side sidepath makes any sense in this segment.* 





Segment B: Gourley Pike to IMI Entrance

This segment offers only one acceptable solution. The IMI entrance is on the west side of the road, and IMI requested that any bike/ped path be on the east side of the road to avoid it having to cross their entrance with the concrete trucks entering/exiting throughout the day. The roadway needs to remain a two-way facility, and the topography, including getting under the SR 46 Bridge, only offers space for a closely-positioned sidepath parallel with the roadway. *Of the various facility alternatives listed, only an* 

segment.



Segments A and B offer a readily apparent best option because a two-way roadway must be maintained and putting bike/ped on the west side presents unnecessary safety concerns. Though Segments A and B, the bike/ped facility

east side sidepath makes any sense in this

should be a sidepath on the east side.

We now skip to the north end of the project area because the other end also offers a readily apparent solution.

#### Segment G: Existing Pedestrian Bridge to Trail Hub

Previous trail projects built what we refer to as the Trail Hub, shown below. This constructed circle is intended to be the junction of the cascades Trail System offering access to all directions, and the main parking lot. A stub has already been provided to the south.



While we are not bound to the previous decisions that built the hub, it provides significant benefits that went into putting it where it is.

First examining options to the east of the creek, Segment G hosts the park's playground and two key parking areas. The roadway needs to remain two-way to offer park circulation to the parking lots. We extend that logic to the parking at the spillway because it is an important parking overflow location and circulation to and from parking is important.

We do not view one-way as an option in

the segments which host parking because those entering the park with a destination in mind might bypass an open parking area only to find the one closest is full. With no ability to back-track, the park visitor would have to take a 4-mile loop to exist and reenter the park to try again. An inconvenience many will not accept, opting either to drive some distance in the wrong way or getting frustrated and not making their visit. The road should remain two-way in areas with parking access.

Regarding a potential sidepath near the road, the space is available but we do have some concerns with placing the bicycle traffic so close to an area with a high number of small children running and playing.

Ultimately, these concerns are unnecessary. A wide crushed stone path is already available for improvement to a paved trail. It's very flat and readily adoptable as part of the needed ADA-accessible route to the Waterfall Shelter and to the large green recreational space that is on the west wide the creek. In our view, there is no reason to create any hindrances to park use on the east side of the creek and the new bike/ped facility can be inexpensively built where the need is apparent on the west side. Segment G should be built as a separated trail on the west side of the creek, generally following the existing crushed stone path.

## Segment F: Spillway area to Existing Pedestrian Bridge

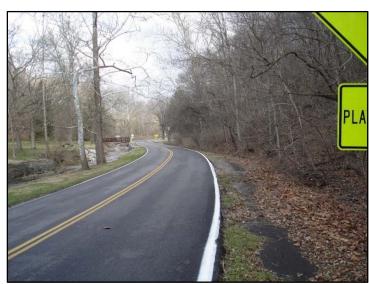
The analysis of Segment F is an extension from Segment G because there is a clear and apparent need to provide an ADA-accessible bike/ped facility west of the creek, and the land is readily available. Putting the trail on the west side of the creek in Segment F would include replacing the old bridge near the



spillway and that is the nearest walking access to the Waterfall Shelter. Providing access on the west side of the creek is also important to satisfy the goal of connecting an ADA-compliant route to the waterfall.

East of the creek, Segment F is relatively narrow because the hillside is near the road, but could otherwise support a sidepath or one-way treatment. With respect to one-way treatment, we do not favor the loss of two-way access to the parking at the spillway which was found to be frequently used. Due to the narrowness of flat land on the east side of the

creek, there is no location at which to provide a suitable turnaround for vehicles. **Two-way traffic should be provided in Segment F in order to provide access to and from the parking.** 



If the bike/ped facility were placed east of the creek, the City would also have to build on the west side to meet the terms of its funding for a waterfall route.

Segment F should be built as a separated trail on the west side of the creek, generally following an existing crushed stone path, but also replacing the substandard pedestrian bridge and providing direct and ADA-compliant connections to the Waterfall Shelter, the planned Waterfall Path, and also the parking area at the spillway.

#### More detailed considerations ahead:

Segments A, B, F, and G offered readily apparent best options. A sidepath should be provided on the east side of the road in Segments A and B, providing the bike/ped path to just north of the IMI entrance where other options bear consideration. Through Segments F and G, the bike/ped facility should be a separated trail, located west of the creek, which connects to the spillway area.

It is between these limits, in Segments C, D, and E, where the more detailed analysis is given, and obviously must include the important considerations of where best to offer bicyclists and pedestrians the safe opportunity to cross the road and the creek.

## Central Park Area (Segments C, D, and E)

The nature of the review shifts for the remaining segments because there is more than one possible solution, and because the decisions for each should be influenced by and related to decisions in the adjacent Segments.

The topography and needs change significantly, offering both challenges and opportunities to fundamentally change how this portion of the park is enjoyed in the future. The one-way roadway alternative is feasible for consideration in Segments C, D, and E.

First, a guick review of the options that are feasible:

Segment	Split Road with One-way Vehicles and Bike/Ped on one side		Two-way Vehicles with a Sidepath		Separated Trail (west of Creek)
	Bike/Ped on east half	Bike/Ped on west half	Path on east side of road	Path on west side of road	
С	Feasible	Feasible	Feasible	Feasible	No available land
D	Feasible	Feasible	Feasible	Feasible	Feasible
Е	Feasible, but reduces access to parking	Feasible, but reduces access to parking	Feasible	Feasible	Feasible

#### Segment C: IMI Entrance to Deteriorated Bridge

We will start with Segment C because though it is unique, its constraints lead to a fairly obvious decision.

Segment C is a very narrow section of the park, offering no flat land west of the creek and only limited space east of the road. The separation of the road and creek varies from a few feet down to nearly nothing. Essentially, the feasible options are all constrained within the available corridor on the east side of the creek, which can be widened somewhat with some excavation into the hillside. Within Segment C, there is no real opportunity to make the stream approachable because the corridor width is so tight between the hillsides that there is no opportunity to shift pavement away from the creek. Any improvement built in this Segment should include a barrier between the pavement and the creek, whether that be a safety railing for bike/ped or a formal guardrail for a vehicular lane. The Segment currently lacks this protection and it is certainly warranted.

First things first, it is recommended to keep the bike/ped facility on the east side. This is for three reasons.

First, Segment B is to be a sidepath on the east side and it will line up smoothly with it. If we cross them in such a narrow corridor, the bike/ped traffic will need to be forced into a pair of abrupt 90 degree turns with a signed stop, and extra space will be needed for those landing areas that is hard to come by in this area. It would be important to bring crossing bike/ped to a near perpendicular crossing to allow proper sighting for traffic. Secondly, if the bike/ped facility is intended to switch from east to west in this segment, there should be a reason to have bike/ped on the west side there. The stream bank area is too narrow to offer an area to stop and enjoy without blocking the path itself. This segment does not lend itself to any use other than an entry/access corridor. While there is certainly a need to shift the bike/ped facility to the west side of the road at some point, Segment C does not offer a logical reason to locate it here.

Lastly, and this really only applies if a one-way roadway is part of the selection, then it is far better to line up the southbound traffic coming out of Segment C with its corresponding lane in Segment B where two-way traffic awaits. If the one-way pavement is east in C, then a lane shift will be needed – this lane shift would need to be positioned in the same area where bike/ped traffic is crossing, and where we are already positioning the increased signage and barriers to end two-way traffic just north of the IM entrance. This will greatly complicate the alignment of the path and be more confusing for path users.

This defers the decision of one-way for the road, but we recommend that bike/ped be kept east for Segment C since these is no benefit to being west of the road yet.

So the remaining options for Segment C are:

- One-Way traffic (southbound) with the Bike/Ped Pavement on the east side
- A sidepath on the east side (keeping road as two-way vehicles).

We defer than recommendation until considering Segments D and E.

The deteriorated bridge is also in Segment C. The replacement of the bridge is necessary under any option and does not control which option is chosen. Various configurations for a bridge or split structures can be made to work with the above options.

## Segment D: Deteriorated Bridge to Old Bike Shop Site

Segment D is the first to offer relatively flat ground on the west side of the creek. A separated trail on that side did have some interest, especially when this problem was first considered several years ago. The flat ground is available for all of the length except for a 260' section where the steep hillside drops right to the walls on the creek.

Recent experiences on Club House Drive have offered some perspective on excavation into rocky slopes, and the challenge and expense involved in this work. In this case, the existing slope that would be impacted is steeper and higher than those previously worked along Club House Drive. In order to provide a stable layback to the slope the work will have to extend significantly into and up the slope....in this case by about 12' wide at the base and extending up to an estimated 30' upslope. A large excavator will be needed and it is unlikely that the creek walls can support it. That hasn't addressed the challenge of getting the equipment to the west side of the creek to begin with. A temporary crossing would be needed that would also be used for trucks and hauling of materials. Getting approval of permits will be a challenge. These all speak to constructability and cost issues, but the aesthetics of the treatment also bears consideration. The hillside excavation will be highly visible in this portion of the park, and unattractive. Avoiding unnecessary environmental impacts is a goal for this effort.

We recommend a separated trail on the west side of the creek not be considered in Segment D. The cost and impacts do not appear to be worth it when there are options on the east side of the creek.

#### Shifting pedestrians and cyclists to the stream side

Segment D does offer an approachable stream edge for a portion of its length...the only such segment in the park. There is sufficient space for it to be a destination (i.e. space to stop and get off the pavement), and there is evidence that visitors have used the space for picnics or just time at the edge of the stream. This provides ample reason to shift the bike/ped facility to the west side of the road, and there is adequate space to accomplish this just north of the deteriorated bridge. It is in this area that we suggest the crossing be positioned after finding a suitable location that offers appropriate sight distance with which to see approaching traffic. Switching the bike/ped to the west side of the roadway is needed somewhere before Segment F. It should be completed as early as possible to maximize the accessibility of the stream.

However, this is dependent on the one-way decision. If the roadway is kept two-way, then the bike/ped facility should be switched to the west side in Segment D and remain there leading to Segment E. If one way is selected, then bike/ped should be on the east side of the road unless the wider option is used, then the shift to the west should be used.

Based on previous decisions farther north, a point at which to cross bike/ped over the creek does need to be found, but this Segment does not offer suitable width to place a bridge and make that shift. Looking ahead, Segment E widens out considerably, making that a more attractive location to deal with these special concerns.

So the remaining options for Segment D are:

- One-Way traffic (southbound) with the Bike/Ped Pavement on the west side (31' pavement)
- One-way traffic (southbound) with the Bike/Ped pavement to the east side (25' pavement)
- A sidepath on the west side (keeping road as two-way)

We will defer that decision until considering Segment E.

#### **Key Consideration Starting in Segment D – Streambank Improvements**

Whereas Segment C is too narrow to discuss possible streambank improvements, Segment D brings this discussion fully to the front. Segment D provides the only current opportunity to visit the stream side as a park amenity. The north end of Segment D also starts the area where streambank erosion has previously claimed the walls, road and trees, collapsing during heavy rain events. If something is to be done with streambank erosion, the consideration should begin here where the problem has posed the greatest hazard and the greatest emergency expense to the City. The original walls are long since gone here, and the City has replaced them with new reinforced concrete segment walls and gabion basket sections.

The City has a budget that is earmarked for streambank erosion of \$630,000. While this is not enough to address the entire park, it is enough to develop a plan for providing long-term solutions, and implementing the solutions for at least some portion of the park.

Even though no decision has been made on how to reconfigure the stream bank, a change from the existing vertical walls means that space is needed; space that can only be provided by shifting the pavement away from the stream. In Segment D, this will require a realignment of a portion of the road to shift it eastward. In the tightest area near the previous failures, the hillside will need to be cut back somewhat to align the pavement farther from the stream as it extends north into Segment E at the Old Bike Shop Site. The magnitude of that cut will measure up to about 30' at its widest. Fortunately this slope is not so steep or tall as in some other areas, so the excavation would look similar to the excavation previously made on Club House Drive.

The intention would be to shift pavements away from the stream, opening up a width in which to provide streambank improvements. A design treatment would need to be determined, but it is reasonable to say the stream will need cut-back sides with armament to prevent erosion during high water conditions. At this stage we are thinking perhaps rows of large quarry millstone, placed far enough apart to provide green space in tiers, wide enough for a casual walk, room for sitting on the stones, and some of the stones with steps carved to make the stream approachable. The millstones are a locally available resource, and are very resistant to being moved. This all would need to be determined aside from the scope of this bike/ped improvement, we simply offer it as a vision to assist in imagining a different treatment to the stream than vertical walls.

The bike/ped improvement should build pavements far enough away from the stream to make this feasible. Note that we still haven't resolved the choice of using a one-way road with half dedicated to bike/ped, or keeping a two-way road with a sidepath. We will shift to Segment E before returning to resolve that issue.

We recommend that Segment D include a shifting of the roadway pavement to the east, to make more space next to the creek. We are continuing to view this as either a one-way option or a two-way road.

## Segment E: Old Bike Shop Site to Spillway Area

Segment E offers flat ground on the west side of the creek without any restricted or missing sections like D has, so a separated trail on the west side is a viable option here.

Additionally, the area east of the creek is wide enough to facilitate various options so there are none which can be discounted immediately.

Preferably, the bike/ped facility is on the west side of the road coming from Segment D, and it should remain so entering Segment E, but a decision needs to be made on where best to cross the creek to eventually join the separated trail that is recommended for Segment F. This crossing should occur in Segment E but can be completed either near the old Bike Shop Site, or near the Spillway, perhaps in conjunction with the needed new bridge for vehicles that are to access the parking area there.

## We recommend that the bike/ped facility cross at a bridge in the vicinity of the Old Bike Shop.

The Bike Shop Area offers better width east of the creek to accommodate the end of a new bridge and an approaching paved path to meet it. The area near the spillway is much tighter. Selecting the Bike Shop Site for a new bridge is also based on a longer-term view of the Spillway area and the fact that it is not within the scope of this study to fully determine what should happen at the Spillway area.

## The Future of the Spillway Area

What we know now is the following:

- The spillway should be replaced with a bridge for vehicles.
- A parking area should still be provided
- The parking should be formalized and paved with spaces because it is to become part of an ADA-accessible route to the waterfall area (and shelter)
- The bike/ped trail will replace the existing substandard pedestrian bridge that connects to the north.
- By necessity, the trail will need to hug the bottom of the hillside to leave room for the parking and its access road pavement.
- The bridge for vehicles can be widened to also accommodate the bike/ped crossing here, but the hillside east of the road will make it somewhat difficult to position the bike ped trail between the road and the creek.

What we don't have enough information on is the following:

- If the City accepts that converting streambank areas to be accessible is an important goal, then the area near the spillway, and especially at the junction of the primary creek and the smaller creek from waterfall should become a focal point for the park. We aren't in a position to determine what the overall area enhancement should look like.
- As the spillway and its slide are removed, the City should anticipate a public reaction. It makes sense to eliminate given the traffic hazard and known stream contamination. A feature that is attractive and approachable will be needed to replace it.
- The creek drops several feet at the spillway and a permanent step-down design for scour/erosion control must be part of a reconfigured stream bed at this location.

• These aren't bike/ped issues. We return to the earlier statement that our goal has to remain primarily bike/ped oriented, but we believe we have a duty to make bike/ped decisions that would allow the City to give this location the extra consideration it seems to deserve.

A new vehicular bridge across the creek will be highly visible and should be attractive, such as a precast arch or three sided structure with a stone façade appearance, or perhaps a steel truss similar to the smaller bridges in the park but properly designed for vehicle loading. The step down of the water will likely need to be achieved with weir structures, terraced to step down but allowing for flood conditions. It should be approachable, especially if conceived in conjunction with removing stone walls from the west side of the creek and the small tributary creek. There is certainly an opportunity for something special here, and the bike/ped facility is essentially secondary to it...we just suggest connecting through while taking up as little space as possible. We recommend that the trail be continued south from Segment F, through most of Segment E until near the Bike Shop Site and then cross there. The spillway area deserves dedicated planning that is outside the bike/ped scope.

#### Streambank Erosion – A Pilot Project

With the bike/ped bridge crossing location having been set near the Old Bike Shop Site, the consideration for streambank improvements into Segment E is important. The worst area for streambank erosion started in Segment D, but is primarily located in Segment E along the Old Bike Shop Site. We suggest that stream improvements continue into Segment E, and extend as far as the project budget may reasonably support. This will need to be coordinated with the bridge location and layout.

In terms of a long-term strategy, we recommend the City include the stream bank changes from Segment D into Segment E but with the full understanding that the current budget cannot fix all the streambank and wall erosion issues in the park. We do think it is important to seize this opportunity to create what is essentially a pilot project area for streambank work so that the City can recover some portion of the stream as a functional amenity to the park, but especially to see what is possible and to gain local interest and momentum in pursuing these changes over the long term. As important, the effort to modify the stream bank should be at the location where the City has had to replace the wall multiple times. A new approach is needed there.

A long-term approach will likely include starting streambank improvements at the area where the stream is approachable in Segment D, and extending northward. Possible phasing might look like:

- Phase 1: East Side of Creek in Segments D and E as the initial budget allows (completed as part of the bike/ped project)
- Phase 2: East Side of stream continuing north through Segment E to the Spillway area (beginning of F) and the future vehicular bridge.
- Phase 3: The spillway area, especially the creek junction and restoring the tributary and starting areas on the west side of the creek.
- Phase 4: west side of the creek extending in Segments F and G next to the park's primary green space
- Phases 5 and beyond. Continued road shift in Segments E, F, and G to allow for restoring the east side of the creek (these likely a bit more limited due to the east hillside).

Over the long term, it appears that many areas of the park can see the stream bank restored to an approachable and enjoyable part of the park. Some areas will very likely need to remain walled.

#### **Examining the One-way Option**

At the south end of the project, we have previously established that maintaining a two-way roadway is vital in Segments A and B due to access to Gourley Pike and then IMI.

At the north end, we have recommended keeping a two-way roadway because having free access to and from the limited parking areas is important to the usage, flow, and convenience of visiting the park. This was especially true through Segments G and F, which host the most-used parking areas for the shelters and the playground. We extend the same logic to the parking area that exists in Segment E which provides overflow parking for the other areas. Segment E is also the only Segment which offers appropriate width for vehicles to comfortably turn around using a small paved circle and so it is the most logical location to place a roadway use change

The section of the park that is under consideration for one-way treatment extends through Segments C and D, with the conversion in Segment E in the Old Bike Shop area. Which side to place bike/ped is dependent on the roadway width selected.

A one-way roadway will need to be at least 25' wide, and if this minimum is selected, then special concerns include:

- An open connection for emergency vehicles in the northbound direction. They will need access to the bike/ped pavement in order to go opposite vehicular traffic. There is a strong preference for putting bike/ped on the creek side, but in order to provide for emergency response in the northbound direction, the bike/ped path must remain on the east side.
- Northbound competitive cyclists will need to be forced to enter the bike/ped trail even though
  they will have to share it with pedestrians and recreational cyclists with the safety concerns that
  creates.
- The public is generally opposed to roadway changes and survey evidence suggests that visits might be decreased because the trip is longer and less convenient.
- One way will reduce the public's eyes on the park space by about 500 vehicles per day.
- The impact to the local roadway system with the loss of the road as a local collector in the northbound direction.

The one notable positive of the narrow one-way option is that is would be slightly cheaper to build.

If the one-way facility is built with about 31' total width, this alleviates the first two noted concerns, but not the other three. With the 31' option, the bike/ped path can be on the west side of the road, which is preferred.

The two-way roadway with sidepath will require about 31' of total pavement width, the same as the preferred one-way treatment. The two-way option does not create any of the concerns noted above, and the bike/ped facility can be on the preferred west side.

We have tried to identify other possible benefits of the one-way options. During the early coordination phase, comments were offered that the one-way road might provide a more enjoyable experience when travelling through the winding portion of the park. There were also comments that a narrower roadway might help slow traffic through the park.

As to the first, we do believe that the forested corridor offers a notably enjoyable experience because several people stated the same thing during early coordination. Comments made have included that it is a nice quiet area surprisingly close to the City. There were several comments made in the theme of

appreciating the unique trip through the park. That being said, it is pretty clear that the corridor offers that experience as a two-way road also. There is no reason to believe that this will change simply by adding bike/ped or that the road needs to be one-way for it to be enjoyed.

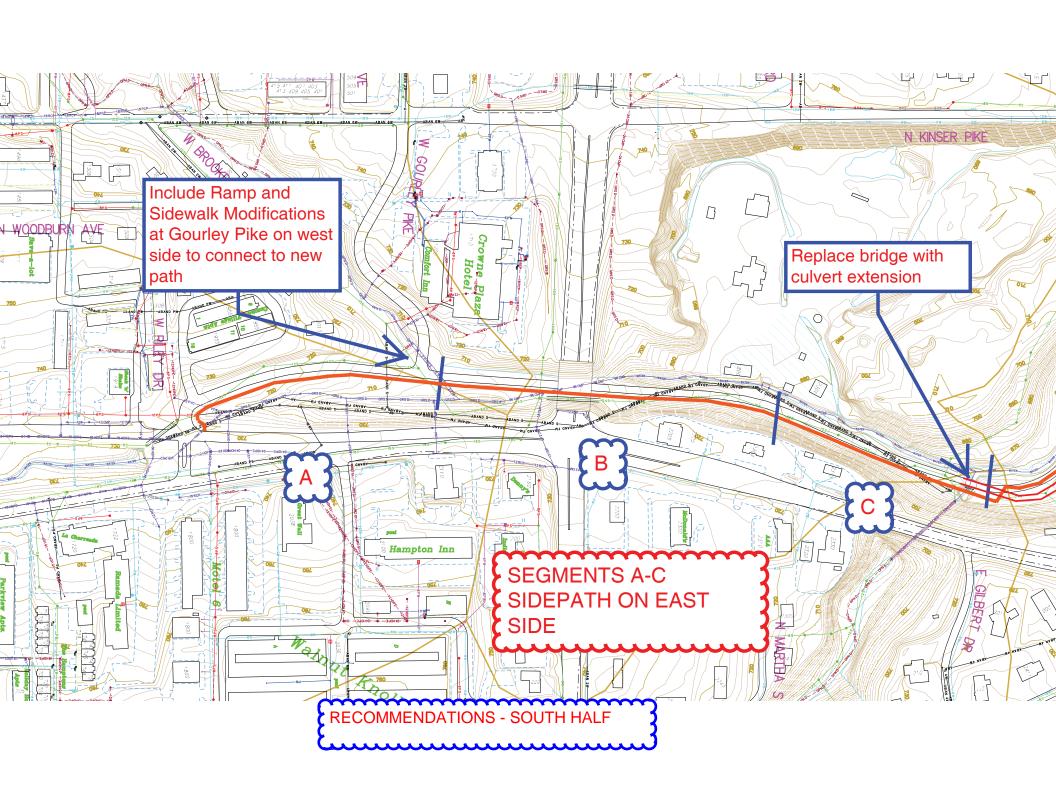
With regard to traffic speeds, it is possible that the one-way road with a curb present will provide a tighter feel which can offer a slight reduction in speeds. The current roadway is 20-22' wide two-way and there were multiple comments offered that drivers go too fast in the park. The one-way options will be narrower, but eliminating the expectation of oncoming traffic will reduce caution, so there is no clear winner. All of the options under consideration would add a curb to the road on one side of the vehicles, and total paved width would be reduced from the current 20-22', so all of them will offer some benefit for traffic calming. We do not recommend the use of speed bumps on a collector, but a raised speed table at the point where the path crosses the road might be appropriate to offer some speed reduction in the middle of this section. Strategic tree replanting and the proximity of the hillside are other means to create a tighter feel to the driving corridor.

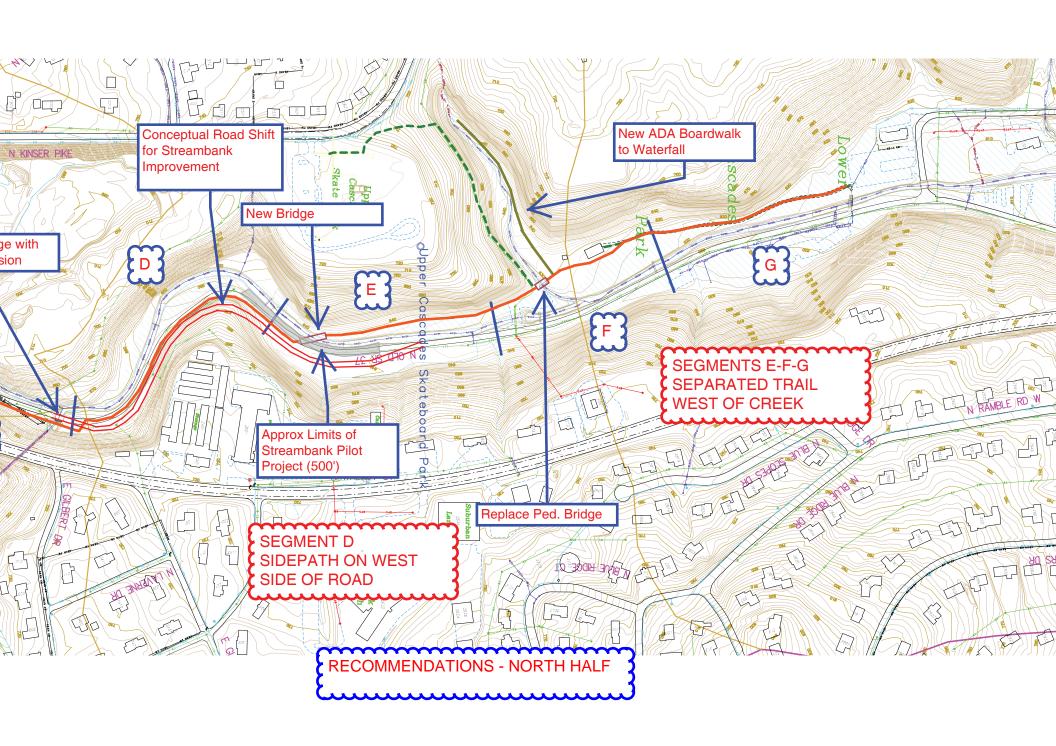
In the end, this really comes down to a local choice. Both one-way and two-way are feasible.

The one-way option offers a marginal cost advantage if built with the narrow option. But we provided a list of issues related to the narrow option and some of them trigger visceral concerns. It is easy to imagine a family bicycling with children and having to react to an oncoming emergency vehicle in the section with limited sight distance. As both a trail user for running and a competitive rider, this author can attest that forcing competitive cyclists onto the bike/ped path creates very real safety concerns when you add the unpredictability of children and dogs. Telling the cyclists to slow down and yield only addresses part of the problem. These are real issues and focused on what has to be our paramount concern...public safety. **We don't recommend the narrow one-way option.** 

Widening the one-way option to allow for a northbound bike lane and emergency responder space does solve those specific safety concerns. The remaining issues with it are more subjective: public opposition possibly resulting in fewer visits, reducing the eyes on the park for general security, and the impact to the City's traffic conditions by diminishing the roadway's use as a collector. As hard as it may be to define the importance of those, the choice may be less difficult because the one-way option at this width is essentially the same as the two-way option. We don't need to fully know the severity of the problems that the one-way will create when the two-way option will have the same basic width, and thus the same basic level of costs and impacts, but without the one-way concerns.

We recommend the road be maintained as two-way through Segments C, D and into E. In conjunction, the bike/ped facility should be shifted from the east side to the west at the south end of Segment D, maintained on the west side through D, and then cross the creek in Segment E near the Old Bike Shop. The work through D and E should include streambank improvements which will require the pavements be shifted east. The extent of that work would be based on the available budget.





#### **Summary of Recommendations:**

The following is a quick summary for those who prefer to pass over the detailed narrative.

#### Segment A - Walnut to Gourley Pike

- Sidepath on East Side
- The existing two-way road remains
- Resurface Existing Road to address damage during sidepath construction

#### Segment B - Gourley Pike to IMI

- Sidepath on East Side
- The existing two-way road remains Road Remains Two-Way
- Resurface Existing Road to address damage during sidepath construction

#### Segment C – IMI to Deteriorated Bridge

- Sidepath on East Side
- The existing two-way road remains
- Include replacement of the Roadway Bridge with a Box Culvert Extension
- Resurface Existing Road to address damage during sidepath construction

## Segment D – Deteriorated Bridge to Old Bike Shop Site

- Cross Sidepath from east to west side near the bridge, then maintain sidepath on west side, separation to be determined
- Assume that Sidepath is built on existing roadbed to reduce costs
- Road Remains two-way
- Shift Roadway eastward where it is needed to support streambank improvements
- Include stream bank improvements that will extend into Segment E (about 500' total length)

## Segment E - Old Bike Shop Site to Spillway

- Sidepath to cross the creek on a new bridge near the Bike Shop Site
- Path continues north as a separated trail west of the creek
- Shift Roadway eastward where it is needed to support streambank improvements
- Include stream bank improvements that will extend from Segment D (about 500' total length).
- Road Remains two-way, rejoins its existing alignment once past streambank improvement area

## Segment F - Spillway to Existing Pedestrian Bridge

- Path continues as a separated trail west of the creek
- Assume path built on existing path to reduce costs
- In the spillway area, position the trail as far west as possible to facilitate redevelopment of that area.
- Replace the existing pedestrian bridge near the spillway parking
- Provide new paved path and boardwalk as ADA-accessible route to the waterfall
- Existing road remains two-way on its current alignment

#### Segment G – Existing Pedestrian Bridge to Trail Hub

- Path continues north as a separated trail west of the creek
- Assume path built on existing path to reduce costs
- Existing road remains two-way on its current alignment

#### **Cost Estimates:**

A detailed conceptual estimate is attached. The quantities have been estimated based on the assumptions and known lengths, and but includes a contingency amount to assist in keeping the estimate conservatively higher.

## The totals by Segment from the Estimate are as follows:

Segment A: \$120,700

Standard Sidepath with minimal grading

Segment B: \$193,700

Standard Sidepath with minimal grading, some storm sewers required

Segment C: \$423,800

Sidepath with some hillside exaction, also replaces the failing roadway bridge, includes new guardrail for Creekside.

Segment D: \$651,500

Sidepath mostly on existing road, road realignment east with hillside excavation, streambank improvements at north end

Segment E: \$452,200

Separated Trail on west side of creek, includes new bridge over the creek. Road realignment to east, streambank improvements at south end

Segment F: \$271,200

Separated Trail on west side of creek on existing gravel path, includes new boardwalk to waterfall and replacement of pedestrian bridge over tributary

Segment G: \$118,400

Separated Trail on west side of creek on existing gravel path, minimal grading

#### **Estimated Construction Total:**

\$2,231,400 (with 5% Contingency, \$2,343,000)

The recommended improvements, while only conceptually estimated at this point, appear to meet the overall project budget for construction of approximately \$2.3M. The overarching goal of the project to complete a bike/ped link from Miller-Showers to the Trail Hub is achieved.

The project would also include the following extras that were not directly part of the bike/ped requirements for the corridor:

- Boardwalk and pavement extension to the waterfall area (Specially funded item)
- The replacement of the failing bridge/culvert under Old SR 37 (which should be at least partially funded by CBU)
- The implementation of a streambank erosion improvement along the most critical section of the stream, near the Old Bike Shop Site. This first phase "Pilot Project" for the stream is assumed to include a section about 500' in length, on the east side of the creek, and at this conceptual level is assumed to include the removal of the wall, and placement of quarry millstones in stepped rows along the bank to make the stream approachable on foot. (Specially funded item)
- A guardrail installation along the creek edge in Segment C which needs it and for which no other improvement solution is satisfactory.
- The installation of two decorative limestone pillars near Club House Drive modeled after previous marker pillars for SR 37 design to be finalized as part of 100-year commemoration of the park.

# **APPENDICES:**

- A. Early Coordination Summary Report
- B. Cost Estimate

#### May 16, 2019

To: David Williams

**Operations Director** 

Dept. of Parks and Recreation

From: Brock Ridgway, P.E.

Re: Summary of Early Coordination and Preliminary Alternatives Review

Cascades Trail Phase 5 – South Branch – Old SR 37 Corridor from College Ave to Club House Dr.

Dear David:

The early coordination and data gathering activities have been completed for this study.

This document is a record of the information gathered during early coordination, and includes a closing section wherein we describe some narrowing of the options which should be given further consideration based on the early coordination. I have also offered several thoughts on what we deem to be the significant concerns that should be given consideration as we get into detailed alternative review.

This study is a process for eventually identifying a recommended alternative, and this summary brings together this first major step toward developing the final recommendations.

#### **Background:**

The City wishes to provide improved access for pedestrians and bicyclists into the Lower Cascades Park area from the south in order to link Miller-Showers Park to the trail network already built in the vicinity of Club House Drive and Old SR 37. Existing paved trails already extend west to Kinser Pike and also north to Griffy Lake. This southward connection out of Lower Cascades Park is the last to be considered due to challenges of topography, space, presence of a sanitary interceptor, need for a roadway bridge replacement, proximity to the edge of Cascades Creek with its steep drop and erosion problems, possible environmental impacts, and assumed high construction costs.

Even with the relatively narrow topography, there is a range of options that are initially being considered, including:

<u>Closure of the Road to Vehicle Use</u> so that the existing pavement may be adopted to dedicated use as a paved bike/ped facility. This would involve closing the road to vehicles at locations that would need to be determined. Considerations include access to such critical destinations as the IMI Concrete Plant, parking, and park amenities but also the use of the roadway as a public road for through travel. Another key consideration is the road's use as an emergency response route.

Partial restriction of the road to a one-way vehicular facility. The other approximately ½ of the road would be dedicated to bike/ped use. Considerations would include making a visit to the park more difficult, additions to travel times for those accessing the park, but also impacts to through travel and emergency response. A means for separating vehicles from bike/ped users would need to be implemented and the exiting roadway would need some widening to support this configuration safely.

<u>Providing a separate bike/ped pavement in the form of a sidepath</u>. Considerations include the amount of space available between the roadway and the creek edge or the steep hillside with some rock



outcroppings, potential for environmental impacts such as tree removals, and having space to implement needed stream bank stabilization measures.

<u>Providing a fully separated facility (a paved trail that does not follow the road corridor).</u> Considerations include the availability of space within the narrower portions of the valley and roadway corridor, the possibility of increased environmental impacts including tree impacts and rock/slope excavations and stabilization and likely higher costs to provide multiple bridges to access areas west of the creek. Streambank erosion is also a consideration with this option.

<u>It is important to note that these solutions are not mutually exclusive.</u> The corridor's characteristics vary widely in different sections, and the optimal solution is likely a combination of these options chosen based on the characteristics of that section of the proposed corridor.

#### **Multi-targeted Early Coordination Process:**

The project was the subject of a multi-faceted Early Coordination effort:

- Direct contact was made with key local department, agencies and businesses that were felt to
  have the most interest in the project area and its roadway use. These included the emergency
  services, school district, City Utilities, City Planning and Transportation, representatives to the
  Bike/Ped Commission, Parks Department and the business and land owners for the IMI concrete
  plant.
- An on-line survey was conducted that was advertised and made available through the Parks Department's newsfeed, email announcement listserve, and social media. This effort gained significant response with over 200 respondents and over 90 offering additional written comments.
- A public meeting (open house) was held on May 9, 2019. This informal meeting provided an
  opportunity to those not participating on-line or wishing to ask their questions or provide their
  comments directly to me or the City staff.

Following are summaries of these three activities.

## **Summary of Direct Contact Feedback:**

A quick summary of the feedback obtained from each is as follows:

<u>Fire Department and EMS:</u> These agencies are opposed to any section of the road being closed to two-way traffic due to the negative impact of response times in the area. They do not prefer that the road be made one-way due to the challenges of working against the normal flow of traffic. They acknowledged this could possibly work for them so long as they had two-way access and that traffic has a means to get out of their way; essentially a wide shoulder or closely spaced pull-off areas. (This would essentially require the road be widened to three lanes through the section.) They are opposed to having to stop and drop collapsible bollards for access due to response delays.

<u>City of Bloomington Utilities:</u> CBU is not opposed to any option so long as access to their facilities (a sanitary sewer interceptor) is provided. Such concern is primarily relevant if a road closure option were considered as they would need to have access to the corridor with maintenance equipment and trucks.



Monroe County Schools: They have two daily school routes in the section between College Avenue and Gourley Pike, but none in the section between Gourley Pike and Club House Drive. They do reroute traffic through the park in the event of traffic accidents and other special situations along Kinser Pike or at SR 46. Special bus trips like field trips or teams may also sue the roads. They do not prefer the road be closed or made one-way due to its importance as an alternate bussing route, but also expressed they could overcome it by adding travel extra distance using Old SR 37 from Club House to Walnut Street.

<u>Dept. of Planning And Transportation</u>: The P&T Department recommended several avenues of further study but did not take a formal position on preferred options at this time. They did state that a change to road use (closure or one-way) would need to be clearly justified through analysis of cost and other impacts. They recommended that the project involve solutions to stream-bank erosion issues, and the replacement of the bridge just north of the IMI entrance. They noted that if road closure were selected, it must include sufficient pavement to allow traffic to turn around, i.e. either a culdesac or a "hammerhead" configuration. A simple dead-end is not allowed. They offered several other recommendations for needs along the corridor which can be applied to any options selected such as considering needs for guardrail, minimizing tree impacts, etc.

In later conversations, proposed pavement sections were discussed, and Parks and P&T staff were generally satisfied with the following (minimum) standards:

- <u>Separated trail for bike/ped pavement</u>: 10' wide minimum, 12' preferred, especially high-traffic locations.
- <u>Trail portion of a one-way treatment of the road:</u> 12' wide minimum due to providing 2' shy distance from a center curb. (effective width for two-directional bike/ped to be 10').
- One-way vehicular portion of roadway: 12' wide lane due to providing 2' shy distance from curb. Also, due to emergency vehicle access in the opposing direction, an additional 8' paved shoulder must be available for traffic to get out of the way, at least in enough locations to make emergency access feasible when going opposite normal traffic.

Irving Materials and Rogers Group: They are the business owner and property owner, respectively, of the active concrete plant. They are strongly opposed to the modification of the roadway-use south of their entrance, as it is the primary egress from the concrete plant, and also sees some use as an entrance from the south. They rarely use their exit onto Kinser because traffic is often backed up from SR 46 and they cannot get out if turning left (south). They are fine with using Kinser as an entrance, just not the exit. They also noted that they want any bike/ped pavement to be on the east side of Old SR 37 at their entrance so that the bike/ped traffic need not cross the path of concrete trucks. They do not have an opinion about options north of their entrance and through the park since they actively discourage their drivers from using it. (Their truck drivers still use it sometimes).

If you desire to read the specific comments made by these entities, they are provided in a separate document that we have entitled **Full Detailing of Direct Early Coordination Feedback for Cascades Trail Phase 5.** It is attached if you wish to review these more deeply.

## **Summary of On-Line Public Survey:**

The response to this survey was very strong, having obtained participation from 212 respondents and of those, 92 offering additional written comments. This is more response than was obtained for early survey work prepared for Switchyard Park. The survey was not scientific, simply voluntary, but we feel it



is reasonable to assume that those most interested in park issues are those most likely to respond, and those who simply use the park road for travel were less likely overall to get the notice or respond. We feel it is fair to say that those using the road without interest in using the park are likely underrepresented since they would be less likely to have seen the notice for the survey.

#### Review of the survey results:

Over 90% of respondents indicated they use the park facilities or amenities in some form and are not simply driving through. Over 70% of the respondents visiting the park are using a vehicle to access the park amenities.

For those traveling in a vehicle, the direction of travel is equal.

Whereas we would have guessed that the amenity most often visited is the playground, the respondents identified the Waterfall Trail and the Cascades (paved) Trail as the top two amenities visited. The playground was 3<sup>rd</sup>.

Among those using parking areas, more than 50% use the two primary lots near the playground and main shelter, which is not surprising. 25% use the parking across the spillway, indicating its overall importance when considering that the Waterfall Trail is the most visited park location. Generally speaking, over 80% feel that parking is always or usually available when/where they want it. Less than 5% feel that parking is not adequate. This suggests that there is not a strong need to add parking, but that any solution should be parking neutral, and the loss of the parking (such as cutting off the spillway area) would be very significant.

When asked how converting the road to one-way use might affect their visits and use of the park, 43% said it would not affect them. Over 32% said they would decrease their visits or stop using the park. Only 8% said that they would visit more often. Note that the question only asked about one-way treatment, because a roadway closure is reasonably expected to generate even more dramatic negative impacts and it was preferred to get feedback on the lesser of the two types of roadway use changes. The difference between negative and positive results suggests that a roadway use change will decrease park usage by a significant amount, and that a full road closure could be assumed to be even worse. This is perhaps the single most important result of this survey. The survey was not scientific and people do tend to overstate the negative impacts of a prospective change before they have had a chance to adjust to it (just my anecdotal experience). Nonetheless, I believe this should be taken very seriously...the City's goals include increasing park usage, and these results are providing a strong indication that a change to the road's usage will have an adverse impact to park visits.

When asked to select among the four options, 71% of respondents prefer the two options that do not include changing roadway use. Perhaps to emphasize the antipathy for roadway closure, over 70% ranked closing the road as the least desirable option (4<sup>th</sup> place among the 4).

We also reviewed the written comments (92 were submitted) and noted trends related to roadway use changes. First, 65%-90% of commenters either clearly stated or implied their support for adding improved bike/ped facilities in the study area. Among the 92 comments, 50% of them included very specific statements <u>against</u> vehicular use restrictions (either one-way or closure). Only 8% made statements in support of vehicle-use restrictions. In summary, the respondents are strongly supportive of improvements for bike/ped, but at the same time generally opposed to those improvements also



**involving restrictions for vehicle usage.** And, just to restate the previous note, there was significant evidence that a vehicular use restriction may result in a decrease to visits to the park.

If you desire to read the survey questions, results and also specific comments submitted, they are provided in a separate document that we have entitled **Cascade Park Trail Survey Results - Annotated.** It is attached.

## **Summary of Public Meeting:**

The meeting was very lightly attended (4 visitors) during the 1.5 hours offered. The attendees were all residents of the neighborhoods west of the project area (west of Kinser Pike, across from the Golf Course). All of them use Old SR 37 in the park as a bypass route for Kinser at SR 46, which is backed up daily. They also noted heavy traffic on Walnut at SR 46 for events at IU, especially football games. Old SR 37 through the park provides them an alternative to Kinser Pike, which has become even more needed since the I-69 project cut off access to the highway from both Acuff and Kinser and has, to a degree, landlocked the area west of Kinser with few convenient egress routes. All of attendees also visit the park, though mostly by foot from the west.

The primary topic that the attendees were interested in were potential roadway usage changes, and seeking to understand what might be done. We first clarified that neither Club House Drive nor the portions of Old SR 37 north of Club House were included in the study area and they will not be altered by this effort. Once that was addressed, we discussed potential impacts of roadway closure or a one-way conversion.

One thing that did become apparent in the discussion, and reinforces comments received in the on-line survey, was that Old SR 37 serves as an important alternate route for backups at SR 46 (at both Kinser and at Walnut). Additionally, we discussed how this is strongly true for the southbound direction of vehicular travel, but much less so for the northbound direction. This is because northbound traffic in this area does not get backed up significantly, and entering northbound Kinser from SR 46 is not difficult with it being a right turn coming from the center of the City. Southbound traffic on both Kinser and Walnut coming to SR 46 are much more impacted by rush hour and special event traffic.

This discussion clarified that the choice of one-way direction (if one-way is implemented) should be southbound. Southbound offers clear benefits that the northbound direction does not.

Aside from the detailed discussions about alternate vehicle routes and the relative benefit of southbound over northbound, the attendees' comments were very supportive of offering a bike/ped facility to the park to Miller-Showers. And, though they seemed accepting that a one-way option could work, they preferred options that did not alter roadway use. This is very consistent with the on-line survey results.



#### **Initial Conclusions and Thoughts:**

The early coordination process has offered several significant findings and ideas that I feel should narrow the options given further consideration.

These are as follows:

## 1) Full-Closure Option Should be Eliminated

The public is highly opposed to this option, the vast majority ranked it last of all available options. It is strongly opposed by emergency services. Park staff are opposed because it would eliminate the trips through the park that help keep "eyes-on" the facilities and space and improve security while decreasing undesirable activities. It would eliminate the utility of the route as an alternative to Kinser/SR46, which has intensified with the completion of I-69. While we acknowledge that this would be the least expensive alternative in terms of construction cost, its negative impacts are detrimental to the park and to the residents in the areas west and north of the park. Less than 10% of those surveyed support this option.

## 2) One-way Direction, if implemented, should be southbound.

Even though the on-line survey results showed a preference for a northbound direction, those results ignore the fact that for the hundreds of nearby residents living west or north of the golf course, the recent I-69 road changes have limited the number of routes into the City. The intersection of Kinser/SR46 already shows the results every day with heavy traffic and IMI's findings that they can't turn left onto Kinser due to the backups. A northbound direction in the park would force them to use Kinser, or force them back north to get to Walnut. These choices force the traffic into the areas already backing up. A northbound direction in the park will push an additional 1,000 vehicles per day into these locations.

#### 3) No change to roadway usage from Walnut to the IMI Entrance should be implemented

That section of the roadway is the primary egress from IMI. IMI's business operations would be severely impacted by such a change, and in my opinion, would likely result in legal challenges, especially when it is considered that a viable alternative has already been identified. (See 5). Impacting this section of roadway is not necessary in order to provide a good bike/ped solution. This does not affect potential options north of the IMI entrance and in the park itself.

#### 4) Post a weight limit on the park section of Old SR 37

As an aside, it would be beneficial to the park road pavement, environment and general safety to bar the heavy industrial trucks (including concrete trucks) from the park section of Old SR 37. IMI already discourages the use of that section of road, and a limit could be set that doesn't affect the school corporation's occasional use of the roadway. Such a limit would have no significant effect on IMI operations while providing a significant benefit to everyone else.

#### 5) In the segments from Walnut to IMI Entrance, Implement a Sidepath on the East Side

From Walnut to the IMI Entrance, only the option for a sidepath on the east side of the road makes sense. The land and space are readily available. Traffic pattern impacts from Walnut to Gourley Pike and extended to IMI aren't necessary or desirable. The appropriate choice seems readily apparent in this south end of the study area.

#### 6) The parking at the spillway is needed.

In conjunction with whatever solution is identified to address safety and public health concerns for the spillway/slide area, the access of vehicles to the west side of the creek should be provided to



preserve a parking neutral impact. Additionally, the fact that the waterfall area was shown to be so popular in the survey and that the adjacent Waterfall Shelter does not have other nearby parking emphasizes the need to keep parking in this area. Trail option selection needs to maintain the ability to have parking in that area.

#### 7) Evaluation of the One-Way Option must include the subjective consideration of these results.

While a lot of this evaluation and study process is subjective, the area perhaps must subjective is what will happen in the event a one-way option is implemented. Over 70% of those participating in the survey were found to use a car to access the park's facilities. The decision will impact the majority of park visitors who will find their total trip increased. Total trip distance will increase by only about 1.5-2 miles, but distance and convenience matter to public choice-making. The survey results were clear that the public is generally opposed to roadway use changes. That doesn't need to be the only consideration, but it should be one.

Also, there is the position by park's staff that the benefits of having more "eyes-on" the park's spaces and facilities greatly decreases illegal and undesirable activities in the park. The directional counts available for traffic were nearly an even split and about 2,000 vehicles per day use the road. A one-way treatment will result in cutting vehicle trips through this part of the park by about 1,000.

It is impossible to know to what degree either of these will have a negative impact on the longer-term use, quality and attractiveness of the park for its visitors, but they need to be considered.

#### 8) Streambank Considerations

Even though this study was initiated to identify the best alternative to provide a bike/ped connection through this part of the park, a significant amount of the early discussions with staff have centered around the problems with erosion of the streambanks that have previously resulted in partial roadway collapse and expensive emergency repairs. It was identified that the City currently has some funding identified to address streambank erosion issues in the park.

From our perspective, this is a really important consideration because the bike/ped options available include many that might make the stream problems either harder or easier to resolve depending on the type and location/position of the bike/ped improvement relative to the creek edge.

The original WPA-built walls have been in place for about 100 years, and their condition ranges from structurally sound to non-existent, having been completely eroded (later replaced in certain critical areas) In many locations the only thing holding the stream bank in place are mature trees along the edge of the creek. These trees are very attractive and do contribute to the character of the park, but many are extensively undermined by the stream, and there are remnants of previous trees that the stream has taken over time.

The walls served their purpose to stabilize the road corridor in the time when the park road was State Road 37 and the primary route north from Bloomington. But due to their height, vertical profile, and proximity to the road edge, they currently present a significant danger to both vehicles and bike/ped users, and make the creek unapproachable through most of the park. The abrupt drop of several feet to the rocky stream bed makes it a hazard for park visitors especially those with small children.

As stated, a lot of our early discussion has been related to the stream banks and how they impact the choices available to the City for bike/ped improvements. It is my intention to give this significant consideration so that the options recommended are supportive of the City's long term needs



to address streambank issues. It is my intention to look beyond the basic goal of reducing streambank erosion, in the hope that the solutions for bike/ped can include providing for, or at least not preventing, long-term efforts to make more of the stream approachable and enjoyable as a true enhancement to the park's offerings.

#### **Closing:**

These results and thoughts will be carried forward into the detailed evaluation of options.

Please let me know if any questions at the contact information below.

Sincerely,

Brock Ridgway, P.E Project Manager

#### **Bloomington Fire Department:**

BFD and EMS are opposed to closing the road to vehicular use. As an additional followup, they are also opposed to the installation of collapsible bollards as part of an improvement where the road would be limited to use by emergency vehicles only. These concerns are based on the impact to response times.

Under a one-way treatment, BFD suggests that pull-off space might be a possible part of a solution where vehicles needed to make way for an emergency responder. (refers to consideration for having a one-way public road where emergency responders need to have access in both directions.)

#### **City of Bloomington Utilities:**

CBU does not have opposition to any of the proposed alternatives as long as access to our facilities is maintained. This is particularly relevant if closure of the road to vehicles becomes the chosen option.

#### MCCSC:

MCCSC does not have any daily bus routes that use Old SR 37 between Club House Drive and Gourley Pike. They do use it occasionally in the event of an accident related detour, construction detour, etc.

MCCSC has two daily routes that use Old SR 3 between College Avenue and Gourley Pike.

MCCSC would deem closure of the road between Gourley Pike and Club House Drive as an inconvenience that would increase travel times, but could be overcome if it needed to be.

### **Planning and Transportation:**

- In general we agree that all of these options should be considered viable at this time. We'll be
  interested to see the comparison of costs as well as other impacts. We assume that these tradeoffs would be quantified before a decision is made to close or one-way the street (i.e. we would
  have to prove that there is a need to alter the street).
- The City may want to consider a trial implementation of the motor vehicle restrictions (full closure, one-way, variations in where the closures start, etc).
- You may also want to get input from Police at some point. They may be interested as it relates to 'eyes on the trail' but also we're unsure whether they enforce closing the park overnight and whether these changes would have any impact.
- Regardless of the option chosen, this project should be considering replacing some of the walls
  along the edge of the stream. The structure (bridge) between IMI and the first curve almost
  definitely has to be replaced.
- If full road closure is pursued, then there will need to be some more thought put into how to cul-de-sac the two ends (we can't install a dead end). This may be particularly challenging at the southern end where we wouldn't have a parking lot to work with.
- We are not convinced that converting to one-way will yield enough street space to install the bike/ped path. In constrained areas (stream on one side, hill on the other, in a curve) how do you propose dividing 20' of pavement to yield a motor vehicle lane in one direction, separation,

- and bi-direction ped/bike facility? Granted converting to one-way will still free up some space and could result in less widening or less impact to
- trees/stream/etc. We just still have a number of questions.
- This project may want to consider formalizing a connection to the Upper Skate Park. There is an
  old road that generally makes the connection (and apparently goes past a waterfall too). Image
  below.



- Some of these options will likely require the loss of some of the trees on the eastern edge of the road, but they appear to be scrub trees and new ones can be planted.
- CBU and the sanitary sewer is a major driver in the scope of this project. The 24" sanitary at the large culvert is shallow and may either need to be relocated or avoided. This will have an impact on the path alignment. I believe that CBU currently has a plan to do something in this area due to the new hospital. I would be curious to what those plans are and how they impact this proposal.
- All the options appear to require that we purchase property on the east side of the road. Two of
  these property owners are Jeff Jones and Gul Saeedi. These takes may prove to be difficult. I
  believe that Jeff Jones has some pending litigation with the City and we should check with Legal
  before we begin any negotiations.
- May need to install a few retaining walls in the area. This is an opportunity to find a wall design
  (I'm thinking large block) that we can also be used on the creek channel. I think one type or look
  of wall will bring an aesthetic harmony and appeal to the area as well as solve a few existing
  problems. My preference would be to closely match the look of the WPA walls
- Consider pushing the roadway and path east into the bike shop lot (brownfield). This will eliminate a problematic parking area.
- Need to pull the road away from the creek channel (clear zone), or add guard rail as necessary. It appears that many sections of the existing road are lacking needed guardrails.

### **Irving Materials and Rogers Group:**

As a local stakeholder, Irving Materials, Inc. would like to express concerns regarding the study.

Irving Materials, Inc. utilizes an east drive from the property at 1800 North Kinser Pike, Bloomington, IN 47404. Sixty six thousand pound concrete ready mix trucks turn right out of the east drive going southbound on Old State Road 37 for timely deliveries. From an environmental health and safety aspect, this is a crucial practice. The topography of the property makes it unsafe for the trucks to exit onto North Kinser Pike. Also, the drive exiting onto North Kinser Pike is extremely dangerous due to its

proximity to the stoplight at State Road 46. It is difficult for the trucks to turn left due to the backup of traffic traveling south along with the oncoming northbound traffic. This also causes delays in product delivery. In regards to the trucks returning to the plant, it is common practice to utilize State Road 46 to turn onto North Kinser Pike for west drive use. Very seldom are trucks returning to the facility using the east drive. We have carefully studied the options to be reviewed. From a safety standpoint, Irving Materials, Inc. would like to discuss an option proposing the trail be on the east side of Old State Road 37. It is unsafe for pedestrian traffic on the west side of Old State Road 37 where fully loaded trucks are exiting the property.

The Rogers Group owns the property in question. It is zoned industrial and is occupied by Irving Materials, who operates the concrete plant on this site. The sites elevation drops significantly from Kinser Pike down to Old SR 37, where the lower elevation is a creek that serves all natural water drainage from the area. The IMI plant sits in what was the bottom of an old dimensional limestone quarry. The raw materials they use are delivered off of Kinser Pike, and stockpiled at the higher elevation and gravity fed to a lower stockpiled area. Once concrete is made it is poured into trucks which weight approximately 72,000 lbs. IMI currently uses the east exit turning right to go under SR 45 and continue south bound into Bloomington because of a substantial traffic bottleneck on the higher elevation of the west entrance. There is no access onto SR45 directly from Old SR 37. They access SR 45 via Kinser Pike, which due to the nature of the entrance in relation to the stoplight becomes a bottleneck for IMI truck and vendor traffic, because the entrance is so close to the intersection.

Currently, the pedestrian path from Millers Showers Park heads north, across College, and across Old SR 37 to the west side of the road, then apparently ends just before the SR45 underpass.

IF the current trail were to extend, it would have to cross Old SR 37 again north of the SR45 underpass, as the creek runs right up next to the edge of the Old SR 37 on the west side. On the east side, there is a steep bank which runs right to the edge of Old SR 37, essentially land locking Old SR 37 to width restriction for approximately 1/3 mile before connecting to the southernmost portion of Lower Cascaded Park.

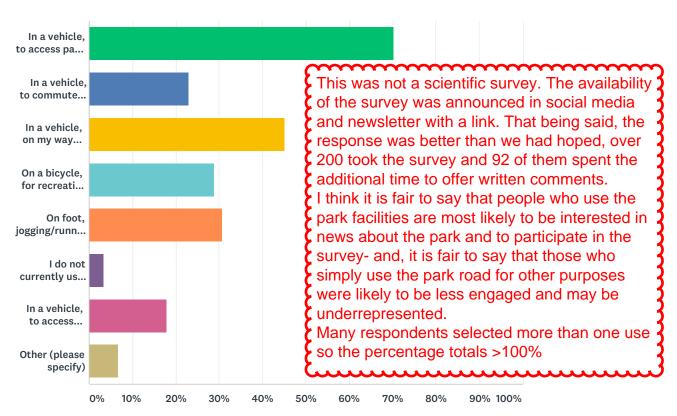
Due to the time sensitivity of concrete delivery, the bottleneck of traffic onto Kinser Pike, and the danger of placing a pedestrian path near the traffic pattern of 72,000 lb industrial trucks leaving property zoned as such, the Rogers Group (as property owner) would oppose utilizing or closing ANY existing lanes of Old Sr 37 between the IMI exit extending south to College Ave.

The ideal situation would be to create a separate trail east of Old SR 37. Despite the steep grade with the appropriate construction the trail could remain on the east side of the road for the duration of the distance to Cascades Park, and the pedestrian and bike traffic could remain safely elevated AND isolated from any and all traffic utilizing Old SR 37.

We value our community and are aware of the economic and environmental benefit of a healthy park system. We look forward to working with you on a mutually agreeable solution to the proposed project. If we can be of further assistance, please call me at (317) 502-5906.

# Q2 How do you currently use Old State Road 37 North through Lower Cascades Park?



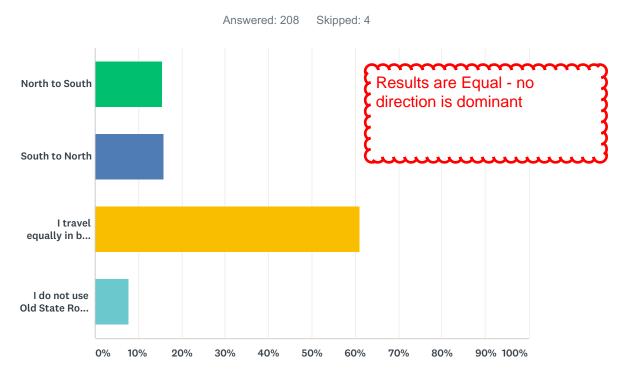


ANSWER CHOICES	RESPONSES	
In a vehicle, to access park amenities	70.28%	149
In a vehicle, to commute to/from work or school	23.11%	49
In a vehicle, on my way somewhere else	45.28%	96
On a bicycle, for recreation or to commute to work or school	28.77%	61
On foot, jogging/running/walking for recreation or exercise	30.66%	65
I do not currently use Old State Road 37 North	3.30%	7
In a vehicle, to access nearby businesses	17.92%	38
Other (please specify)	6.60%	14
Total Respondents: 212		

#	OTHER (PLEASE SPECIFY)	DATE
1	During events at IU to avoid heavy traffic congestion.	3/24/2019 9:40 PM
2	I don't drive through Lower Cascades Park. I take old state road 37 North from the stop light near the dog park. I turn at the stop sign and head up to the golf course. I never pass through the area with the playground. I always walk through that area.	3/18/2019 9:10 PM
3	In the morning, anyone north of Ind. 46 going south has only Kinser Pike and Old 37 as access to the south. During North's drop off period it takes 3 or 4 light changes to get through.	3/18/2019 2:25 PM

4	Walk dogs through area	3/17/2019 7:25 PM
5	Coming home from Indianapolis it is much closer to my home.	3/16/2019 11:07 AM
6	I also use OSR 37 to avoid the intersection of N Walnut St and SR 46 when going downtown.	3/15/2019 2:07 PM
7	I access the golf course.	3/14/2019 5:16 PM
8	Gourley pike to Old 37N to college ave makes great cut through access	3/14/2019 4:26 PM
9	I drive through for pleasure as a preferred alternative route.	3/14/2019 8:45 AM
10	often use it when there are <mark>IU games and traffic is bad</mark> ). Living in Blue Ridge makes travel difficult on game days and we depend on using Lower Cascades as a transportation route	3/14/2019 8:16 AM
11	I rarely drive on it, but wouldn't want to see it closed to vehicle traffic	3/11/2019 5:04 PM
12	When I drive on Old State Road 37 it is to access the amazing playground in Lower Cascades Park.	3/11/2019 10:43 AM
13	Joyriding on a mototcycle	3/11/2019 8:36 AM
14	on the way to/from Ferguson dog park	3/9/2019 10:03 AM

# Q3 If you use Old State Road 37 North primarily in a vehicle, which direction do you typically travel?



ANSWER CHOICES	RESPONSES	
North to South	15.38%	32
South to North	15.87%	33
I travel equally in both directions	61.06%	127
I do not use Old State Road 37 North	7.69%	16
TOTAL		208

# Q4 What amenities at Lower Cascades Park do you use most often?

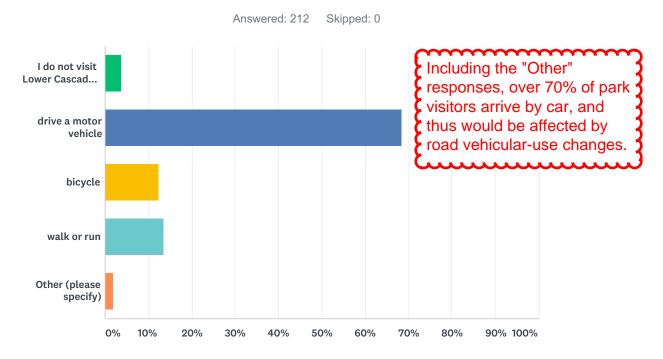


ANSWER CHOICES	RESPONSES	
I do not use any amenities at Lower Cascades Park.	6.64%	14
Playground	44.08%	93
Sycamore Shelter (at Clubhouse Drive & Old State Road 37 North)	26.07%	55
Waterfall Shelter (south side of the park, across the creek)	27.49%	58
Cascades Trail	46.92%	99
Waterfall Trail and waterfall	58.77%	124
Creek	30.33%	64
Parking lots (at shelters, playground, or along Old State Road 37 North)	41.71%	88
Other (please specify)	5.69%	12
Total Respondents: 211		

#	OTHER (PLEASE SPECIFY)	DATE
1	Golf course	3/31/2019 10:46 AM
2	I use these facilities, but rarely.	3/24/2019 1:09 PM

Walking my dogs.	3/18/2019 6:21 PM
Softball fields	3/18/2019 2:53 PM
golf course	3/17/2019 10:31 AM
I use OSR 37 and the existing trails daily for walking (usually about 4 miles a day).	3/15/2019 2:07 PM
Softball fields!	3/15/2019 10:31 AM
Sometimes just a cruise through the park for a natural break from the city crowd	3/14/2019 2:13 PM
Access golf couse and BHSN	3/14/2019 1:58 PM
Just to get to/from either the bottom rd area or north on Old 37 on bicycle.	3/8/2019 11:28 PM
The open green spaces along the creek for hammocking and lounging.	3/8/2019 1:28 PM
So far the playground, though we intend to explore more as a family (two 6-year-olds and a 9-month-old).	3/8/2019 1:16 PM
	Softball fields golf course I use OSR 37 and the existing trails daily for walking (usually about 4 miles a day). Softball fields! Sometimes just a cruise through the park for a natural break from the city crowd Access golf couse and BHSN Just to get to/from either the bottom rd area or north on Old 37 on bicycle. The open green spaces along the creek for hammocking and lounging. So far the playground, though we intend to explore more as a family (two 6-year-olds and a 9-

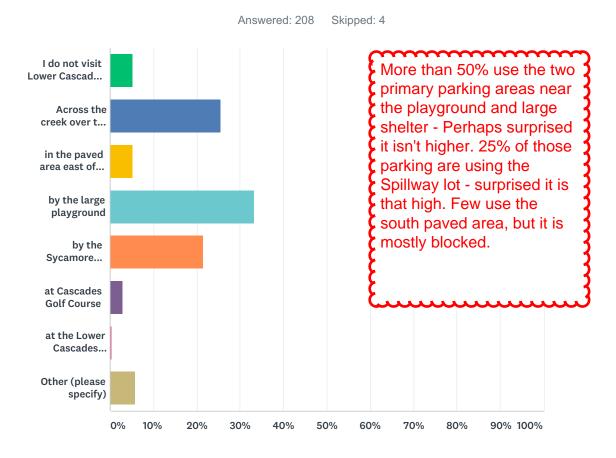
# Q5 When you visit Lower Cascades Park, do you usually:



ANSWER CHOICES	RESPONSES	RESPONSES	
I do not visit Lower Cascades Park	3.77%	8	
drive a motor vehicle	68.40%	145	
bicycle	12.26%	26	
walk or run	13.68%	29	
Other (please specify)	1.89%	4	
TOTAL		212	

#	OTHER (PLEASE SPECIFY)	DATE
1	Vehicle and walk/run	3/18/2019 9:10 PM
2	Bike or drive or walk	3/18/2019 8:51 AM
3	Take grandchildren to the park.	3/16/2019 11:07 AM
4	Vehicle	3/14/2019 4:20 PM

# Q6 When you visit Lower Cascades Park, which parking area do you use most often?

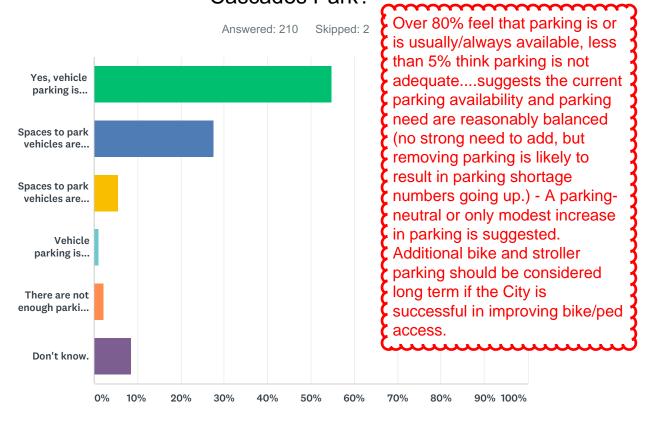


ANSWER CHOICES	RESPONSES	
I do not visit Lower Cascades Park.	5.29%	11
Across the creek over the concrete spillway, by the Waterfall Shelter	25.48%	53
in the paved area east of the road	5.29%	11
by the large playground	33.17%	69
by the Sycamore Shelter	21.63%	45
at Cascades Golf Course	2.88%	6
at the Lower Cascades ballfields	0.48%	1
Other (please specify)	5.77%	12
TOTAL		208

#	OTHER (PLEASE SPECIFY)	DATE
1	Bicycle parking	3/30/2019 6:05 PM
2	I dont drive to the park.	3/30/2019 5:49 PM
3	I do not use the parking areas. I bike there.	3/30/2019 4:37 PM
4	I do not drive to Lower Cascades Park. I typically bike or walk.	3/30/2019 4:29 PM

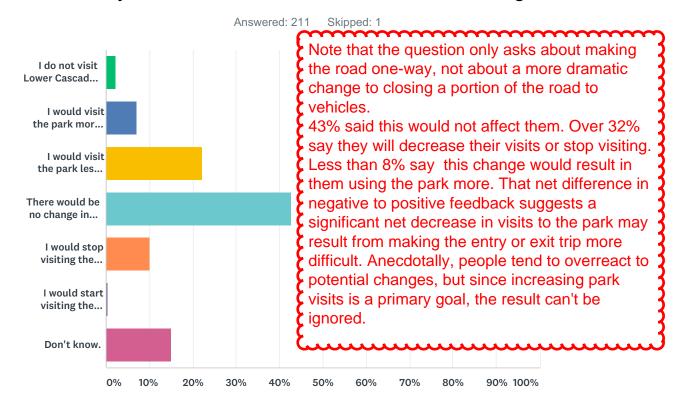
5	n/a	3/19/2019 1:22 PM
6	do not park my bike, always just riding through	3/18/2019 5:22 PM
7	I am generally on a bicycle and so do not use the parking lot for parking a car.	3/16/2019 5:53 PM
8	Use dirt trail through west side of cascades	3/14/2019 7:36 PM
9	wherever it is closest!	3/14/2019 4:20 PM
10	I don't park. I ride from town and through lower cascades without stopping	3/8/2019 11:28 PM
11	I walk - live nearby	3/8/2019 4:23 PM
12	I only run to it	3/8/2019 4:14 PM

# Q7 Do you believe there is adequate parking available at Lower Cascades Park?



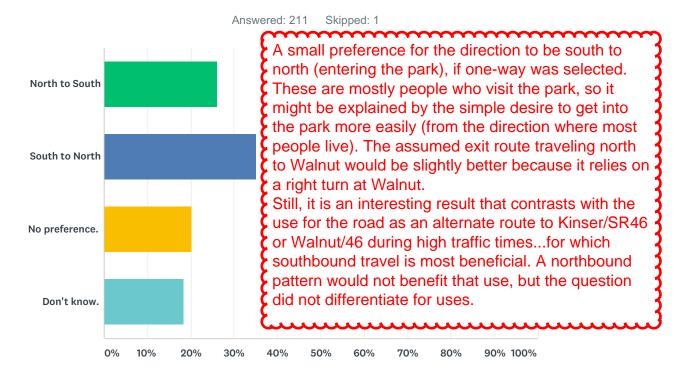
ANSWER CHOICES	RESPONSES	
Yes, vehicle parking is always available.	54.76%	115
Spaces to park vehicles are usually available.	27.62%	58
Spaces to park vehicles are sometimes available.	5.71%	12
Vehicle parking is often not available.	0.95%	2
There are not enough parking spaces for vehicles.	2.38%	5
Don't know.	8.57%	18
TOTAL		210

# Q8 If the road were changed to be one-way only for vehicle traffic, how would your visits to Lower Cascades Park change?



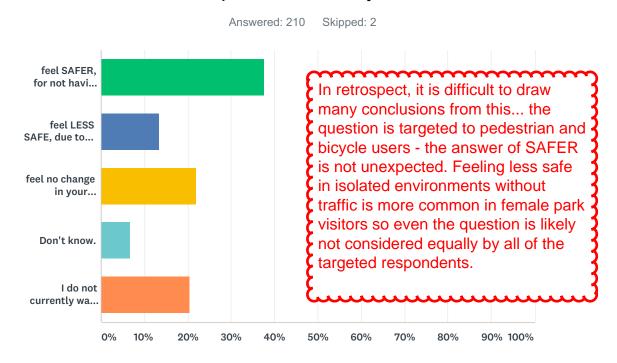
ANSWER CHOICES	RESPONSES	
I do not visit Lower Cascades Park.	2.37%	5
I would visit the park more frequently.	7.11%	15
I would visit the park less frequently.	22.27%	47
There would be no change in the number of times I visit the park.	42.65%	90
I would stop visiting the park.	9.95%	21
I would start visiting the park.	0.47%	1
Don't know.	15.17%	32
TOTAL		211

# Q9 If the road were changed to be one-way only for vehicle traffic, which direction would you prefer vehicles to travel?



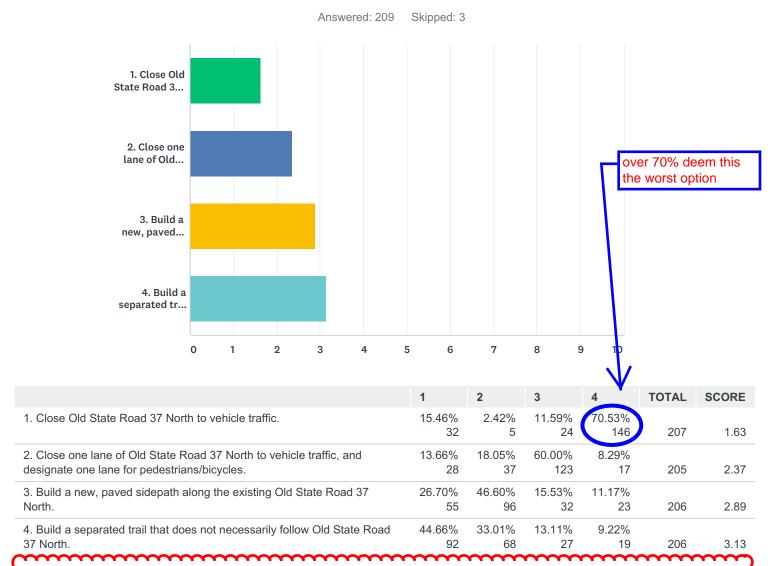
ANSWER CHOICES	RESPONSES	
North to South	26.07%	55
South to North	35.07%	74
No preference.	20.38%	43
Don't know.	18.48%	39
TOTAL		211

# Q10 If the road were changed to be one-way for vehicle traffic, would you, as a pedestrian or cyclist:



ANSWER CHOICES	RESPONSES	
feel SAFER, for not having to share the lane with vehicle traffic	37.62%	79
feel LESS SAFE, due to being more isolated with less vehicle traffic	13.33%	28
feel no change in your perception of personal safety	21.90%	46
Don't know.	6.67%	14
l do not currently walk, run, or cycle in Lower Cascades Park.	20.48%	43
TOTAL		210

Q11 Please consider the way you use Lower Cascades Park and Old State Road 37 North, and, using options 1-4 at the top of this survey, list your first through last choices for the development of the Cascades Trail connector.



### General thoughts:

Among the choices for the most favored option, 71% prefer options which do not include changing vehicular use of the roadway. 29% prefer one of the options which includes reducing vehicular use. Over 70% of respondents ranked closing the road to be the worst option. (strongest measure)

### **Info about these respondents:**

about 91% of them are using the park amenities in some fashion and not simply driving through it, so these are the Parks Deptartment's core constituents.

70% of respondents are using a vehicle in their travel/visit to the park.

In open comments received (92 respondents offered additional comments):

65-90% are clearly or implied supportive of the need for improved bike/ped facilities into the park.

50% of those made very specific statements against vehicular-use restrictions (one way or closure). Only 8% made statements in support of vehicular-use restrictions.

In summary, respondents are strongly supportive of improvements for bike/ped, but generally opposed to those improvements also involving restrictions in roadway usage for vehicles.

# Q12 Please share your thoughts, ideas, suggestions, and concerns regarding the creation of a paved bicycle/pedestrian trail connector between Miller-Showers park and Clubhouse Drive.

Comments specifically against road use changes.
Comments specifically for road closure

Answered: 93 Skipped: 119

#	RESPONSES	DATE
1	I totally understand the need for it. I encounter runners and cyclists using roadway even where sidepath is available. And in the curves at south end where there is no path, they are often on wrong side of road. But I use that road EVERY DAY in my vehicle. So I would prefer it NOT be closed to vehicle traffic. I feel a solution could be found that works for both.	3/31/2019 10:46 AM
2	Keep it simple add a side path and some speed bumps.	3/31/2019 6:36 AM
3	Any additional bicycle/pedestrian trails will be welcome!	3/30/2019 10:52 PM
4	I use this road daily for work and very often for the park. I don't want to see the road closed or made one way. I think expanding the trails is a great idea. I have had trouble with adults, perhaps homeless on two occasions and it has made me rethink the time of day that we go to the park. I believe decreasing traffic could cause more problems for safety on this more isolated but beautiful area. I also worry about trails away from traffic areas for this reason.	3/30/2019 10:51 PM
5	I think that this would be a great and critical bicycling infrastructure improvement.	3/30/2019 10:37 PM
6	Jogging on Old State Road 37 North in particular feels very dangerous as there is no sidewalk or path for parts and lots of blind curves.	3/30/2019 6:05 PM
7	This may not be an issue at all but I am worried about disturbing existing natural features and environment.	3/30/2019 5:37 PM
8	As a long time biker, who has gone over many, many bike paths, as well as following main roads, I prefer to see a separate bike path. This is as much for folks in general, who are not always terribly confident about biking with traffic.	3/28/2019 6:16 PM
9	I think it would be great. Cascades Park is currently an under appreciated park that needs a face lift and some TLC	3/25/2019 11:08 AM
10	The path is a great idea if bicycles would really use it, but considering this road is a vital infrastructure for use by the public for providing appropriate traffic flow under normal and special event times closing the road and/or making it a one way creates a great strain on the public. It also limits use, growth, and ease of access of this great park facilities. Keep the road open as is and build a separate path for bikes and pedestrians. Make the bicyclist really use the designated path.	3/24/2019 9:40 PM
11)	I am pretty surprised that closing old 37 seems like such a serious option hereI grew up on the north side and we own land there. I don't mind some of the work that has been done to improve the parks, but shutting down the real dog park and the idea of closing driving through Cascades is getting a little ridiculous	3/24/2019 9:30 PM
12	This is a good idea! I hope construction can go forward without completely cutting off access to the park.	3/24/2019 11:51 AM
13	I think this is an excellent idea which will increase the accessibility of the park from the north side of downtown	3/21/2019 3:33 PM
14	do it	3/21/2019 2:00 PM
15	TaylorWe live in Marlin Hills and use Old State Road 37 to drive our grandchildren to play on the playground. We could not walk with them to the playground as it would be too far for the little ones. We also use that road when IU has a football game, commencement, basketball game, or other function that draws a large amount of guests in order to avoid the traffic congestion going south from the stop light at Old 37 N and N Walnut. We love the new bicycle trail and use it quite frequently during the spring, summer, and fall months. Please don't completely close Old 37 North through Cascades for cars. We don't mind bicycling along with the cars and it would really hurt us when we wanted to drive through the park.	3/19/2019 8:22 PM

16	I like the idea of closing the road, but I think the closure should start at the large parking lot by the playground and end at Gourley Pike. This would eliminate most parking/mobility concerns for the playground, and there would be ample access to most of park from there. Traffic from Walnut to Kinser would be minimally impacted as well. As a parent of small children, I love the idea of a large, safe area to bike, run and play. That being said, I am excited about the connection regardless of which avenue is chosen.	3/19/2019 4:51 PM
17	The road is not really required for vehicular traffic, so making it one-way doesn't create much hardship and makes for safer biking and walking.	3/19/2019 1:22 PM
18	This roadway is part of the old Dixie Highway and as such, should be maintained as a north-south corridor.	3/19/2019 8:59 AM
19	I would feel safest if the area by the playground did not have any traffic through it. I like being able to access the golf course via old 37 north. I would feel safest in a bike lane near the imi entrances to remain most visible.	3/18/2019 9:10 PM
20	I believe creating a new paved path not along old 37 and not changing the current traffic pattern is the best option. I use the road through the park from fritz terrace neighborhood to get to old state road 37 north to get on and off I-69. I also use the road to get to old stare road 37 north to bethel lane to bypass heavy game day traffic. Having a path not following old state road 37 would be much safer for bikers and walkers/runners because they would be away from heavy traffic. This would provide a much safer environment for everyone especially for people with kids or pets that may be enjoying the trail as well.	3/18/2019 6:21 PM
21	No concerns- please do it	3/18/2019 5:46 PM
22	Please consider connecting the skate park to the trail. This would allow bicycles/pedestrians to commute to town from Fritz Terrace and the Skyline Drive area using the 46 underpass without backtracking to Clubhouse Drive.	3/18/2019 5:04 PM
23	great	3/18/2019 4:21 PM
24	My first choice is for you to "leave a good situation alone" and do nothing that changes the current access and use situation. A one way road? really? And where does that traffic congestion go? And please, leave the connecting road between as is. There is no real compelling reason to change the current use patterns. Many people use these roads and all of users are entitled to the benefits of access, in whatever form that takes, without changing it to privilege one group (ie: bicyclists, joggers, ). We have children and use the park quite a bit, and I drive there with them in tow. If you change it ,make it one way or close it, I will be forced to go elsewhere. I'll explain it to the kids by saying that "the Government doesn't want me to drive to the park so you can play and since you can not get to it any other way well, when you get older, you can" We also meet out friends there and that is equally important in our social lives. We also use the road between the Golf Course and the Park and you should leave that road alone too. If you want to make a new trail here and there through out the park We say Bravo more new trails go for it but not at the expense of the current lay out and usage. Please please please don't make a mistake and cripple a perfectly great park under some misguided sense of "improvement" Thanks for reading my thoughts.	3/18/2019 3:38 PM
25	I think it is great idea, and will be well used. But removing vehicular use would be detrimental, as the number of options has been reduced significantly with 69.	3/18/2019 3:08 PM
26	I believe closing this road to vehicle traffic is a bad idea. If you want to make it walk/bike friendly put in a path for them.	3/18/2019 3:03 PM
27	The wide path they added to the hill (up to the golf course) and from the stop sign to old SR 37 is very nice. Adding a path like this that runs the length of the park would be nice for the people who bike/run. However, taking away access by car would limit a lot of people from using the parks.	3/18/2019 2:53 PM
	Think about all the groups that have picnics in the shelter houseshow would they get their supplies in?	

29	As a lifelong Btown resident, I've seen the evolution of Cascades park and its uses. It's come a long way! That being said, I believe cutting off vehicle access in any way would be a step backward. We live in the age of Amazon Prime and Kroger-to-go Parents won't bring kids to a park that can't be easily accessed. If there are fewer families visiting, that makes the park the perfect isolated spot for other, unwanted "recreational" activities. As a female, if I know there is even the chance of those things going on in an area, there is no way I'm using that trail. Additionally, to remain a family-friendly area, emergency vehicles need to have easy access from multiple directions. Flooding and downed trees are a common problem in that area, so limiting access points would be short-sighted. In short, building a bike path along the current road seems like a great addition to the park, without the risk of creating unnecessary complications or potentially negative ripple effects by removing vehicle access.	3/18/2019 2:17 PM
30)	First and foremost, money needs to be put towards restroom facilities in both upper and lower Cascades parks. This alone will attract more families. And we all know that that will reduce the number of shady characters and activities in the area. Since Acuff and Kinser closed to 69, I use the park to reach my home when I'm coming back from Indy. My husband uses the drive every day to avoid the traffic that builds up at the stoplight at Kinser in the mornings. Also, I work at the Visitor Center so I'm on that road every day both directions. And I often use Lower Cascades as a point of interest for people who come into the Visitor Center and ask about parks or something to do. Also, when people need directions to Bloomington North, I send them through the park. I'm certain that it's used by many high school students on the north side of town (Marlin Hills, old 37) as their way to school. To put more traffic on Bayles Road seems very irresponsible. Another point is that, if there was an accident that closed old 37 between the two lights (45/46 & old 37) there would not be a very easy way around it. Bloomington's construction last summer was a nightmare. To eliminate a road and interfere with traffic flow, along with adding even more onto Kinser and Bayles seems ill conceived and the notion needs to be abandoned. I'm all for building nice trails but not at the expense of tax payers daily commutes. I think you will be buying yourselves a lot of ill will. Are you planning on doing a traffic count first? I am willing to bet you'll be surprised at the numbers. And a partial or temporary closing would reveal the nightmare you would cause. But you would need to do it during the school year. Finally, I'd like to know if you've reached out to the administrators at Bloomington North and let them know that you are considering closing one of the ways that their students reach the school? That is real input that you need to hear! Thanks for letting me vent!	3/18/2019 1:47 PM
31	Two way traffic in this area is a necessity now that most Bloomington roads are now closed thanks to the monstrous Interstate69. Traffic is bad enough already. Changes will make it even worse and more aggravating for access, especially to the High School.	3/18/2019 1:10 PM
32	I am not in favor of changing the vehicular access, or traffic pattern in the park.	3/18/2019 12:59 PM
33	Trails are great and we certainly need more. But keep access for those of us with disability in mind as well. I'm and adult who has some limiting physical disabilities. Cascades has been a staple of my family's history in Monroe county for a very long time and I would hate to lose the ability to get to the shelter houses and the lower Cascades area because it can only be accessed by non motorized means. I think adding and additional trail is fantastic, but why in the world would you remove motorized vehicle access?	3/18/2019 10:39 AM
34	I would love a biking/running trail but to make Cascades one way or close it would put far too much stress on the bypass. Quit causing congestion.	3/18/2019 10:00 AM
35	Thank you for working on this project. The park is a beautiful space that combines the natural and utilitarian needs of people. I live just north of the park and use it both as an alternate route to town when game/IU event traffic makes it difficult to travel, and as a safe and idyllic bike/walking route used for fun, recreation, or commuting. I think that making one or even two alternative pathways would be a nice addition to the park for commuting and also to create more ways to enjoy the park.	3/18/2019 8:51 AM
36	I think it paramount to conduct an environmental impact assessment. Closing Old State Road 37 to traffic, or converting to one way traffic would negatively affect my commute for work and business-related travel. Thank you for the opportunity to provide feedback.	3/17/2019 7:25 PM
37	It isn't necessary	3/17/2019 4:34 PM
38	Please increase police presence at Lower Cascades to address drug use (this is primarily people sitting in parked cars during off hours, but sometimes also includes drug use inside the shelters) to make users of this proposed new trail connector feel more comfortable.	3/17/2019 12:59 PM

39	I am very much against both shutting down the road and making it one-way because it will impact not only my commute, but also it will eliminate this route as an alternative way to drive during game days and other Bloomington functions that often affect N.Walnut St. and Dunn/Stadium area.	3/17/2019 10:43 AM
40	I live in the area and not only do I use the road to get to work and personal use, but I also recreationally use the park and if you all were to shut down the road to vehicles it would greatly hamper my lifestyle. I am absolutely against closing the road. If you all would like to add additional avenues for biking/walking/etc. that's fine, but please DO NOT close the road.	3/17/2019 10:28 AM
41	Closing the road would be a terrible idea and would adversely effect my ability to drive from my home to where I need to go on a weekly basis	3/17/2019 10:17 AM
42	Cars can use Kinser Pike to the West and Walnut Street to the East. Through traffic should be banned on Old 37 because it is a park and there are parallel roads for cars on either side of the park. Simply install bollards at the intersection of Club House and Old 37 so that bicycles can pass through but road becomes a dead end for cars. That would eliminate unnecessary vehicle traffic and save money on building bicycle facilities.	3/17/2019 8:19 AM
43	I think the idea of closing the road to motorized vehicles can work to improve the aesthetic and safety of the park. Bicyclists need this road for recreational and commuting rides in and out of Bloomington and so any proposal that puts fast moving riders in competition with pedestrians and strollers would negatively impact bicycle travel. A one-way or partial one-way street might work as a compromise, but not many motorists use the corridor now, so closing it to motorized traffic could be a positive development.	3/16/2019 5:53 PM
44)	One of my biggest concerns, particularly with the addition of the adaptive play ground, is that in restricting vehicular access to the park, you are restricting anyone with mobility limitations. By this I don't just mean individuals who use wheelchairs, scooters or other mobility aids, but those with reduced stamina, with anxiety, with other disabilities that affect mobility in less visible ways. From a purely selfish standpoint, even when I don't stop and park and use the facilities, I will drive through just to enjoy the trees and the creek. I also will typically exit I69 at the Walnut St. exit and drive through Cascades either to the Club House Dr. intersection (I live in Fritz Terrace) or to Gourley Pike or Walnut St.	3/16/2019 12:08 PM
45	A paved trail is a great idea, but I'm completely against the road being closed. Making it one way from north to south is an acceptable compromise.	3/16/2019 11:25 AM
46	If the road was closed I would not visit lower cascades. We have a reunions at the shelter and walking in would not all many in our families to attend because if age/ mobility issues as well as bringing in food. Closing the road would be terrible as well for those wanting to visit the large playground. Please don't remove this access to a park I visit more than any other park.	3/16/2019 10:11 AM
47	IU sporting events make travel difficult to cross the bypass. Old 37 is an option I use when this occurs. The road isn't that busy that I haven't felt safe when riding and the current walking paths are well away from the road. Additional walking trails would be nice.	3/16/2019 9:39 AM
48	We have had our family reunion at Cascades for over 50 years. Please make sure the elderly and handicapped can still get to the shelter houses.	3/15/2019 8:09 PM
49	I would truly hate to see the entire road closed to trafffic as it further isolates the neighborhoods on the north side. We lost access to 37/69, so now the only way in and out of several neighborhoods is by using Kinser Pike, which I live on. The traffic is so bad in the morning that it's backed up to my driveway. Closing that road just further isolates us.	3/15/2019 4:22 PM
50	I think it's a great park, especially for an area that does not have as many parks as say the South side of town. I worry if the road is closed, less people will take their kids to that park. Although I primarily just bicycle through there, I don't think it would be wise to close the road to vehicles. I'd rather see a paved path or alter the sidewalks on Kinser Pike to be for multi-modal use instead of just sidewalk pedestrian width.	3/15/2019 4:18 PM
51	I am against closing OSR 37. It is an important connecting road and used during high volume traffic times. I use the park daily (weather permitting) for walking. I currently feel safe using the park with OSR 37 open to auto traffic.	3/15/2019 2:07 PM
	pant man derit of open to date trainer	

53	Would like to see the road preserved as it is, without adding an extra lane for bikes etc. The road through the park feels like you're driving on a country lane and I like that. Would prefer to see it made into one-way, or build separate trail not attached to the road.	3/15/2019 10:02 AM
54	I'm not sure what you're trying to accomplish, you can already ride a bike and run on this road and coexist safely with traffic. I do it all the time	3/15/2019 7:37 AM
55	Roads are for cars, bikes on trails for safety. Pedestrians should stay on sidewalks & trails, no bikes on sidewalks.	3/14/2019 10:08 PM
56	Close it completely or just leave it alone. I live at the top of Kinser Pike and go through Cascades frequently. People speed, drive recklessly and do not yield or slow down for bikes or runners. It is dangerous on the blind curves and constructing anything new in that corridor will detract from the beauty of the area. It should be closed to all vehicles.	3/14/2019 9:25 PM
57	I wish you all would stop trying to prevent car usage. Cars will not go away anytime soon. People will switch to electric cars and help the environment but they will still need cars.	3/14/2019 4:24 PM
58	Please do not spend any money on this. There are far too many other urgent problems in our city that require these funds. Our city leaders must be fiscally responsible and budget and spend appropriately.	3/14/2019 4:20 PM
59	I think it is a bad idea!	3/14/2019 4:20 PM
60	I really think that if all vehicle traffic (and parking) is eliminated from Old State Road 37 North there will be a drastic decline in use of of the park, especially the awesome playground. Please don't cut out vehicle access and parking.	3/14/2019 3:33 PM
61	Leave the road alone. We have enough pedestrian/bike trails already.	3/14/2019 3:27 PM
62)	Having cycled on this stretch of road many times, I would appreciate a safer route through this narrow and winding section of road. I would hate to see this beautiful section cut off completely to motorists as this is a very beautiful section of road to drive down. I would imagine using the existing roadway for a foot path would be logistically the easiest decision, but I would miss being able to take the scenic route when I am driving that way.	3/14/2019 2:17 PM
63	Closing Cascades road to cars would eliminate families and folks over 30. Cascades Park should be shared with cars, bikes, pedestrians and maybe scooters. Closing the road would make it an 'elite park" for bikersnot very democratic.	3/14/2019 2:13 PM
64	Having a trail through this area will be vital for the connection of our great city resources. If this trail is built, it will connect Griffy through Lower Cascades, through Miller Showers Park to the (soon to be) 17th Street multi use path (in the MPO 20-24 Transportation Improvement Program) which will connect to the B-Line after the new section is completed. This multi use path will not only add to a fun recreational experience, it will greatly enhance the City's active transportation network, with a minimal affect to the vehicular traffic network.	3/14/2019 2:06 PM
65	Don't limit vehicles dumbasses	3/14/2019 1:58 PM
66	How will young children access the park without vehicles? Lower Cascades park is designed for children who cannot walk/run or bike long distances to easily reach. It is not easily or safely accessible from any neighborhoods without driving. Closing Old 37 to vehicles without providing safe, short access for nearby neighborhoods would make the park essentially useless for families, and would convert the area almost exclusively into a biking/running space mostly for adults and older children. Right now, it is both. Rather than focusing only along paths along Old 37, consider ways to create greater access for nearby neighborhoods. A stepped path from the Bloomington visitors center would provide access for Blue Ridge, or other drivers from nearby neighborhoods without requiring them to drive down to lower Cascades. Similar parking and access from the east side of Cascades Golf Course would also provide this option, but be accessible from a different set of neighborhoods.	3/14/2019 11:26 AM
67	Existing traffic volumes through this area are low and appear to have Cascades Park as the primary destination. Cyclists from IU Teams frequently us this corridor for spinning up the hill to the Golf Course, as do runners such as myself. The existing west side edge of roadway pavement is severely/dangerously undermined by stream bank scouring and large (generally American Sycamore) trees that could fall in a westerly direction thereby taking more pavement. Bank stabilization is severely needed in some locations. Walking/running along the park roadway in the area of a wooden guardrail is fraught with danger since on-coming NB cars rarely move over. Thank you!	3/14/2019 9:19 AM

68		
	Vehicle traffic needs to be slowed in the single lane configuration and in the two way as well. The stop sign at the north end is still hard to see for new comers to the road.	3/14/2019 8:45 AM
69	Great idea. I would like to see one lane left open. I don't think it matters which way traffic flows as long as the road remains open from Clubhouse Dr. north to Collage Ave.	3/14/2019 8:16 AM
70	Have widened "passing" areas for congested times of use to make flow better	3/13/2019 1:43 AM
71)	Building a separate pathway would be the best option for pedestrians and vehicles. I live nearby and I know we (wife and son) would walk to the park more often if there was a safe way to access the park. But we are not the average user of the park. We need to consider the concrete business and those who regularly use the baseball fields. I think making access to park one-way would be very disruptive.	3/12/2019 7:00 AM
72	The trail could be a good thing, but not at the expense of losing that road for motor vehicles. Closing the road—even partially—is a bad idea. The "one way" road will be confusing and we'll end up with cars on the pedestrian road.	3/12/2019 3:11 AM
73	I do appreciate our parks department. I enjoy Griffey Lake!	3/11/2019 9:38 PM
74	Because of the number of families who bring young children to Lower Cascades Park, and the park's distance to the City center and residential neighborhoods, vehicular access is needed.	3/11/2019 6:32 PM
75)	I live on Ironwood Court, near where the Cascades Trail is supposed to expand one day. I'm definitely in favor of more walking trails in Bloomington, especially in the northside. I'd rather not see existing roads closed to vehicle traffic though, especially as traffic is only increasing from one year to the next. Thanks for taking the time to survey us. I was lucky to see this on the bloomington subreddit - otherwise I wouldn't have heard about it.	3/11/2019 5:04 PM
76	I am excited about the prospect of making this corridor more bicycle friendly but don't want those with families who access the playground and other amenities by vehicle to lose this opportunity.	3/11/2019 10:43 AM
77	There's already a desire path in place for most of it. Just pave it and rebuild the two pedestrian bridges. The ground might need to be built up between the road and creek for a small portion just north of IMI, and we'll need a new bridge at the top of that section; but it doesn't seem all that complicated.	3/11/2019 8:36 AM
78	close old sr 37 to cars! i can't tell you how many times i have been *intentionally harrassed* by drivers for cycling on that road. drivers there are almost unanimously impatient on that stretch of road. a side path is garbage, you'd still have a highway running through a park. close it to cars!	3/10/2019 12:40 AM
79	I already rely on a motor vehicle primarily because I feel safer, it gets me places faster, and as it is, it makes commuting in most ways, easier. My point is not to so much to the project planners, but to my fellow drivers: our routes are a privilege, not a right, and we should value making these routes more accessible to others in our community whether they choose or have to commute by bike or foot. If drivers want to push back by inconvenience caused by closing part or all of the road, I implore them to consider: we already have a much easier, safer commute through the area. Would giving up 15 min of convenient driving really make THAT much difference to us, when opposed to what pedestrians and cyclists have to gain? I say this against any pushback some of the options may receive. In general, I know *I* would open to any of them, and at the end of day would not be too greatly affected, but I think more "radical" redesigning strengthens the fabric and identity of what Bloomington can be. Thank you!	3/9/2019 12:52 PM
80	a path on the inside of the creek, to separate bike/foot and car, would be great!	3/9/2019 10:03 AM
00		
81	I use the roadway for accessing the Golf course via a vehicle and ride my bicycle for recreation. I feel safer on my bike in the park than many of the streets in Bloomington. For families bringing their bikes to the park for family riding, a separate trail would be best. But the new switchyard Park may serve this purpose best.	3/9/2019 8:01 AM
	feel safer on my bike in the park than many of the streets in Bloomington. For families bringing their bikes to the park for family riding, a separate trail would be best. But the new switchyard Park	3/9/2019 8:01 AM 3/8/2019 10:47 PM
81	feel safer on my bike in the park than many of the streets in Bloomington. For families bringing their bikes to the park for family riding, a separate trail would be best. But the new switchyard Park may serve this purpose best.  I'm hopeful that a solution can be found that both allows for the trail and does not inhibit vehicle	

85	When I do walk/run through the park, I am often alone. I am not in favor of any changes that would result in less traffic or less use of the park, because being a woman alone in a deserted area is unfortunately quite scary. Even though I would still bring my family to play at the park, I would be much less inclined to walk/run at the park by myself, which I do often.	3/8/2019 5:21 PM
86	As a runner, I love the idea of more of a primitive single-track trail that connects to the paved trail. As a road biker, I like the idea of having my own paved lane next to traffic.	3/8/2019 4:33 PM
87	I would be very excited about this prospect. I go to the park with my small child and a paved bicycle/pedestrian trail would allow us more options for visits. We don't walk or bike there now because I feel it's too dangerous. Yet, completely closing the park to traffic would make it harder to visit especially for short visits less than one hour. We wouldn't be able to quickly or easily access the park's amenities that are closer to the north side of the park (the shelters/playground). I think closing to one lane would be an excellent compromise especially if the bike/ped lane were separated by a physical barrier for even more safety.	3/8/2019 2:50 PM
88	Why is this connection "highly" desired? If funding has been identified, why not just apply it to fix the erosion issue first?	3/8/2019 2:04 PM
89	I think the best possible use of this space would be first a path which runs alongside SR 37 until right after the quarry (going north). At which point, a new pedestrian/bike bridge could cross the creek, followed by an expansion of this area to allow for the creation of a new paved pedestrian path on the west side of the creek between the creek and hillside. This new path could run along the creek until meeting up with the current multi-use path north of the playground.	3/8/2019 2:03 PM
90	I like this concept and also see the challenges. I would hate to see the stream impacted any further, which to me means you can't build a path right along the road. I'm not sure where else you are envisioning. And nice as it might be to turn the whole road into pedestrian and bicycle only, it would greatly discourage me from taking my kids to the playground. Thanks for seeking a solution that will work for everyone.	3/8/2019 2:02 PM
91	Due to the long, skinny shape of Lower Cascades Park, if the park were completely closed to traffic, I think I would be much less likely to use the park. There are many other spaces around town that would be easier to access and I'd be much more likely to use those instead.	3/8/2019 1:28 PM
92	I like the idea of closing off traffic, but not near the playgrounds. That would surely decrease use of the park. Could the southern end of the road be turned into a trailhead? The road could be a trail down to the parking area that is across the creek by Waterfall Shelter. From there to Clubhouse drive the trail could veer away from the road since there is more space. This is tricky, thanks for working on this exciting project!	3/8/2019 1:16 PM
93	If I am not able to drive right up to facilities I will not deal with wrangling my children to come to this park.	3/8/2019 1:15 PM

#### **General Thoughts:**

With regard to interpreting general support for making bike/ped improvements to this portion of the park:

Less than 10% of respondents suggested that NO CHANGES ARE NEEDED.

About 25% of the comments do not address support or opposition to bike/ped changes.

About 65% (2/3) of the responders make a statement in support of bike /improvements...these are broadly mixed in with comments about potential changes to vehicular usage.

With regard to comments about potential changes to roadway use:

47 of the 93 (approx 50%) wrote a statement firmly AGAINST changing roadway use for vehicles.

7 of the 93 (approx 8%) wrote a statement firmly for eliminating vehicular use.

Most of the respondents made some comment on the issue, but some were ambiguous or unclear about what they were addressing (e.g. "Great" - obviously supportive of improvements, but not specific enough to know what options might be supported.)

If taking the time to write a comment is accepted as a measure of interest in the issues, then over 40% of people who took the survey also commented. Among those motivated enough to comment, there is a clear and very strong support for making bike/ped improvements to the park, but at the same time there is a fairly strong opposition to having that improvement diminish the vehicular use of the roadway.

# APPENDIX B DETAILED COST ESTIMATE BY SEGMENT

Date of Estimate: 5/27/2019

Date of Estimate: 3/2/1/2019				- WALNUT TO EY PIKE		B - GOURLEY TO IMI	SEGMENT BRII			T D - BRIDGE SHOP SITE	SHOP	NT E - BIKE SITE TO LLWAY		F - SPILLWAY D. BRIDGE		- PED BRIDGE DEND	<u> </u>	TOTALS
		BIKE/PED LENGTH	774		980		610		1160		650		700		680			5554
Item Description	<u>Unit</u>	Unit Cost	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount		
Mobilization/Demobilization Construction Engineering	UNIT	\$ 1,000.00 \$ 1,000.00	3	\$ 4,000 \$ 3,000	3	\$ 4,000 \$ 3,000	6 4	\$ 6,000 \$ 4,000	6	\$ 6,000 \$ 6,000	6 5	\$ 6,000 \$ 5,000	6	\$ 6,000 \$ 4,000	3	\$ 4,000 \$ 3,000		\$ 36,000 \$ 28,000
Clearing Right of Way	UNIT		5	\$ 5,000	3	\$ 3,000	12	\$ 12,000	25	\$ 25,000		\$ 10,000	3	\$ 3,000	2	\$ 2,000		\$ 60,000
Materials Testing, Concrete	UNIT	\$ 1,000.00	1	\$ 1,000	1	\$ 1,000	1	\$ 1,000	1	\$ 1,000	1	\$ 1,000	1	\$ 1,000	1	\$ 1,000		\$ 7,000
Surface Milling, 1"	SYD	\$ 1.00	1892	\$ 1.892	2396	\$ 2,396	1491	\$ 1,491	0	6	0	•	0	s -	0	\$ -		\$ 5.779
Pavement Removal	SYD	\$ 15.00	140	\$ 2,100	20	\$ 300	0	\$ 1,431	2800	\$ 42,000	2500	\$ 37,500	0	\$ -	0	\$ -		\$ 81,900
Concrete Curb Removal	LFT		120	\$ 1,800	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -		\$ 1,800
Undercut Unsuitable Soils - Remove/Replace 12" - 25% ALLOWANC	CYD		86	\$ 5,590	109	\$ 7,078	68	\$ 4,406	336	\$ 21,840	126	\$ 8,190	78	\$ 5,056	76	\$ 4,911		\$ 57,070
Geogrid for Undercuts - ALLOWANCE  Excavation, Unclassified	SYD	\$ 6.00 \$ 40.00	341 0	\$ 2,043	431 480	\$ 2,587 \$ 19,200	268 2200	\$ 1,610 \$ 88,000	1330 4400	\$ 7,980 \$ 176,000	500 1300	\$ 3,000 \$ 52,000	308	\$ 1,848	299 0	\$ 1,795 \$ -		\$ 20,864 \$ 335,200
Structure Demo/Removal	LSUM		0	\$ -	480	\$ 19,200	12000	\$ 88,000	0	\$ 176,000	0	\$ 52,000	4000	\$ 4,000	0	\$ -		\$ 335,200 \$ 16,000
Contaminated Soil Mitigation	LSUM		0	\$ -	0	\$ -	0	12,000	0	\$ -	1	\$ 20,000	0	\$ -	0	\$ -		\$ 20,000
Linear Grading	LFT	\$ 10.00	774	\$ 7,740	980	\$ 9,800	610	\$ 6,100	1160	\$ 11,600	650	\$ 6,500	700	\$ 7,000	680	\$ 6,800		\$ 55,540
Silt Fencing Inlet Protection	LFT EA		774 0	\$ 3,870	300 6	\$ 1,500 \$ 1,200	0 4	\$ -	1160 4	\$ 5,800 \$ 800	650	\$ 3,250 \$ 600	700	\$ 3,500 \$ 200	680 2	\$ 3,400 \$ 400		\$ 21,320 \$ 4.000
IIIIGE E TOTGOTION	LA	φ 200.00	U	J -	0	Ψ 1,200	4	<b>₩</b> 600	4	₩ 600	3	Ψ 000		Ψ 200		ý <del>4</del> 00		ψ 4,000
HMA Surface, Type B	TON	\$ 90.00	156	\$ 14,048	198	\$ 17,787	123	\$ 11,072	202	\$ 18,180	55	\$ 4,950	0	\$ -	0	\$ -		\$ 66,037
HMA Base, Type B	TON		0	\$ -	0	\$ -	0	\$ -	1076	\$ 80,700	293	\$ 21,975	0	\$ -	0	\$ -		\$ 102,675
HMA Surface, Type A, Path	TON		73	\$ 5,818 \$ 9,463	92	\$ 7,366 \$ 11.982	57	\$ 4,585 \$ 7,458	109	\$ 8,719 \$ 14.182	61	\$ 4,886 \$ 7.947	79	\$ 6,288	76 132	\$ 6,109		\$ 43,772
HMA Intermediate, Type A, Path Subgrade Treatment, IC (12" Comp Agg.)	TON		126 0	\$ 9,463 \$ -	160 0	\$ 11,982 \$ -	99	\$ 7,458 \$ -	189 2600	\$ 14,182 \$ 72,800	106 700	\$ 7,947	135 0	\$ 10,162 \$ -	0	\$ 9,872		\$ 71,066 \$ 92,400
Compacted Agg. For Base, 53	TON	\$ 30.00	451	\$ 13,535	571	\$ 17,137	356	\$ 10,667	300	\$ 9,000	350	\$ 10,500	234	\$ 7,034	228	\$ 6,833		\$ 74,706
Tack Coat	SYD		2752	\$ 1,376	3484	\$ 1,742	2169	\$ 1,084	4124	\$ 2,062	2311	\$ 1,156	933	\$ 467	907	\$ 453		\$ 8,340
4" Concrete Sidewalk	SYD		100	\$ 6,000	0	\$ -	120	\$ 7,200	0	\$ -	100	\$ 6,000	150	\$ 9,000	0	\$ -		\$ 28,200
Handicap Curb Ramp	SYD		23	\$ 2,530	0	\$ -	0	\$ - \$ -	0	\$ -	0	\$ -	0	\$ - \$ -	0	\$ -		\$ 2,530
Detectable Warning - Cast Plates Curb, Concrete	SYD	\$ 200.00 \$ 25.00	5 80	\$ 1,000 \$ 2,000	0	\$ - \$ -	0	\$ -	0	\$ - \$ -	0	\$ - \$ -	0 140	\$ -	0	\$ - \$ -		\$ 1,000 \$ 5,500
Curb and Gutter, Concrete	LFT		60	\$ 1,800	670	\$ 20,100	420	\$ 12,600	0	\$ -	0	\$ -	0	\$ -	0	\$ -		\$ 34,500
Storm pipe, 18"	LFT	\$ 60.00	44	\$ 2,640	363	\$ 21,780	320	\$ 19,200	150	\$ 9,000	50	\$ 3,000	300	\$ 18,000	115	\$ 6,900		\$ 80,520
Storm Pipe, 24"	LFT	\$ 80.00 \$ 100.00	0	\$ - \$ -	0	\$ - \$ -	238	\$ 19,040	0	\$ - \$ -	100 100	\$ 8,000 \$ 10,000	0	\$ - \$ -	0	\$ - \$ -		\$ 27,040 \$ 10,000
Storm Pipe 36" Pipe End Sections	EA	\$ 750.00	2	\$ 1,500	1	\$ 750	0	\$ -	0	\$ - \$ -	3	\$ 10,000	0 4	\$ 3,000	3	\$ -		\$ 10,000 \$ 9,750
Class A Concrete	CYD		0	\$ -	1	\$ 75	1	\$ 75	6	\$ 900	8	\$ 1,200	4	\$ 600	2	\$ 300		\$ 3,150
Manholes	EA	\$ 4,000.00	0	\$ -	0	\$ -	1	\$ 4,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -		\$ 4,000
Inlets	EA	\$ 2,800.00	0	\$ -	5	\$ 14,000	4	\$ 11,200	0	\$ -	0	\$ -	0	\$ -	0	\$ -		\$ 25,200
Structural Backfill Type 3 Bypass Pumping	LSUM		18 0	\$ 630 \$ -	130 0.0	\$ 4,550	220 1.0	\$ 7,700 \$ 2,500	62 0	\$ 2,170 \$ -	140 0.0	\$ 4,900 \$ -	81 0.0	\$ 2,835	35 0.0	\$ 1,225 \$ -		\$ 24,010 \$ 2,500
Utility Protections	LSUM		0	\$ - \$ -	0.0	\$ 1,000	0.5	\$ 2,500	0.3	\$ 1,500	0.0	\$ -	0.0	\$ -	0.0	\$ -		\$ 2,500
Sanirtary Manhole, Partial Reconstruct			0	\$ -	2	\$ 1,600	2	\$ 1,600	2	\$ 1,600	2	\$ 1,600	1	\$ 800	0	\$ -		\$ 7,200
•																		
Prefabricated Bridge Truss - 80'		\$ 90,000.00		\$ -		\$ -		\$ -		\$ -	1	\$ 90,000		\$ -		\$ -		\$ 90,000
Prefabricated Bridge - Truss - 40' Box Culvert incl. Wingwalls & Util Cover		\$ 60,000.00 \$100,000.00		\$ - \$ -		\$ - \$ -	1	\$ 100,000		\$ - \$ -		\$ - \$ -	1	\$ 60,000		\$ - \$ -		\$ 60,000 \$ 100,000
Boardwalk with Rails	LSUM			\$ -		\$ -		\$ -		\$ -		\$ -	1	\$ 90,000		\$ -		\$ 90,000
Paint, White, 4"	LFT	\$ 0.50	774	\$ 387	980	\$ 490	610	\$ 305	1160	\$ 580	650	\$ 325	700	\$ 350	680	\$ 340		\$ 2,777
Paint, Yellow, 4"	LFT	\$ 0.50	1548	\$ 774	1960	\$ 980	1220	\$ 610	2320	\$ 1,160	1300	\$ 650	1400	\$ 700	1360	\$ 680		\$ 5,554
Poset Signs on New Post	E^	¢ 450.00	2	\$ 200	4	¢ 450	0	e	0	e	2	\$ 200	0	e	4	¢ 450		¢ 000
Reset Signs on New Post New Signs with Post	EA EA	\$ 150.00 \$ 250.00	2	\$ 300 \$ 500	2	\$ 150 \$ 500	3	\$ 750	0 4	\$ 1,000	4	\$ 300 \$ 1,000	6	\$ 1,500	4	\$ 150 \$ 1,000		\$ 900 \$ 6,250
Guardrail	LFT	\$ 70.00	0	\$ -	0	\$ -	640	\$ 44,800	0	\$ -		\$ -	0	\$ -	0	\$ -		\$ 44,800
Guardrail End Treatment, OS		\$ 4,000.00	0	\$ -	0	\$ -	2	\$ 8,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -		\$ 8,000
Railing, Pedestrian Safety	LFT		0	\$ -	30	\$ 3,000	0	\$ -	260	\$ 26,000	80	\$ 8,000	80	\$ 8,000	0	\$ -		\$ 45,000
Limestone Pedestals - Gateway  Mailbox, Reset	EA EA	\$ 20,000.00 \$ 200.00	2	\$ -	0	\$ - \$ -	0	\$ - \$ -	0	\$ - \$ -	0	\$ - \$ -	0	\$ - \$ -	0	\$ 40,000		\$ 40,000 \$ 400
Mainbox, 11636t	LA	φ 200.00		ų 400	J	-	J	, .	J	-	J		J	· -	U	Ψ -		Ψ-00
Topsoil	CYD		189	\$ 7,568	96	\$ 3,833	45	\$ 1,789	284	\$ 11,342	238	\$ 9,533	171	\$ 6,844	166	\$ 6,649		\$ 47,559
Mulched Seeding, R	SYD			\$ 2,580	1307	\$ 1,960	0	\$ -	0	\$ -	0	\$ -	1556	\$ 2,333	1511	\$ 2,267		\$ 9,140
Mulched Seeding, Native Seeds	SYD		0	\$ -	0	\$ -	542	\$ 1,627		\$ 15,467		\$ 6,500	0	\$ -	0	\$ -		\$ 23,593
Mobilizations for Seeding Trees	EA EA		1 5	\$ 200 \$ 2,000	1 5	\$ 200 \$ 2,000	0	\$ 200 \$ -	1 15	\$ 400 \$ 6,000	1 15	\$ 400 \$ 6,000	1 5	\$ 200 \$ 2,000	1 5	\$ 200 \$ 2,000		\$ 1,800 \$ 20,000
Geotextile for Riprap	SYS			\$ 2,000	20	\$ 2,000	0	\$ -	30	\$ 6,000	60	\$ 480	0	\$ 2,000	40	\$ 2,000		\$ 20,000
Riprap, Revetment	TON			\$ 450	9	\$ 450	0	\$ -	30	\$ 1,500		\$ 3,000		\$ -	30	\$ 1,500		\$ 6,900
Riprap, Class 1	TON	\$ 70.00		\$ -	0	\$ -	40	\$ 2,800	0	\$ -	0	\$ -	0	\$ -	0	\$ -		\$ 2,800
Millstone Bank Treatment	LSUM		0	\$ -	0	\$ -	0	\$ -		\$ 60,000		\$ 60,000	0	\$ -	0	\$ -		\$ 120,000
Maintenance of Traffic	UNIT	\$ 1,000.00	5	\$ 5,000	5	\$ 5,000	3	\$ 3,000	3	\$ 3,000	5	\$ 5,000	2	\$ 2,000	2	\$ 2,000		\$ 25,000
Subtotals				\$ 120,694		\$ 193,653		\$ 423,769		\$ 651,523		\$ 452,192		\$ 271,218		\$ 118,354		\$ 2,231,402
Contingency at 5% Total:				\$ 6,035 \$ 126,729		\$ 9,683 \$ 203,335		\$ 21,188 \$ 444,958		\$ 32,576 \$684,098.79		\$ 22,610 \$ 474,801		\$ 13,561 \$ 284,779		\$ 5,918 \$ 124,272		\$ 111,570 \$ 2,342,972