

CITY COUNCIL PACKET

Version 5.2.11

This activity is designed to provide an opportunity for you to engage in a decision-making process. The City of Riverton and the people and organizations in this activity are all fictional. However, while the town and the people are made up, the scientific studies and references included are real. Please try to be honest, thoughtful, and respectful to other students as you participate in this activity. There is no right or wrong way to decide about the issue discussed in this activity.

Instructions to the City Council

In this activity, you will take on the role of a city council member in the city of Riverton. You'll be working in a small group (each small group will represent a Riverton city council) that will need to make a decision about an issue. You will be provided with information about the issue and about procedures the city council must follow in making decisions. Group members will need to discuss the issue together, respond to some questions, and vote on the issue.

So here is the issue... currently Riverton faces steep budget problems, and in particular, the city schools need technology updates to be brought up to 21st century standards. One proposal that has been put forward is to sell a city park to raise money to install needed technology updates in schools. In making decisions about selling land, the city council must adhere to a city rule that city land is to be sold in such a way as to maintain the overall environmental quality of the city.

Therefore, before voting to sell city land, the council must follow a three step process of 1) gathering the best evidence available from multiple perspectives about the possible benefits and impacts, 2) evaluating the evidence and determining if it is adequate or inadequate for making a decision about selling the parcel of land, and 3) making a decision (either a tentative/preliminary decision if more information is requested, or a final decision if sufficient information has been gathered).

A few months ago, Sharon Brown of Eco-Mall Ventures, Inc. submitted to the city council a proposal to purchase Riverton City Park and to build a 500,000 square foot shopping center at the site. The Riverton City Council made the proposal available to the community so that community members could respond to the proposal with comments supporting or opposing the shopping center. The proposal was also reviewed by Riverton City scientists.

Step 1 of the city council decision-making process (gathering evidence) was recently completed and at this time, reports and comments from seven groups have been submitted to city council. This packet includes the following submitted documents for the city council to consider:

1. Riverton Crossing Shopping Center Proposal
2. Riverton Scientists' Report
3. Superintendent of Riverton Schools Comment
4. Riverton Chamber of Commerce Comment
5. Riverton Downtown Business Association Comment
6. Friends of Riverton Park Comment

On pages 16-18 of this packet, there are some questions to help city council members weigh the various pieces of information provided. Please read through the documents and answer the questions on pages 16-18 to prepare for the upcoming decision-making meeting with your fellow city council members.

RIVERTON CROSSING SHOPPING CENTER

A PROPOSAL BY SHARON BROWN
OF ECO-MALL VENTURES, INC.

FOR THE RIVERTON CITY COUNCIL



THE VISION

Riverton is a mid-sized city with a population of 375,000. Including the suburbs around Riverton, the population of the area is 570,000. The Green River runs through Riverton.

Riverton Crossing Shopping Center will be a 500,000 square foot retail space developed in the heart of Riverton, next to the Green River. Riverton Crossing will be an eco-friendly mall with stores including:

- Department stores (Sears and Macy's)
- Restaurants (Olive Garden, Outback Steakhouse, and others)
- Clothing stores (Abercrombie and Fitch, Eddie Bauer, and others)
- Additional specialty stores including sporting goods, furniture, shoes, and jewelry

Environmentally responsible elements of the shopping center plan include:

- Pervious parking lot surfaces that allow water to infiltrate
- A green roof garden
- Reduced carbon dioxide emissions through green building design, purchase of renewable wind energy, and reforestation outside the city to offset additional carbon dioxide emissions
- A riverside natural area with recreational trails

Currently, the nearest shopping center of a similar size is 20 miles away in the suburb of Essex. The development of Riverton Crossing Shopping Center will:

- Create a modern and inviting retail shopping hub for the City of Riverton
- Provide employment for 750 individuals during the construction phase
- Provide permanent employment for 800 individuals after construction is completed
- Generate \$3 million per year in tax revenue for the City of Riverton
- Reduce vehicle miles from driving to shops and carbon dioxide emissions for Riverton residents.

THE LOCATION

190,000 people live within three miles of the proposed shopping center site. Over 400,000 people live within a ten mile radius. The site for the shopping center is also close to a freeway entrance for Interstate 30. Approximately 40,000 cars drive by this area every day.



Figure 1. Map showing proposed site for Riverton Crossing Shopping Center

THE PLAN

The site plan for the Riverton Crossing Shopping Center is shown Figure 2.

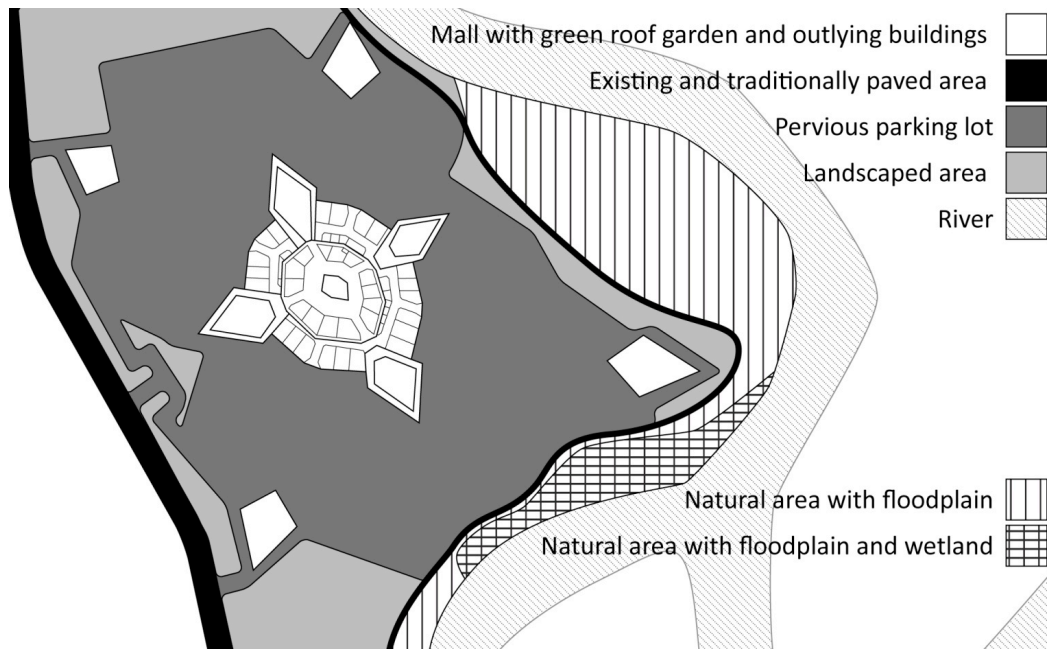


Figure 2. Site plan for Riverton Crossing Shopping Center

The Riverton Crossing Shopping Center will use cutting edge environmental building practices to create a mall that meets the economic needs of the city while maintaining the high quality of environment that Riverton is known for. Environmentally responsible elements of the plan include:

Use of pervious pavement for parking lot surfaces will reduce parking lot runoff by 95%



Construction of a green roof garden will reduce runoff and provide locally-grown organic vegetables for the shopping center restaurants



Low carbon dioxide emissions will be achieved by purchasing electricity from a renewable wind power utility and supporting reforestation outside the city to offset carbon dioxide emissions



20% of the 80 acre shopping center site will be maintained as a natural area with recreational trails near the Green River



ECO-MALL VENTURE, INC. TRACK RECORD

Eco-Mall Ventures, Inc. was launched in 1992 by Sharon Brown. The company has since developed eight eco-friendly shopping centers around the country including in Austin, TX and Atlanta, GA. The shopping centers have added between 650 and 1,200 permanent jobs to their communities, and have contributed between \$1.5 million and \$4.5 million to their local tax revenues each year. On average, the value of homes within 1 mile of the shopping centers has risen by 20%. Eco-malls are low-impact, have low carbon dioxide emissions, and are part of a sustainable, climate-friendly future.

ENVIRONMENTAL STUDY OF PREDICTED IMPACTS

Eco-Mall Ventures hired an environmental consulting firm to complete an environmental study examining the predicted impacts of building the shopping center on water resources and aquatic organisms. The findings of the study are summarized here.

WATER RESOURCES AND IMPACTS ON WATER QUALITY

Water resources on the proposed shopping center site include:

- The Green River, which flows adjacent to the site.
- A 3 acre wetland area. The wetland will be preserved as part of a designated nature area.
- The Riverton aquifer, a shallow, unconfined aquifer, is located beneath the proposed site.
- 12 acres of designated floodplain along the banks of the Green River. This area has historically flooded in flood events occurring, on average, once every 10 years.

The 12 acres of floodplain on the site will be maintained as part of a natural area. Therefore, if flooding events do occur in the future, the shopping center buildings will not be affected. The natural area will serve as a buffer zone to protect developed parts of the site from damage during future floods.

Impacts on water quality will be minimal due to use of pervious parking lot pavement and green roof gardens. Eco-Mall Ventures will use the pervious pavement system developed by Milwaukee School of Engineering (2010). With normal (impervious) pavement, when rain hits a parking lot, it picks up substances such as oil, dirt and debris. These substances are transported by water running across the pavement into stormwater drains. Stormwater drains, in turn, lead the substances directly into rivers and lakes. In contrast, with pervious pavement, there is very little runoff because rainwater passes through the pavement and soaks into the soil beneath (Scholz & Grabowiecki, 2007).

Because Eco-Mall Ventures will use pervious pavement and roof gardens on top of buildings, the total increase in percent impervious surface for the site will only be 9%. Thus, the impact of the shopping center on water quality is predicted to be small.

Figure 3, taken from a Center for Watershed Protection (2003) study, shows predicted impacts of percent impervious surface area on the quality of streams in a watershed. Stream quality includes characteristics such as runoff volume and stream temperature. As the increase in percent impervious surface for the site will be only 9%, the data in Figure 3 suggest that the shopping center will have a minor impact on stream quality in the area.

Figure 3. Impact of Percent Impervious Cover on Stream Quality

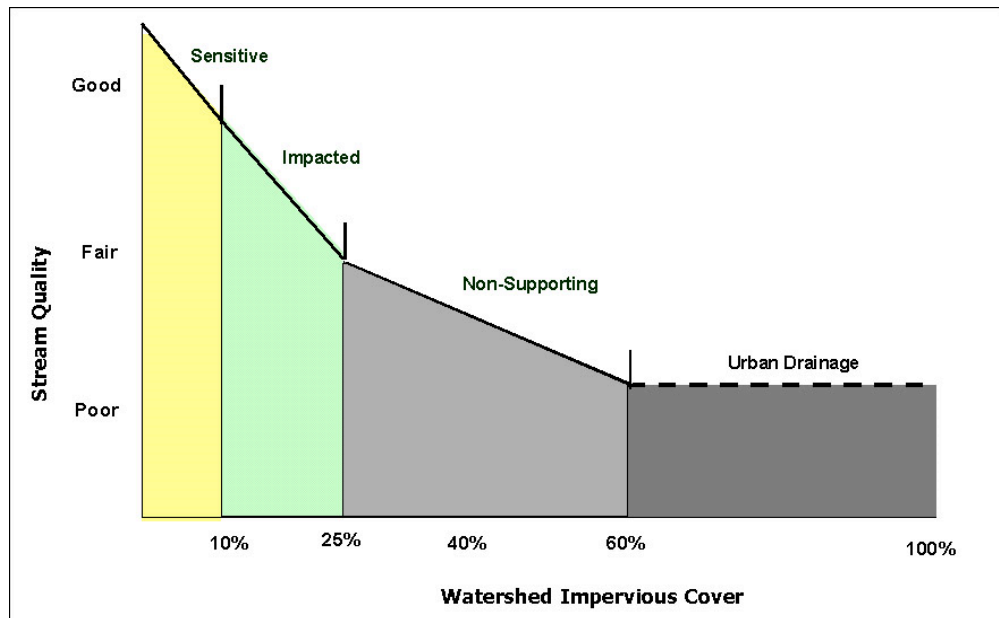
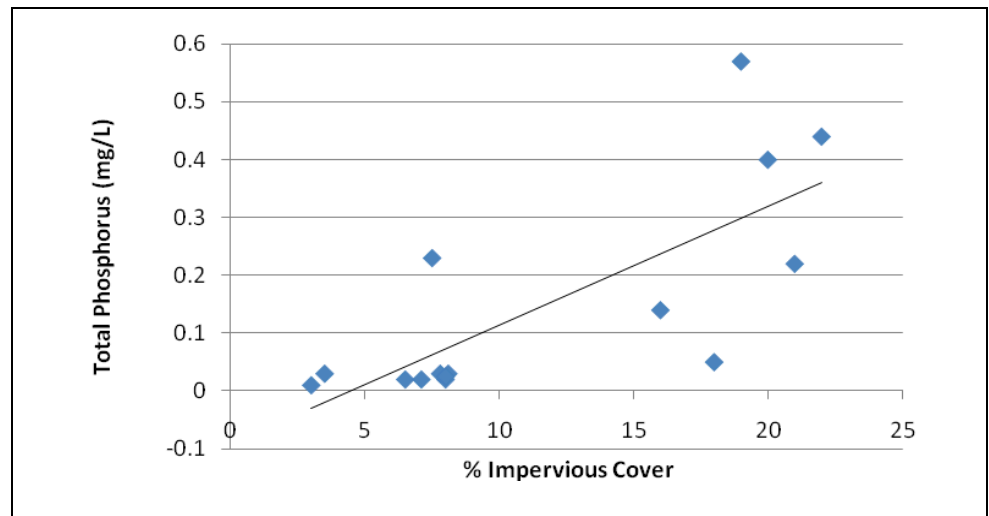


Figure 4 from Clausen and colleagues (2003) shows predicted impacts of percent impervious surface area on total phosphorus in stream water. Data from 15 streams in Connecticut were used in this study. High levels of nutrients such as phosphorus in water can lead to rapid growth of algae (this rapid growth is known as algal blooms). In turn, algal blooms can lead to rapid decreases in the amount of dissolved oxygen available in the water. Low levels of oxygen can negatively impact biological diversity.

As the increase in percent impervious surface for the site will be only 9%, Figure 4 suggests that the shopping center will have a very small impact on increasing Phosphorus levels in the Green River.

Figure 4. Increase in Average Total Phosphorus (mg/L) in Response to Impervious Cover

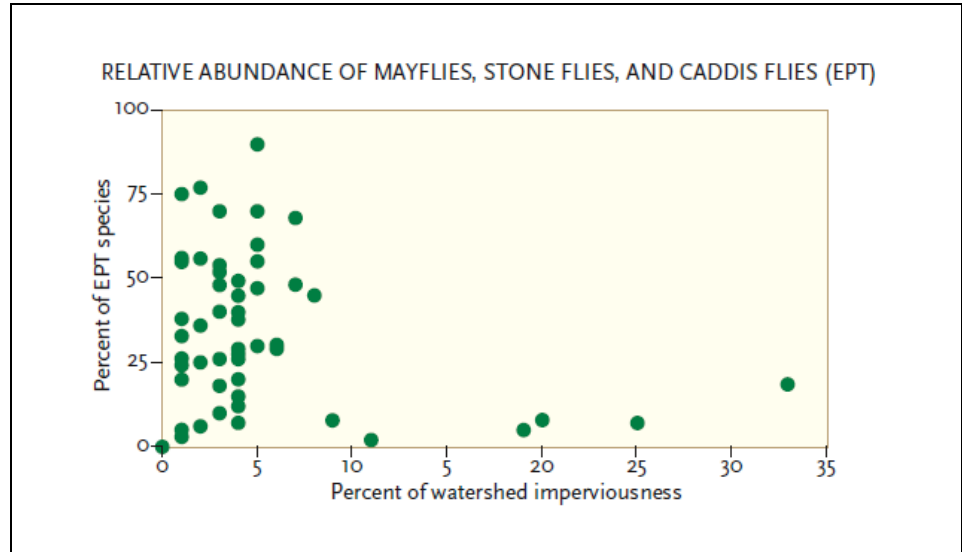


AQUATIC BIOLOGICAL RESOURCES AND IMPACTS ON BIODIVERSITY

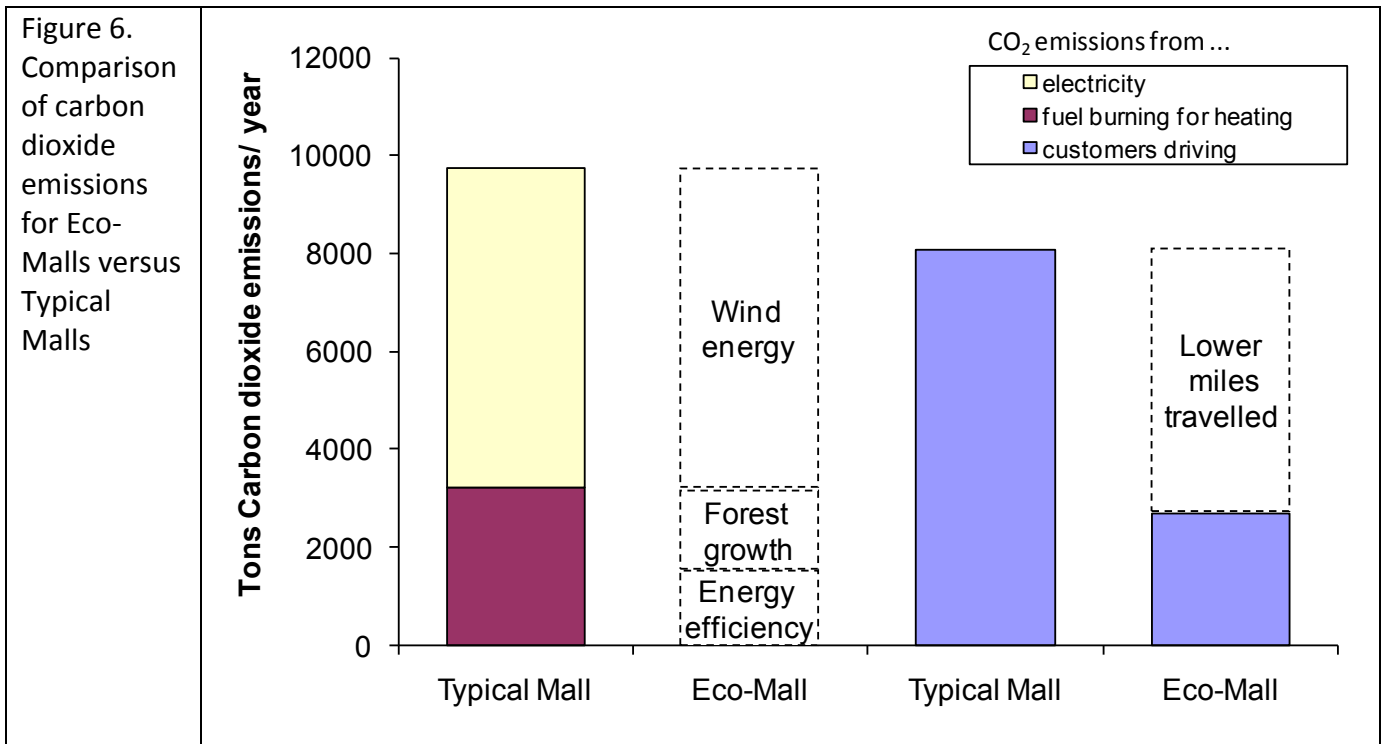
Aquatic biological resources on and near the proposed shopping center site include various plant and animal species. We focus on three macroinvertebrate insect species because they are good indicators of overall ecological health. Mayflies, stoneflies and caddis flies all require high levels of dissolved oxygen (8-12 mg/L) in the water where they live in order to thrive. Thus, these organisms are good

indicators of biological health of an area. If these organisms are healthy, then they likely have healthy habitat to live in. Figure 5 from Wang (2003) shows the impact of percent watershed imperviousness on abundance of mayflies, stoneflies and caddisflies. Figure 5 suggests that the construction of the shopping center will have very minor impact on the abundance of sensitive macroinvertebrates in the Green River.

Figure 5. Relative Abundance of Mayflies, Stone Flies, and Caddisflies in Response to Impervious Cover



atmosphere, and carbon dioxide emissions from vehicle miles of shoppers will be greatly reduced due to the fact that Riverton Crossing Shopping Center is centrally located within the city of Riverton.



SUMMARY OF FINDINGS

Across various studies, results show that reducing pervious cover by 10% or less has limited effects on environmental outcomes including water quality and aquatic ecosystem health. Further, environmental building design and practices will ensure that the shopping center will result in almost no new carbon dioxide emissions into the atmosphere. Thus, we are confident in our assessment that construction of Riverton Crossings Shopping Center will have little to no negative impact on environmental quality in Riverton.

REFERENCES

Center for Watershed Protection. (2003). Watershed Protection Research Monograph No. 1: Impacts of Impervious Cover on Aquatic Systems. Ellicott City, MD.

Clausen, J., Warner, D., & Hood, M. (2003). Nonpoint Education for Municipal Officials: Impervious Surface Research. Department of Natural Resources Management and Engineering, University of Connecticut.

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Wang, L., & Kanehl, P. 2003. Influences of Watershed Urbanization and Instream Habitat on Macroinvertebrates in Cold Water Streams. *Journal of the American Water Resources Association*, 39(5), 1181-1196.

City of Riverton Environmental Impact Report for Proposed Riverton Crossing Shopping Center

**Report prepared for the Riverton City Council by city hydrologist Maria Perez,
city biologist Duane Jordan, and city environmental engineer Wei Lee**

This report provides our assessment of the science in the Eco-Mall Ventures proposal and our predictions for environmental impacts to water quality and biological resources.

Potential for Flood Events

In their environmental study, Eco-Mall Ventures states that the portion of the proposed shopping center site that is part of a 10-year flood plain, and thus vulnerable to flooding events, will be maintained as a natural area. Their study, however, leaves out the fact that the entire proposed shopping center site is part of a 100-year flood plain (U.S. Water Resources Council, 1982). A minor flood event would probably not pose a threat to the shopping center because flooding would be limited to the natural area by the river. However, in a major flood event the entire shopping center could be submerged in up to 2 feet of water and significant water damage to shopping center buildings could occur.

Potential for Impacts on Water Quality

Overall, the figures that Eco-Mall Ventures used to show the relationship of percent impervious surface to water quality outcomes are appropriate. Within the entire Green River Watershed, less than 1% of the land will be changed from pervious surface to impervious surface if the shopping center is built.

However, while the use of pervious pavement will help prevent direct runoff into the Green River, the parking lot will still have a greater negative impact on water quality than would a forested park (Moore & Palmer, 2005; Urban, et al., 2006). With construction of the shopping center, many more vehicles will visit the site. These vehicles will bring with them substances including gasoline, motor oil, heavy metals, and potentially harmful compounds known as PAHs (which are produced as a byproduct of burning fuel). Studies (e.g., Boving et al., 2008) have found that some harmful materials from cars including PAHs and heavy metals can infiltrate through pervious pavement into underlying groundwater, posing a threat to groundwater quality.

Infiltration of harmful materials into the groundwater beneath a pervious parking lot is more likely if the groundwater table is shallow (near the surface) (Swisher, 2002). At the proposed site, the water table is very shallow. Thus, while the pervious pavement means there will be little surface runoff, nearby water resources such as the wetland and the Green River may still receive increased levels of pollutants as a result of the construction of the shopping center.

It is worth noting that most studies have found that compared with impervious pavement, pervious pavement greatly reduces the infiltration of pollutants. Studies have found that pervious parking lots can reduce the amount of harmful substances in groundwater by between 50 and 95% (McNally, et al., 2005). Many of the pollutants accumulate on the surface of the porous asphalt and/or in the soil underneath the pavement.

Potential for Impacts on Aquatic Biological Resources

Eco-Mall Ventures suggests that because only 9% percent of the site will be converted to impervious surface, that the shopping center will have very little impact on aquatic biological resources. However, we predict that the shopping center will have some impacts on aquatic organisms. While the 3 acre wetland area on the site will be retained, it is possible that contaminants from the parking lot could infiltrate through the pavement, into the groundwater, and into the nearby wetland. We predict that the infiltration of contaminants such as heavy metals and PAHs into the wetland through groundwater could have a negative impact on the health and abundance of aquatic organisms.

Potential for Impacts on Carbon Dioxide Emissions

The carbon dioxide emissions from the shopping center will be much lower than emissions from other shopping centers of the same size, but they will most likely not be zero. Renewable energy sources such as wind are not available all the time, so some of the Eco-mall's electricity will probably have to come from other sources such as coal-fired power plants (Trainer, 2010). Carbon dioxide emissions from heating the shopping center will also not be zero, despite the excellent energy-efficient building design that Eco-Mall Ventures is proposing to use.

The calculation of carbon dioxide absorbed by the reforestation project does not take into account the potential loss of carbon stored in the trees (Pacala et al. 2001) that will be cut down to make room for the development. By clearing 60 acres of current forest, Riverton will lose stored carbon that is the equivalent of 15,000 tons carbon dioxide. It will take the nearby reforestation project 10 years to build up the same amount of stored carbon just to offset the amount lost in clearing the trees alone. Finally, the Eco-mall report assumes all Riverton residents within 10 miles of the new mall are currently shopping at a distant mall and will switch their shopping preferences to the Eco-mall. However, the Eco-mall developers have not surveyed Riverton residents to know whether this is likely to be true.

References

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**Letter from Robin Morris, Superintendent of Riverton Schools
in Support of the Proposal
to Build Riverton Crossing Shopping Center**

Dear City Council Members,

I am writing to express my support for the proposal to build the Riverton Crossing Shopping Center. I have discussed this proposal extensively with the Riverton School Board members and with principals, teachers, and parents throughout our district.

Development of the shopping center will provide much needed funds to support our school district in updating technology equipment. It is estimated that the shopping center will generate \$3 million per year in city tax revenues. Riverton City Schools could use these tax funds to install and maintain new computer labs in our district's 42 schools. Currently, only half of our elementary schools have computer labs. Computer labs in the remaining elementary schools, as well as labs in our middle and high schools are all badly outdated and in need of replacement.

The installation of new computer labs will provide an extremely important educational support for Riverton Schools' 28,000 students. In our twenty-first century world, it is critical that Riverton Schools prepare students for the various roles they will play in their lives after they graduate. Computer literacy will be required for success in college, finding employment, carrying out work responsibilities, and staying informed about what is happening in the world.

With access to state of the art computer labs, our students will be ready to face twenty-first century challenges including competing in a tough job market.

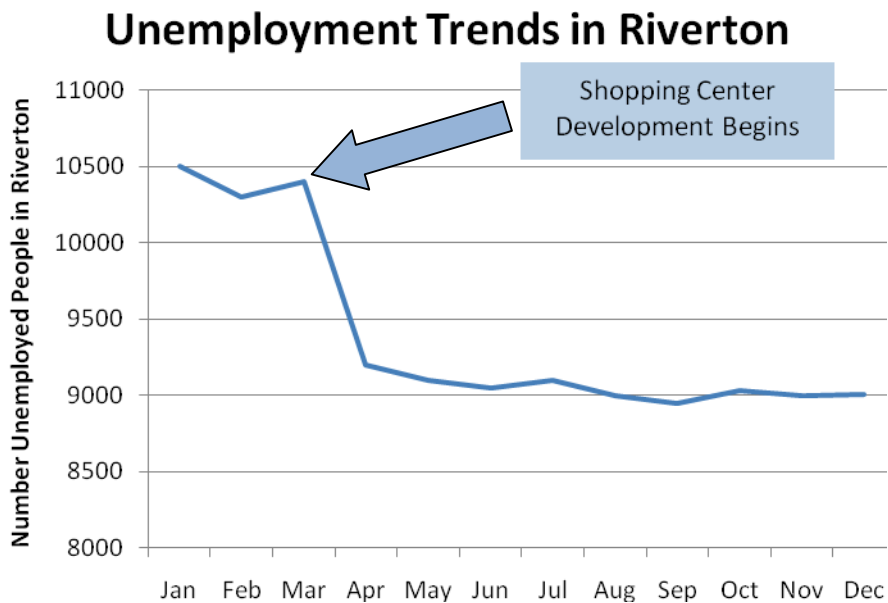
Thank you for considering our comment and please vote in favor of the proposal to build Riverton Crossings Shopping Center.

Sincerely,

Robin Morris, Superintendent of Riverton City Schools

Riverton Chamber of Commerce Comment on the Riverton Crossing Shopping Center Proposal

The Riverton Chamber of Commerce strongly supports the development of a new shopping center at Riverton City Park. The shopping center will create hundreds of jobs, both temporary and long-term, including construction, retail, and service jobs. The shopping center can become not just a shopping hub, but also a community center offering gathering space for citizens of Riverton. We also project that we will see annual revenue of \$3 million in sales and business taxes, which will allow our city to provide much needed funds to update computer labs in city schools. Additionally, the hundreds of people who will be employed during the construction of the mall and during its operation will significantly reduce our city's unemployment rate.





**The Riverton Downtown Business
Association**

OPPOSES

**The Proposed Development of
The Riverton Crossing Shopping
Center**

The Riverton Downtown Business Association opposes development of a mall at the current site of Riverton City Park. Development of a 500,000 square foot shopping center in the middle of the city will draw foot traffic away from downtown businesses, which will likely force many downtown stores and restaurants to close.

While the mall may generate new revenue for the city, it will also bring new costs. These include costs of bringing city services such as water, sewer, police and fire protection to the new site. These costs will greatly reduce the tax revenue from the mall that will be available for other projects such as improving our schools.

Also, because most stores and restaurants in the downtown area are locally owned, the money that our citizens spend at these businesses stays in our city. Business owners who earn money in Riverton also spend money in Riverton. In contrast, most of the stores and restaurants in the new mall will be national chains. Many of the dollars spent at these mall businesses will leave our community and be sent to the national headquarters of large corporate chains such as the Olive Garden and Macy's.

The historic downtown area of Riverton is a highly valued asset in our city. Building a new mall on the site of Riverton City Park will draw both local and visiting shoppers away from our downtown area, threatening the vibrancy and appeal of our downtown community. Thus, the Riverton Downtown Business Association strongly opposes the development of a mall at the site of Riverton City Park.

Comment from Friends of Riverton Park

Building a shopping center on the site of Riverton City Park would be harmful for our community. We would lose a place where generations of families have gathered for evening barbeques, where kids have caught their first tadpole, and where people of all ages have enjoyed a quiet stroll by the Green River.

It is well known that there is a strong connection between open space and public health. In the U.S., walking rates are declining while the number of overweight adults and children is climbing. Obesity is the number one risk factor for Type II Diabetes. According to the Center for Disease Control, only 40% of American adults engage in regular physical activity. When people have access to parks, they exercise more. Studies also show that when residents have access to green spaces, they rate their quality of life higher than residents who have no green space nearby.

If the shopping center is built, we will lose not only an important city green space, but also the ecosystem benefits of our park, which provide us with clean air, clean water, and cooler temperatures in the summer. Building a so called eco-mall will eliminate critical habitat in an urban area that is already full of buildings, streets, and pavement. The developer claims that the shopping center will be built with some open space preserved for the public, but we view this as a token and not a real commitment to improving quality of life in our city.

References

- Center for Disease Control. 1999. Physical Activity and Health: A Report of the Surgeon General. Retrieved from <http://www.cdc.gov/nccdphp/sgr/summ.htm>.
- De Sousa, C. 2002. Turning brownfields into green space in the City of Toronto. *Landscape and Urban Planning*, 62(4), 181-198.

Comment from Riverton Climate Action Coalition

Eco-Mall Ventures argues that their new mall will lower carbon dioxide emissions for the city of Riverton. However, even with the green bells and whistles they propose, this mall will still be an unnecessary energy hog, will use up valuable open space, and will be an unsustainable scar on the landscape that someone else will have to tear down within two decades. We urge the council to consider the following:

- The proposed mall may utilize some high tech energy efficient features, but it is also extremely large. Building and maintaining a shopping center of this size will require a large amount of energy, more than can be supplied by wind energy currently available near Riverton, and will produce significant carbon dioxide emissions.
- Eco-Mall Ventures' proposal to offset carbon dioxide emissions by planting trees outside of Riverton has a serious error. The site proposed for tree planting has never supported a mature forest so even if trees will grow there, they will grow very slow and will not take up much carbon dioxide.
- The developers suggest that planting trees outside of town will absorb (sequester) carbon dioxide, but they are still proposing to destroy a natural area within the city. We would like the city council to consider the significant negative impact that cutting down the trees in Riverton Park will have on our air quality within the city.
- The developers' claim that the shopping center will reduce driving miles for Riverton shoppers ignores the fact that many Riverton shoppers currently shop downtown at stores that they can reach by walking, biking, bus, or much shorter drives. These downtown stores will be put out of business if the mall is built. Because of this, we estimate that the proposed shopping center would actually increase carbon dioxide emissions from vehicles by more than 2000 tons of CO₂ per year.

Instead of building this new mall, the City of Riverton should ensure that shopping and residential areas are close together, build more public transportation systems, and support local food production. These types of city policies will have real and lasting positive effects on the quality of the environment and the quality of life in the City of Riverton.

Name:

Questions to Consider for the Shopping Center Proposal

1. Impacts of building the shopping center on water quality in Riverton.

A. If the shopping center is built, what do you predict will be the impacts on water quality in Riverton? Please provide a scientific explanation of how you think building the shopping center will lead to the impacts you predict.

B. What evidence provided to the city council supports your prediction?

C. Please comment on how adequate you think the evidence is and why.

2. Impacts of building the shopping center on biological resources in Riverton.

A. If the shopping center is built, what do you predict will be the impacts on biological resources in Riverton? Please provide a scientific explanation of how you think building the shopping center will lead to the impacts you predict.

B. What evidence provided to the city council supports your prediction?

C. Please comment on how adequate you think the evidence is and why.

Name:

3. Impacts of building the shopping center on Riverton carbon dioxide emissions.

A. If the shopping center is built, what do you predict will be the impacts on carbon dioxide emissions in Riverton? Please provide a scientific explanation of how you think building the shopping center will lead to the impacts you predict.

B. What evidence provided to the city council supports your prediction?

C. Please comment on how adequate you think the evidence is and why.

4. Additional impacts.

A. If the shopping center is built, do you predict any additional impacts for the city of Riverton besides those mentioned above? Please explain how you think building the shopping center would lead to these impacts.

B. What evidence supports your prediction?

C. Please comment on how adequate you think the evidence is and why.

Name:

5. Do you think that you currently have enough information to make a decision? YES NO

A. If NO, what other information and/or studies would you need to make an adequately informed decision about whether or not to allow the shopping center to be built in Riverton?

6. Given the information that you have now, do you think that selling the land to build the shopping center would meet the city's requirement of maintaining the overall environmental quality of the city? YES NO

A. Please explain why or why not.

7. As a member of the Riverton city council, if you had to decide right now, would you vote for or against building the shopping center? FOR AGAINST

A. Why would you vote this way?