Ferdinand Project Ideas

Library drainage ditch

The west side of the new library's parking lot drains to a small ditch that ends at a grated drain. Replanting the ditch with native species will filter the parking lot runoff, infiltrate some of the water, and reduce the amount going into the drain. The drain will remain as an overflow precaution. Ferdinand in/kind could come from any earth moving that's necessary and planting. Cost would be a few hundred to $2000 depending on if underdrains were needed and if the work had to be contracted out. Cost may increase if the ditch has to be regraded, but I don't think it will be.

Parking Lot Enhancement

Building north of library has a parking lot that slopes to the north and is sectioned into 5 areas by curbed parking lot islands. Near the east end of each island is a drain. The drain passes under the lot, the green space immediately north of the parking lot and from there turns east. By cutting the island's curb away in places so runoff can flow into them, and regrading the islands so they are concave and not convex, the islands can be turned into storm water infiltration islands.

Example of an infiltration island

The existing drains at the end of each island can be used as an outlet/overflow. An engineer would have to design the new islands; taking into account infiltration rates, what soil amendments are needed, and whether an underdrain would be necessary. If all of the islands are enhanced (probably not necessary) cost would probably range from $12-15,000.

In addition or separate from this idea is the grassy space north of the lots. This area could serve as a large rain garden/storm water infiltration cell. The parking lot drain would have to be moved so it empties its water across this grassy surface instead of piping it underneath it.

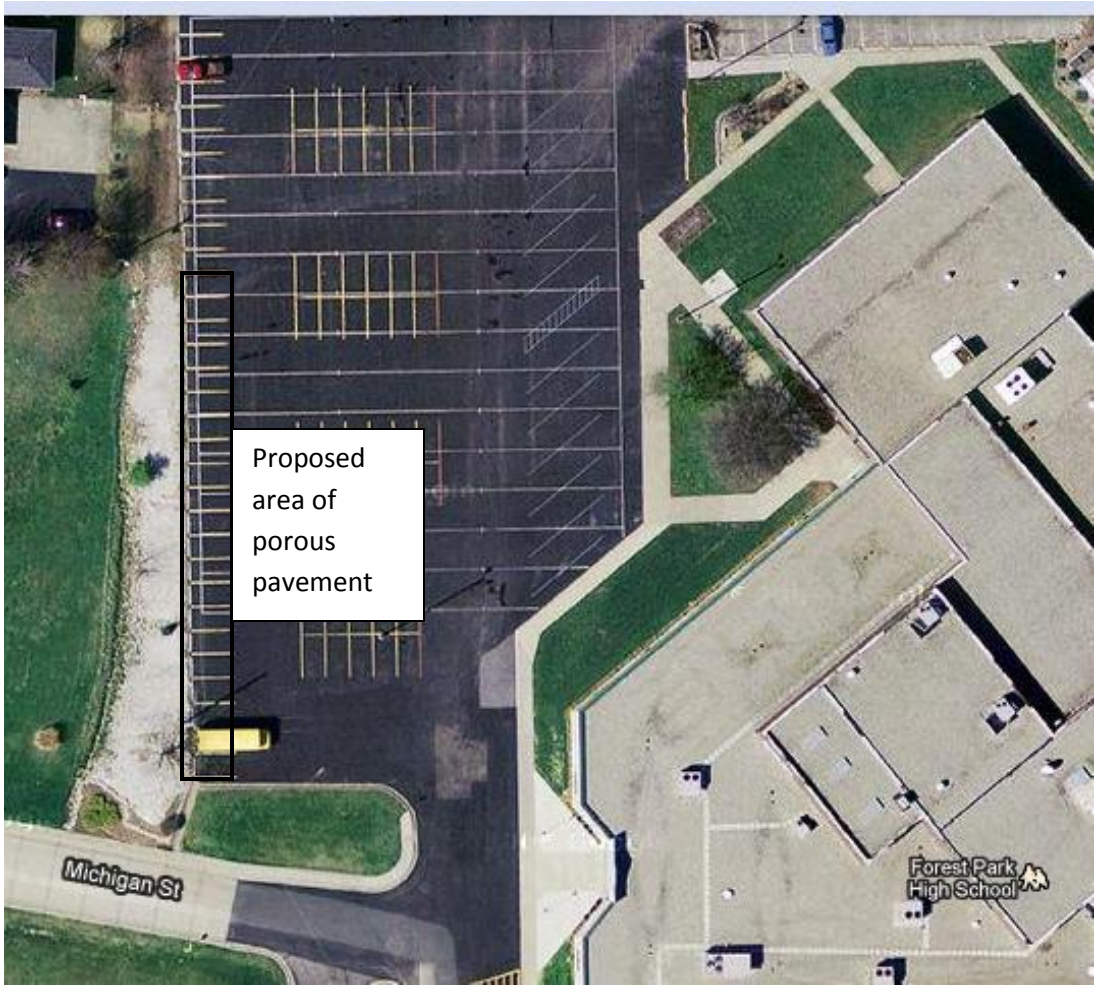
Example of infiltration cell

Total cost of the cell is hard because I'm not sure how much work would be involved in modifying the existing pipe. Ferdinand in/kind could come from earth moving, planting the cell, and perhaps contribution of some soil amendments.

School Parking Lot

Precipitation from Forest Park High School parking lot flows down a steep rip rapped slope and into a small ditch that moves towards Michigan St. Flow off the parking lot is obviously an erosion concern (hence the rip rap) and is contributing polluted runoff to local streams. Adding a strip of porous pavement along the edge of the lot (perhaps as deep as a parking space) will allow runoff to infiltrate. Ferdinand in/kind could come from tearing up part of the existing lot. Costs depend on the type of porous pavement used. Assume project area is 2400 square feet.

Porous Asphalt	$1200-2400
Porous Concrete	$4800-15600
Porous Pavers (grass/gravel)	$3600-13800
Interlocking concrete pavers	$12000-24000



5th Street Park

Runoff comes off the rolling farm fields to the west of the park and enters a small settling basin. From there it either flows on the surface across a small swale or enters a pipe exiting the settling basin and moves underneath the swale. The swale has a four check dams, and at each one is a drain where more water can enter the underground pipe. The pipe eventually outlets in a nearby stream carrying sediment, chemicals, and nutrients from the farm fields.

Settling Basin

The whole thing looks fairly new, so you may not want to do anything if you've just invested in it. However, the basin and swale could be redone so they have native plants that will filter the water and help infiltrate it. The existing pipes could continue to act as an overflow precaution. The riser on the basin would likely need to be modified so more water is held back in that area. The basin likely would have to increase in size too. Likewise, the drains by each of the swale's check dams may have to be raised so water has more of a chance to infiltrate. An engineer would definitely have to be involved. Total cost likely around $10,000. Ferdinand in/kind could come from earth work, grading, and planting.

Fenced Storm water Basin North of High School

We spent a lot of time looking at this with Tom, but when I went back to it, I felt less confident that it would make a good project. Water enters the basin from a pipe that collects runoff from uphill (Vienna Dr) and from a small ditch that runs along a stand of trees between the basin and high school. The ditch shows no signs of erosion and is highly vegetated, so I think you're already getting as much benefit from it as you can. The slope from Vienna down to the basin is so great that it's probably best to keep it in place and not try to infiltrate storm water on the surface of that hill. My only suggestion would be to modify the outlet of the basin so water is held in it longer and possibly vegetate the basin so you're filtering the water and helping to infiltrate it before it leaves. Let me know if you want to talk further about this site.

Rain Garden

Part of the Vienna Rd. hill drains to a small depression along the park's walking trail. A culvert takes the collected water under the trail and into the streambed that follows the trail. This area might make a nice rain garden. A rain garden is a planted depression that filters and infiltrates stormwater. It's location on the trail would make it a good educational project. The culvert would need to remain as an overflow option. The depression would have to be excavated a little deeper to increase capacity and then planted. Depending on existing soil, some amendments might be needed. With the city's help, volunteers could do most of the work; I don't think any engineering is needed. Total cost around $3000. City in/kind would be from excavating and planting and maybe putting up an educational sign.

Project Ideas

1. Curb cuts and rain garden in island
2. Pervious concrete near back of parking lot
3. Regrading/replanting of slope to promote storm water cleansing
4. Water cleansing plants around perimeter
5. Trees

1. Cut openings into the curb around the existing island to allow storm water to flow into it. Dig out the landscaping to build a rain garden. The garden will be graded so overflow water spills out through the curb cuts on the south side and flows back across the parking lot. Opportunities for Ferdinand in-kind are:

- Making the curb cuts (if town owns a concrete saw)
- Excavating the island (backhoe or other large equipment needed)
- Layering the island with new soils and regarding the soil (backhoe and workers with shovels needed)
- Putting new plants into the island (man-hours)

Example of a curb cut and adjoining rain garden

2. You can clearly see where water is flowing off the southwest corner of the parking lot and eroding the slope as it moves towards the ditch. The velocity and volume of water can be diminished by installing pervious pavement in this area. There are several types of pervious pavements.

Pervious asphalt $0.50--$1.00 per square foot

Pervious concrete $2.00--$6.50 per square foot

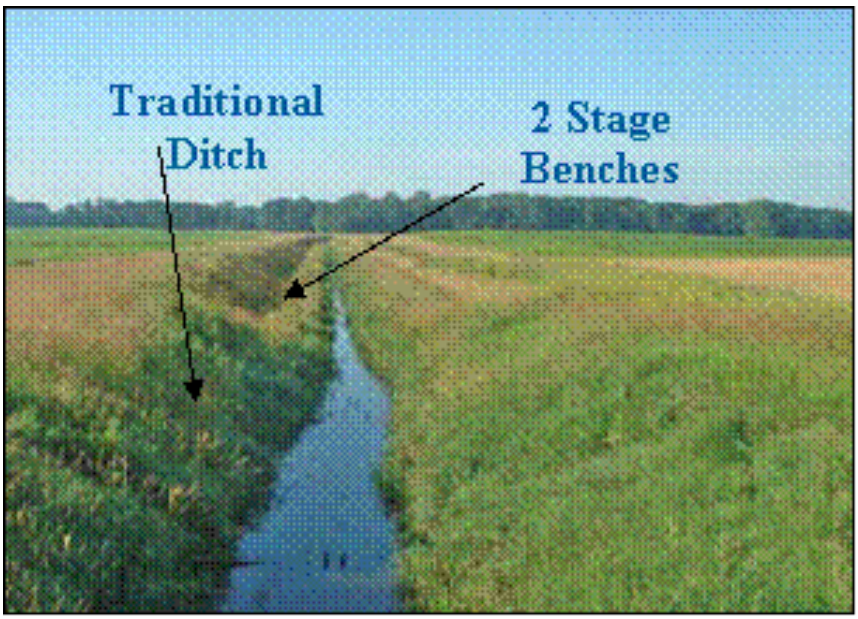
Grass/gravel pavers $1.50--$5.75 per square foot

Most pervious pavements have to be professionally installed, so beyond removing the existing pavement (heavy equipment needed) there is little opportunity for in-kind. A cash match would likely be needed.

Example of grass parking lot (used for low-use areas)

3. The stream on the west side of the property has a deep channel and no floodplain to filter water. Grading the slope and creating benches for high water to sit on would help water quality. Benches will help slow down the water that's coming off the west side of the parking lot. Cost is hard to estimate, but if you have equipment and staff that could regrade it according to an engineer's specs, you could use that as in-kind. Additional in-kind could come from replanting the area.

Example of benches: AKA 2-stage ditch



4. Since there is no curb around the lot, storm water flows off it and into the surrounding grass. Grass does a poor job filtering and slowing down moving water. In areas where lots of water is moving off the lot, we could put plants that would do a better job of cleansing the water. Depending on the area, minimal regrading may be necessary. Ferdinand in-kind could come from use of equipment, shovels, man-hours, and volunteers to do the planting. Besides water quality benefits, this project would improve aestics and reduce the amount of mowing.

Example of water cleansing plants at the side of a parking lot

5. We'd like to plant trees as part of the project. With few exceptions, we could put trees on any Ferdinand property you'd like. In-kind could come from equipment and man hours need to plant the trees and keeping them watered.

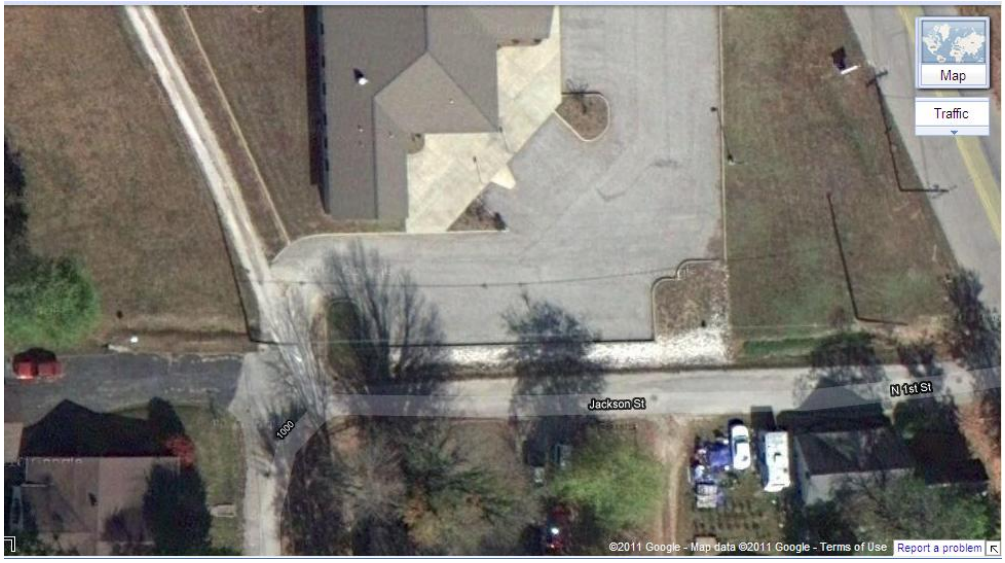
Town of Winslow Project Ideas

Rain Gardens/Rain Barrels in neighborhood south of E. Porter St.

This area drains to a swale that empties into the ditch running through the park and under 61. Rain gardens and rain barrels on residential property would reduce stormwater and pollution runoff from entering that swale and the ditch. The swale could also be planted with native plants to increase stormwater infiltration. Winslow in/kind could be help building rain gardens, advertising the project through utility mailings, and plant the swale. Cost of this project would likely be $1-5,000 depending on how many people wanted to participate.

Improve drainage ditch along Jackson St.

A rip rapped ditch accepts stormwater from an adjacent parking lot and uphill residential area. Remove the rip rap and turn the ditch into a planted swale that will filter the runoff and infiltrate it into the ground. An engineer would be needed to design the swale. Winslow contribution could be removal of existing rip rap, earth moving, and planting once the swale is done. Cost may be $10-15,000.



Small ditch plantings in residential area

There are a series of intermittent roadside drainage ditches running along 2nd St from its beginning to its end at W. Factory St. Some of these ditches could be planted with native plants to increase runoff filtering and infiltration. The whole neighborhood between 61 and 3rd Street would be a good place to promote rain gardens, rain barrels, and ditch plantings. Winslow in/kind could be help building rain gardens, advertising the project through utility mailings, and planting the ditches. Cost of this project would likely be $1-5,000 depending on how many people wanted to participate.

West/North Side of Community Center

Rain from the Community Center's roof goes to underground pipes and outlets to a nearby ditch. There are some grassy areas near the Center that possibly could be turned into large stormwater retention cells. Engineering may be needed

to complete this project. The retention capacity of the grassy areas would needs to be known, as well as how much of the roof runoff can be diverted. Diverting the runoff will involve creating an inlet and outlet structure to the grassy area. The inlet likely would have to be placed underneath the gravel road. The outlet would have to tie into the existing storm drain system. Winslow support could be earth moving, connecting inlets and outlets, and planting the grassy area. Estimating the cost is hard. Likely tens of thousands.

Ditch Plantings in neighborhood bounded by Oak, Porter, Bryant, and Lafyette

This area is the headwaters of one of the 4 main drainage areas in town, so is a good place to try to slow down some water and infiltrate it into the ground. Promoting rain gardens and rain barrels would be a good idea, as would doing some plantings to the intermittent drainage ditches running through the area. Winslow in/kind could be help building rain gardens, advertising the project through utility mailings, and planting the ditches. Cost of this project would likely be $1-5,000 depending on how many people wanted to participate and how complicated some of the ditch work may be.

Map
Traffic
E Porter St
E North St
E Lafayette St
Bluff St
N Oak St
N Hickory St
N Public St
N Pearl St
Whitman St
N Collins St
N Bryant St
400
500
600
700
1000

Appendix C

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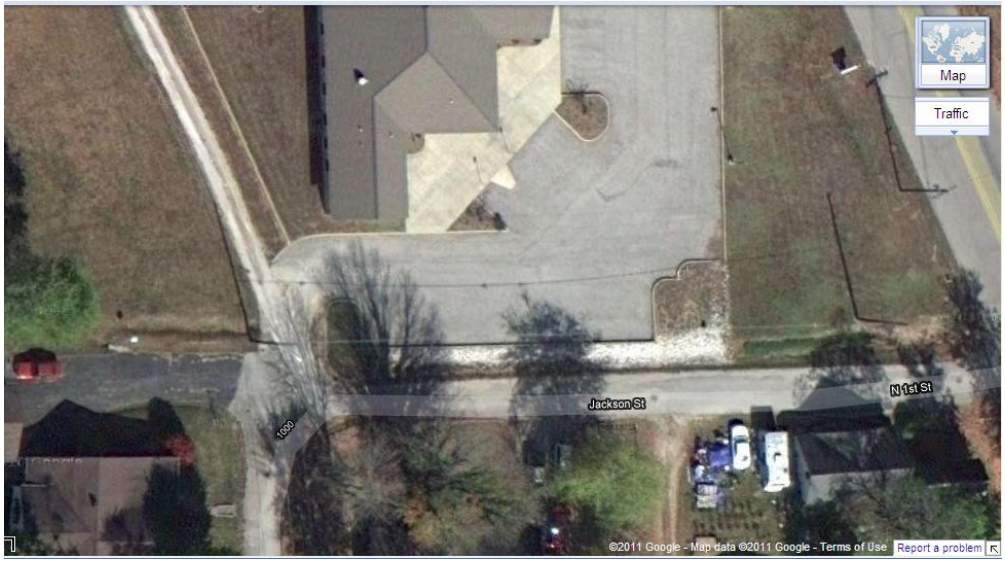

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West/North Side of Community Center

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