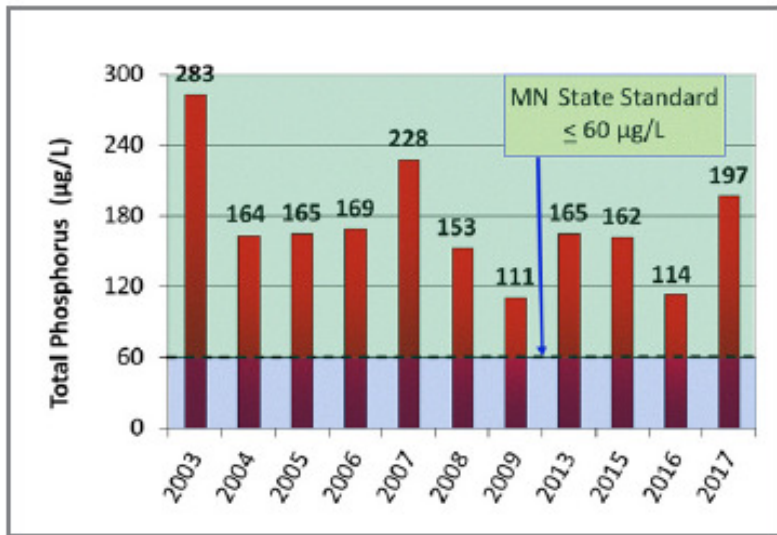


# Rosland Park Stormwater BMP Conceptual Designs

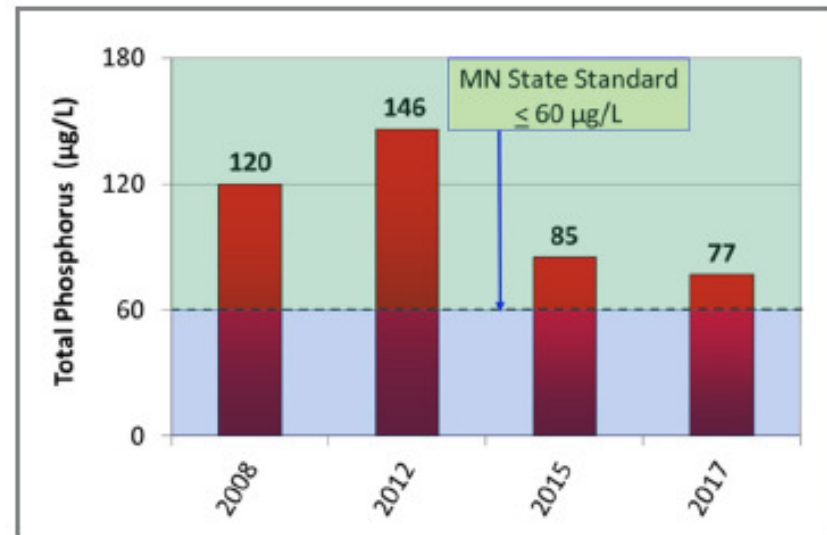
**Summary for Nine Mile Creek Watershed District  
December 18, 2019 Board Meeting**

## Motivations-

Lake Cornelia and Lake Edina do not meet State water quality standards



Summer average phosphorus concentrations in Lake Cornelia (North Basin) have historically been well above the state standard for shallow lakes.



Summer average phosphorus concentrations in Lake Edina have historically been above the state standard for shallow lakes.

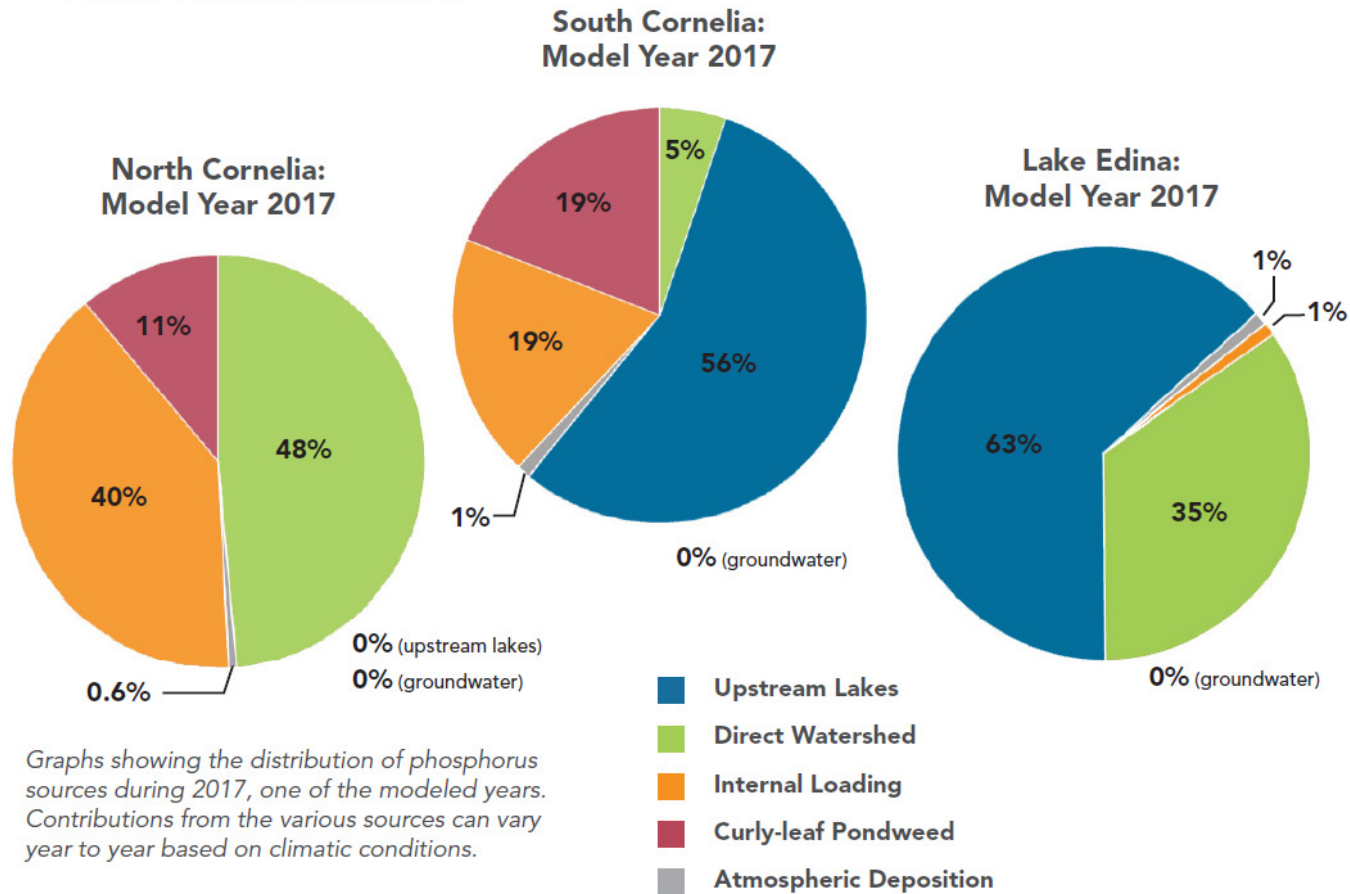
# Motivations- Periodic blue green algal blooms



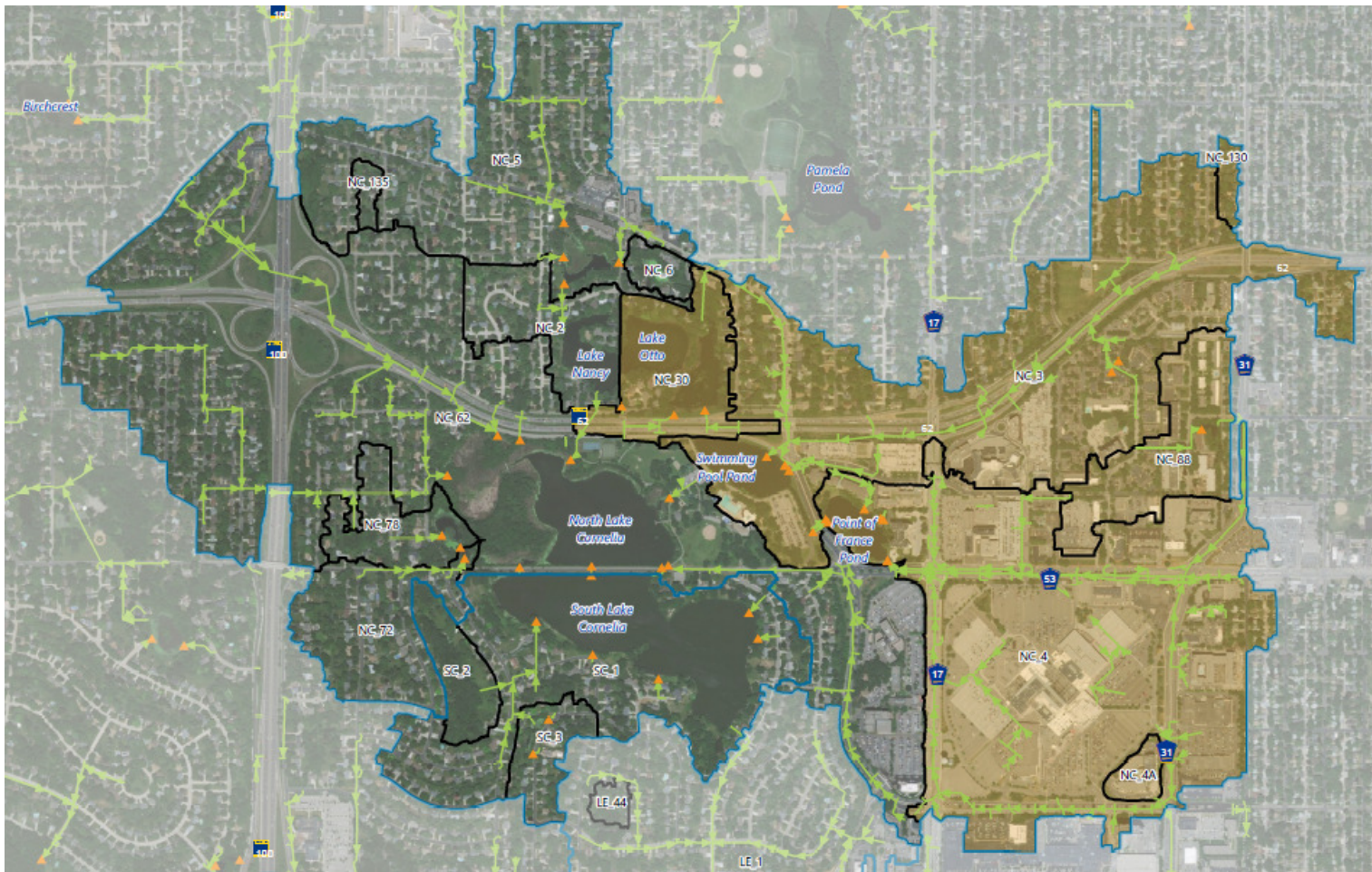
Cornelia Blue Green Algae Blooms

# Water quality study results

## PHOSPHORUS SOURCES



# Why stormwater treatment in Rosland Park?



Large drainage area (shown in orange) flows to Swimming Pool Pond in Rosland Park before reaching Lake Cornelia.

## Stormwater treatment design goals/criteria

- ***Treat as much stormwater as possible.*** Using ponds as storage allows us to treat more water (versus trying to capture the runoff from nearby parking lots/roads/buildings as it happens)
- ***Target dissolved phosphorus removal.*** Much of the particulate phosphorus is already removed by the ponds.
- ***Minimize footprint/park disruption***

# Conceptual Designs

## **Concept #1:**

Underground Filtration Treatment Vault (Gravity flow)

- Located in north parking lot

## **Concept #2:**

Filtration Stream with Bioretention Pools (Pumped)

- Located in green space northwest of north parking lot

## **Concept #2-REVISED:**

Filtration Treatment Vault (Pumped)

- Located at the edge of the north parking lot



# Underground Filtration Treatment Vault – example



Ramsey-Washington Metro Watershed District  
Frost-Kennard Spent Lime Vault Filter

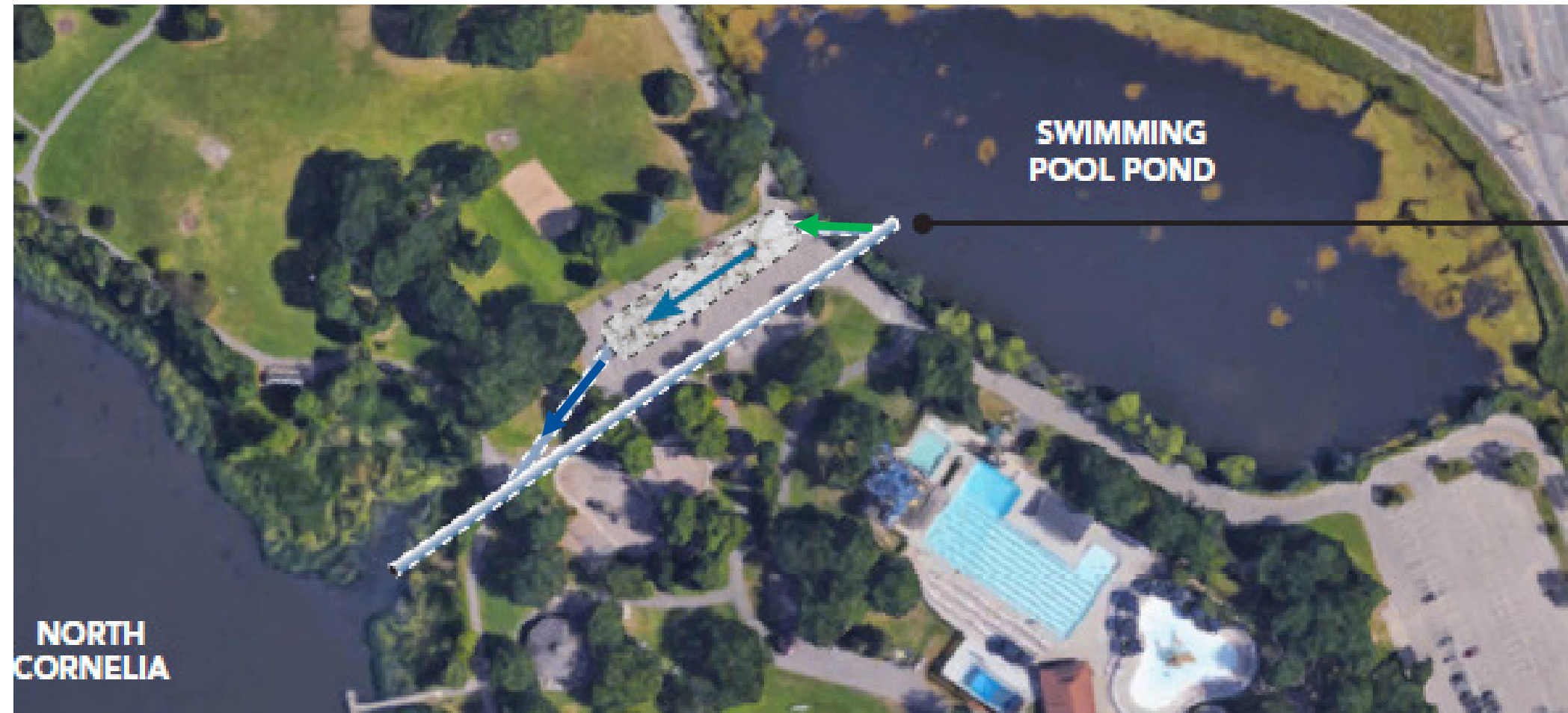


# Concept #1: Underground Filtration treatment vault – (gravity flow)

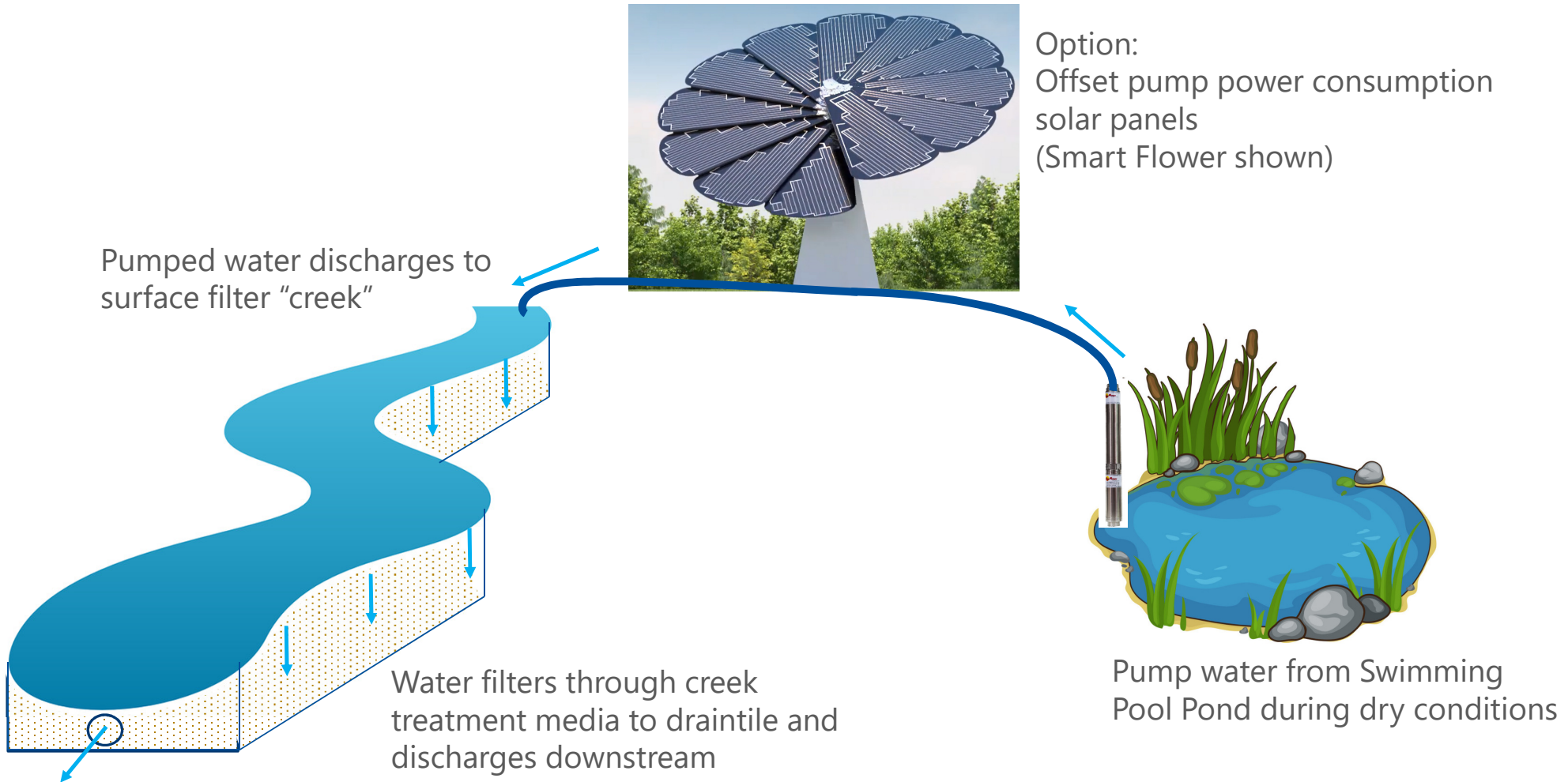


Divert flow to  
underground  
treatment filter  
from Swimming  
Pool Pond

# Concept #1: Underground Filtration treatment vault – (gravity flow)



# Concept #2 (original): filtration stream w/bioretention pools – pumped



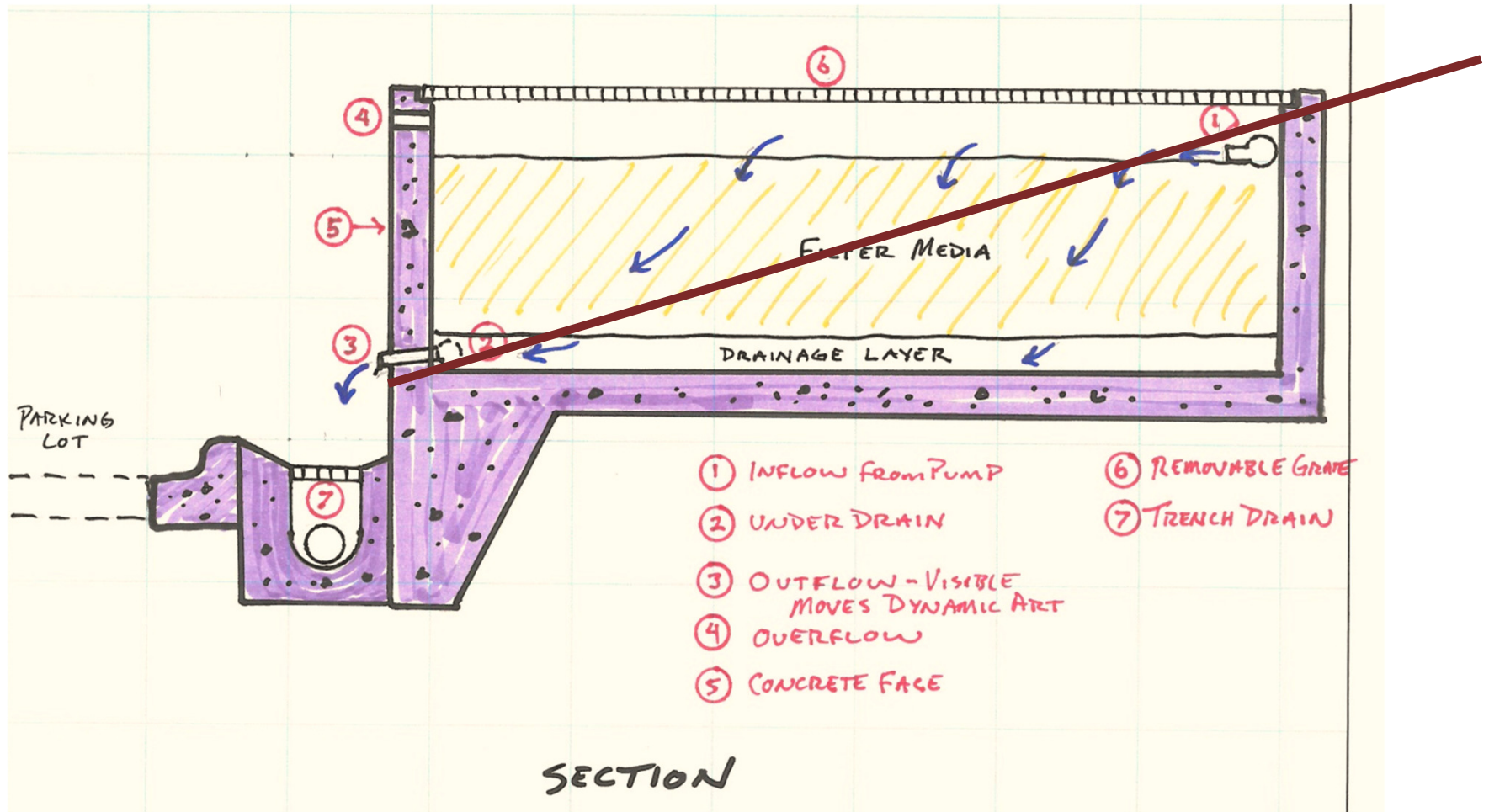
# Concept #2 (original): filtration stream w/bioretention pools – pumped



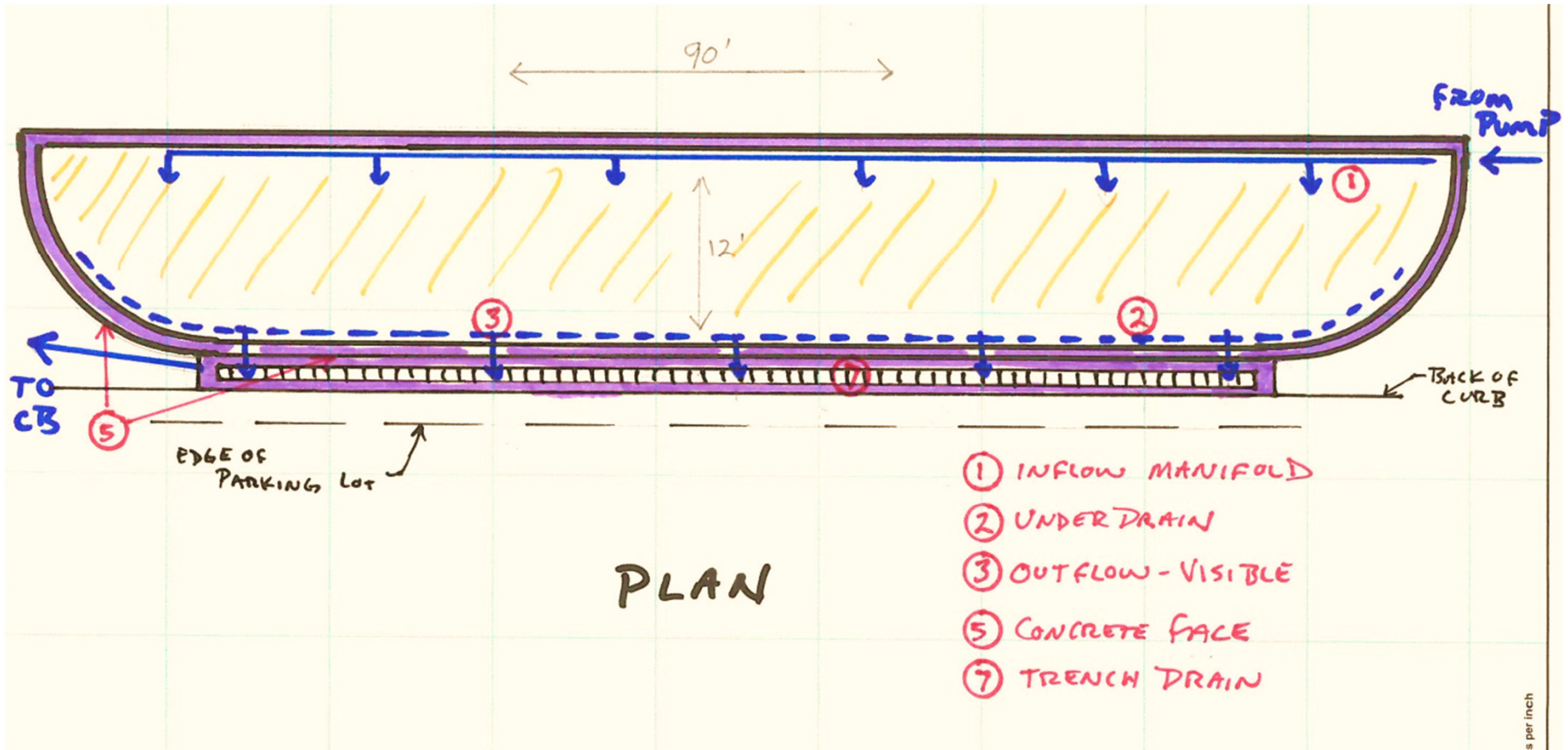
# Concept #2 (REVISED): Filtration Treatment Vault – pumped



# Concept #2 (REVISED): Filtration Treatment Vault – pumped Cross section



# Concept #2 (REVISED): Above-ground treatment vault – Plan view sketch

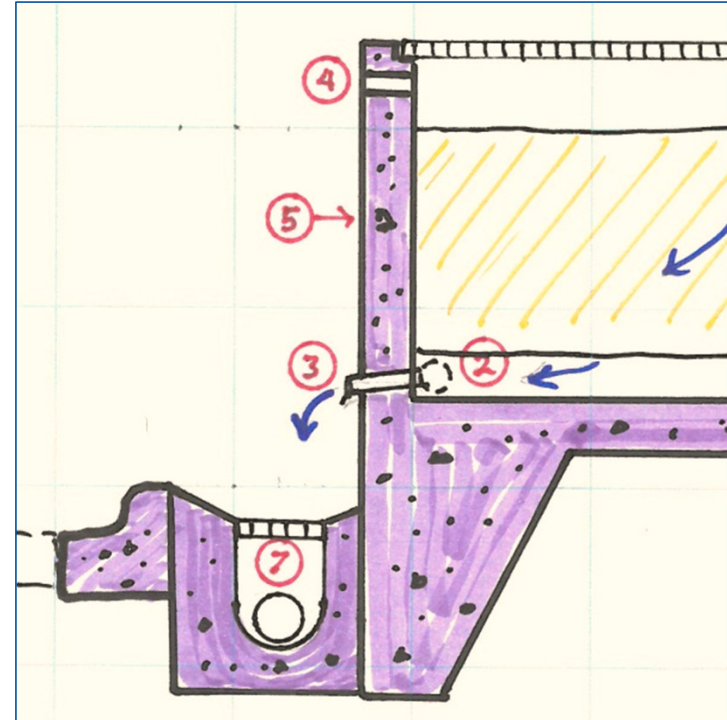


# Concept #2 (REVISED): Filtration Treatment Vault – Example grates

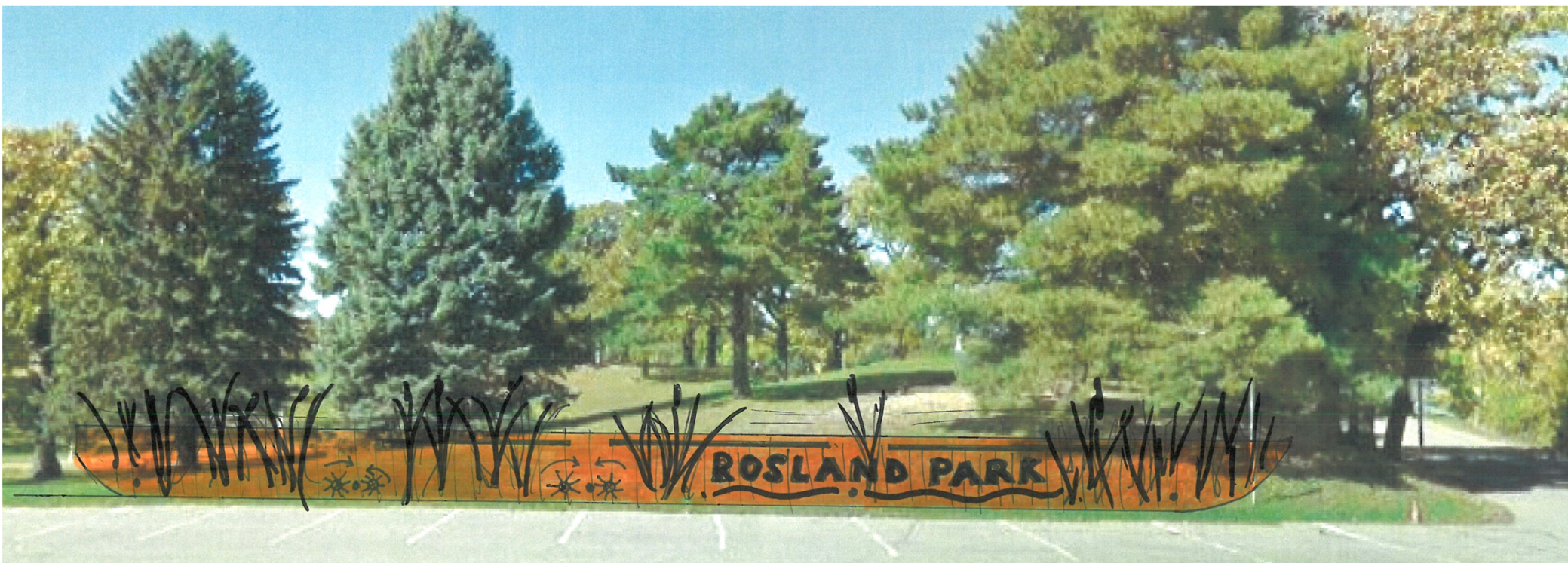




# Concept #2 (REVISED): Filtration Treatment Vault – filtered water is visible



# Concept #2 (REVISED): Filtration Treatment Vault – sketch



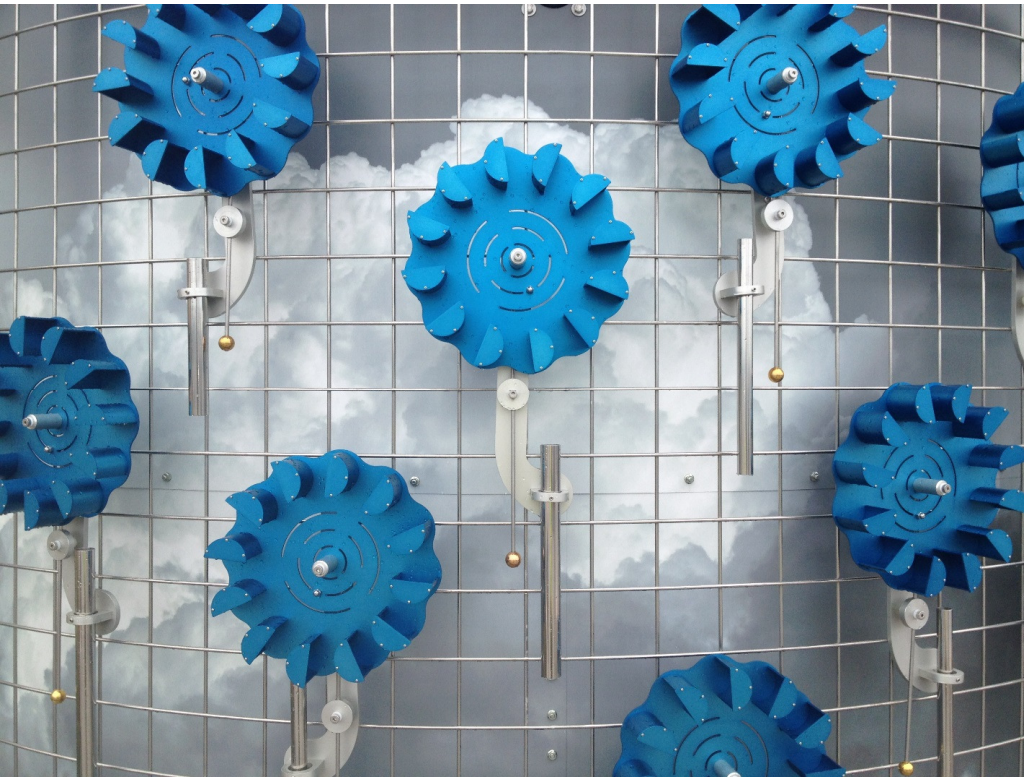
## Option: Offset pump's power consumption with solar



Image source above: Woodford Country Journal and Smart Flower Solutions

Image to the left: Timber frame and SunCommon's Solar Canopy.  
Source: *The Beetle Blog: Snapshots and Stories from New Energy Works.*

# Opportunities to integrate stormwater education and public art



# Opportunities to Improve the Appearance of the Exposed Vault





## Other considerations

- Maintenance- City would operate and maintain
- Quasi-experimental nature of stormwater feature (potential to experiment with alternative filtration media)

## Treatment System Comparison: Option 1 vs. Option 2 revised

### **Option 1** : Underground Vault in Parking Lot - gravity (**pros**)

- Passive system
- Accessible for maintenance
- No loss of park space

### **Option1** : Underground Vault in Parking Lot – gravity (**cons**)

- Larger footprint
- Will need to resurface parking lot
- Greater design uncertainty



## Treatment System Comparison: Option 1 vs. Option 2 revised

### Option 2 Revised: Vault on Edge of Parking Lot - Pumped (pros)

- Smaller footprint
  - Treatment even when its not raining
  - Design for a constant flow rate
- Accessible for maintenance
- Greater design/performance certainty
- Visible to public—education and public art opportunities
- Treats more Stormwater on an annual basis

### Option 2 Revised: Vault on Edge of Parking Lot - Pumped (cons)

- Requires power
- Pump O & M
- Small loss of park space

## Next Steps

- Prepare planning-level cost estimate and pollutant removal estimate to evaluate cost-benefit for preferred option
- Present preferred conceptual design to Edina City Council
- Feasibility analysis/preliminary design on **preferred** concept—  
**January - April**