C1.04 - Water Supply Project

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Project Overview

Our team's goal is to design a water supply pipeline from Maxwell to San Marcos Delivery Point 2 (between San Marcos and Kyle) as well as a booster pump station in Maxwell that can provide water from the Carrizo-Wilcox Aquifer to our community.

Background

Hays County is experiencing a concerning increase in water demand due to the recent unprecedented growth in population. From 2020 to 2040, the water demand in Hays County is projected to increase by nearly 50%. This, combined with recent drought conditions, has made it obvious how our communities are in dire need of new water facilities that can provide a sustainable supply of water.

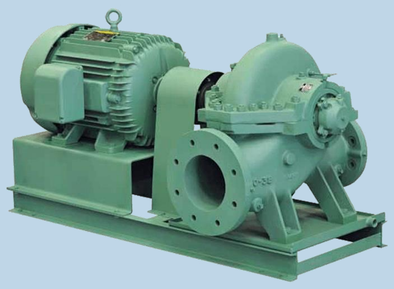
Design Considerations

- Design Alternatives
  - Ease of construction
  - Land use
- Sustainability
  - Community quality of life
  - Siting and ecology
- Total Cost
  - Construction
  - Maintenance

Design Alternatives

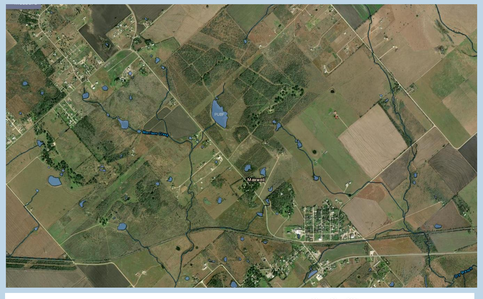
- Pump configuration: Seven or Four Pumps
- Path configuration: Path 1 (Orange) and Path 2 (Blue)
- Criteria Weighing Matrix utilized to select design
- Ease of Construction, Land Use, Pump Configuration, and Cost considered
- Path 2 with four pumps chosen as design

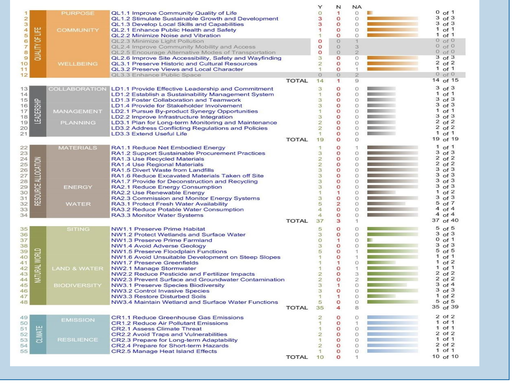
	Ease of Construction	Land Use	Pump Configuration	Cost	Maintenance Cost	
Ease of Construction		1	-1	1	1	
Land Use	-1		1	1	0	
Pump Configuration	1	-1		-1	-1	
Cost	-1	-1	1		0	



Sustainability Evaluation

- Project evaluated with Envision Framework
- Sixty-four sustainability and resilience indicators
- 5 categories: Quality of life, Leadership, Resource Allocation, Natural World, Climate and Resilience
- Irrelevant indicators removed for analysis (Light Pollution, Pathfinding, etc.)
- Surpassed required level for accreditation
- Important aspects include improving community wellbeing, and not disturbing ecological areas with construction





Capital and Life Cycle Costs

Easments (land)	$1,883,434.30
Pumps	$72,000.00
Pipes	$16,559,281.25
Excavation	$164,632,854.17
Aggregate	$2,658,607.60
Total estimate:	$185,806,177.32

Other costs		
OH & P (15%)	$27,870,926.60	$213,677,103.91
Mobilization (5%)	$10,683,855.20	$224,360,959.11
Contingency (40%)	$89,744,383.64	$314,105,342.75
	Subtotal	$314,105,342.75

Total Maintenance cost estimates:		Adjusted for inflation (4%/yr)
$22,818.00	per mile	
$248,913	Per year	
$2,489,128	10 years	$3,684,408
$6,222,821	25 years	$16,588,796
$12,445,642	50 years	$88,447,441
$24,891,283	100 years	$1,257,131,771

Next Steps

- Continue to refine construction & maintenance costs
- Develop construction timeline
  - Traffic models and flow control
- Develop Public Outreach & Information Plan

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