Groundwater Recharge Facility

Civil Engineering

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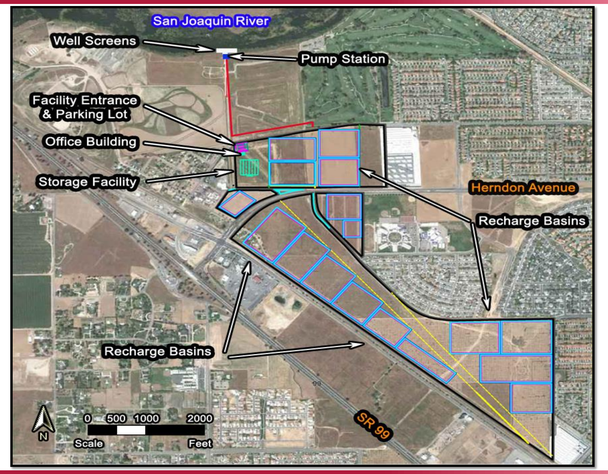
Abstract

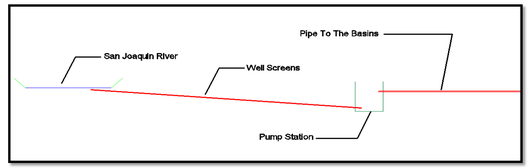
There is a higher demand of potable water with the city of Fresno's increase in population. This results in the demand of groundwater increasing being that it is the city's main source of potable water. Within the past 80 years the city's groundwater table has decreased 100 feet due to this high demand of water needed to provide Fresno's increasing population. The decrease of the city's ground water table causes many issues such as land subsidence, increase of groundwater pumping cost, increase pollutants in the water, and the decrease of water supply.

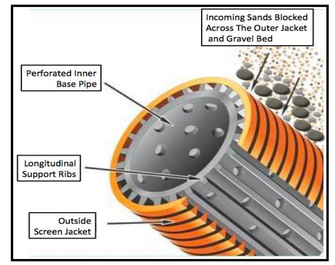
One solution to help mitigate this issue is the development of a ground water recharge facility in which water will be recharged into the underground aquifer. The proposed recharge facility is located north of Herndon Ave and is east of Highway 99. The recharge facility will be supplied with Class 1 water from the San Joaquin River to fill the basins that will be used to recharge clean water back into the aquifer. The facility will also include a two-story office building and a storage facility to house the maintenance equipment that will be needed to keep the recharge basins running efficiently. With the development of this recharge facility the ongoing depletion of the groundwater will lessen due to the artificial recharge provided by the facility.

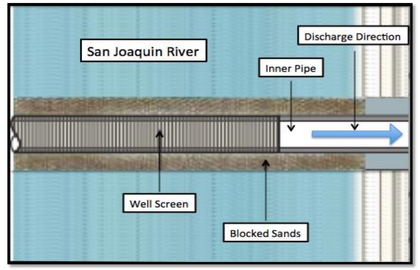
Site Plan



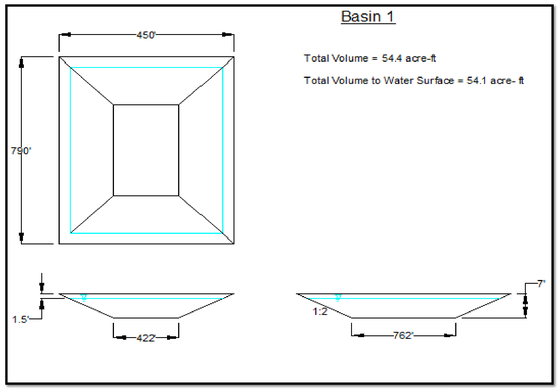
Recharge Water Collection







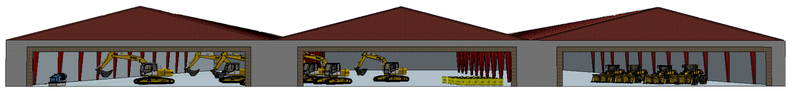
Typical Basin



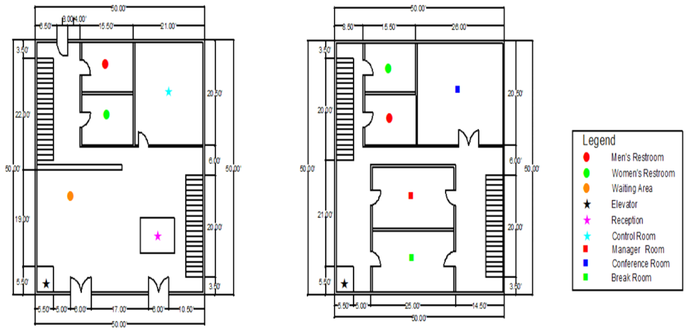
Groundwater Recharge Process

Collection of San Joaquin Water → Pump Water to Site Location → Distribute Water throughout Basins → Obtain Artificial Groundwater Recharge

Structural Design

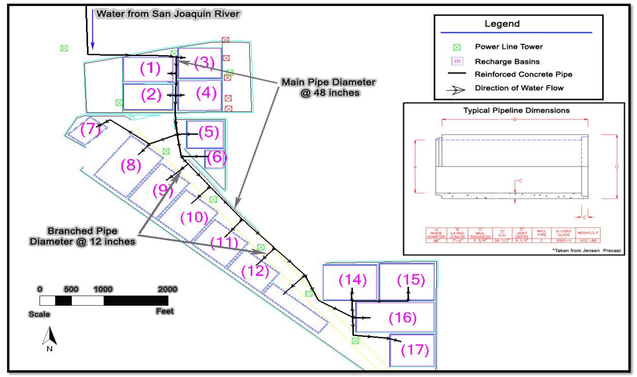


Storage Facility

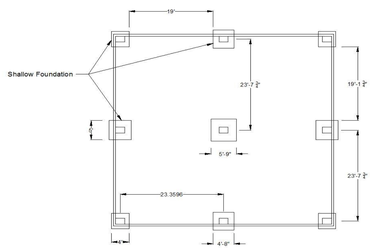


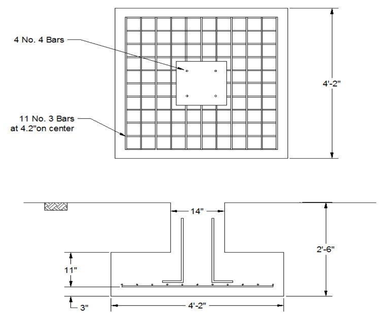
Office Building Plan View

Water Distribution Pipeline



Foundations





Sponsors/Conclusion

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