ATTACHMENT 3
CHANGES TO WATER MANAGEMENT STRATEGIES & PROJECTS
MENARD ALLUVIAL WELL STRATEGY

WUG:	**Menard**	**Capital Cost:**	$13,835,000
WMS Name:	**Develop Alluvial Well Supplies**	**Annual Cost** (During Amortization):	$1,741 per acre-foot $5.34 per 1,000 gal
WMS Type:	Groundwater Development		
WMS Yield:	1,000 acre-feet per year	**Annual Cost** (After Amortization):	$768 per acre-foot $2.36 per 1,000 gal
WMS Status:	Recommended	**Implementation:**	2020

Strategy Description

The City of Menard is seeking to lease 1,000 acre-feet per year of a recently purchased 4,890 acre-feet per year water right from Menard Co WCID #1, and to expand its surface water treatment plant to accommodate the additional water supply. The city plans to drill 2 additional 50 foot deep shallow alluvial wells with new pumps, in addition to the city's 4 existing wells and pumps.

Quantity, Reliability and Cost

The quantity and reliability of water from this source is expected to be approximately 500 gpm. Each of the two new wells are expected to produce at 250 gpm. The source of the water supply is the San Saba River alluvium. The one new well is assumed to supply an additional 200 acre-feet per year. The reliability of the supply is considered to be medium because of the alluvial water source. Capital costs for this strategy are estimated at $13.8 million.

Environmental Factors

Groundwater development from this source should be evaluated for potential impacts on base flows of area rivers. It is unlikely that this strategy would cause subsidence.

Agricultural and Rural Impacts

The proposed strategy will lease 1,000 acre-feet per year from a Menard Co WCID #1 water right for irrigation. However, it is assumed that the remaining water supply for the Menard Co WCID #1 water right will be sufficient to meet their irrigation needs.

Impacts to Natural Resources and Key Parameters of Water Quality

While the water quality of the alluvial water source from the San Saba River not known, pumping water through the shallow alluvial wells will serve as a pre-treatment as the surface water passes through the alluvial sands. The strategy also includes an expansion of the city's treatment plant to treat the additional water supply.

No impacts to natural resources have been identified.

Impacts on Other Water Resources and Management Strategies

Since the water supply for this strategy will be leased from a run of river water right for Menard Co WCID #1, there is potential impact for water management strategies under that water right.

No impacts to other strategies or water resources were identified.

Other Issues Affecting Feasibility

The City of Menard has not yet purchased the water rights from Menard Co WCID #1 to lease the 1,000 acre-feet per year. If the water rights can be leased, this strategy is expected to be feasible and the two additional wells should produce sufficient water supply since the city has four other existing shallow alluvial wells.

Cost Estimate Summary
Water Supply Project Option
September 2018 Prices
City of Menard - Develop Alluvial Well Supplies

Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018

Item	*Estimated Costs for Facilities*
CAPITAL COST	
Transmission Pipeline (12 in dia., 2 miles)	$834,000
Well Fields (Wells, Pumps, and Piping)	$276,000
Storage Tanks (Other Than at Booster Pump Stations)	$989,000
Water Treatment Plant (1.8 MGD)	$7,799,000
TOTAL COST OF FACILITIES	**$9,898,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$3,423,000
Environmental & Archaeology Studies and Mitigation	$87,000
Land Acquisition and Surveying (14 acres)	$56,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	$371,000
TOTAL COST OF PROJECT	**$13,835,000**
ANNUAL COST	
Debt Service (3.5 percent, 20 years)	$973,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	$21,000
Pumping Energy Costs (388929 kW-hr @ 0.08 $/kW-hr)	$31,000
TOTAL ANNUAL COST	**$1,741,000**
Available Project Yield (acft/yr)	1,000
Annual Cost of Water ($ per acft), based on PF=2	$1,741
Annual Cost of Water After Debt Service ($ per acft), based on PF=2	$768
Annual Cost of Water ($ per 1,000 gallons), based on PF=2	$5.34
Annual Cost of Water After Debt Service ($ per 1,000 gallons), based on PF=2	$2.36

WC *7/10/2020*