

TOWN OF
QUEEN CREEK
ARIZONA

Update on Reclaimed Water Corridor
Study – *Final Report*

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Development Services Director

Paul Gardner

Utilities Director

May 18, 2011



Overview

- Greenfield Water Reclamation Plant in operation since 2007
- Partnership between Mesa, Gilbert, and Queen Creek
- 4 million gallons per day (MGD) treatment capacity available; approximately 1.2 MGD presently treated daily
- After treatment, class “A+” reclaimed water available for reuse (recharge, irrigation – turf or crops, cooling towers)
- Queen Creek’s reclaimed water is presently being utilized by Mesa and Gilbert with no direct benefit to Queen Creek



Greenfield Water Reclamation Plant



Overview

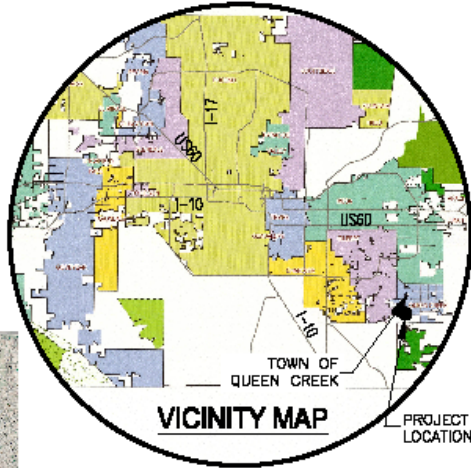
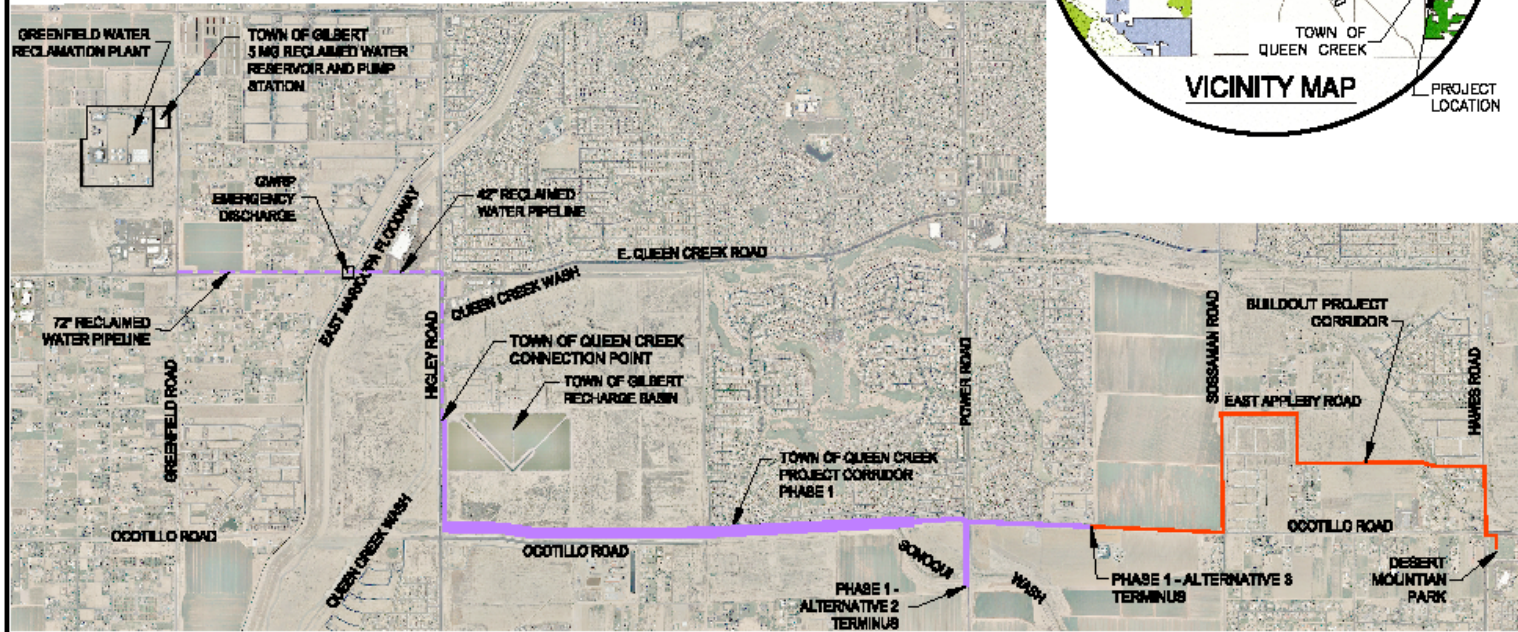
- IGA with Gilbert and Mesa requires Queen Creek to make beneficial use of our reclaimed water prior to the next wastewater plant expansion (no earlier than 2019)
- Reclaimed water is a valuable commodity and can be used to obtain recharge credits, sold to other agencies, used for landscape irrigation, or sold to agricultural users
- First reclaimed water study by LAN in 2007; phased implementation and \$21.4M cost
- Stantec Report (May 2011) defines a corridor for Phase I and provides additional recommendations for future improvements






Project Features

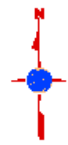
- Connection at Gilbert Recharge Basin
- 24-inch PVC pipeline (3 miles)
- Potential sites for storage tank and pump station
- 2 million gallon storage tank / pump station
- Discharge Location (Phase 1)
- Recharge / Reuse Options
- Ultimate Configuration





LEGEND

-  EXISTING RECLAIMED WATER PIPELINE
-  PROJECT CORRIDOR
-  BUILDOUT PROJECT CORRIDOR



NOT TO SCALE



TOWN OF QUEEN CREEK

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 www.watcon.com

PRELIMINARY ENGINEERING REPORT
 NOT FOR CONSTRUCTION



Client/Project
**TOWN OF QUEEN CREEK
 RECLAIMED, REUSE & RECHARGE WATER LINE - PHASE I**

PRELIMINARY ENGINEERING REPORT
 Town of Queen Creek, Address
**RECLAIMED WATER PROJECT
 PHASE I PROJECT LOCATION
 AND PLANNING AREA MAP**

Proprietor:	City:	
(801) 778-8998	MTS	
Reporting No.:	Sheet:	Revisions:

Figure 1-1 0

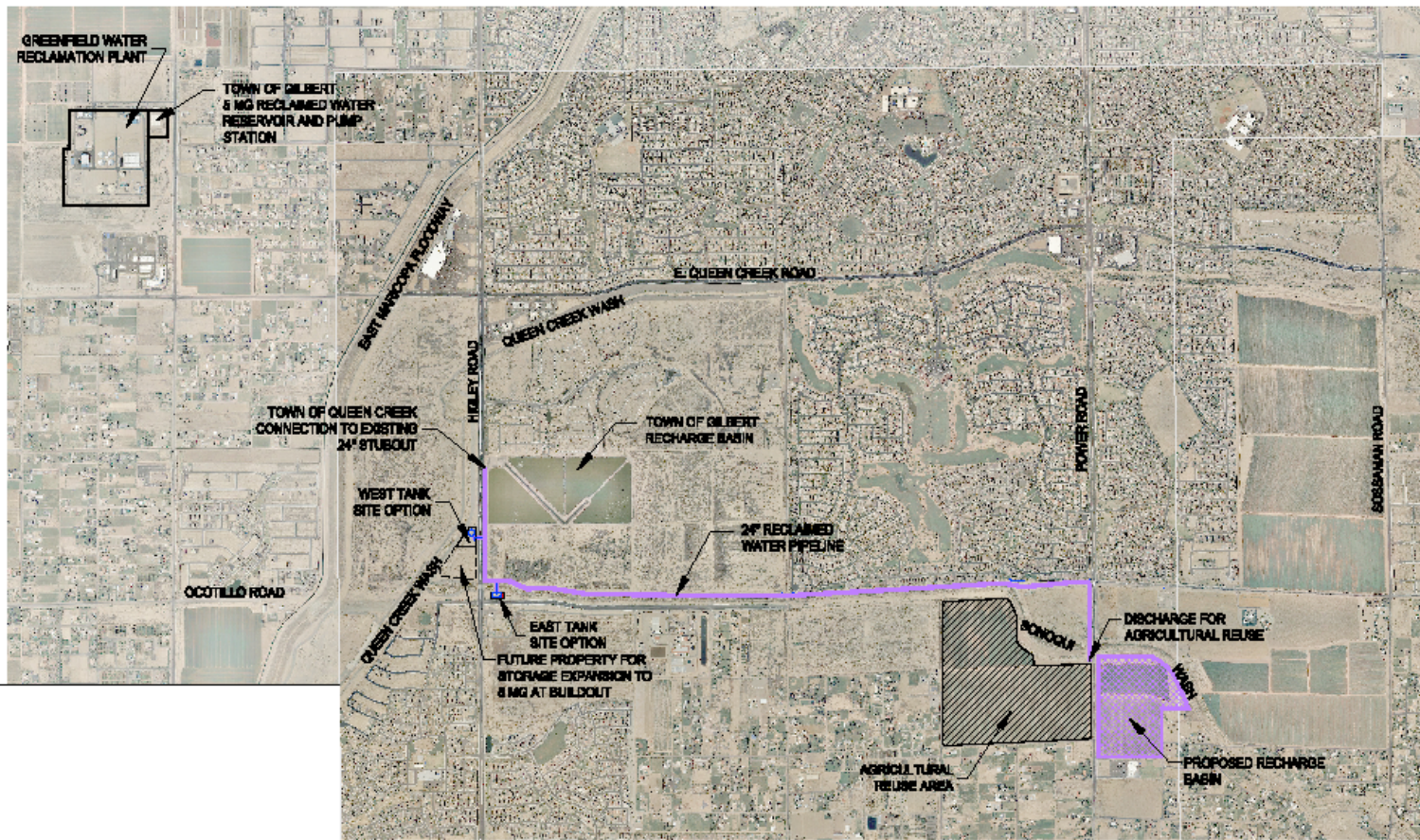
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Project Alternatives

- No Action
- 2.5-mile pipeline (ends at Power)
- 3.0-mile pipeline (ends at 188th Street)

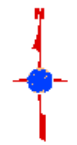
Future, Ultimate Build-Out Configuration



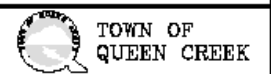


LEGEND

- PROPOSED 24" RECLAIMED WATER PIPELINE
- AGRICULTURAL REUSE AREA
- PROPOSED RECHARGE BASIN



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Revision									
File Name: P1-03-000									

PRELIMINARY ENGINEERING REPORT

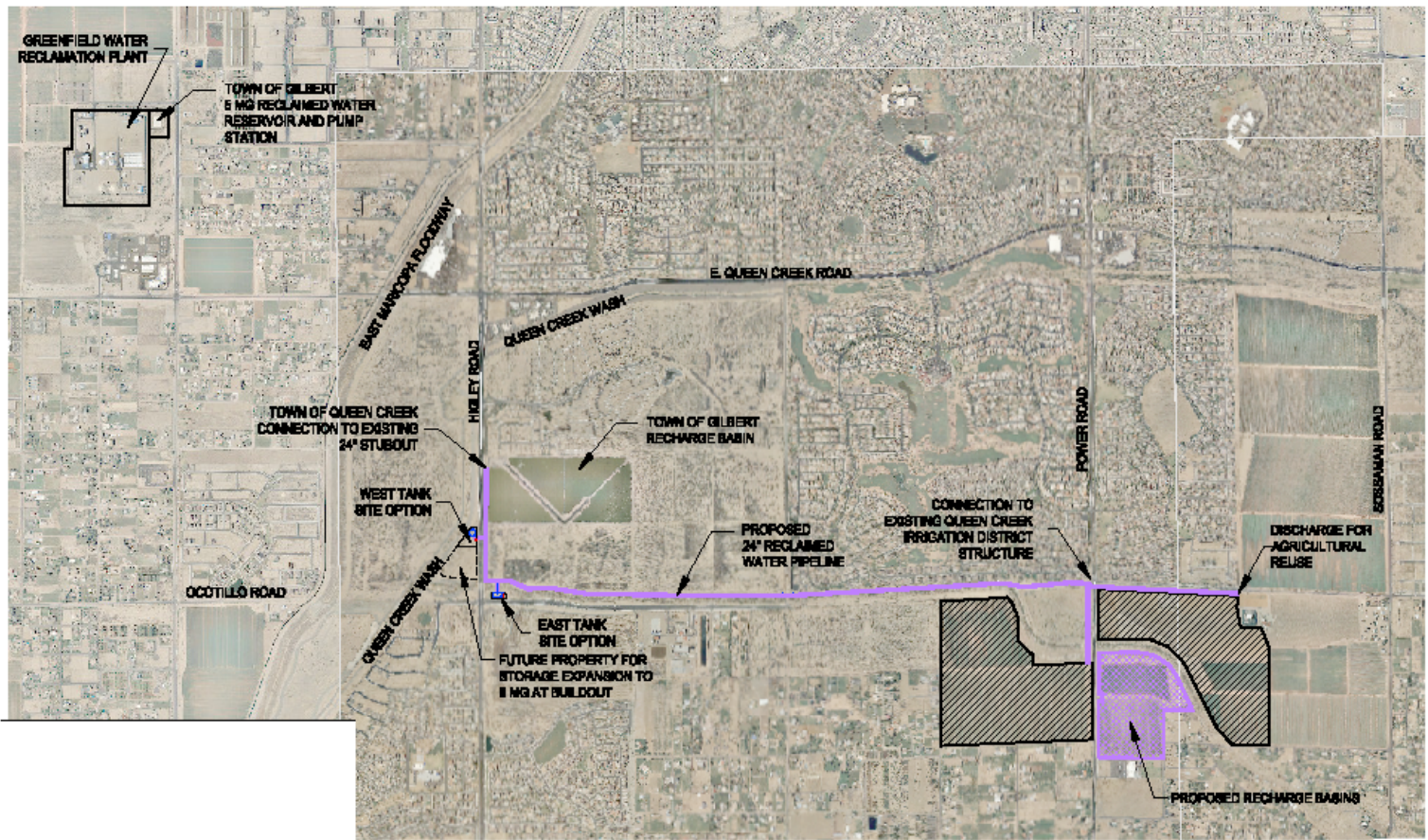
TOWN OF QUEEN CREEK
RECLAIMED, REUSE & RECHARGE WATER LINE - PHASE 1

PRELIMINARY ENGINEERING REPORT




City, State, County, Address

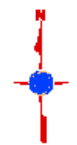
Project No.	19188744	Scale	MTS	Revision	0
Reporting No.		Sheet			

Figure S-1

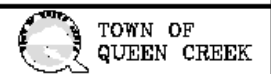


LEGEND

-  PROPOSED 24" RECLAIMED WATER PIPELINE
-  AGRICULTURAL REUSE AREA (APPROX 240 AC)
-  PROPOSED RECHARGE BASIN



NOT TO SCALE




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Revision	By	App'd	Date

PRELIMINARY ENGINEERING REPORT
 NOT FOR CONSTRUCTION OR PERMITS

Client/Project:
TOWN OF QUEEN CREEK
 RECLAIMED, REUSE & RECHARGE WATER LINE - PHASE 1

PRELIMINARY ENGINEERING REPORT
 Queen Creek, Arizona

ALTERNATIVE 3 - RESERVOIR, PUMP STATION AND 3.0 MILE REUSE WATERLINE

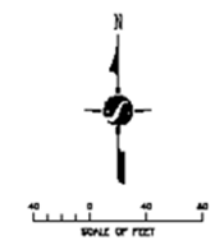
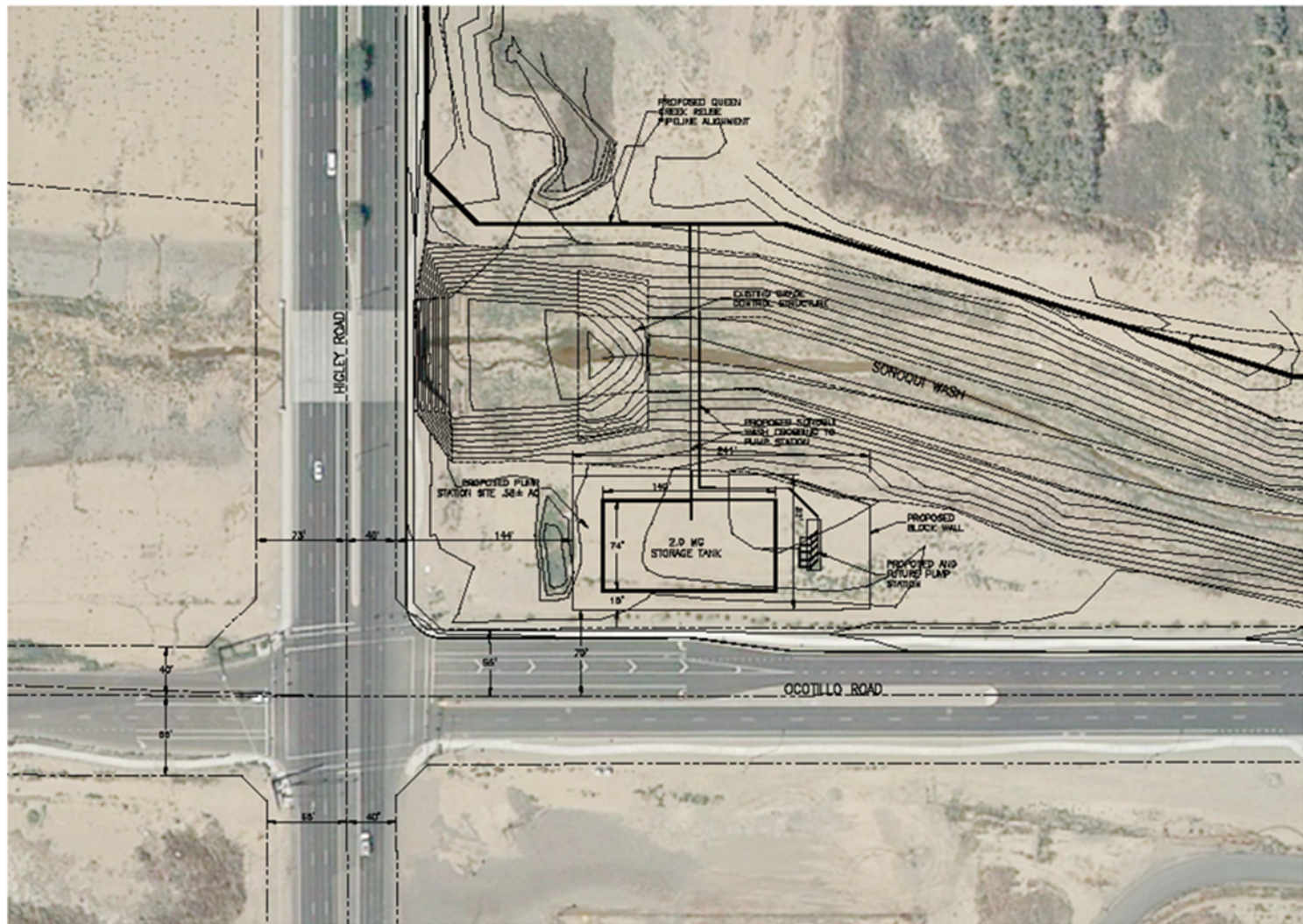
Project No.	Date
181302148	NTS
Issued By	Scale

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Storage / Pump Station Alternatives

- NE corner of Ocotillo and Higley Road
- North of Ocotillo, west side of Higley Road
- Phase I: 2 MG storage + booster station sized for future build-out
- Will require additional storage capacity once the Town exceeds 2 MGD wastewater treatment





TOWN OF QUEEN CREEK

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Revised	By	Area	Date

PRELIMINARY ENGINEERING REPORT

NOT FOR CONSTRUCTION OR PERMITS

Client/Project:
TOWN OF QUEEN CREEK
 RECLAIMED WATER & PROPOSED WATERLINE - PHASE 1

PRELIMINARY ENGINEERING REPORT

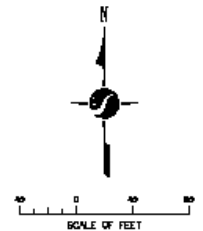
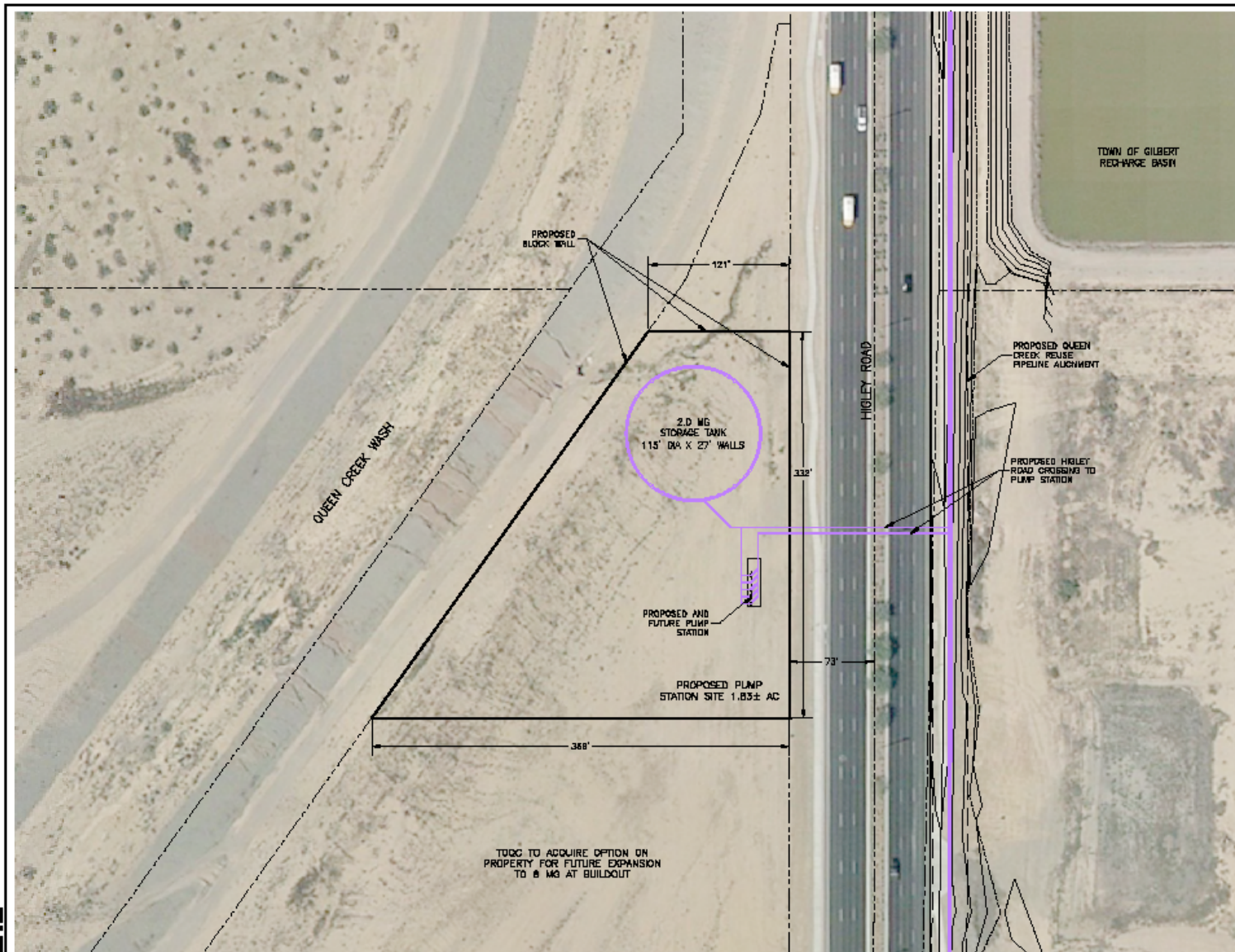
Queen Creek, Arizona

EAST TANK SITE LAYOUT

Project No. 181822148 Date 1/14/2020
 Drawing No. 001 Sheet 1 of 1

Figure 6-1 1 of 1 0

All dimensions shown are in feet. All dimensions are approximate.



TOWN OF QUEEN CREEK

West Tank Site
18132548
11/12/2014

Revision	By	App'd	Date

PRELIMINARY ENGINEERING REPORT

WEST TANK SITE LAYOUT

Client/Project: TOWN OF QUEEN CREEK
RECHARGE, REUSE & RECHARGE TANKLINE - PHASE 1

Project No.: 18132548
Date: 11/12/2014

Scale: 1"=40' HOR

Sheet No.: 0
Total Sheets: 0

Figure 6-2 1 of 1 0

ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN FEET AND INCHES. DIMENSIONS TO FACE UNLESS OTHERWISE SPECIFIED.

Cost Estimates

- No Action Alternative – Town will still be responsible for capital costs; Mesa would construct the improvements and bill Queen Creek for them
- 2.5 Mile Pipeline Alternative
 - \$8,532,000
- 3 Mile Pipeline Alternative
 - \$9,200,000





TOWN OF QUEEN CREEK
Reclaimed, Reuse and Recharge Pipeline Phase 1
 Alternate 2 Opinion of Probable Construction Cost



PROPOSED PROJECT

BASE ITEMS - PIPELINE, PUMP STATION and STORAGE TANK						
1.1	24-Inch PVC C905 DR18	13,500	LF	\$ 140	\$	1,890,000
2.1	Metering Station and Connection at Higley Road	1	EA	\$ 20,000	\$	20,000
3.1	Discharge Metering Structure at Sossaman Farms	1	EA	\$ 15,000	\$	15,000
4.1	Electrical Construction, Service, RTU & SCADA	1	LS	\$ 200,000	\$	200,000
5.1	Pump Station	1	LS	\$ 750,000	\$	850,000
6.1	2 MG Partially Buried Storage Tank	1	LS	\$ 1,100,000	\$	1,100,000
7.1	Land Acquisition - Pump Station and Storage Tank	1	LS	\$ 450,000	\$	450,000
	Subtotal Pipeline, Pump Station and Storage Tank				\$	4,525,000
SELECTED RECHARGE OPTION - RECHARGE BASIN (Recharge Credit - Evaporation, Transpiration, etc.)						
A.1	Basin - Excavation, Flow Control Structure, Turnout Structure, Perimeter Fence, Dechlorination, Metering, Electrical, Clearing	37	AC	\$ 35,000	\$	1,295,000
A.2	Land Acquisition - Access Road and Basin Site	37	AC	\$ 5,000	\$	185,000
	Subtotal Option A - Recharge Basin				\$	1,480,000
INDIRECT COSTS						
I.1	Engineering (Des. and PM - 15% of Construction)	1	LS	\$900,750	\$	900,750
I.2	Permitting	1	LS	\$125,000	\$	125,000
I.3	Contingency (25% of Construction Costs)	1	LS	\$ 1,501,250	\$	1,501,250
	Subtotal Indirect Costs				\$	\$2,527,000
TOTAL PROJECT						
P.1	Pipeline, Pump Station and Storage Tank	1	LS		\$	4,525,000
P.2	Option A - Recharge Basin	1	LS		\$	1,480,000
P.3	Indirect Costs (Including 25% Contingency)	1	LS		\$	2,527,000
	TOTAL ESTIMATED COST ALTERNATE 2				\$	8,532,000

ALTERNATE RECHARGE OPTIONS

OPTION B - VADOSE ZONE WELLS						
B.1	Vadose Zone Wells w/Meter (250 GPM)	6	EA	\$ 250,000	\$	1,500,000
	Subtotal Option B - Vadose Zone Wells				\$	1,500,000

OPTION C - MANAGED UNDERGROUND STORAGE FACILITY (Wash Recharge) (Recharge Credit - Losses and 50% Cut to Aquifer)						
C.1	Discharge Facilities and Monitoring/Meter Structure at Wash - Includes Piping and Wash Improvements	1	LS	\$ 200,000	\$	200,000
C.2	Dechlorination Structure	1	LS	\$ 20,000	\$	20,000
	Subtotal Option C - Managed USF				\$	220,000

OPTION D - INJECTION/ASR WELLS						
D.1	Injection/ASR Wells w/Meter	2	LS	\$ 850,000	\$	1,700,000
	Subtotal Option D - Injection/ASR Wells				\$	1,700,000



TOWN OF QUEEN CREEK
Reclaimed, Reuse and Recharge Pipeline Phase 1
Alternate 3 Opinion of Probable Construction Cost



PROPOSED PROJECT

BASE ITEMS - PIPELINE, PUMP STATION and STORAGE TANK						
1.1	24-Inch PVC C905 DR18	16,500	LF	\$ 140	\$	2,310,000
2.1	Metering Station and Connection at Higley Road	1	EA	\$ 20,000	\$	20,000
3.1	Discharge Metering Structure at Sossaman Farms	1	EA	\$ 15,000	\$	15,000
4.1	Electrical Construction, Service, RTU & SCADA	1	LS	\$ 200,000	\$	200,000
5.1	Pump Station	1	LS	\$ 750,000	\$	850,000
6.1	2 MG Partially Buried Storage Tank	1	LS	\$ 1,100,000	\$	1,100,000
7.1	Land Acquisition - Pump Station and Storage Tank	1	LS	\$ 450,000	\$	450,000
Subtotal Pipeline, Pump Station and Storage Tank						\$ 4,945,000
SELECTED RECHARGE OPTION - RECHARGE BASIN (Recharge Credit - Evaporation, Transpiration, etc.)						
A.1	Basin - Excavation, Flow Control Structure, Turnout Structure, Perimeter Fence, Dechlorination, Metering, Electrical, Clearing	37	AC	\$ 35,000	\$	1,295,000
A.2	Land Acquisition - Access Road and Basin Site	37	AC	\$ 5,000	\$	185,000
Subtotal Option A - Recharge Basin						\$ 1,480,000
INDIRECT COSTS						
I.1	Engineering & Town Admin. (15% of Construction)	1	LS	\$963,750	\$	963,750
I.2	Permitting	1	LS	\$125,000	\$	125,000
I.3	Contingency (25% of Construction Costs)	1	LS	\$ 1,606,250	\$	1,606,250
Subtotal Indirect Costs						\$2,695,000
TOTAL PROJECT						
P.1	Pipeline, Pump Station and Storage Tank	1	LS		\$	4,945,000
P.2	Option A - Recharge Basin	1	LS		\$	1,480,000
P.3	Indirect Costs (Including 25% Contingency)	1	LS		\$	2,695,000
TOTAL ESTIMATED COST ALTERNATE 3						\$ 9,120,000

ALTERNATE RECHARGE OPTIONS

OPTION B - VADOSE ZONE WELLS						
B.1	Vadose Zone Wells w/Meter (250 GPM)	6	EA	\$ 250,000	\$	1,500,000
Subtotal Option B - Vadose Zone Wells						\$ 1,500,000

OPTION C - MANAGED UNDERGROUND STORAGE FACILITY (Wash Recharge) (Recharge Credit - Losses and 50% Cut to Aquifer)						
C.1	Discharge Facilities and Monitoring/Meter Structure at Wash - Includes Piping and Wash Improvements	1	LS	\$ 200,000	\$	200,000
C.2	Dechlorination Structure	1	LS	\$ 20,000	\$	20,000
Subtotal Option C - Managed USF						\$ 220,000

OPTION D - INJECTION/ASR WELLS						
D.1	Injection/ASR Wells w/Meter	2	LS	\$ 850,000	\$	1,700,000
Subtotal Option D - Injection/ASR Wells						\$ 1,700,000

Recommendations

1. Staff concurs with consultant recommendation for 3-mile pipeline alternative;
2. Continue seeking various grant funding and partnering opportunities;
3. Include in upcoming Development Fee Study for inclusion in that program;
4. Continue dialogue with various agencies on joint-use arrangements, including beneficial reuse on farmland





Questions / Comments ?