APPENDIX H

Regional Water Facilities

MACKAY & SOMPS
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TECHNICAL MEMORANDUM

Date:	October 5, 2010 (Revised May 24, 2011)[1]
To:	Bob Shattuck, Lennar Communities
From:	Ken Giberson, MacKay & Somps
TM No.:	Technical Memorandum No. 8
Subject:	Regional Water Facilities SunCreek Specific Plan Rancho Cordova, CA
Job No.:	7991-10
Task No.:	Task D.2.c

A. Introduction

The Sacramento County Water Agency (SCWA) issued a Master Water Study (MWS) for the SunCreek Specific Plan (Final Report) in October 2008[2]. The MWS described the water infrastructure requirements that were needed to meet the projected water demands for the SunCreek Specific Plan. The location of the SunCreek project is shown in Figure 1. Those infrastructure improvements can be divided into two general categories: major or backbone on-site and off-site infrastructure facilities.

The purpose of this technical memorandum is to describe the off-site backbone water facilities. This description will be based on the following documents:

1. Master Water Study (MWS) for the SunCreek Specific Plan (Final Report) – MWH (October 2008).
2. SCWA Zone 40 Water System Infrastructure Plan (WSIP) – MWH (April 2006).
3. Technical Memorandum No. 1 "Updated Water Demands – SunCreek Specific Plan" – MacKay & Somps Civil Engineers, Inc. (July 14, 2010).
4. Technical Memorandum No. 2 "Ground Water Demands – SunCreek Specific Plan" – MacKay & Somps Civil Engineers, Inc. (July 15, 2010 / Revised July 28, 2010).

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[1] Original published on August 4, 2010 and revised on October 5, 2010 to remove ambiguous language. This revision was made to include the Zone 6 off-site water transmission pipeline to North Douglas Storage Tanks (the "Americanos Boulevard Pipelines") that was inadvertently omitted from the prior version of this technical memorandum.

[2] Prepared by MWH Americas, Inc.

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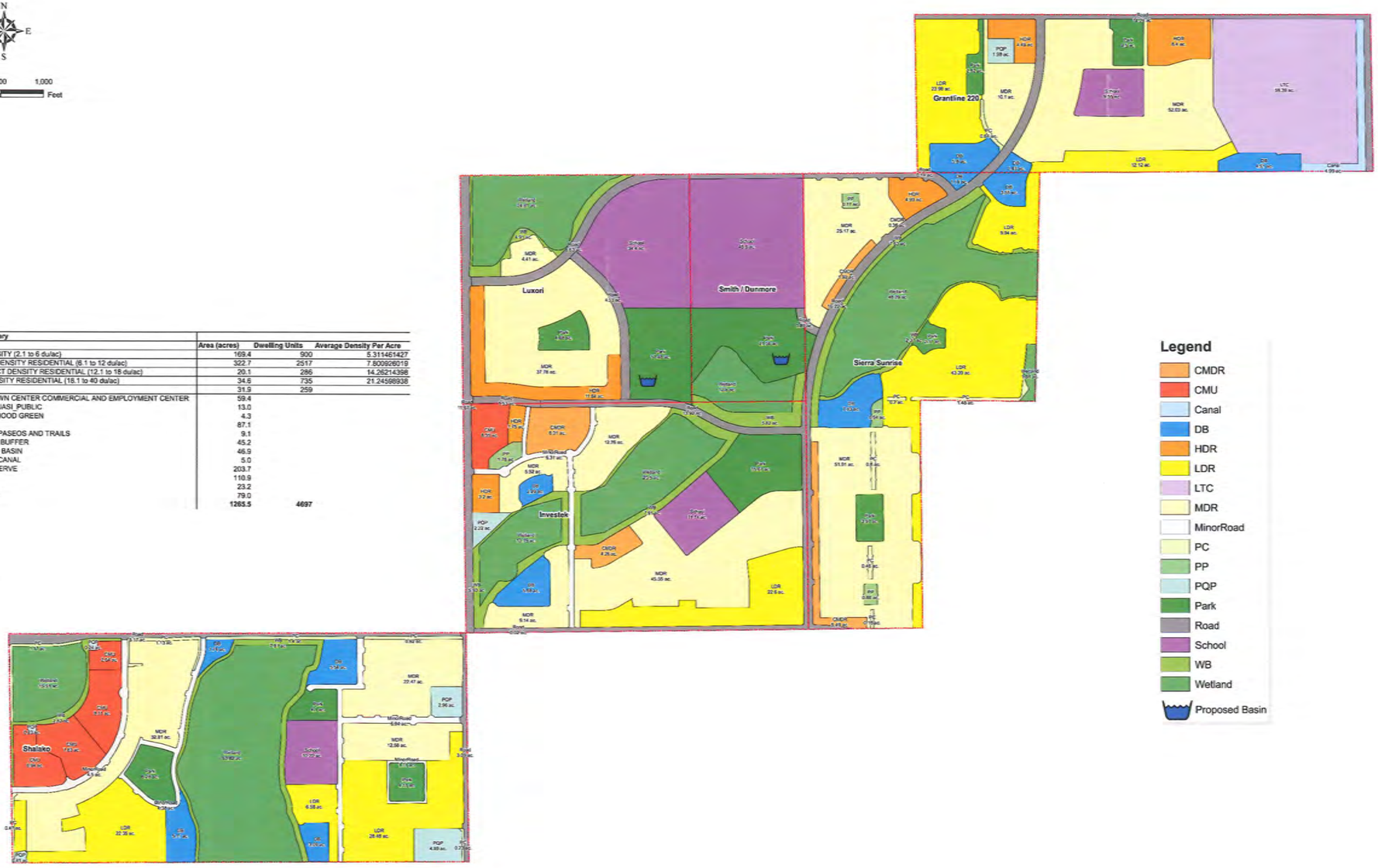
Feet

Land Use Summary			
Land Use Type	**Area (acres)**	**Dwelling Units**	**Average Density Per Acre**
LDR - LOW DENSITY (2.1 to 6 du/ac)	169.4	900	5.311461427
MDR - MEDIUM DENSITY RESIDENTIAL (6.1 to 12 du/ac)	322.7	2517	7.800926019
CMDR - COMPACT DENSITY RESIDENTIAL (12.1 to 18 du/ac)	20.1	286	14.26214396
HDR - HIGH DENSITY RESIDENTIAL (18.1 to 40 du/ac)	34.6	735	21.24598938
CMU	31.9	259	
LTC - LOCAL TOWN CENTER COMMERCIAL AND EMPLOYMENT CENTER	59.4		
PQP - PUBLIC/QUASI_PUBLIC	13.0		
PP - NEIGHBORHOOD GREEN	4.3		
PARK	87.1		
PC - PARKWAY, PASEOS AND TRAILS	9.1		
WB - PRESERVE BUFFER	45.2		
DB - DETENTION BASIN	46.9		
STORM WATER CANAL	5.0		
WETLAND PRESERVE	203.7		
SCHOOL	110.9		
MINOR ROADS	23.2		
MAJOR ROADS	79.0		
Grand Total	**1263.5**	**4697**	



Legend

- CMDR
- CMU
- Canal
- DB
- HDR
- LDR
- LTC
- MDR
- MinorRoad
- PC
- PP
- PQP
- Park
- Road
- School
- WB
- Wetland
- Proposed Basin

August, 2010

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FIGURE 1
Land Use Map
Suncreek Specific Plan

County of Sacramento, California

7991-10

B. Off-Site Infrastructure

The MWS identified two major off-site facilities that would be needed to serve the SunCreek project on a long-term basis. Technical Memorandum No. 2 identified a third off-site facility that could be used on an interim basis. These facilities are identified as follows:

- The North Service Area Pipeline and Appurtenances,
- The Florin Road/Sunrise Blvd. Pipeline,
- The Anatolia Pipeline Conversion (Interim Facility), and
- The Americanos Boulevard Pipelines.

These facilities are shown on Figure 2 and more particularly described as follows:

1. North Service Area Pipeline and Appurtenances[3]

   SCWA is planning to construct a major treated water transmission pipeline to serve the Agency's North Service Area from the Vineyard Surface Water Treatment Plant (VSWTP)[4] that is nearing completion at a site on Florin Road east of Knox Road. This facility has been identified in both the MWS and the WSIP.

   The North Service Area (NSA) Pipeline will primarily serve the Mather Field Specific Plan and Sunrise Douglas Community Plan Areas. This project has undergone environmental review, with the Board of Supervisors approving the environmental documentation (a Mitigated Negative Declaration) on September 14, 2010.

   The NSA Pipeline project will consist of a water transmission main with tank and booster stations situated as needed to provide the most cost effective alternative. The transmission main will be primarily located in existing or future right-of-way. The transmission main will ultimately connect the Vineyard Surface Water Treatment Plant to an existing 42-inch transmission main that provides service to the Sunrise Douglas Community Plan area as well as stub out for future development within the Mather Field Specific Plan in the Zone 40 North Service Area.

   Where possible, this project will be installing the pipeline within existing and prescriptive road right-of-ways. In locations where the pipeline will not be in existing roadways, permanent easements will be acquired as needed.

   Temporary construction easements are anticipated to be up to 60 feet in width as required for contractor staging areas, materials stockpiling, and backfill storage. These easements will be identified and reviewed prior to approval of construction plans.

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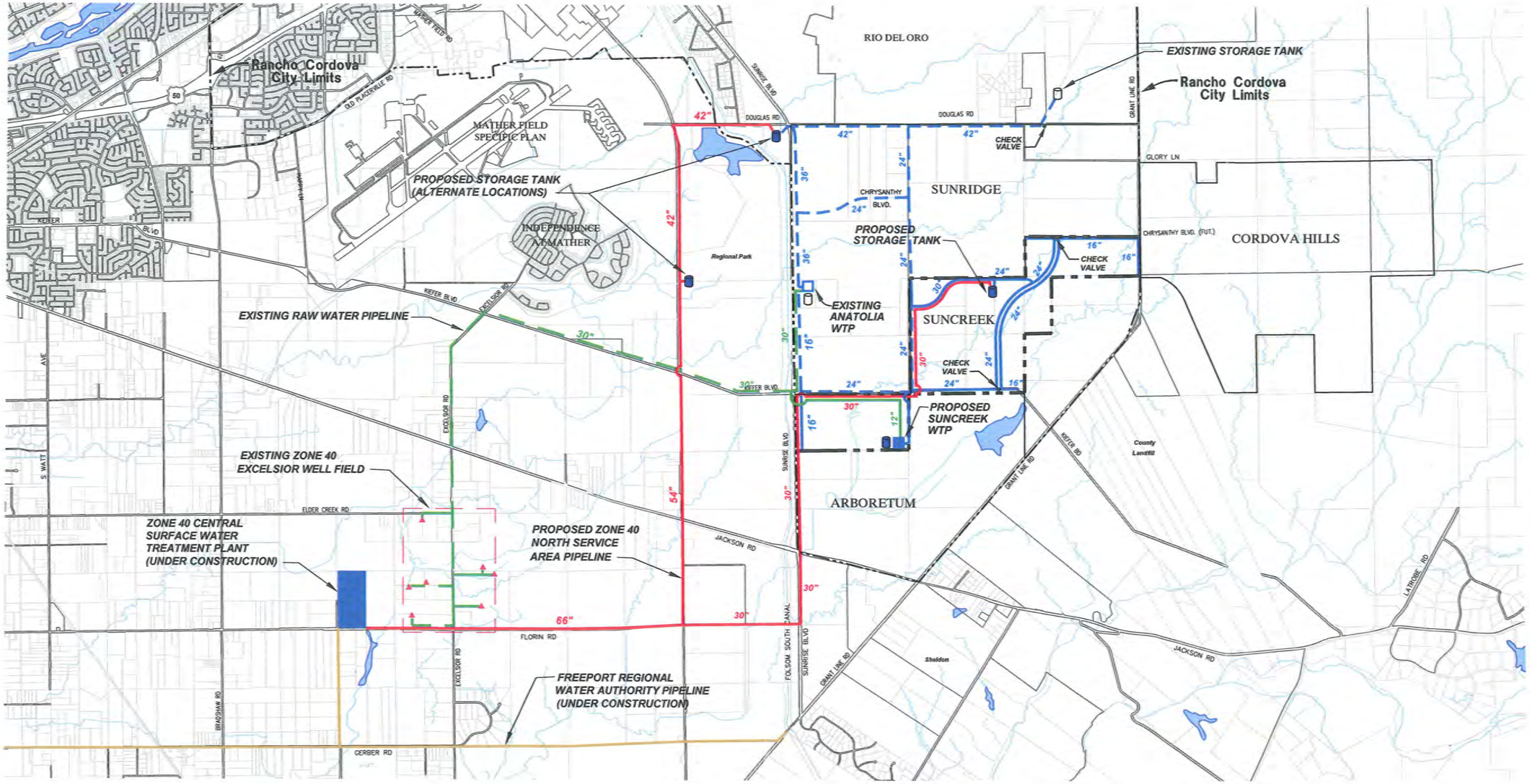
[3] The source of much of the project description for the NSA Pipeline and Appurtenances contained in this Technical Memorandum was provided by Mike Crooks, Senior Engineer, SCWA, on July28, 2010.
[4] Formerly known as the Central Surface Water Treatment Plant.



LEGEND

- 16" — PROPOSED OFFSITE WATER TRANSMISSION PIPELINE
- 48" — PROPOSED NORTH AREA SERVICE (NSA) PIPELINE
- PROPOSED RAW SURFACE WATER PIPELINE (FRWA)
- PROPOSED RAW GROUND WATER PIPELINE
- EXISTING WATER TRANSMISSION PIPELINE
- EXISTING RAW GROUND WATER PIPELINE

0 2500 5000 10,000

SCALE: 1"=5000'

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FIGURE 2

SCWA Water Facility Plan

Suncreek Specific Plan

County of Sacramento, California

August, 2010

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5-25-2011 15:41:09 mjones P:\7991\7991-SC\00\Master Plans\Water\Tech Study #8\Fig 2 - SCWA Water Facility Plan.dwg
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There are four alternative routes proposed and two tank/booster station sites proposed. The project will be constructed along one of the pipeline alignments and on one or both of the tank/booster station sites as illustrated on Figures 3 and 4[5]. The various pipeline and tank/booster station alternatives are generally described below:

PIPELINE ALIGNMENTS

Each of the four alternative pipeline alignments begins at the Vineyard Surface Water Treatment Plant located on Florin Road east of Knox Road. The project will install the pipeline within the prescriptive road right-of-ways, primarily using open trench construction, where trenches are to be 5 to 8 feet wide.

The water pipes are expected to have approximately 5 to 10 feet of cover. The first 4,600 feet of 66-inch pipe material would be laid in the easterly direction within the alignment of Florin Road to the intersection of Florin Road and Excelsior Road.

The next 11,300 feet of 66-inch pipe material would be laid in the easterly direction within the alignment of Florin Road to the intersection of Florin Road and Eagles Nest Road and then turn north for 11,500 feet of 54-inch pipe material within the alignment of Eagles Nest Road to the intersection of Kiefer Boulevard. This section of the pipeline will cross Jackson Road (State Route 16), most likely in a bore and jack configuration.

From this point, each of the alternative alignments for the 42-inch pipe material differs. The four alternative alignments from Kiefer Boulevard are as follows:

1. Alternative 1 would continue north within the proposed alignment of Eagles Nest Road as identified in the Mather East Specific Plan for approximately 11,900 feet, then turn east for another 4,200 feet within the existing Douglas Road right-of-way to the Douglas Road tank site. A crossing of the Folsom South Canal would need to be designed either within the future bridge to be constructed on Douglas Road or in a separate utility bridge.

   The finishing connection of the 42-inch transmission main could be constructed to the 42-inch stub at the intersection of Douglas Road and Sunrise Boulevard.

[5] Source: Mike Crooks, Senior Engineer, SCWA, on July 28, 2010.

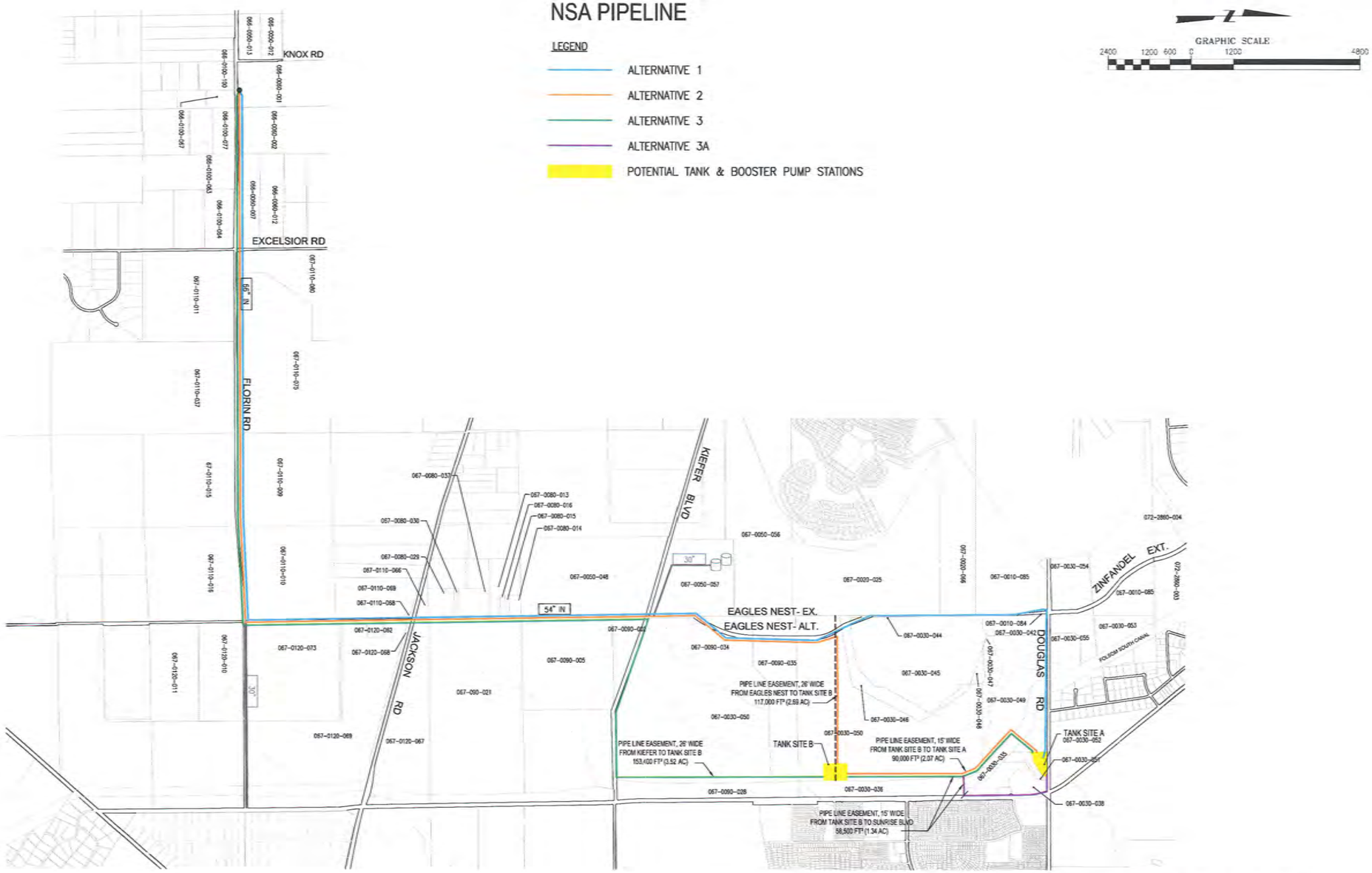

FIGURE 3
NSA Pipelines Alternatives
Suncreek Specific Plan

County of Sacramento, California

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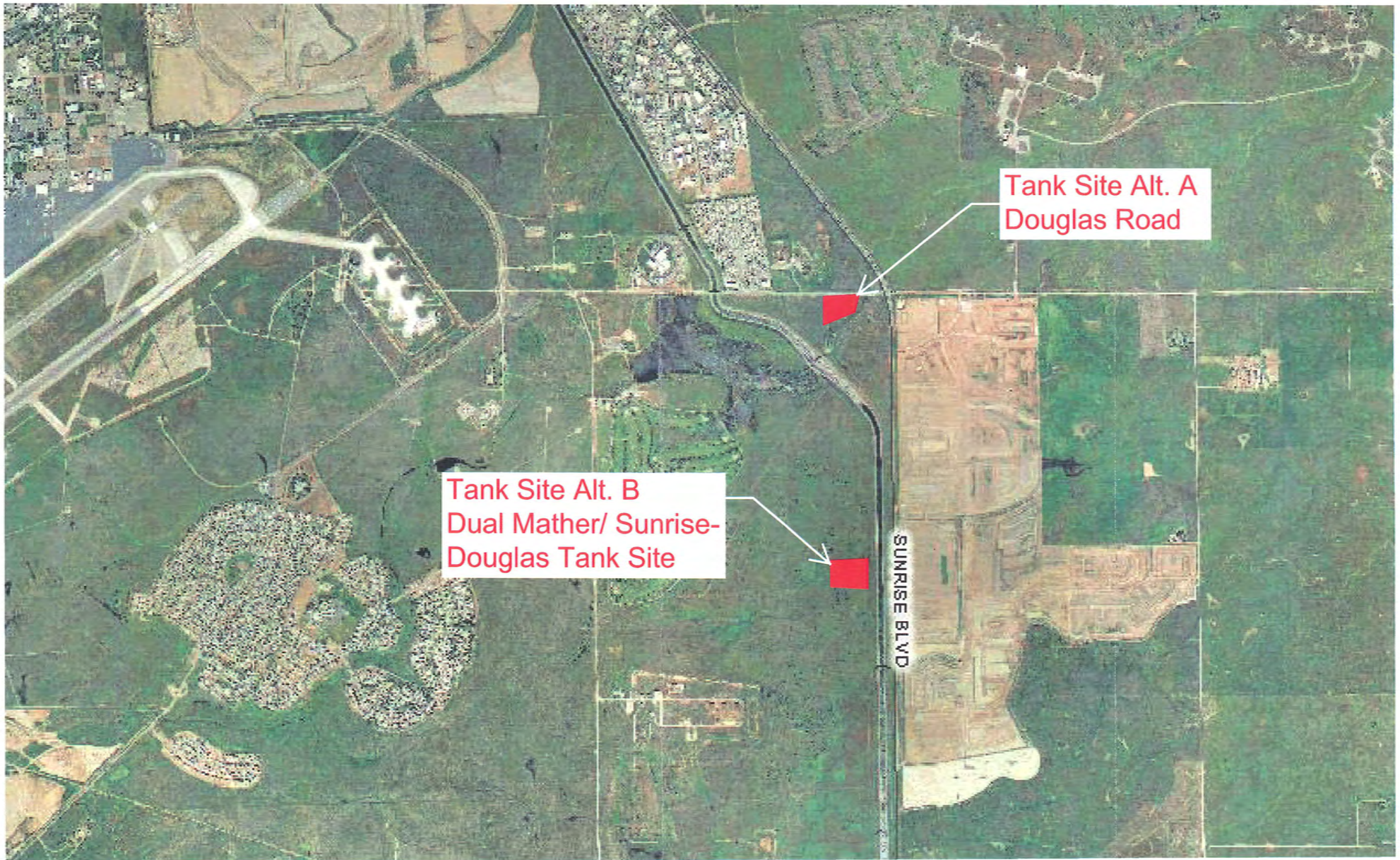

FIGURE 4
Water Tank Alternatives
Suncreek Specific Plan

County of Sacramento, California

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5-25-2011 15:49:54 mjones P:\7991\7991-SC\00\Master Plans\Water\Tech Study #8\Fig 4 - Tank Sites.dwg
There are no xreferences in this drawing.

2. Alternative 2 would continue north within the proposed alignment of Eagles Nest Road as identified in the Mather East Specific Plan for approximately 5,800 feet, then turn east for another 3,900 feet to the tank site, then turn northerly for approximately 6,000 feet and run in an alignment parallel to the Folsom South Canal and cross over in a perpendicular alignment in a utility bridge to reach the Douglas tank site. The finishing connection of 42-inch transmission main could be constructed to the 42-inch stub at the intersection of Douglas Road and Sunrise Boulevard.

3. Alternative 3 would contain approximately 10,900 feet, running easterly within the alignment of Kiefer Boulevard, then turn northerly and run in an alignment parallel to the Folsom South Canal to the Mather Field tank site on the west side of the canal, then continue northerly for approximately 5,900 feet in the alignment parallel to the Folsom South Canal and cross over in a utility bridge at a perpendicular alignment to reach the Douglas Road tank site. The finishing connection of 42-inch transmission main could then be constructed to the 42-inch stub at the intersection of Douglas Road and Sunrise Boulevard.

4. Alternative 3A would be a deviation in alignment of the pipeline material between the two tank sites that could be used with any of the previous 3 alternatives. This alignment would propose a crossing of the Folsom South Canal in a utility bridge at a perpendicular angle at a point south of the curve in the canal. Then, it would either continue to the proposed Douglas Road tank site and through the finishing connection of 42-inch transmission main to the 42-inch stub at the intersection of Douglas Road and Sunrise Boulevard, or it could be constructed directly to the 42-inch stub at the intersection of Douglas Road and Sunrise Boulevard if the alternative for only one tank site was used.

The two booster tank station sites are described as follows:

1. Booster tank station Site A, hereinafter called the Douglas Road Tanks is proposed to serve the Sunrise Corridor with up to two 3,500,000 gallon storage tanks, booster pumps, generators, and a control building situated on a property on Douglas Road near the southwest corner of Douglas Road and Sunrise Boulevard situated just east of the Folsom South Canal. This site is approximately 5.2 acres.[6]

[6] The Douglas Road tank site is APN 067-0030-052.

2. Booster tank station Site B, hereinafter called the Mather Field Tanks is proposed to serve the Mather Field Specific Plan area with two 1,500,000 gallon storage tanks, booster pumps, generators, and a control building on approximately four acres of property on the Mather property located near the west bank of the Folsom South Canal and approximately one mile north of Kiefer Boulevard.[7]

   This site may be increased to approximately 7 acres in the event that Tank Site A cannot be acquired or further analysis deems it is most effective to build a consolidated site that could serve both the Mather and Sunrise corridors. Consolidation to one larger tank site would include a combination of tank and equipment configurations to provide as much as 10,000,000 gallons of total storage capacity to serve both service areas. Potentially, this configuration could consist of up to 4 tanks and two sets of booster pumps and related equipment. It is possible that only one control building and one emergency generator would be required for this consolidated tank and booster station alternative.

PIPELINE CONSTRUCTION

In most areas the pipeline will be installed in open trenches using conventional trenching techniques. The trenching techniques include: preparing the surface, excavating the trench, shoring trench side walls, pipeline installation, backfilling and surface grading. A backhoe or excavator will be used to dig trenches for pipe installation. The trenches will have vertical sidewalls in order to minimize construction easement width and amount of soil excavated.

If excavated soil is of suitable quality for backfill, it will be stockpiled alongside the trench or at staging areas for later reuse. If not suitable as backfill, the soil will be hauled off site and disposed of in a permitted landfill. Width and depth of trenches will vary with pipe size and the location along the chosen route, but trenches would generally be 5 to 8 feet wide. Trenches deeper than 5 feet will require shoring to protect workers from trench failure. A shallow depth cover of 5 feet is proposed with this project. In paved roadways, new pavement would be placed to match the surrounding road. For unpaved areas, restoration would generally involve re-grading and planting with annual grasses.

[7] The Mather Field tank site is a portion of APN 067-0030-050.

TANK/BOOSTER STATION

The tank/booster station sites will include storage tanks, booster pumps, generators and a control building. Each site will be fenced with chain link and have a 26-foot wide interior access road. The Mather Field Tank site may be expanded to contain a configuration of storage tanks and pumps to consolidate the second booster tank station (Douglas Road Tanks) which would entail a phased construction of the tank site.

STAGING AREAS

Staging areas may be up to 10 acres in size and will store pipes, construction equipment, and other construction-related material. Potential staging areas will be reviewed prior to approval of final construction plans. SCWA anticipates there will be two crews (total of 16 to 18 workers) working on the water line, possibly at opposite ends of the alignment. The crews will work normally during the day (8 hours), except as needed at night for work to cross the major roads (Sunrise Boulevard, Florin Road, Jackson Road, Douglas Road, and Kiefer Boulevard).

PROJECT TIMING

The construction of this expensive project is not anticipated to occur for a number of years. While needed to provide long-term service in the North Service Area, there is currently available groundwater capacity to serve any new growth within this service area for the near term. Unfortunately, the NSA Pipeline isn't included within the current SCWA financing plan. Accordingly, it is not know when this facility will be constructed.

Groundwater is currently provided to the North Service Area from the Excelsior Well Field and the Anatolia Groundwater Treatment Plant.[8] These groundwater facilities have the capacity to serve a limited amount of future growth before they need to be expanded. While these facilities can be expanded, albeit with some difficulty[9], SCWA is discouraging the near term expansion of groundwater facilities in favor of utilization of the new surface water facilities. These surface water facilities (FRWA and VSWTP) are anticipated to be in service to meet the peak summer demands in 2011.[10]

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[8] As well as the Mather Housing Water Treatment Plant.

[9] Refer to Technical Memorandum No. 2 for details on the challenges of expanding these groundwater facilities.

[10] SCWA is encouraging the use of the new surface water facilities as a way to help service the bonds that were used to construct the new surface water program. Obviously, SCWA would prefer to have connection fees directed to debt service in lieu of paying for further expansion of the groundwater system when treated surface water is readily available.

It is not known when the North Service Area Pipeline and Appurtenances will be constructed as this facility is not included in the current version of SCWA's financing plan. Given the financing challenge of constructing this facility in the near term, this Technical Memorandum identifies an interim facility that could be constructed without similar financing challenges. This interim facility can be constructed at a significantly lower cost than the North Service Area Pipeline project and it can provide the additional capacity needed to serve the North Service Area in a relatively short time frame on an interim basis. This interim facility is described later in this Technical Memorandum.

2. Florin Road/Sunrise Blvd. Pipeline

   This pipeline is an extension of the North Service Area Pipeline further easterly along Florin Road to Sunrise Blvd, and then northerly along Sunrise Blvd. to a point of connection with the proposed on-site backbone water facilities at the intersection of Sunrise Blvd. and Kiefer Blvd. This pipeline is shown in Figure 5. Obviously, this alternative is dependent upon the construction of the first two sections of the North Service Area Pipeline. This facility has also been shown in both the MWS and the WSIP.

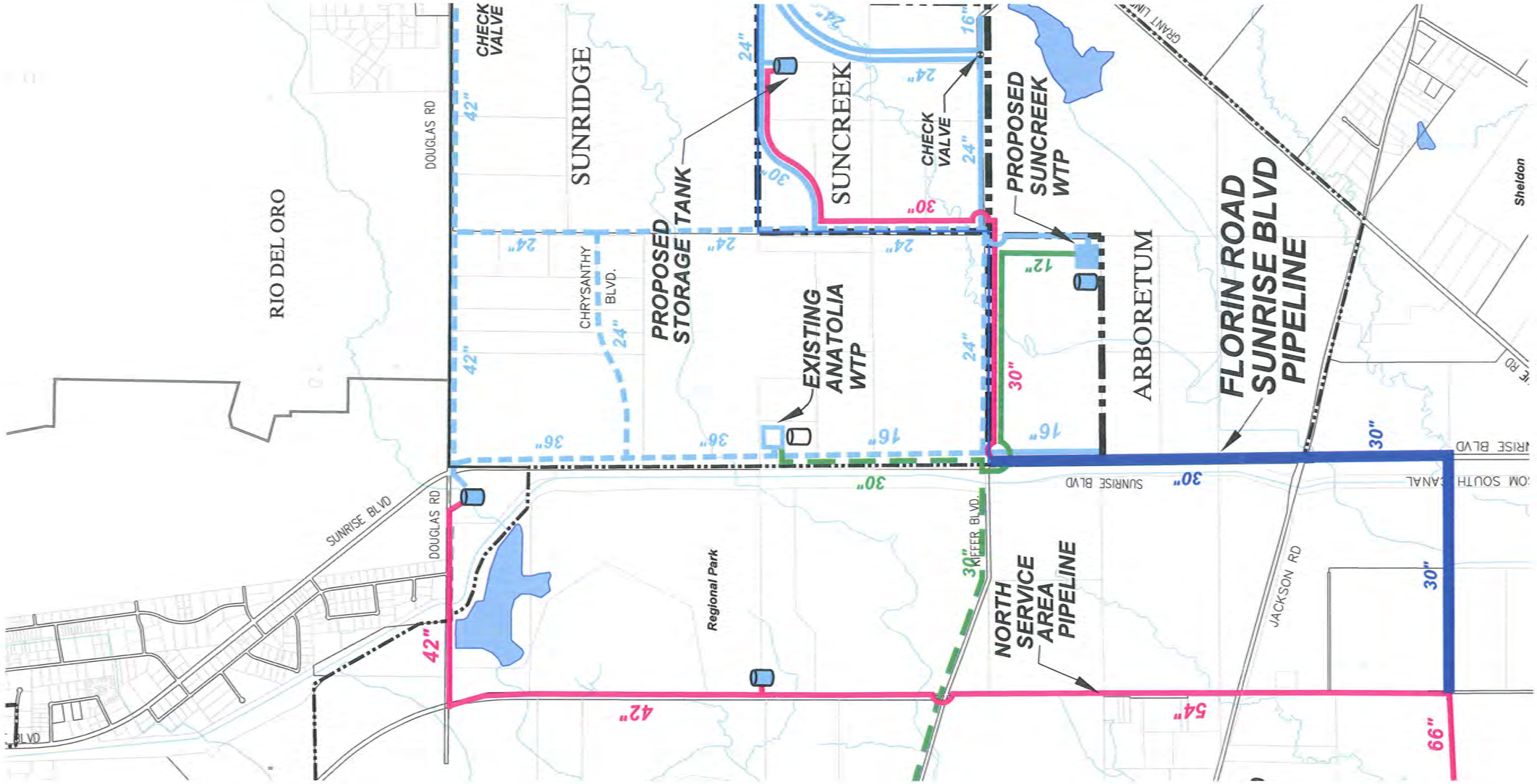
   This 30-inch diameter pipeline would connect to the North Service Area Pipeline at the intersection of Florin Road and Eagles Nest Road and extend in the easterly direction within the alignment of Florin Road approximately 5,300 feet to the intersection of Florin Road with Sunrise Blvd.

   The next section of the pipeline will then turn northerly 10,500 feet within the alignment of Sunrise Blvd. to the intersection of Kiefer Blvd. where it will connect to the proposed on-site backbone water system planned for the SunCreek Specific Plan area.

   This pipeline will be primarily located in existing or future right-of-way. In locations where this pipeline will not be in existing roadways, permanent easements will be acquired as needed. This section of the pipeline will cross Jackson Road (State Route 16), most likely in a bore and jack configuration.

   This project will install the pipeline within the existing and/or prescriptive road right-of-ways, primarily using open trench construction, where trenches are to be 5 to 6 feet wide. The water pipe is expected to have approximately 5 to 10 feet of cover.

   Crossing the Folsom South Canal, the pipeline would need to be either attached to the existing Florin Road bridge over the canal, placed within a future bridge to be constructed across the canal, or be placed in a separate utility bridge.



LEGEND

- 16" — PROPOSED OFFSITE WATER TRANSMISSION PIPELINE
- 48" — PROPOSED NORTH AREA SERVICE (NSA) PIPELINE
- PROPOSED RAW SURFACE WATER PIPELINE (FRWA)
- PROPOSED RAW GROUND WATER PIPELINE
- EXISTING WATER TRANSMISSION PIPELINE
- EXISTING RAW GROUND WATER PIPELINE

0 1250 2500 5000

SCALE:1"=2500'

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FIGURE 5

Florin Road/Sunrise Blvd Pipeline

Suncreek Specific Plan

County of Sacramento, California
August, 2010

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5-25-2011 15:49:59 mjones P:\7991\7991-SC\00\Master Plans\Water\Tech Study #8\Fig 5 - Florin Road - Sunrise Blvd Pipeline.dwg
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PIPELINE CONSTRUCTION

In most areas the pipeline will be installed in open trenches using conventional trenching techniques. The trenching techniques include: preparing the surface, excavating the trench, shoring trench side walls, pipeline installation, backfilling and surface grading. A backhoe or excavator will be used to dig trenches for pipe installation. The trenches will have vertical sidewalls in order to minimize construction easement width and amount of soil excavated.

If excavated soil is of suitable quality for backfill, it will be stockpiled alongside the trench or at staging areas for later reuse. If not suitable as backfill, the soil will be hauled off site and disposed of in a permitted landfill. Width and depth of trenches will vary with pipe size and the location along the chosen route, but trenches would generally be 5 to 6 feet wide. Trenches deeper than 5 feet will require shoring to protect workers from trench failure. A shallow depth cover of 5 feet is proposed with this project. In paved roadways, new pavement would be placed to match the surrounding road. For unpaved areas, restoration would generally involve re-grading and planting with annual grasses.

STAGING AREAS

Staging areas may be up to 10 acres in size and will store pipes, construction equipment, and other construction-related material. Potential staging areas will be reviewed prior to approval of final construction plans. SCWA anticipates there will be two crews (total of 16 to 18 workers) working on the water line, possibly at opposite ends of the alignment. The crews will work normally during the day (8 hours) except as needed at night for work to cross the major roads (Sunrise Boulevard, Florin Road, Jackson Road, and Kiefer Boulevard).

PROJECT TIMING

The construction of this project is not anticipated to occur for a number of years. While needed to provide long-term service in the North Service Area, there is currently available groundwater capacity to serve any new growth within this service area for the near term. This pipeline isn't included within the current SCWA financing plan. Accordingly, it is not know when this facility will be constructed.

As explained above, groundwater is currently provided to the North Service Area from the Excelsior Well Field and the Anatolia Groundwater Treatment Plant.[11] These groundwater facilities have the capacity to serve a limited amount of future growth before they need to be expanded.

[11] As well as the Mather Housing Water Treatment Plant.

While these facilities can be expanded, albeit with some difficulty, SCWA is discouraging the near term expansion of groundwater facilities in favor of utilization of the new surface water facilities that are anticipated to be in service to meet the peak summer demands in 2011.[12]

Given the financing challenge of constructing this facility, this Technical Memorandum identifies an interim facility that could be constructed for a significantly lower cost and provide the needed additional capacity needed to serve the North Service Area on in a relatively short time frame on an interim basis. This interim facility is below.

3. Anatolia Pipeline Conversion (Interim Facility)

   Alternatively, there exists the opportunity to convert portions of the existing 30-inch diameter raw groundwater pipeline that currently conveys groundwater pumped from the Excelsior Well Field to the Anatolia Groundwater Treatment Plant (AGWTP) to a treated surface water transmission pipeline. Figure 6 shows this pipeline alternative in more detail.

   If this conversion was accomplished in a timely fashion, surface water could be delivered to the NSA relatively easily once the VSWTP is operational in 2011. In order to accomplish this conversion, the following measures would be required:

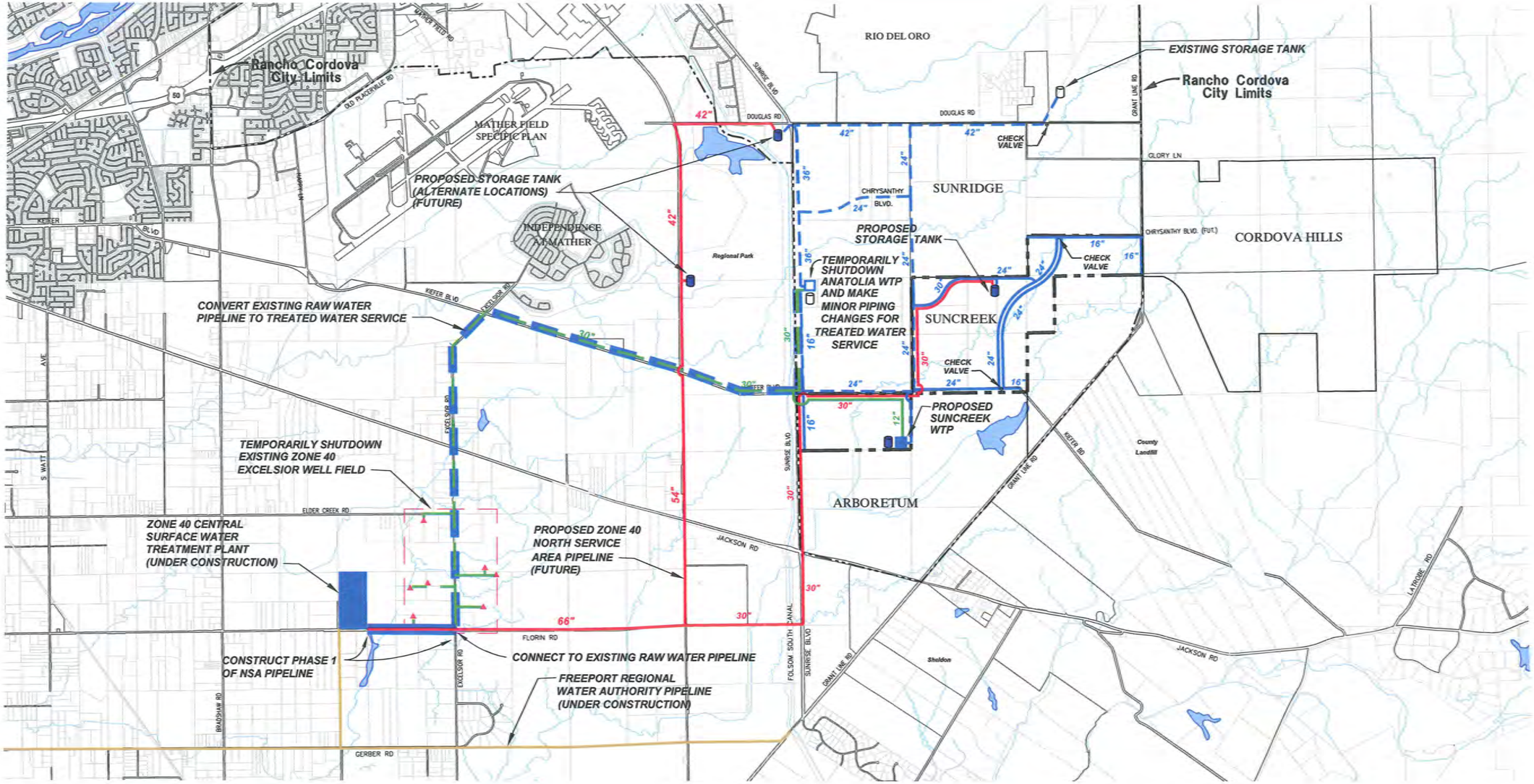
   1. Construct Phase 1 of the NSA Pipeline. A relatively short portion of the NSA Pipeline would need to be constructed from the VSWTP to the Excelsior Well Field.

   2. Temporary Shut-Down of Existing Wells. The existing groundwater wells in the Excelsior Well Field could be taken off line temporarily and saved for reactivation when needed to meet conjunctive use water demands in the future.

   3. Temporary Shut-Down AGWTP. The AGWTP would be temporarily shut-down until needed to meet conjunctive use demands in the future.

   4. Treated Water Piping Modifications. Minor piping modifications within the AGWTP site would be required to connect the converted raw groundwater transmission pipeline directly to the treated water side of the AGWTP.

[12] SCWA is encouraging the use of the new surface water facilities as a way to help service the bonds that were used to construct the new surface water program. Obviously, SCWA would prefer to have connection fees directed to debt service in lieu of paying for further expansion of the groundwater system when treated surface water is readily available.



LEGEND

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- EXISTING WATER TRANSMISSION PIPELINE
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SCALE: 1"=5000'

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FIGURE 6

Anatolia Pipeline Conversion Conceptual Plan

Suncreek Specific Plan

County of Sacramento, California
August, 2010

5-25-2011 15:49:50 mjones P:\7991\7991-SC\00\Master Plans\Water\Tech Study #8\Fig 6 - Regional Water Facility Concept.dwg
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In this manner, treated surface water could be delivered to the NSA in a relatively short period of time. The benefit of this alternative is the utilization of existing transmission capacity and the avoidance of significant capital costs associated with the construction of the entirety of the NSA Pipeline. The downside would be the temporary shut-down of the existing Excelsior Well Field and the AGWTP.

The duration of this shutdown could be minimized by accelerating the construction of the North Service Area Pipeline. Initiation of the County's conjunctive use program could then be realized. This interim pipeline will minimize the premature expenditure of capital until sufficient demand exists to support the costly NSA Pipeline.

To summarize, this interim pipeline would deliver potable water to the North Service Area on an interim basis. The alignment of this interim pipeline is shown in Figure 6.

This pipeline is a combination of:

- The first section of the North Service Area Pipeline,
- A relatively short connecting 30-inch diameter pipeline extending approximately 2,500 feet northerly along Excelsior Road to a point of connection with the existing Anatolia Raw Groundwater Pipeline (30-inch diameter), and
- Conversion of the Anatolia Raw Groundwater Pipeline to a treated surface water pipeline on an interim basis.

The alignment of the new pipeline would begin at the Vineyard Surface Water Treatment Plant located on Florin Road east of Knox Road. The first 4,600 feet of 66-inch pipe material that would be laid in the easterly direction within the alignment of Florin Road to the intersection of Florin Road and Excelsior Road. Turning northerly, the next section of pipeline would be 30-inch diameter and extend along Excelsior Road to a point of connection with the existing 30-inch raw groundwater pipeline, approximately 2,500 feet northerly of Florin Road.

Once connected to the new pipeline, the existing 30-inch raw water pipeline will be capable of serving approximately 24 million gallons per day of treated surface water to the North Service Area. Assuming a maximum pipeline velocity of 7 feet per second, this is enough water to serve approximately 15,400 EDU's on a maximum day basis. Beyond this level of demand the North Service Area Pipeline will need to be operational.

PIPELINE CONSTRUCTION

As described above for the other alternatives, this project will locate new pipelines primarily in existing or future right-of-way. In locations pipeline will not be in existing roadways, permanent easements will be acquired as needed. While the pipeline will be installed in open trenches using conventional trenching techniques in most areas, in areas where the pipeline crosses creeks and/or wetlands the pipeline will be constructed utilizing bore and jack techniques.

This project will install the new sections of pipeline primarily using open trench construction, where trenches are to be 5 to 8 feet wide. The water pipe is expected to have approximately 5 to 10 feet of cover.

As stated above, in most areas the pipeline will be installed in open trenches using conventional trenching techniques. The trenching techniques include: preparing the surface, excavating the trench, shoring trench side walls, pipeline installation, backfilling and surface grading. A backhoe or excavator will be used to dig trenches for pipe installation. The trenches will have vertical sidewalls in order to minimize construction easement width and amount of soil excavated.

If excavated soil is of suitable quality for backfill, it will be stockpiled alongside the trench or at staging areas for later reuse. If not suitable as backfill, the soil will be hauled off site and disposed of in a permitted landfill. Width and depth of trenches will vary with pipe size and the location along the chosen route. Trenches deeper than 5 feet will require shoring to protect workers from trench failure. Depth of cover will generally be 5 to 10 feet for this project.

In paved roadways, new pavement would be placed to match the surrounding road. For unpaved areas, restoration would generally involve re-grading and planting with annual grasses.

STAGING AREAS

Staging areas may be up to 10 acres in size and will store pipes, construction equipment, and other construction-related material. Potential staging areas will be reviewed prior to approval of final construction plans. It is anticipated there will be one construction crews (total of 16 to 18 workers) working on the project. The crews will work normally during the day (8 hours) except as needed at night for work to cross the major roads (Florin Road).

CONVERSION OF EXISTING FACILITIES

This alternative envisions the temporary idling of the Excelsior Well Field and the Anatolia Groundwater Treatment Plant on an interim basis in favor of delivering treated surface water to the North Service Area until sufficient funding can be developed for the two more expensive pipelines described above (the North Service Area Pipeline and Appurtenances and the Florin Road/Sunrise Blvd. Pipeline projects).[13] The temporary idling of these facilities will continue until the North Service Area Pipeline can be financed, constructed, and placed in service.

The existing wells will be taken off line and prepared for extended idling. The wells will most likely need to be retrofitted for periodic exercising during the interim shutdown period. This may consist of changes in electrical service, and minor piping changes to allow for the recirculation of pumped groundwater during exercise periods.

The existing treatment plan will likewise be taken off line and prepared for extended idling. Generally speaking, this would include changes in electrical service and minor piping changes to connect the converted raw groundwater pipeline directly to the on-site storage tanks.

PROJECT TIMING

It is reasonable to expect that the construction of this project could occur in a relatively short period of time. There is currently available groundwater capacity to serve any new growth within this service area for the near term – perhaps until 2020 based on the analysis in Technical Memorandum No. 2.

As explained above, groundwater is currently provided to the North Service Area from the Excelsior Well Field and the Anatolia Groundwater Treatment Plant.[14] When combined with the conversion of the raw water pipeline, these groundwater facilities have capacity until approximately 2020 before they reach their respective design capacities.

In lieu of near term expansion of these groundwater facilities, the concept herein is to make the short connection to the new VSWTP via the first section of the North Service Area Pipeline and begin delivering treated surface water to the North Service Area in a relatively short time frame. This concept could be constructed for a significantly lower cost and provide the needed additional capacity needed to serve the North Service Area on an interim basis.

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[13] Technical Memorandum No. 2 explains in some detail how this project could serve the anticipated growth in new connections within the North Service Area on an interim basis until funding of the more expensive pipeline projects can be obtained.

[14] As well as the Mather Housing Water Treatment Plant.

4. Americanos Boulevard Pipelines

These pipelines are an extension of the existing 30-inch diameter Americanos Boulevard pipelines, from their current terminus at Douglas Road, southerly along future Americanos Blvd. to a point of connection with the proposed on-site backbone water facilities at the intersection of future Chrysanthy Blvd. and Americanos Blvd. This pipeline is shown in Figure 7. This facility has also been shown in both the MWS and the WSIP.[15]

These parallel 24-inch diameter pipelines would connect to the existing North Douglas Storage Tanks and extend Zone 6 water service to the project. These pipelines will be primarily located in existing or future right-of-way. In locations where the pipeline will not be in existing roadways, permanent easements will be acquired as needed.

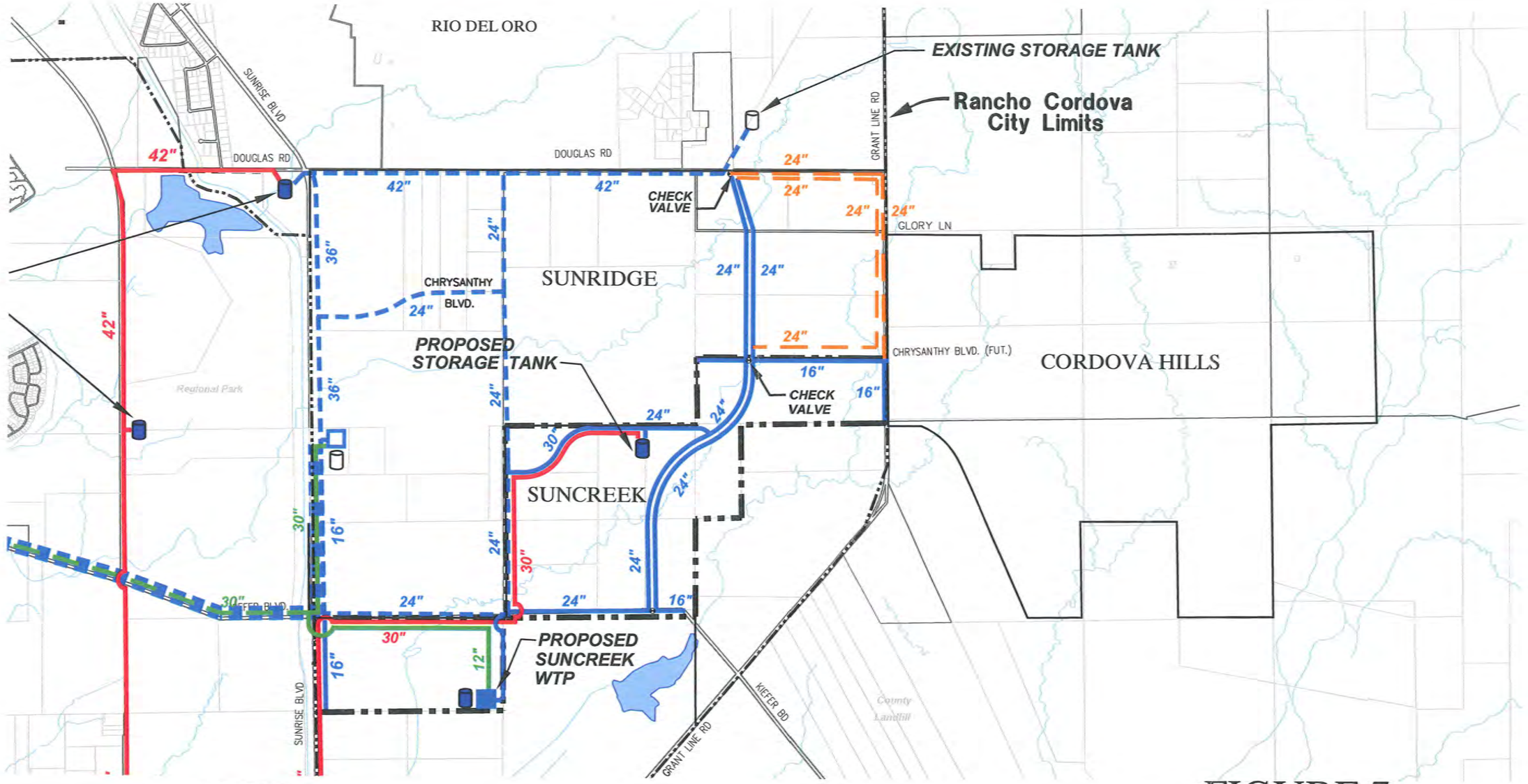
This project will install the pipeline within the rights-of-way of future streets, primarily using open trench construction, where trenches are to be 4 to 5 feet wide. The water pipe is expected to have approximately 5 to 10 feet of cover.

PIPELINE CONSTRUCTION

In most areas the pipeline will be installed in open trenches using conventional trenching techniques. The trenching techniques include: preparing the surface, excavating the trench, shoring trench side walls, pipeline installation, backfilling and surface grading. A backhoe or excavator will be used to dig trenches for pipe installation. The trenches will have vertical sidewalls in order to minimize construction easement width and amount of soil excavated.

If excavated soil is of suitable quality for backfill, it will be stockpiled alongside the trench or at staging areas for later reuse. If not suitable as backfill, the soil will be hauled off site and disposed of in a permitted landfill. Width and depth of trenches will vary with pipe size and the location along the chosen route, but trenches would generally be 4 to 5 feet wide. Trenches deeper than 5 feet will require shoring to protect workers from trench failure. A shallow depth cover of 5 feet is proposed with this project. In paved roadways, new pavement would be placed to match the surrounding road. For unpaved areas, restoration would generally involve re-grading and planting with annual grasses.

[15] An alternative route for this pipeline, if Americanos Blvd. has not been constructed southerly from Douglas Road to Chrysanthy Blvd., would be easterly along Douglas Road to Grant Line Road and then southerly along Grant Line Road to the intersection of future Chrysanthy Blvd. and Grant Line Road.



LEGEND

- 24" — PROPOSED OFFSITE WATER TRANSMISSION PIPELINE (Americanos Boulevard Zone 6)
- 16" — PROPOSED OFFSITE WATER TRANSMISSION PIPELINE
- 48" — PROPOSED NORTH AREA SERVICE (NSA) PIPELINE
- PROPOSED RAW SURFACE WATER PIPELINE (FRWA)
- PROPOSED RAW GROUND WATER PIPELINE
- 24" — ALTERNATIVE OFFSITE WATER TRANSMISSION PIPELINE
- EXISTING WATER TRANSMISSION PIPELINE
- EXISTING RAW GROUND WATER PIPELINE

0 1500 3000 6000

SCALE: 1"=3000'

MACKAY & SOMPS
CIVIL ENGINEERS, INC.
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FIGURE 7

Americanos Boulevard Pipelines (Zone 6) Conceptual Plan

Suncreek Specific Plan

County of Sacramento, California

May 24, 2011

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STAGING AREAS

Staging areas may be up to 5 acres in size and will store pipes, construction equipment, and other construction-related material. Potential staging areas will be reviewed prior to approval of final construction plans. SCWA anticipates there will be two crews (total of 16 to 18 workers) working on the water line, possibly at opposite ends of the alignment. The crews will work normally during the day (8 hours).

PROJECT TIMING

The construction of this project is not anticipated to occur for a number of years. While needed to provide long-term service in the North Service Area, there is currently available groundwater capacity to serve any new growth within this service area for the near term.

C. Conclusion

This Technical Memorandum identifies and describes the off-site facilities that will be required to provide potable water to the SunCreek Specific Plan area.

These facilities described above are summarized as follows:

1. Connection to the existing treated water transmission system within the Sunrise/Douglas area,
2. Construction of three new treated surface water pipelines (North Service Area Pipeline, Americanos Boulevard Pipelines, and Florin/Sunrise Water Pipeline), and,
3. Conversion of the existing Anatolia Raw Groundwater Pipeline to convey treated surface water (the "Anatolia Pipeline Conversion Project")from the VSWTP to the Sunrise/Douglas area on an interim basis.