

**ENGINEER'S REPORT
For NORTH SAN JOAQUIN
WATER CONSERVATION DISTRICT**

**PROPOSITION 218 PROCEDURES FOR
IMPROVEMENT DISTRICT NO. 3 - SOUTH WATER USERS**

November 2018



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Appendix APetition for Formation

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ABBREVIATIONS

AF.....	Acre-feet
AFA.....	Acre-Feet Annually
CDFA.....	California Department of Food and Agriculture
CFS.....	Cubic-feet-per-second
DWR.....	Department of Water Resources
EBMUD.....	East Bay Municipal Utility District
GSP.....	Groundwater Sustainability Plan
NRCS.....	Natural Resources Conservation Service
NSJWCD or District.....	North San Joaquin Water Conservation District
O&M.....	Operations and Maintenance
PDA.....	Protest Dismissal Agreement
SGMA.....	Sustainable Groundwater Management Act
SWRCB.....	State Water Resources Control Board
USDA.....	United States Department of Agriculture
WID.....	Woodbridge Irrigation District

REPORT SUMMARY

The North San Joaquin Water Conservation District (NSJWCD) is proposing to form the Improvement District No. 3 – The South Water Users Improvement District (ID #3) for the purpose of funding, constructing and operating the South System. An improvement district is a delineated area within a larger water conservation district that includes only a fraction of the lands in the entire water conservation district. The new ID #3 would then levy a special benefit assessment on lands within the improvement district that will receive a benefit from the South System. The monies collected from the special benefit assessment will be used to finance the capital cost of the South System improvements necessary to efficiently deliver surface water to the members of ID #3 (South System Project).

The process of establishing a special benefit assessment to pay for the capital costs of an improvement project is subject to provisions of Article XIII D of the California Constitution (commonly known as Proposition 218) and Sections 53750 through 53753.5 of the California Government Code, which implements Proposition 218. Proposition 218 was passed by the voters in November 1996 and established mandatory procedures that must be followed by local agencies in order to establish, or increase, a special benefit assessment on property. This report is intended to comply with the required procedure by identifying the benefitted properties, assessing the relative benefits to the properties from the South System Project and proposing assessment rates that are proportional to the relative benefits.

NSJWCD has already begun replacing the South System pump station by constructing a new wet well and installing new HDPE piping to replace a prior open channel facility at the diversion. The South System Project involves completing the new South Pump Station with a new pump, electrical, meter and automation equipment, as well as adding valves and necessary repairs to the existing delivery pipeline and related infrastructure for the South System.

In early 2018, NSJWCD proposed a larger, more expensive project for the South System which would have involved replacing or sliplining seven miles of pipeline and pressurizing the entire system. The funding for this larger project would have come from an assessment on the lands in Improvement District No. 2. The Proposition 218 ballot proceeding on the proposed assessment to finance the larger project failed. The current South System Project is a smaller-scale, less expensive project for the South System. In addition, the membership of Improvement District No. 3 is entirely voluntary.

The proposed South System Project and this assessment proceeding are critically important to NSJWCD because:

- Under the terms of the NSJWCD's water right, NSJWCD must put its surface water to use soon or it will lose the water right. The proposed project will enable NSJWCD to put about half of its water right to immediate beneficial use when the South System Project is completed.
- NSJWCD overlies a portion of the critically overdrafted Eastern San Joaquin Groundwater Subbasin. Groundwater levels in NSJWCD have been declining an average of one foot per year, increasing costs of pumping groundwater for landowners. This trend is expected to continue unless landowners reduce groundwater pumping by using alternate surface water supplies or fallowing land.

REPORT SUMMARY

- Pursuant to the recently enacted law called the Sustainable Groundwater Management Act (SGMA), NSJWCD must show that it can manage the groundwater basin towards sustainability or landowners may face pumping restrictions and/or state regulatory intervention. The proposed project will reduce groundwater use, improve groundwater levels and help NSJWCD reach its sustainability goal.
- NSJWCD has secured outside funding and grants for the project. The grants will be lost if the landowners do not approve moving forward to fund the balance of the cost of the project.

NSJWCD proposes to establish a per-acre assessment on lands within the assessment district based upon the level of special benefit to each parcel from the South System Project. Only lands that voluntarily elect to join ID #3 will be assessed. The assessment will be \$50/acre for ten years. A majority of the landowners in ID #3 may vote to increase the assessment in the future for additional projects on the South System if they choose. Lands in ID #3 will have a first priority right to delivery of surface water available on the South System. The Petition for Formation, attached as **Appendix A**, details other terms of the membership in ID #3.

SECTION ONE

1 PURPOSE OF THE REPORT

1.1 General

The NSJWCD is proposing to form the ID #3 to fund the South System Project. This report is prepared in accordance with California State law to identify and describe an equitable distribution of the benefit assessments in accordance with the proportionate special benefits each assessed parcel will receive from the South System Project.

In November 1996, the California voters approved Proposition 218, the "Right to Vote on Taxes Act", which added Article XIII D to the California Constitution. Proposition 218 imposes certain requirements relative to the imposition of property related assessments, fees and charges by local agencies such as NSJWCD.

Accordingly, NSJWCD must identify all parcels that will have a "special benefit" conferred upon them for which the proposed assessment will be levied. Under Proposition 218, a "special benefit" is defined as "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large" Article XIII, Section 2(i) of the California Constitution.

The primary special benefit for parcels in ID #3 is the ability to receive surface water for irrigation and retain any "groundwater credits" associated with the use of this surface water that may be established for the Sub-basin as part of the Groundwater Sustainability Plan required under the Sustainable Groundwater Management Act.

To comply with Proposition 218, NSJWCD will mail a notice and ballot to each landowner subject to the proposed assessment for ID #3. NSJWCD then must hold a public hearing on the proposed assessment no earlier than 45 days after mailing the notices. The ballots must be returned prior to, or at the opening of the public hearing. The ballots are then counted following the conclusion of the public hearing. NSJWCD cannot impose the assessment if, upon the conclusion of the hearing, ballots submitted in opposition of the assessment exceed the ballots submitted in favor of the assessment. In tabulating the ballots, the ballots shall be weighted according to the proportional financial obligation of the affected property.

Any funds collected from landowners by the assessment proposed in this report may only be used for the South System Project and may not be used to benefit other landowners not within the identified special benefit improvement district.

1.2 Revenue Objectives

The South System Project consists of the following parts:

- (1) Complete the South Pump Station Replacement Project
- (2) Repair and Automate South System Pipeline

The total budget for the South System Project is \$1.3 million broken down as follows:

- \$1 million to complete the South System Pump Station
- \$300,000 for repair and automation of the South System Pipeline

NSJWCD applied for and was awarded a \$300,000 grant for the South System Pump Station automation equipment, reducing the revenue objective for ID #3 to \$1 million.

NSJWCD has also applied for \$150,000 in additional federal grants for the pipeline work and is working with the Department of Water Resources to modify the project description for the Proposition 1 \$3 million grant to cover the modified South System Project.

If these additional grant efforts are successful, NSJWCD will have additional funding for additional improvements to the South System pipeline, including sliplining or replacing parts of the pipeline that are leaking and adding additional valves as needed.

2 DISTRICT AND SOUTH SYSTEM BACKGROUND INFORMATION

2.1 General

The NSJWCD was organized in 1948 as a water conservation district under California Water Code Division 21. The NSJWCD encompasses approximately 150,000 acres generally east of the City of Lodi, including areas within the city limits, and north and south of the Mokelumne River. NSJWCD delivers surface water to agricultural landowners and for groundwater recharge projects, as available, under State Water Resources Control Board (SWRCB) Permit #10477 through four existing pump station and delivery systems, including the South System, which is a part of the proposed project.

A board of five directors governs the NSJWCD. Each Director represents a separate geographical division and is elected to a term of four years by the qualified voters within the division. Regular Board meetings are held monthly at the Lodi Library and are generally at 2:00 PM on the last Monday of each month.

2.2 Location

The NSJWCD is situated east and north of the City of Lodi in San Joaquin County in California. The Mokelumne River passes through the NSJWCD service area. NSJWCD overlies the Eastern San Joaquin Groundwater Subbasin as defined in California Department of Water Resources (DWR) Bulletin 118.

A Location Map and District Boundary Map are provided as **Figure 2-1**.

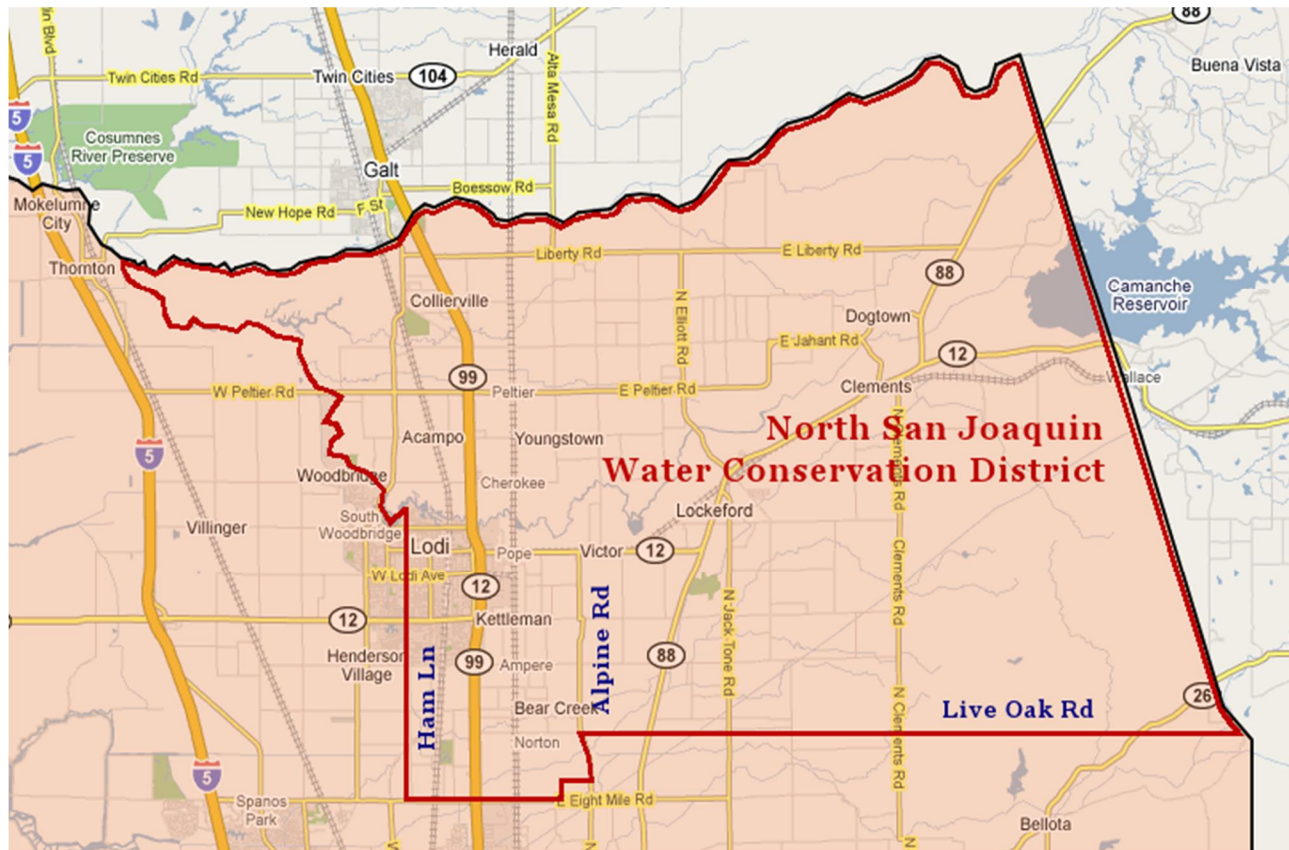


Figure 2-1 Location and District Boundary Map

2.3 History and Water Rights

The SWRCB issued Permit 10477 to NSJWCD in 1956 in Water Rights Decision 858 (D-858). Permit 10477 provides for diversion and use of 20,000 acre-feet of water per year from the Mokelumne River in years when water is available under NSJWCD's priority of right.

Other water right holders for Mokelumne River water include Woodbridge Irrigation District, Amador County, Calaveras County, East Bay Municipal Utility District (EBMUD), and riparian and pre-1914 appropriative rights along the river. Most of these rights are senior to Permit 10477. As a result, NSJWCD receives water under its permit in only normal to wet years (about 55% of years).

NSJWCD diversion and use of water under Permit 10477 peaked in 1973 with 9,488 AFA of diversions. Of that 9,488 AF, 8,725 AF were diverted through the South System and 763 AF were diverted through the North System. However, the lack of available water during the drought of the late 1980's and early 1990's combined with widespread conversion to drip irrigation and the increasing cost of operating the older NSJWCD facilities caused landowners along the North and South Systems to stop using the NSJWCD's surface water for irrigation. In recent years, diversions under Permit 10477 have been limited to about 3,000 to 5,000 AF per year off the

South System, when water is available. (See NSJCWD Monthly and Annual Diversions in Acre Feet, **Appendix I**).

2.4 Recent NSJWCD Activity and Projects

Permit 10477, like all water right permits, contains time limits to put the full amount of the permit to beneficial use. If a permit holder does not put the full amount to use in the provided time, the state can limit the amount of water that can be diverted in the future to just the amounts that have been diverted in the past. In light of the historic use of water under Permit 10477, NSJWCD filed a petition for an extension of time to put the full 20,000 AF of water available under Permit 10477 to use. In 2006, the SWRCB issued an order denying NSJWCD's petition for an extension of time to put the full 20,000 AF of water under Permit 10477 to beneficial use due to the lack of progress in NSJWCD in upgrading facilities and encouraging the use of surface water. NSJWCD and other stakeholders in San Joaquin County successfully challenged this decision and were able to convince the SWRCB to reconsider the order and give NSJWCD more time to put the water to beneficial use. (Water Right Order 2008-0016.)

In 2014 the SWRCB officially granted NSJWCD's petition for extension of time and issued an Amended Permit 10477 which requires that NSJWCD show substantial progress in putting water to use by 2025 and fully utilize the water right by 2040. Given this history and the timeline set by the SWRCB, it is very important that NSJWCD move forward with the ID #3.

As part of the process to extend the time to use water under Permit 10477, NSJWCD had to resolve protests that other parties had lodged at the SWRCB regarding the NSJWCD water right. East Bay Municipal Utility District (EBMUD) also had a petition for extension of time for its Camanche water right pending at the same time. EBMUD, NSJWCD, San Joaquin County and other county water interests entered into a Protest Dismissal Agreement (PDA) to resolve their respective protests in 2014. Under the terms of the PDA, EBMUD provided \$1.75 million in funding to NSJWCD for improvements to the NSJWCD South System.

As part of the PDA, EBMUD also committed to providing additional water to NSJWCD above and beyond the water available under Permit 10477 if the parties are able to establish a groundwater banking program in NSJWCD. The additional water that could be available to NSJWCD includes 3,000 to 6,000 AFA in years when water is normally not available under Permit 10477 (dry years) and up to 8,000 AFA in years when water is available under Permit 10477 (wet years). However, NSJWCD must have a groundwater banking program in place to receive this additional water. NSJWCD, EBMUD and San Joaquin County have been working on a pilot level groundwater banking program involving 1,000 AF of EBMUD water to start this process. This is called the DREAM Project. The project agreements and some permits have been obtained for the DREAM Project, but it has not started yet. The parties expect to start operating the DREAM Project in 2018.

During the last ten years, NSJWCD has also been working diligently on other projects to put the water under Permit 10477 to beneficial use. These include the Cal Fed project, the Tracy Lake Groundwater Recharge Project and the City of Lodi transfer.

In 2004 the District received grant funding for the Cal-Fed pump station and groundwater recharge project. This project included installation of a new 15 cfs pump station on the north side of the Mokelumne River and related pipeline infrastructure to divert river water onto nearby bermed fields used as groundwater recharge ponds. The project was operated in 2009, 2010, and 2011.

In Fall of 2017, NSJWCD resumed operation of this system for a pilot groundwater recharge project on a 23-acre vineyard. NSJWCD is investigating funding sources to expand the groundwater recharge options using the Cal Fed diversion site, including potentially forming an improvement district on the north side of the Mokelumne River to enable landowners to fund groundwater recharge efforts that benefit their properties.

In 2011, NSJWCD was awarded a federal WaterSmart grant for the Tracy Lake Groundwater Recharge Project. This project was completed in fall of 2015 at a cost of approximately \$2.3 million and involved construction of a new 25 cfs pump station on the north side of the Mokelumne River downstream of the Woodbridge Irrigation District diversion dam. The project involves pumping river water available under Permit 10477 into a natural lake (South Tracy Lake). Some of the water that is pumped into the lake recharges the groundwater basin through percolation, or direct groundwater recharge. Most of the water that is pumped into the lake will be diverted out of the lake by adjacent landowners farming 1,310 acres of irrigated vineyards. By using the river water for irrigation, these 1,310 acres of vineyards will stop pumping a like amount of groundwater, accomplishing in-lieu groundwater recharge. The WaterSmart grant covered \$300,000 of the project cost and the balance was funded through capital cost assessments on the 1,310 acres of lands that will receive irrigation water from the project.

In 2014, NSJWCD negotiated a transfer agreement with the City of Lodi to enable the City to purchase up to 1,000 AF of water available under Permit 10477. The purchased water is diverted at Lodi Lake and treated at the City's water treatment plant for delivery to City residents and businesses in-lieu of the City having to pump groundwater to meet demand, accomplishing in-lieu groundwater recharge. About half of the City of Lodi is located within NSJWCD's boundaries. The transfer agreement is for five years and ends in 2019. The agreement can be renewed with both parties' agreement. In 2017 NSJWCD delivered 400 acre-feet of water to the City of Lodi pursuant to this agreement and generated more than \$30,000 in revenue.

During the last ten years, NSJWCD has also analyzed the ability to rehabilitate the North and South distribution systems. Limited funds have prevented the District from moving forward with projects on these two systems to date. The \$1.75 million in PDA settlement money provided by EBMUD was a start to securing funding for the South System, but was not enough to complete a project. In 2016, two grant opportunities that seemed perfect for the South System arose and the NSJWCD Board decided to invest in the engineering studies necessary to apply for the grants.

In 2017, NSJWCD was awarded a \$1 million federal WaterSmart grant from the U.S. Bureau of Reclamation and a \$3 million Proposition 1 Agricultural Water Use Efficiency grant from California Department of Water Resources. Both of these grants provide funding for improving the NSJWCD South System pipeline so that it can deliver automated, pressurized surface water to improve water use and energy efficiency. Due to the failure of the Proposition 218 ballot proceeding in February 2018 for Improvement District No. 2, NSJWCD lost the \$1 million federal grant. NSJWCD is currently working on amending the project description for the \$3 million grant from the State of California for the modified South System Project and related pipeline improvements.

While the South System is NSJWCD's current focus, the NSJWCD board is continuing to investigate improvements to the North System and maximizing the use of the Cal Fed system to fully utilize Permit 10477 and accomplish groundwater recharge throughout NSJWCD.

Table 2-1 below summarizes current estimates of how NSJWCD plans to utilize the water under Permit 10477 and the additional water available to NSJWCD from EBMUD under the PDA. Modeling of water availability for Permit 10477 over the last 80 years of hydrology shows that when water is available to NSJWCD under Permit 10477, the full 20,000 AFA is available except in rare circumstances. Permit 10477 requires that 5% of the water available under the right be used for fish flows. For planning purposes, NSJWCD is assuming 19,000 AFA is available under Permit 10477 in normal to wet years, plus up to 8,000 AFA of additional water from EBMUD under the PDA, for a total of 27,000 AFA. The District's agreement with the Tracy Lake landowners ensures that the first 3,000 AFA of water available under Permit 10477 is delivered to the District's existing North and South Systems, and that up to 4,000 AFA of water can be delivered to Tracy Lake, with the balance allocated by the District between various demands.

Table 2-1: Estimated Allocation of Water Use in NSJWCD Between Diversion Systems

Diversion System	Current Use (AFA)	Potential Use(AFA)	Current Source Options
North System	0	5,000+	Permit 10477
Cal-Fed	1,000	1,000+	Permit 10477
South System	3,000	10,000+	Permit 10477 and PDA water
Tracy Lake	100	4,000+	Permit 10477
City of Lodi	400	1,000	Permit 10477
TOTALS	4,500	21,000+	

SECTION TWO

2.5 NSJWCD's Water Delivery Facilities

NSJWCD has four pumping stations on the Mokelumne River:

- (1) The North System, located off Tretheway Road on the north side of the river (Point of Diversion 2)
- (2) The South System, located off Tretheway Road on the south side of the river (Point of Diversion 3)
- (3) The Cal-Fed/Woodbridge System, located off Woodbridge Road on the North Side of the river (Point of Diversion 4)
- (4) The Tracy Lake Groundwater Recharge Project (Point of Diversion 6), located on the north side of the river, downstream of the Woodbridge Irrigation District dam.

The Woodbridge Irrigation District dam, which allows for diversions from Lodi Lake to the City of Lodi, is also an approved point of diversion for NSJWCD (POD#5). Because EBMUD stores NSJWCD's permit 10477 water in Camanche Reservoir seasonally, Camanche Reservoir is denoted as POD#1. (See Figure 2-2.)

The proposed South System Project involves the South System pump station (Point of Diversion 3) and related distribution system.

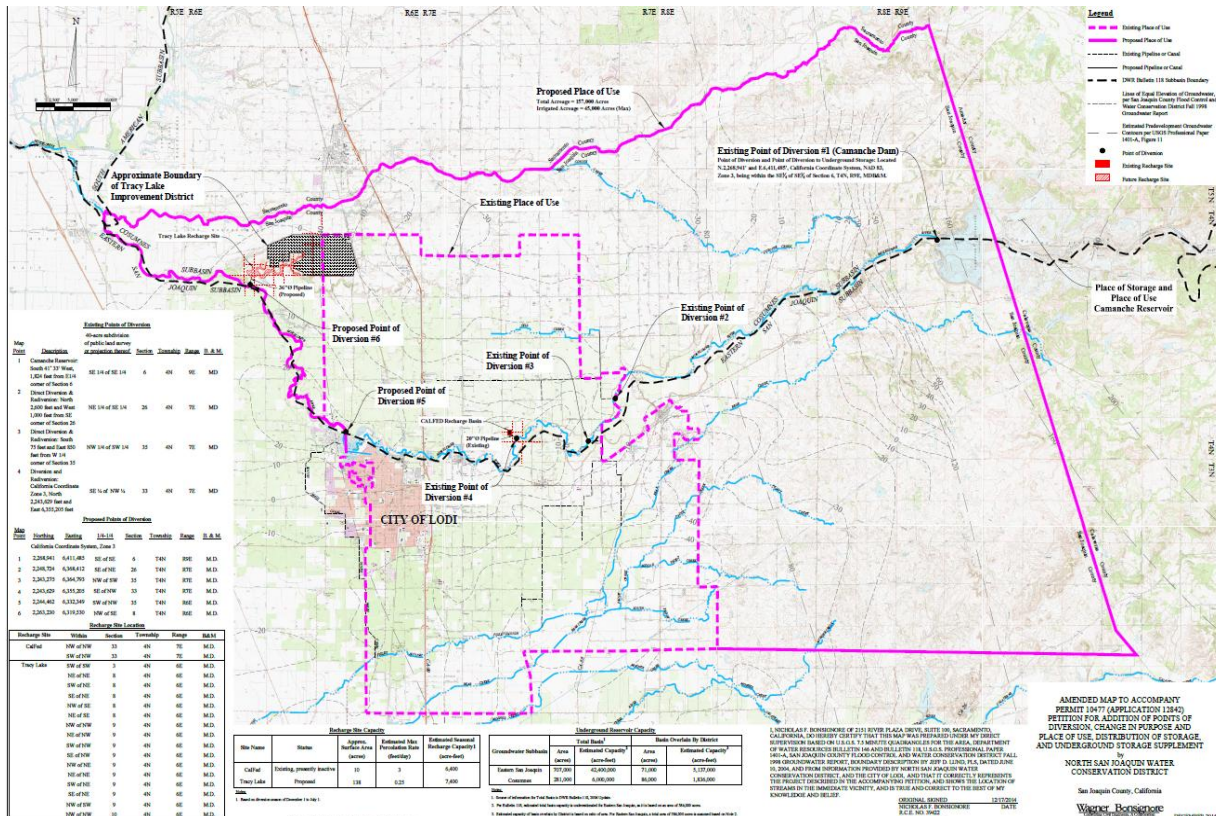


Figure 2-2 Map of NSJWCD's Water Delivery Facilities

2.5.1 Groundwater

Groundwater is found in the aquifer underlying NSJWCD. Groundwater management within NSJWCD is rooted in the conjunctive use of surface water and groundwater resources, since water supplies from these two sources are integrated to accomplish optimum utilization of each supply. NSJWCD landowners historically conjunctively used surface water supplies from the Mokelumne River with groundwater after the completion of NSJWCD's irrigation distribution system facilities in the 1960's. However, the use of surface water steadily declined as the distribution system aged and landowners converted to pressurized irrigation methods because it became increasingly expensive to operate the district's pumps and they could only provide non-pressurized water. Today, the water source for almost all irrigation of NSJWCD lands south of the Mokelumne River is groundwater.

San Joaquin County has been measuring groundwater levels at various locations within NSJWCD at least twice a year for several decades (See **Figure 2-3**). There has been a steady decline in groundwater elevations throughout the District since NSJWCD and San Joaquin County first began recording groundwater levels. The trend towards declining groundwater elevations within NSJWCD has coincided with decreased use of surface water. In recent years, water use under permit 10477 has been limited to approximately 3,000 to 5,000 acre-feet per year. When landowners utilized surface water in the district, groundwater levels were relatively stable. Since the decline in use of surface water, groundwater levels have steadily declined at a rate of about one foot per year.

The NSJWCD overlies the Eastern San Joaquin Groundwater Sub-basin (5-22.01, Bulletin 118, DWR, 2006). Groundwater pumping in the basin has long exceeded natural recharge, leading to sustained groundwater overdraft. Groundwater extractions in the basin first began exceeding annual recharge in the early 1900s; however, the State did not formally recognize the problem until 1982 when the basin was first declared as "critically overdrafted."

A number of studies have been completed over the years which estimate that annual extractions within the total Eastern San Joaquin Groundwater Sub-basin exceed annual recharge by anywhere from 70,000 to 200,000 acre-feet per year. The 2004 Groundwater Management Plan for the Sub-basin estimated annual overdraft for the Sub-basin at 107,000 acre-feet per year. NSJWCD's 150,000-acre jurisdictional area accounts for about 20% of the total acreage in the Sub-basin. About 60,000 acres of the total 150,000 acres in NSJWCD are irrigated agriculture. In 2009, an engineer's report prepared for NSJWCD estimated that current overdraft within district boundaries was about 50,000 AFA. More recent studies suggest that this amount is overstated and that annual overdraft within NSJWCD is no more than 20% of the total Sub-basin overdraft, or no more than 22,000 acre-feet per year.

NSJWCD is currently working with other agencies in the Sub-basin to closely study the overdraft issue. NSJWCD is optimistic that full use of the water available under Permit 10477 as well as water available from EBMUD under the PDA will resolve more than half of the total overdraft problem in NSJWCD.

A primary goal of NSJWCD is to maximize use of surface water available under its water right permit in order to alleviate groundwater overdraft. This goal is of particular importance in light of the SGMA Act of 2014. SGMA is new legislation which requires that all groundwater sources be actively managed to achieve sustainability goals. Local agencies, including NSJWCD, have specific timelines to complete plans to achieve sustainability. If they fail to meet the required

statutory deadlines, the state can intervene in the basin to impose regulation. If overdraft continues in NSJWCD, the risk of future pumping restrictions and/or loss of local control of the basin increases. By delivering surface water to meet existing irrigation demand, NSJWCD can reduce groundwater pumping and help the Sub-basin achieve its sustainability goals, reducing the likelihood of future pumping restrictions and maintaining local control of the basin.

Further, NSJWCD is working with other water agencies in the Sub-basin on a Groundwater Sustainability Plan (GSP). This plan will include an accounting of surface water use in the basin and may include pumping restrictions or other means of accomplishing safe yield. The landowners seeking to form ID #3 are willing to invest in capital facilities to enable the delivery and use of surface water in NSJWCD in exchange for any groundwater credits that may be available under the GSP.

2.5.2 Hydrogeology

NSJWCD is within the Eastern San Joaquin County Groundwater Sub-basin, which is defined and described in the California Department of Water Resources (DWR) Bulletin 118 at: <http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/5-22.01.pdf>,

The following stratigraphic description of the water-bearing units in the Eastern San Joaquin County Groundwater Sub-basin is from DWR Bulletin 146 (1967, pp. 12-35). The water-bearing units consist of a thick sequence of continental deposits of Quaternary and Tertiary age. The generalized sequence of water-bearing sediments is shown on **Table 2-2** below.

Table 2-2 Generalized Stratigraphy of Fresh Water-Bearing Formation in Eastern San Joaquin County

Geologic Age		Stratigraphic Unit
Quaternary	Holocene	Stream channel deposits
	Holocene to Pleistocene	Victor formation
-----	Pleistocene to Pliocene	Laguna formation
--Tertiary	Pliocene to Miocene	Mehrten formation
	Miocene	Valley Springs formation

Holocene age stream channel deposits are found as thin bands along major stream courses and consist of unconsolidated gravel and coarse sand. These deposits have high permeability and provide for significant infiltration to lower formations.

The surficial material which covers the majority of the study area is the Holocene to Pleistocene age Victor formation. It consists of stream deposited unconsolidated gravel, sand, silt, and clay with a maximum thickness of 150 feet. The material grades from coarser sand and gravel in the east, to sand, silt, and clay in the center of the county. It is generally coarser grained and more permeable than underlying formations. Groundwater in this formation is unconfined over the entire county.

The Pleistocene to Pliocene age Laguna formation outcrops in the eastern part of the county and dips gently to the west. It consists of discontinuous lenses of unconsolidated to semi-consolidated sand and silt with lesser amounts of clay and gravel with a maximum thickness of 1,000 feet. This unit has moderate permeability and is generally unconfined with locally semi-confined conditions where layers of clay are present.

SECTION TWO

The Pliocene to Miocene age Mehrten formation outcrops along the eastern border of the county, dipping to the west more steeply than overlying formations. It consists of stream-deposited, semi-consolidated to consolidated silt, sand, and gravel with a maximum thickness of 600 feet. In the central part of the county, the upper portion of this formation is finer-grained than the lower portion resulting in semi-confined to confined groundwater conditions. The unit changes to unconfined conditions in the eastern part of the county where the uppermost fine-grained material is less effective as a confining layer. West of Stockton, this formation contains saline groundwater. This formation contains the "black sand" reported by many well drillers in the area. The Mehrten formation has moderate to high permeability and is the oldest of the fresh groundwater aquifers in the study area.

This Miocene age unit contains marine-deposited ash, clay, sand, and gravel. It contains saline groundwater in most of the study area where the upper part of this formation is above the base of fresh groundwater.

The fresh groundwater is contained in the Mehrten formation and overlying younger units. Due to the saline nature of the groundwater in the Valley Springs formation over most of the study area, the base of the usable groundwater basin is considered to be the bottom of the Mehrten formation. The uppermost fine-grained portion of the Mehrten formation causes semi-confined to confined aquifer conditions over the central part of the county. The groundwater basin is thus considered a two-layer system with an upper unconfined aquifer consisting of the Victor and Laguna formations and a lower confined aquifer consisting of the Mehrten formation. In the eastern part of the study area, the older formations outcrop and the Mehrten formation becomes unconfined.¹

Water levels in selected wells in San Joaquin County are monitored by San Joaquin County Flood Control and Water Conservation District. Recent bi-annual Groundwater Reports prepared by that agency were reviewed during preparation of this report, including maps showing lines of equal elevation and depth to water in wells.

Hydrographs were also reviewed that plot available static water level readings taken in wells monitored by San Joaquin County Flood Control and Water Conservation District and other data contributors to the California Statewide Groundwater Elevation Monitoring (CASGEM) program: <http://www.water.ca.gov/groundwater/casgem/>.

Trends of long-term declining water levels in wells are apparent in most of the hydrographs, and can be seen in the following ten-year groundwater level change map.

¹ *Eastern San Joaquin County Groundwater Study, Final Report*, Brown and Caldwell Consulting Engineers, October 1985 (Paragraph 2, Page 3-10 through Paragraph 1, Page 3-12)

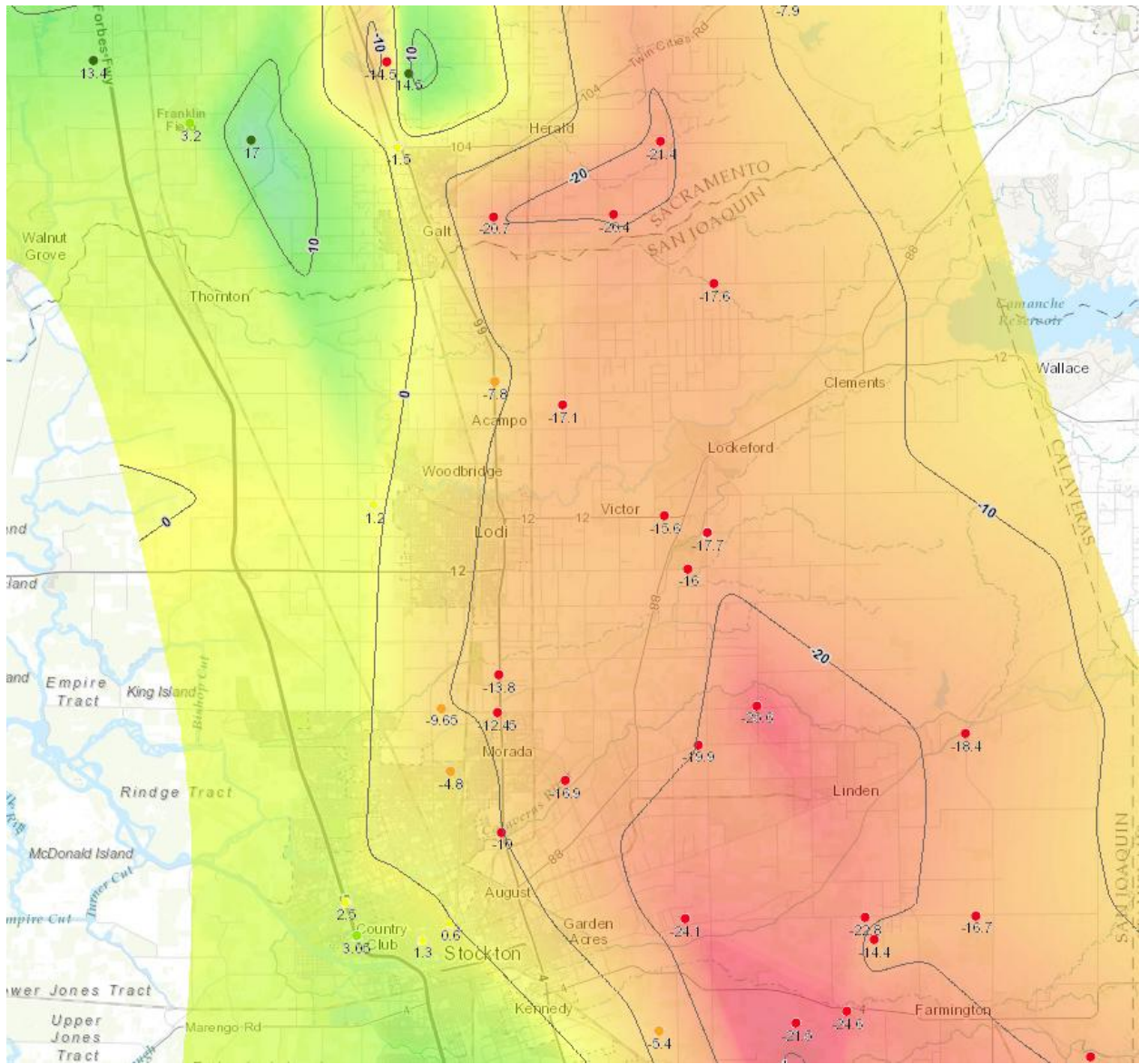


Figure 2-3 Spring 2007 - Spring 2017 Groundwater Level Change Map²

² Groundwater Information Center Interactive Map Application, DEPARTMENT OF WATER RESOURCES (last visited August 2, 2017) available at <https://gis.water.ca.gov/app/gicima/>.

2.6 Existing South System Facilities

In 1964, a group of landowners organized as the Mokelumne South Irrigation Association constructed an underground pipeline to carry irrigation water from the Mokelumne River south to Pixley and Bear Creeks. In 1966, the Association sold the pipeline and easements to NSJWCD, who then connected the pipeline to their new South System pump station on the Mokelumne River to begin surface water deliveries.

The South System currently consists of the original pump station on the Mokelumne River and the original approximately seven miles of cast-in-place concrete pipeline. The district added a modern fish screen to the pump station in the last twenty years. The pump station is equipped with 4 low-head, single-speed pumps that operate very inefficiently in comparison to modern pumps. Pumped water is conveyed into the concrete pipeline where it travels approximately seven miles south to Pixley Slough (the West Branch). The South System also includes an East Branch where water is conveyed through an open ditch that empties into Bear Creek. Farmers occasionally pump water from Pixley Slough and/or Bear Creek delivered through the South System.

On the West Branch, there are about 100 existing turn-outs tapping into the concrete pipeline. Very few of the existing turnouts are currently in use. The majority of lands along the pipeline that historically received deliveries of low head water for use in flood irrigation have converted to drip or sprinkler irrigation. Because drip or sprinkler irrigation require pressurized deliveries, many growers who formerly received low-head surface water converted their irrigation systems to be supplied with pressurized water from on-farm groundwater wells. In recent years, NSJWCD has only delivered between 3,000 and 5,000 AF of water to landowners on the South System due to the diminished demand for low-head surface water and the high cost of operating the old system.

2.7 NSJWCD Charges

NSJWCD administration and general operations are currently funded through a small percentage of County property taxes (approximately \$240,000). The property tax revenue is also used to fund the NSJWCD SGMA efforts, grant writing efforts and research and planning efforts. This report does not propose or involve any changes to the current property tax revenue source or how it is used.

NSJWCD previously created the Tracy Lake Improvement District No. 1, which imposes and collects a capital acreage assessment and an operations and maintenance acreage assessment on lands in the Tracy Lake Improvement District No. 1. These charges are used to pay for the Tracy Lake Groundwater Recharge Project. The Tracy Lake Improvement District assessments and project are not impacted by this report or the proposed assessment.

NSJWCD currently does not collect any assessments or charges from landowners to maintain or operate the South System other than charges for water when water is delivered to individual landowners who request it. The special benefit acreage assessment discussed in this report will only be used to fund the capital costs of the South System Project; it will not be used to cover annual operation and maintenance (O&M) costs associated with water deliveries to individual landowners. Instead, O&M costs for water delivered to individual landowners will be recovered through water charges; specifically, a surface water delivery charge that will be applied to each AF of surface water delivered to individual landowners who request delivery of water for irrigation.

SECTION TWO

In 2014, NSJWCD approved a surface water delivery charge, not to exceed \$101.40 per AF in 2018 with 3,000 AF of total South System deliveries or \$78.82 per AF with 6,000 AF of total South System deliveries. This rate reflects the estimated high costs of operating the current inefficient system and delivering a small quantity of water.

In 2016 and 2017, NSJWCD set the surface water delivery charge at \$50.00 per AF for the South System, below the maximum rate that is allowed. Once the South System Project is constructed, NSJWCD intends to set the surface water delivery charge at a rate that enables the district to recover the O&M costs of operating the new system. These O&M costs are expected to be relatively low (estimated to be less than \$50 per AF) in comparison to the existing system as a result of the new variable speed pumps, updated electrical components, capability for automated operation (eliminating significant labor expense), and the larger quantity of water that will be delivered through the system each year that it operates

This report addresses only the proposed acreage assessment to pay for the capital costs of the South System Project.

3 PROPOSED PROJECT, SCHEDULE AND COSTS

3.1 South System Project Components and Timeline

3.1.1 South Pump Station Replacement Project

The South Pump Station Replacement Project involves replacing the existing south system pump station with a new, modern pump station that can deliver non-pressurized water efficiently. The pump station project has been fully designed and NSJWCD completed construction of the new wet well and HDPE pipeline segment at the intake in October 2018 at a cost of approximately \$1.7 million. The remaining components to complete the new pump station include the steel platform, pumps, electrical, meter and automation equipment, and related connections. The estimated cost for the remaining components is \$1 million.

3.1.2 Repair and Automate South System Pipeline

The existing pipeline will be repaired as needed to facilitate the delivery of surface water to members of ID #3. Priority repairs include replacing the valve at the “tee” in the pipeline at the intersection of Brandt and Tretheway and adding equipment and software to enable automation of this valve with the pump station. Additional valves will be added to the pipeline as needed and as funding is available through the assessment and other outside sources, such as grants. Landowners are responsible for the cost of their respective turn-outs, meters and on-farm facilities. It is anticipated that some landowners will coordinate installation and operation of common facilities reducing the capitol costs for growers and reducing the number of turnouts along the South System. NSJWCD will assist landowners with design and specification for these facilities and with applying for available grant funding to pay for the turnout facilities.

4 BENEFIT DETERMINATION

Proposition 218 makes a distinction between general and special benefits provided by a project or service. A general benefit is defined as something that benefits the general public as a whole, such as libraries or ambulance service. A special benefit is defined as a particular benefit to specific and identifiable parcels of real property.

Proposition 218 specifies that assessments may not “exceed the reasonable cost of the proportional special benefit conferred on that parcel”. Here the lands to be assessed have agreed to proportionally divide the capital costs of the South System Project, which provides them with equal access to surface water from the South System, by the number of acres that can receive water. Each parcel receives an equal benefit because the special benefit allocated to each parcel is equal access to water from the South System.

The South System Project will provide a special benefit to certain parcels within NSJWCD by improving the South System facilities so that surface water can be delivered to the lands that are part of Improvement District #3. The particular benefits identified are for specific commercially irrigated properties and do not accrue to the public at large and are therefore not considered general benefits. The cost of on farm improvements were not considered in this evaluation as they are impacted by a variety of factors outside of the control of NSJWCD including cultural practices, crop type, existing infrastructure, and the ability of landowners to coordinate joint projects. In addition, the potential for outside funding for on farm improvements negates the need for these improvements to be considered in the determination of benefits to parcels.

The lands to be assessed are only those that have agreed to the assessment because they want access to surface water. **Figure 4.1** shows the location of the parcels to be assessed in relation to the South System.

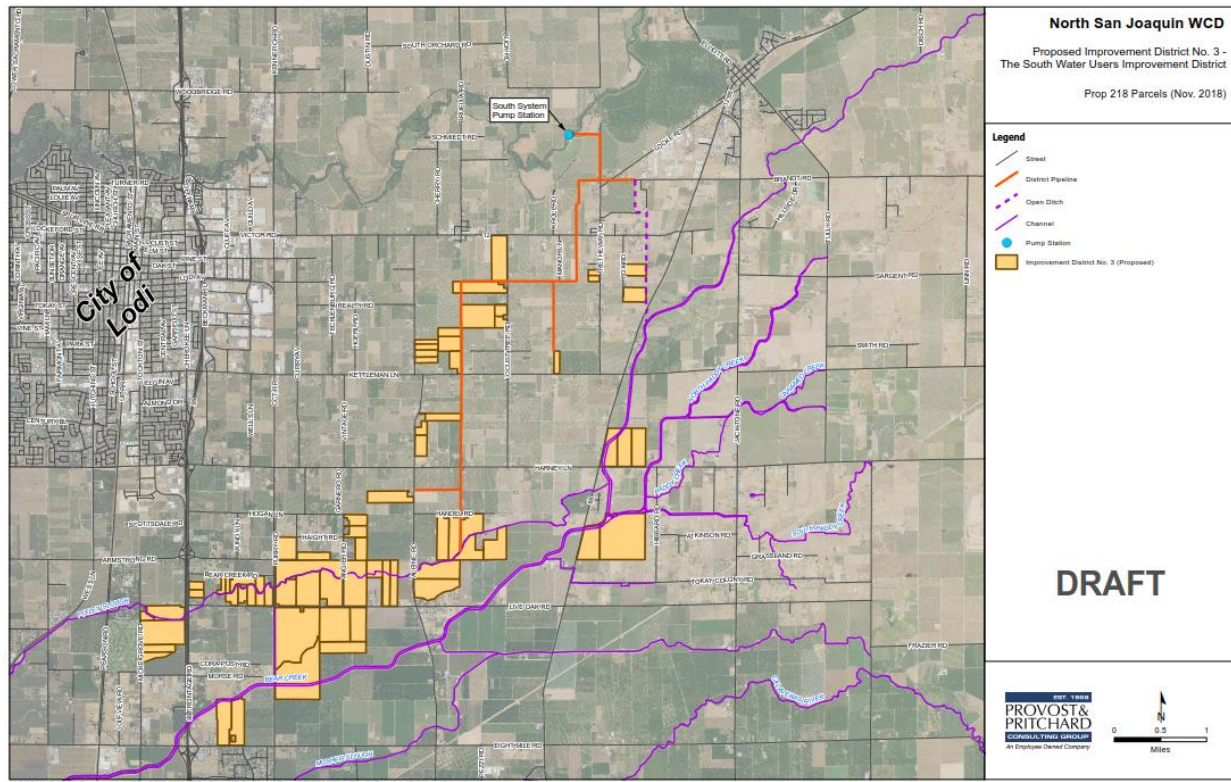


Figure 4-1 Proposed Improvement District #3

5 PROPOSED ASSESSMENT AMOUNT AND PROCESS

Appendix B is a sample assessment roll showing the amount of the proposed assessment for each parcel in the ID #3. All landowners within the proposed ID #3 shall have the right to vote on the assessment through a mailed ballot.

Proposition 218 requires a 45-day mailed notice to the record owners of all lands impacted by the proposed assessment. The record owner is the owner of a parcel whose name and address appears on the last equalized secured property tax assessment roll. Notices and ballots will be mailed based on the updated 2017-2018 tax assessment roll. The district will then hold the required public hearing and tabulate the submitted ballots. The NSJWCD Board of Directors cannot levy the assessments if the number of votes submitted in opposition to the assessment exceed those submitted in favor.

If a majority of the weighted votes from timely submitted ballots are cast in favor of the assessment, then the district will proceed with the financing for the project and levy the assessment.

**Petition for Formation of Improvement District No. 3
– South Water Users Improvement District**

**PETITION FOR THE FORMATION OF
IMPROVEMENT DISTRICT NO. 3, TO BE KNOWN AS
THE SOUTH WATER USERS IMPROVEMENT DISTRICT**

TO THE HONORABLE BOARD OF DIRECTORS OF THE NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT:

1. **PETITION.** We, the undersigned, hereby petition for the formation of an improvement district within the North San Joaquin Water Conservation District (District) to provide for the construction of the South System Surface Water Project (Project), and for the levying of an assessment on the lands within the improvement district. We certify that we represent all of the holders of title or evidence of title of all the tracts of land situated within the boundaries of the proposed improvement district.
2. **PLANS:** The plans of the proposed improvement and the purposes of the proposed improvement district (ID No. 3) are as follows:
 - a. The District plans to construct a new South System Pump Station and rehabilitate or replace valves in the South System pipeline, and make necessary repairs to the pipeline, at a cost of approximately \$3 to \$3.5 million. The District has approximately \$1.7 million in funding for this project. The District sought to obtain the remaining funding needed from an assessment on all irrigated lands in Improvement District No. 2, however the assessment failed the Proposition 218 ballot proceeding.
 - b. The undersigned landowners represent a sub-set of the landowners in Improvement District No 2., who are willing to agree to assess themselves \$50.00 per acre for ten years to fund the balance of the cost to complete the new South System Pump Station, and to make repairs to the South conveyance system, such that the South System can be used to deliver non-pressurized surface water to the undersigned landowners on the terms and conditions set forth below.
3. **INCLUDED LANDS:**
 - a. At least 2,500 acres of lands must sign this Petition to move forward with the formation of ID No. 3. Additional acres may elect to join ID No. 3 provided:
 1. The total acreage in ID No. 3 does not exceed 4,000 acres; AND
 2. Any acreage that joins pays a connection fee equal to the acreage assessment imposed for all prior years [for example, if 10 acres joins after three years of assessments have been levied, the connection fee is $\$50 \times 3 \text{ yrs} \times 10 \text{ acres} = \$1,500$] plus interest on the prior assessments at the same rate paid by the District for any borrowed funds for the Project;

AND

3. The District will annually revise the boundary of ID No. 3 to add any additional acres that meet this criteria, and the newly added landowners will consent in writing to joining the ID, paying the assessments, and having the assessments be a lien on their real property and security for financing for the Project improvements financed by any lending institutions as allowed by law.
4. ASSESSMENTS:
 - a. Lien. The undersigned acknowledge that the assessment is a lien on their real property and may be used as security for the financing for the Project.
 - b. Initial Assessment. The initial assessment shall be \$50.00 per acre per year for ten years. The assessment shall be used only for the new South System Pump Station, and repairs or replacement of the valves and pipeline facilities associated with the South System to enable the District to delivery surface water through the system. The assessment shall not be used to fund any other projects of the District or to fund other operation and maintenance expenses of the District. If the Initial Assessment is insufficient to complete the Pump Station and necessary repairs, the landowners may consider a future assessment as described below. If the Initial Assessment raises surplus funds, the surplus shall be held in a designated reserve account for South System repairs or improvements.
 - c. Future Assessments. The landowners may approve additional future assessments with a majority vote, with votes weighted based on proportional financial obligation (one acre one vote).
3. PRIORITY.
 - a. The District shall provide Landowners in ID No. 3 with a first priority to access and use surface water available to the District on the South System, under the District's water right Permit 10477, on their acreage in ID No. 3 for irrigation purposes.
 - b. To the extent the District determines that use of surface water for irrigation results in any form of a credit for groundwater purposes pursuant to a plan developed under the Sustainable Groundwater Management Act, the landowners in ID No. 3 who have paid for the Project and have used surface water on their properties, shall be entitled to the credits associated with their surface water use.
 - c. The undersigned further acknowledge that the District has previously agreed with the landowners in the Tracy Lakes Improvement District No. 1 that when the District does have water available under Permit 10477, the first 3,000 acre-feet are to be made available to the District's North and South System, the next 4,000 acre-feet are to be made available to the

Tracy Lakes System, and the balance (up to 13,000 acre-feet) are currently uncommitted.

- d. The undersigned acknowledge that the District does not have access to surface water in all year types and cannot guarantee an annual water supply. The District's water right is generally not available in Dry, Critically Dry and most Below Normal year types.

4. LANDOWNER TURNOUTS AND DIVERSIONS. Landowners in ID No. 3 are responsible for installing any facilities necessary to divert and take water from the District's South System facilities at the Landowners' sole cost and expense. The design and installation of the facilities which connect to the District's facilities shall be reviewed and approved by the District's Engineer. All diversions of District water from the District's facilities, or from Pixley Slough or Bear Creek, shall be metered with meters approved by the District and installed at the Landowners' expense.

5. SURFACE WATER CHARGE: Landowners in ID No. 3 shall pay, in addition to the annual acreage assessment of \$50.00 per acre, a surface water charge for all water scheduled for delivery, as set by the District from time to time, to cover the actual operation and maintenance expenses for the delivery of surface water.

6. COMMITTEE: The District shall establish an advisory committee for ID No. 3 comprised of at least three members of ID No. 3 to review projects, expenditures and other matters related to ID No. 3 and provide recommendations to the District.

7. MODIFICATION: The terms and conditions of ID No. 3 as set forth in this Petition may be modified from time to time upon approval of the District and a majority vote of the acres in the ID No. 3.

8. EXHIBITS: This petition includes the attached *Exhibit A*, *Exhibit B*, *Exhibit C*.

- a. The Project is more specifically described in the attached *Exhibit B*.
- b. The names of the owners of all the land within the proposed improvement district with their last known addresses and a description of the parcel or parcels of land owned by each such owner within the proposed improvement district according to the next preceding equalized assessment book of the County of San Joaquin are contained in attached *Exhibit A*. The list of the parcel descriptions contained in *Exhibit A* constitutes a description of all the land proposed to be included in the proposed improvement district at this time.
- c. The attached *Exhibit C* map shows the land to be included within the boundaries of the proposed improvement district. The District shall cause an amended improvement district map to be prepared as additional acres are added to the ID No. 3.

IN WITNESS WHEREOF, we have signed our names and caused this petition to be dated as of the date of the last signature below.

LANDS WHO SIGNED PETITION FOR FORMATION IMPROVEMENT DISTRICT NO. 3

APN	ACRES	\$/AC/YR	Assessment	Total
			Per Year	Assessment
05120008	25.0	\$50	\$ 1,250.00	\$ 12,500.00
06303001	143.2	\$50	\$ 7,158.50	\$ 71,585.00
06302015	159.3	\$50	\$ 7,965.00	\$ 79,650.00
05120032	9.8	\$50	\$ 490.50	\$ 4,905.00
05926084	47.8	\$50	\$ 2,388.00	\$ 23,880.00
05926086	46.6	\$50	\$ 2,330.00	\$ 23,300.00
06116026	72.7	\$50	\$ 3,637.00	\$ 36,370.00
06115014	20.0	\$50	\$ 1,000.00	\$ 10,000.00
06114069	37.6	\$50	\$ 1,880.00	\$ 18,800.00
06308037	37.1	\$50	\$ 1,852.50	\$ 18,525.00
06306032	38.8	\$50	\$ 1,941.00	\$ 19,410.00
06306036	35.6	\$50	\$ 1,778.00	\$ 17,780.00
05114022	5.0	\$50	\$ 251.50	\$ 2,515.00
06318024	47.9	\$50	\$ 2,392.50	\$ 23,925.00
06318025	157.1	\$50	\$ 7,853.50	\$ 78,535.00
06110022	11.4	\$50	\$ 571.00	\$ 5,710.00
06110032	13.1	\$50	\$ 655.00	\$ 6,550.00
06109017	8.1	\$50	\$ 406.00	\$ 4,060.00
06110017	5.1	\$50	\$ 256.00	\$ 2,560.00
06110035	20.4	\$50	\$ 1,022.00	\$ 10,220.00
06110036	14.1	\$50	\$ 706.50	\$ 7,065.00
06110037	10.0	\$50	\$ 500.00	\$ 5,000.00
06110038	14.0	\$50	\$ 701.00	\$ 7,010.00
05910011	38.1	\$50	\$ 1,902.50	\$ 19,025.00
05910012	82.0	\$50	\$ 4,100.00	\$ 41,000.00
05910026	7.7	\$50	\$ 384.00	\$ 3,840.00
06109041	9.2	\$50	\$ 461.50	\$ 4,615.00
06109042	9.2	\$50	\$ 461.50	\$ 4,615.00
06110027	10.2	\$50	\$ 512.00	\$ 5,120.00
06116002	38.5	\$50	\$ 1,925.00	\$ 19,250.00
06116006	57.0	\$50	\$ 2,851.00	\$ 28,510.00
06116009	79.7	\$50	\$ 3,983.00	\$ 39,830.00
06116011	26.7	\$50	\$ 1,334.50	\$ 13,345.00
06116012	26.7	\$50	\$ 1,334.50	\$ 13,345.00
06116021	21.1	\$50	\$ 1,056.50	\$ 10,565.00
05112043	51.8	\$50	\$ 2,592.00	\$ 25,920.00
06305062	57.1	\$50	\$ 2,857.00	\$ 28,570.00
06305063	52.9	\$50	\$ 2,644.50	\$ 26,445.00
06308043	32.4	\$50	\$ 1,621.50	\$ 16,215.00
06309013	43.0	\$50	\$ 2,150.00	\$ 21,500.00
05914035	14.5	\$50	\$ 725.00	\$ 7,250.00
05914036	19.0	\$50	\$ 950.00	\$ 9,500.00
06114032	16.5	\$50	\$ 825.00	\$ 8,250.00
06114037	19.9	\$50	\$ 995.00	\$ 9,950.00

06114054	34.7	\$50	\$ 1,735.00	\$ 17,350.00
06114060	16.9	\$50	\$ 845.00	\$ 8,450.00
06302010	39.2	\$50	\$ 1,960.00	\$ 19,600.00
06302011	78.4	\$50	\$ 3,920.00	\$ 39,200.00
06302012	40.0	\$50	\$ 2,000.00	\$ 20,000.00
05107022	15.0	\$50	\$ 750.00	\$ 7,500.00
05113076	44.1	\$50	\$ 2,203.50	\$ 22,035.00
05107025	16.9	\$50	\$ 844.50	\$ 8,445.00
05107023	25.0	\$50	\$ 1,250.00	\$ 12,500.00
05107037	7.6	\$50	\$ 379.00	\$ 3,790.00
05107038	10.0	\$50	\$ 500.00	\$ 5,000.00
05107039	12.4	\$50	\$ 621.00	\$ 6,210.00
05107040	10.0	\$50	\$ 500.00	\$ 5,000.00
05119012	19.7	\$50	\$ 985.00	\$ 9,850.00
05114023	5.0	\$50	\$ 251.50	\$ 2,515.00
06116005	60.0	\$50	\$ 3,000.00	\$ 30,000.00
06307061	20.1	\$50	\$ 1,003.50	\$ 10,035.00
06307062	11.8	\$50	\$ 588.50	\$ 5,885.00
06307063	17.3	\$50	\$ 865.50	\$ 8,655.00
05113056	58.4	\$50	\$ 2,921.00	\$ 29,210.00
05113057	10.0	\$50	\$ 500.00	\$ 5,000.00
05113058	10.0	\$50	\$ 500.00	\$ 5,000.00
06316035	39.5	\$50	\$ 1,973.00	\$ 19,730.00
06316036	39.4	\$50	\$ 1,971.50	\$ 19,715.00
06316037	39.4	\$50	\$ 1,968.00	\$ 19,680.00
TOTALS	2373.7		\$ 118,687.00	\$ 1,186,870.00
			per year	over 10 years

EXHIBIT B

PROPOSED IMPROVEMENT PLAN FOR THE FORMATION OF IMPROVEMENT DISTRICT NO. 3 TO BE KNOWN AS THE SOUTH SURFACE WATER USERS IMPROVEMENT DISTRICT

The improvement plan for the proposed improvement district is as follows:

1. The District plans to construct a new South System Pump Station and rehabilitate or replace valves in the South System pipeline, and make initial; necessary repairs to the pipeline, at a cost of approximately \$3 to \$3.5 million. The District has approximately \$1.7 million in funding for this project. The District sought to obtain the remaining funding needed from an assessment on all irrigated lands in Improvement District No. 2, however the assessment failed the Proposition 218 ballot proceeding.
2. The landowners in Improvement District No. 3 are willing to assess themselves \$50.00 per acre for ten years to fund the balance of the cost to complete the new South System Pump Station, and to make initial repairs to the South conveyance system, such that the South System can be used to deliver non-pressurized surface water to the undersigned landowners on the terms and conditions set forth below.
3. If additional repairs or improvements are necessary or desired for the South System Pump Station, pipeline, or related ditches, channels, valves and related infrastructure, which will cost more than the funds available through the initial \$50.00 per acre, or other available sources, the landowners in Improvement District No. 3 may, by majority vote (one acre one vote) decide whether or not to fund those additional project components through an increased and/or extended assessment.

**Sample "Assessment Roll"
South System Improvement District**

DRAFT

LANDS WHO SIGNED PETITION FOR FORMATION IMPROVEMENT DISTRICT NO. 3

APN	ACRES	\$/AC/YR	Assessment	Total
			Per Year	Assessment
05120008	25.0	\$50	\$ 1,250.00	\$ 12,500.00
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05926086	46.6	\$50	\$ 2,330.00	\$ 23,300.00
06116026	72.7	\$50	\$ 3,637.00	\$ 36,370.00
06115014	20.0	\$50	\$ 1,000.00	\$ 10,000.00
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05113057	10.0	\$50	\$ 500.00	\$ 5,000.00
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06316036	39.4	\$50	\$ 1,971.50	\$ 19,715.00
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TOTALS	2373.7		\$ 118,687.00	\$ 1,186,870.00
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