City Council Meeting Agenda

Monday, March 17, 2025 at 6:00 PM

33 Church Street, Sutter Creek, CA 95685

The Agenda can be found on the City's Website: www.cityofsuttercreek.org

---

The City of Sutter Creek City Council Meeting will be available via Zoom and in person.

Join Zoom meeting:

https://us02web.zoom.us/j/81391466458?pwd=4jXmBm1AP5bEbiID3iDwuxk4GpreRY.1

Please note: Zoom participation is only available for VIEWING the Council meeting.

Public Comment will not be taken from Zoom

Or Dial by phone: 301 715 8592 Webinar ID: 816 8589 0182 Passcode: 186036

Unless stated otherwise on the agenda, every item on the agenda is exempt from review under the California Environmental Quality Act ("CEQA") per CEQA Guidelines Sections 15060(c), 15061(b)(3), 15273, 15378, 15301, 15323 and/or Public Resources Code Section 21065.

1. **Call to Order and Establish a Quorum for Regular Meeting**
2. **Pledge of Allegiance to the Flag**
3. **Public Forum**

   At this time, the public is permitted to address the City Council on items not appearing on the agenda. Comments may not exceed 5 minutes. In accordance with State Law, however, no action or discussion may take place on any item not appearing on the posted agenda. The City Council may respond to statements made or questions asked or may request Staff to report back at a future meeting on the matter. The exceptions under which the City Council may discuss and/or take action on items not appearing on the agenda are contained in Government Code §54954.2. Public comment on any item listed below shall be limited to five minutes, unless additional time is permitted by the Mayor/Council.

4. **City Manager's Report**

This section is an opportunity to provide Council members with a brief status update on staff activities. No action is expected to be taken by the Council.

5. **Presentations**

6. **Approval of Minutes**

A. City Council Minutes of March 3, 2025

Recommendation: By motion approve minutes as presented.

7. **Consent Agenda**

Items listed on the consent agenda are considered routine and shall be enacted in one motion. Any item may be removed for discussion at the request of Council or the Public.

A. Notice of Preparation for Bidding on Wastewater Collection System Repairs

Information Only

8. **Ordinances and Public Hearing**

9. **Administrative Agenda**

A. Resolution Authorizing City Manager to Sign Wastewater Engineering Agreement

Approve Staff Motion

B. Minnie Provis Park Improvements

Staff Reccomends Motion to Approve Designa and Project

C. Update to Weed and Nuisance Ordinance

Staff recommends approval by Council with or without amendments

D. Empty Storefront Ordinance

Council Discussion / Information Session

10. **Mayor and Council Member Reports**

This section is to provide Council members an opportunity to present updates on their activities and to request items be placed on future agendas.

11. **City Attorney's Report**

This section provides an opportunity for the City Attorney to report on any activities or upcoming legislation of importance to the City. No action is expected to be taken by the Council.

12. **Future Agenda Items**

This section provides an opportunity for Council members to request items to be added to the agenda in the future with a majority Council vote.

13. **Information and Correspondence**

    A. Feb 2025 Treasurers Report

    B. Feb 2025 Finance Department Report

    C. Feb 2025 Cash Flow Report

    D. Feb 2025 Revenue Report

    E. Feb 2025 Expense Report

    F. Feb 2025 Police Report

    G. February City Engineering Report

    Project Status Update

    H. EnterTextHere

    I. Feb 2025 Planning Department Report

    J. ARSA Individual Water Balance Final Reports

    K. Correspondence and Emails to Council

14. **Closed Session**

    A. None

15. **Report from Closed Session**

16. **Adjournment**

    The next regularly scheduled meeting is April 7, 2025

City Council Meeting Minutes

Monday, March 03, 2025 at 6:00 PM

33 Church Street, Sutter Creek, CA 95685

The Agenda can be found on the City's Website: www.cityofsuttercreek.org

---

The City of Sutter Creek City Council Meeting was available via Zoom and in person.

1. Call to Order and Establish a Quorum for Regular Meeting

Mayor Gunselman called the meeting to order

PRESENT

Claire Gunselman

Julia Sierk

Dan Riordan

Jim Swift

Susan Feist

ABSENT

Vicky Runquist - Treasurer

STAFF

Tom DuBois

Derek Cole

Erin Ventura

Mason Peters

Dan LaFontaine

2. Pledge of Allegiance to the Flag

The Mayor led the pledge

3. Public Forum

Mike Kirkley - asked about status of wrecking yard, seeing more vehicles coming on to the property.

4. City Manager's Report

City Manager gave an up using the attached presentation

5. Presentations

A. Proclamation Recognizing Mary Ann Solbrig For Her Contributions to the City of Sutter Creek

Continued to future meeting when Ms Solbrig can attend.

B. Amador County Recreation Agency Update

General Manager Michael Rock gave a verbal update on the status of ACRA. There are$1.6M in impact fees available for capital projects in the cities and the county. ACRA is also scheduling activities for the summer including a lot more academic and project based camps for kids. Goal with youth programming is to not just provide babysitting anymore. Summer Fun Days - 8 week program for kids, ages K - 6 includes swimming pool and field trips and other enrichment activities.

Ceramics class in Jackson and Plymouth, 4 week sessions for kids

Kids kickboxing in Jackson

Swim lessons coming back - 1 and 2 week long lessins, private and parent/tot class

Mens BB League is now happening at Amador high school

Watercolor and Cooking class in Sutter Creek - Grammar School

Pickleball - Jackson and Amador City

Bingo - multiple cities

CM Riordan - Is there a process to allocate the impact fees? Policy decision for elected officials on ACRA board, the TAC will proposal projects..

6. Approval of Minutes

A. City Council Minutes of Feb 18, 2025 Special Meeting

Recommendation: By motion approve minutes as presented.

B. City Council Minutes of Feb 18, 2025 Regular Meeting

Recommendation: By motion approve minutes as presented.

CM Sierck - correction page 9 police costs is 60-65% of general fund. Was 45% in 2021

CM Riordan - typos correction sent via email

CM Swift - On item Number 6 the vote to approve was 3 - 0 - 2 need to correct the vote count.

Motion to pass Special Minutes of Feb 18, 2025 made by CM Swift, Seconded by CM Sierk

Motion passed 5 - 0

Motion to pass regular minutes of Feb 18, 2025 by CM Swift, seconded by CM Riordan

Motion passed 4- 0 - with CM Sierk abstaining

7. Consent Agenda

Items listed on the consent agenda are considered routine and shall be enacted in one motion. Any item may be removed for discussion at the request of Council or the Public.

A. FY22 POA Salary Schedule Revision to resolve CalPERS Audit

Motion to approve FY22 POA payscale in proper formatting

B. Updated Pool Management Agreement between City of Sutter Creek and ACRA

Approve City Manager to sign update to previous pool agreement accounting for increased labor costs, addition of swim lessons, addition of snack shack

Motion to approve Item 7A by CM Swift, seconded by CM Feist -

Motion passed 5 - 0

Item 7 B was pulled from consent to be heard by CM Riordan, Sierk and Gunselment to be heard at a date uncertain.

9. Administrative Agenda

A. Joint Session of the Planning Commision and the City Council

Mayor Gunselman led the discussion

Reviewed city annual priorities, mentioned Nexus Study and Zoning code updates are in process.

CM Riordan - housing projects have been few and far between, understand goals and roles, CIP made it clear that we need some development to fund needed improvements.

CM Swift - agreed with CM Riordan. Thanks planning commission for their work, lot of technical, detailed items.

CM Sierk - Wants to be aligned and communicating with planning commission

PC Baggett - has been fun and interesting to help the community. Challenge to get the appropriate zoning, and if change needed then talk about it

PC Kirkley - concerned about annexations to the city. Look at inventory of what has been approved over the years, Powder House project, Crestview - partially built, Golden Hills phases never got developed within City limits, City annexed 1100 acres in Gold Rush, now an infill project. Want people to be aware of history. Also want to clean up zoning. Get very little property tax from development (4% of 1% property tax).

PC Mulvey - Planning Commission role is to evaluate projects to the code, and flagging where code may be outdated or flawed.

CM Feist - wants to see a walkable town.

Mayor Gunselman - Haven't had a lot of good development project examples. Need to learn from our history but can't have future pay for past mistakes. Need to enable projects people want and ensure it pays its own way. Get caught in black and white - annexation as an example, past projects may not matter when evaluated by a property owner. Could look at incentives for infill. Not sure if we are a walkable town, more than half the town can't walk to downtown safely. Like to see more feedback from planning commission - give us comments and concerns.

CM Feist - Agrees just downtown is walkable, would like to see ways to connect other parts of town. Like to see higher density for a better mix of housing.

CM Riordan - Annexation vs infill, partially a philosophical discussion on property rights.

CM Swift - existence of infill vs annexation - can't count on past proposals. Powder house is gone

PC Kirkley - general plan, good planning not to keep annexing. Powder house is still residential zoned.

City Attorney Cole spoke to both bodies. PC will make recommendations to Council on annexation, looking at the sphere of influence. Council will determine.

CM Feist - want to keep the identity of small town surrounded by rural area, not suburban sprawl.

PC Kirkley - encourage infill before annexation.

CM Sierk - Concerned about the HCD report, if Danco doesn't happen? Consequences?

Planner Ventura - disconnect between state and jurisdictions, cities don't build houses. Have Danco application but not much otherwise for low income housing.

City Attorney Cole - HCD could penalize, SB35 could kick in, allowing development by right. No city review.

Mayor Gunselman - wants to see both legislative bodies evaluating projects based on merits of the project. How do we insure we are covered? Would like Planning Commission - how does it meet our needs, benefit residents, how do mitigate impacts?

B. Sutter Creek Housing Element Annual Progress Report 2024

Motion to accept and approve the report for submittal to HCD

Planner Ventura reviewed the HCD annual report. Projects that are entitled, denied, permits issued, permits finaled. Also report on programs that incentivize low income. 1 ADU produced. Made progress on some programs.

CM Riordan - Thinks we made progress on application procedures - #22, new TAC process.

CM Gunselman - some could be implemented by staff, some by working group, some far off

Planner Ventura - Reporting is based on the year we start working on things.

CM Gunselman - indicate which could be done internally, see how we can make progress. Planning Commission or Council could help make progress.

CM Gunselman - How does housing element impact funding? LEAP's only requirement is you do the report. Are grants available if we are making progress?

Planner Ventura - HCD wants to see that cities are removing constraints.

CM Swift - seems to go above and beyond housing production, what is a reasonable accommodation? Program 54 - what does it mean? ANSWER: It's for people with disabilities. 13 of 25 programs are not yet implemented, factor of budget. How much would it cost to do it all?

Ventura - goal of housing working group is cost will be shared across all the cities. Not a huge cost when shared.

CM Sierk - Question on federal voucher program on page 57, how does it work?

Planner Ventura - This is Section 8 subsidized housing.

Motion to accept the annual report with some updates on progress on certain programs.

Motion made by CM Riordan, Seconded by CM Sierk

Motion passed 5 - 0

C. Prescreening 150 Home Project Proposed in Gold Rush

Staff presented the project via a presentation, and council asked questions throughout.

City Manager DuBois - This is a pre screening - not a decision meeting, not yet a complete application. This is a chance for the council and community to get an early look, ask questions. It's been a long time since the previous developer had a development agreement. There are now new owners who are interested in a project under the existing zoning, defined in the City's specific plan.

FIrst we'll go over definitions and then an overview of the proposal.

Mayor Gunselman - EIR and piecemealing? Is it a concern?

No, the EIR studied the entire area.

CM Riordan - What about traffic?

That was done and mitigation measures were identified. Will we ask for a baseline update study

Mayor Gunselman - how do you look at infrastructure impacts, like water?

Reviewed background info - was examined in the EIR, part of the expired development agreement. THey will need to get "will serve" from AWA.

What was submitted in 2023?

Submitted a new specific plan then decided not to pursue it.

CM Riordan - Can they build ADUs? Lot will constrain ability and SB9 is constrained in a fire zone.

State law supersedes general city ordinances.

PUBLIC

Sandy Anderson - Golf courses are a negative in terms of habit.

Greg Bardini - Asking to split Phase 1 - used to be 500 total housing units, golf course, broken into smaller sizes to implement. Using 150 sewer hookups, Couldn't finance entire phase 1 due to lack of sewer hookups. Plan is to help with the sewer and get effluent to the property. Only a portion of 150

is in the restricted grading zone, heard concern on trees, and thinks there is a solution. Available for questions

Craig Barracco - how many homes in 1B? 150 homes plus vacation rentals, hotels, golf course. A lot of trails is 1B, and add more to the west, 1B includes that geography. Updating environmental documents - traffic and water supply.

Al Beers - Size of 6900 sq ft lot, similar to some near castle oak. What is the full build out? Total is 1334 originally, scaled back to about 900.

Bob Lapmphere - Introduced Tim and Beau - 4 year discussion, first 150 is what is available for sewer hookups, 4 - 5 years to develop and build, gives us time to figure out new plant. Will help, but can't do it all. If costs are too high, then it won't happen.

CM Sierk - concerned about erosion. Like to understand the building process. Tree removal is a concern. Want an upgraded tree plan. Balance removal of old trees with new trees - not an easy tradeoff - like to retain some existing canopy.

CM Feist - Tree removal is a concern, 100-200 yr old trees, newly planted trees elsewhere died. Concerned about grading, I like the density. 8.4 miles of trails is a concern, and was one of the best things for the community in plan. Looking at Grass Valley, active outdoor living.

CM Swift - Conflict between getting density and not removing trees. Some concerns about grading, give some visual examples. Will get some visuals. Like to have details on trees cut vs saved

Greg - 38 trees to be removed is the estimate.

Mike Kirkley - fire safe plan needed

Planner Ventura summarized concerns that she noted. 2 council members indicated trails were a concern.

COUNCIL REPORTS

none

CiTY ATTORNEY

none

10. Mayor and Council Member Reports

This section is to provide Council members an opportunity to present updates on their activities and to request items be placed on future agendas.

11. City Attorney's Report

This section provides an opportunity for the City Attorney to report on any activities or upcoming legislation of importance to the City. No action is expected to be taken by the Council.

12. Future Agenda Items

This section provides an opportunity for Council members to request items to be added to the agenda in the future with a majority Council vote.

13. Information and Correspondence

14. Closed Session

15. Report from Closed Session

16. Adjournment

The next regularly scheduled meeting is March 17, 2025

SUTTER CREEK
JEWEL OF THE MOTHER LODE

TO:	**THE HONERABLE MAYOR AND MEMBERS OF THE CITY COUNCIL**
MEETING DATE:	**MARCH 17, 2025**
FROM:	**DAN LAFONTAINE, PUBLIC WORKS DIRECTOR**
SUBJECT:	**2024/2025 COLLECTION SYSTEM I/I WORK**

RECOMMENDATION:
The collection system improvement work is being presented to the City Council for informational purposes to keep all members aware of the project scope and bidding process. Approval of bids will come back to Council for approval.

BACKGROUND:
In an effort to continue to reduce I &I in the City's sewer collection system and relieving recurring maintenance issues by replacing old sewer mains within the system, this proposed project has been placed as a priority to complete by the Public Works Department. It is planned to perform collection system work in seven (7) areas of the sewer mains as detailed below:

Project Areas:

Area "A" – Back of Napa Auto Parts:
Install 1 manhole

Area "B" – Rayland Drive:
Raise drop manhole, reconnect sewer piping (Open cut 160 lineal feet of 8-inch PVC), and install 2 new manholes.

Area "C" – Dennis Street:
Pipe burst 400 lineal feet of 6-inch PVC sewer main and reconnect 6 services.

Area "D" – Sutter Hotel / Fiefield Alley:
Install 1 manhole, Pipe burst 215 lineal feet of 8-inch PVC sewer main, reconnect 6 services, and reconnect new main to existing main in creek.

Area "E" – Old Highway 49, Highland Drive to Old Sutter Hill Rd
Pipe burst 1,606 lineal feet of 6-inch PVC sewer main with 8-inch PVC, modify entrance, exit, and flowline invert at 5 manholes.

Area "F" – Greenstone Terrace
Install 2 manholes, open cut 10 and 20 lineal feet of 6-inch and 4-inch sewer mains, respectively, pipe burst 574 and 210 lineal feet of 6-inch and 4-inch sewer mains, respectively, and reconnect 8 existing services.

Area "G" – Eureka Street at Broad Street
Pipe burst 160 lineal feet of 6-inch sewer main and reconnect 4 services

DISCUSSION:
The Notice to Contractors for bidding will be sent for advertising to our local newspaper and regional contractor plan rooms to obtain competitive bids for the work. The project is currently set to bid on April 22, 2025. Successful bidder information will be presented after that date.

BUDGET IMPACT:
The FY 24-25 Budget included $655,000 for wastewater collection projects. However, some funds have already been expended for repairs during the paving of Oro Madre. At the same time we have saved some funds by underspending on other wastewater budgeted items. Once staff sees the bids, we may return with budget amendments to shift funds between projects if needed.

1854 SUTTER CREEK
JEWEL OF THE MOTHER LODE

STAFF REPORT

TO: **THE HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL**

MEETING DATE: **MARCH 17, 2025**

FROM: **CITY MANAGER DUBOIS**

SUBJECT: **WASTEWATER ENGINEERING AGREEMENT**

RECOMMENDATION:
Staff recommends Council adopt the resolution authorizing the City Manager to enter into agreement with Hydroscience Engineers.

BACKGROUND:
For many years, Gary Ghio from WGA has been the City's wastewater engineer. He has served the City well and continues to support us as needed. However, Gary has desired to retire for several years now and is becoming more occupied with other interests.

The City has worked with Hydroscience over the years on several projects including our wastewater master plan. The company and one of its principals, Bill Slenter, is familiar with our wastewater system and challenges, including the details of the ARSA system. Bill and Hydroscience are currently under contract with ARSA to respond to the Orders from the Water Board on crafting our individual and joint water balances. Hydroscience is also already engaged on the Henderson Underdrain project, readying the project for public bidding.

During this work, both Dan and I were impressed with Hydroscience's work. We need a replacement for Gary and believe that retaining Hydroscience is an excellent outcome. Hydroscience is willing to take on this work, and it is difficult to find qualified people in our region that can do this work. Bill Slenter and Steven Whittlesey are working on our projects – Bill will save the City expenses when he can by having more junior people on his team support us when possible. Steven is a young project manager and has also been great to work with.

By becoming Sutter Creek's wastewater engineering firm, Hydroscience is foregoing potentially lucrative work for a progressive design builder, designing our WWTP. Instead, they will be the City's advocate in the progressive design build process, giving us the engineering expertise we need to oversee and manage a large-scale capital project, like the construction of a new wastewater plant.

DISCUSSION:
The agreement is primarily a time and materials contract for ongoing wastewater engineering services. To minimize contract overhead, it also includes provisions for a Federal agreement, in the event we have an emergency which would qualify for FEMA funds. The Federal portion of the agreement is there only for that reason.

BUDGET IMPACT:
We can cover Hydroscience costs within the existing ARSA and City wastewater budgets, using professional services budgeted funds. We are underspending on other categories of the wastewater budget, as we are preparing to issue an RFQ for a new WWTP. We expect to return to the council in the future with budget amendments to shift some additional funds from maintenance to professional services when needed.

ATTACMENT:
Proposed Resolution, Agreement, and Resumes for Bill Slenter and Steven Whittlesey

RESOLUTION NO. _____

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SUTTER CREEK AUTHORIZING THE CITY MANAGER TO EXECUTE AN AGREEMENT WITH HYDROSCIENCE ENGINEERS, INC.

WHEREAS, California Government Code section 37103 authorizes cities to contract with any specially trained and experienced person, firm, or corporation for special service and advice in financial, economic, accounting, engineering, legal, or administrative matters.

WHEREAS, in accordance with this authorization, the City of Sutter Creek desires to retain HydroScience Engineers, Inc. to provide specialized engineering services to the City.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Sutter Creek authorizes the City Manager to execute the Consulting Services Agreement attached as Exhibit A to this Resolution.

The foregoing resolution was duly passed and adopted at a regular meeting of the City Council of the City of Sutter Creek on the 3rd day of March, 2025 by the following vote.

AYES:
NOES:
ABSTAIN:
ABSENT:

ATTEST:

_____
Claire Gunselman Mayor

_____
Mason Peters, Acting City Clerk

EXHIBIT A

CONSULTING SERVICES AGREEMENT BETWEEN
THE CITY OF SUTTER CREEK AND HYDOSCIENCE ENGINEERS, INC.

THIS AGREEMENT for services is entered into by and between the City of Sutter Creek, a municipal corporation in the State of California (hereinafter referred to as "City") and HydroScience Engineers, Inc. (hereinafter referred to as "~~Contractor~~Consultant") as of March 184, 2025 (the "Effective Date").

Section 1. **SERVICES**. Subject to the terms and conditions set forth in this Agreement, ~~Contractor~~Consultant shall provide to City the services described in the Scope of Work attached hereto and incorporated herein as Exhibit A at the time and place and in the manner specified therein. In the event of a conflict in or inconsistency between the terms of this Agreement and Exhibit A, the Agreement shall prevail.

1.1 **Term of Services.** The term of this Agreement shall begin on the Effective Date, and shall include any work performed in advance of that date, and shall end on June 30, 2026. The time provided to ~~Contractor~~Consultant to complete the services required by this Agreement shall not affect the City's right to terminate the Agreement, as provided for in Section 8.

1.2 **Standard of Performance.** ~~Contractor~~Consultant shall perform all services required pursuant to this Agreement in the manner and according to the standards observed by a competent practitioner of the profession in which ~~Contractor~~Consultant is engaged in the geographical area in which ~~Contractor~~Consultant practices its profession. ~~Contractor~~Consultant shall prepare all work products required by this Agreement in a substantial, first-class manner and shall conform to the standards of quality normally observed by a person practicing in ~~Contractor~~Consultant's profession.

1.3 **Assignment of Personnel.** ~~Contractor~~Consultant shall assign only competent personnel to perform services pursuant to this Agreement. In the event that City, in its sole discretion, at any time during the term of this Agreement, desires the reassignment of any such persons, ~~Contractor~~Consultant shall, immediately upon receiving notice from City of such desire of City, reassign such person or persons. Bill Slenter will be the principal assigned to Sutter Creek. Replacement of Bill Slenter must be approved by the City of Sutter Creek.

1.4 **Time.** ~~Contractor~~Consultant shall devote such time to the performance of services pursuant to this Agreement as may be reasonably necessary to meet the standard of performance provided in Section 1.1 above and to satisfy ~~Contractor~~Consultant's obligations hereunder.

Section 2A. **COMPENSATION (NON-FEDERALLY FUNDED PROJECTS).** For projects not funded in whole or in part by any federal funding source, City hereby agrees to pay ~~Contractor~~Consultant sums not to exceed the amounts described in Exhibit A, notwithstanding any contrary indications that may be contained in ~~Contractor~~Consultant's proposal, for services to be performed and reimbursable costs incurred under this Agreement. In the event of a conflict between this Agreement and ~~Contractor~~Consultant's proposal regarding the amount of compensation, the Agreement shall prevail. City shall pay ~~Contractor~~Consultant for services rendered pursuant to this Agreement at the time and in the manner set forth herein. The payments specified below shall be the only payments from City to ~~Contractor~~Consultant for services rendered pursuant to this Agreement. ~~Contractor~~Consultant shall submit all invoices to City in the manner specified herein. Except as specifically authorized by City, ~~Contractor~~Consultant shall not bill City for duplicate services performed by more than one person.

~~Contractor~~Consultant and City acknowledge and agree that compensation paid by City to ~~Contractor~~Consultant under this Agreement is based upon ~~Contractor~~Consultant's estimated costs of providing the services required hereunder, including salaries and benefits of employees and

sub~~contractor~~consultants of ~~Contractor~~Consultant. Consequently, the parties further agree that compensation hereunder is intended to include the costs of contributions to any pensions and/or annuities to which ~~Contractor~~Consultant and its employees, agents, and sub~~contractor~~consultants may be eligible. City therefore has no responsibility for such contributions beyond compensation required under this Agreement.

2A.1 **Invoices.** ~~Contractor~~Consultant shall submit invoices, not more often than once a month during the term of this Agreement, based on the cost for services performed and reimbursable costs incurred prior to the invoice date. Invoices shall contain the following information:

- Serial identifications of progress bills; i.e., Progress Bill No. 1 for the first invoice, etc.;
- The beginning and ending dates of the billing period;
- A Task Summary containing the original contract amount, the amount of prior billings, the total due this period, the balance available under the Agreement, and the percentage of completion;
- The ~~Contractor~~Consultant's signature.

2A.2 **Monthly Payment.** City shall have 30 days from the receipt of an invoice that complies with all of the requirements above to pay ~~Contractor~~Consultant.

2A.3 **Total Payment.** City shall pay for the services to be rendered by ~~Contractor~~Consultant pursuant to this Agreement. City shall not pay any additional sum for any expense or cost whatsoever incurred by ~~Contractor~~Consultant in rendering services pursuant to this Agreement. City shall make no payment for any extra, further, or additional service pursuant to this Agreement.

In no event shall ~~Contractor~~Consultant submit any invoice for an amount in excess of the maximum amount of compensation provided above either for a task or for the entire Agreement, unless the Agreement is modified prior to the submission of such an invoice by a properly executed change order or amendment approved by the City Manager, which shall not exceed the maximum amount allowed by the Sutter Creek Municipal Code.

2A.4 **Fees.** Fees for work performed by ~~Contractor~~Consultant shall not exceed the amounts shown on the Compensation Schedule attached hereto and incorporated herein as Exhibit A.

2A.5 **Reimbursable Expenses.** Reimbursable expenses are specified in Exhibit A, and expenses not listed in Exhibit A are not chargeable to the City.

2A.6 **Payment of Taxes.** ~~Contractor~~Consultant is solely responsible for the payment of employment taxes incurred under this Agreement and any similar federal or state taxes.

2A.7 **Payment upon Termination.** In the event that the City or ~~Contractor~~Consultant terminates this Agreement pursuant to Section 8 of this Agreement, the City shall compensate the ~~Contractor~~Consultant for all outstanding costs and reimbursable expenses incurred for work satisfactorily completed as of the date of written notice of termination. ~~Contractor~~Consultant shall maintain adequate logs and timesheets in order to verify costs incurred to that date.

2A.8 **Authorization to Perform Services.** The ~~Contractor~~Consultant is not authorized to perform any services or incur any costs whatsoever under the terms of this Agreement until receipt of authorization from the Contract Administrator.

Section 2B. COMPENSATION (FEDERALLY FUNDED PROJECTS).

2B.1.1 Federal Compensation Requirements. The following compensation terms shall apply to projects that are funded in whole or in part from any federal funding source.

2B.1.2 Compensation. ~~Contractor~~Consultant will be reimbursed for hours worked at the hourly rates specified in ~~Contractor~~Consultant's Rate Schedule (Exhibit A). The specified hourly rates shall include direct salary costs, employee benefits, overhead, and fees. These rates are not adjustable for the performance period set forth in this Agreement.

2B.1.3 Reimbursement. ln addition, ~~Contractor~~Consultant will be reimbursed for incurred (actual) direct costs other than salary costs that are in the Federal Cost Proposal and identified in the Federal Cost Proposal and in the executed task order.

2B.1.4 Task Orders. Specific projects will be assigned to ~~Contractor~~Consultant through issuance of task orders.

2B.1.5 Draft Task Order. After a project to be performed under this Agreement is identified by City, City will prepare a draft task order, less the cost estimate. A draft task order will identify the scope of services, expected results, project deliverables, period of performance, project schedule and will designate a City project coordinator. The draft task order will be delivered to ~~Contractor~~Consultant for review. ~~Contractor~~Consultant shall return the draft task order within ten (10) calendar days along with a Cost Estimate, including a written estimate of the number of hours and hourly rates per staff person, any anticipated reimbursable expenses, overhead, fee if any, and total dollar amount. After agreement has been reached on the negotiable items and total cost, the finalized task order shall be signed by both City and ~~Contractor~~Consultant.

2B.1.6 Lump Sum Task Orders. Task orders may be negotiated for a lump sum (Firm Fixed Price) or for specific rates of compensation, both of which must be based on the labor and other rates set forth in ~~Contractor~~Consultant's Federal Cost Proposal.

2B.1.7 Federal Cost Proposal. Reimbursement for transportation and subsistence costs shall not exceed the rates as specified in the approved Federal Cost Proposal.

2B.1.8 Milestone Cost Estimates. When milestone cost estimates are included in the approved Federal Cost Proposal, ~~Contractor~~Consultant shall obtain prior written approval for a revised milestone cost estimate from the City's contract administrator before exceeding such estimate.

2B.1.9 Progress Payments. Progress payments for each task order will be made monthly in arrears based on services provided and actual costs incurred.

2B.1.10 Approval. ~~Contractor~~Consultant shall not commence performance of work or services until this Agreement has been approved by City, and notification to proceed has been issued by City's contract administrator. No payment will be made prior to approval or for any work performed prior to approval of this Agreement.

2B.1.11 Signed Task Order. A task order is of no force or effect until returned to City and signed by an authorized representative of City. No expenditures are authorized on a project and work shall not commence until a task order for that project has been executed by City.

2B.1.12 Timing of Compensation. ~~Contractor~~Consultant will be reimbursed, as promptly as fiscal procedures will permit upon receipt by City's contract administrator of itemized invoices in

triplicate. Separate invoices itemizing all costs are required for all work performed under each task order. Invoices shall be submitted no later than 45 calendar days after the performance of work for which ~~Contractor~~Consultant is billing, or upon completion of the task order. Invoices shall detail the work performed on each milestone, on each project as applicable. Invoices shall follow the format stipulated for the approved Federal Cost Proposal and shall reference this Agreement, project title and task order number. ~~Credits due City that include any equipment purchased under the provisions of Section 2B.4 - Equipment Purchase of this Agreement, must be reimbursed by Contractor prior to the expiration or termination of this Agreement.~~ Invoices shall be mailed to City's contract administrator at the following address: City of Sutter Creek; City Manager; 18 Main Street, Sutter Creek, CA 95685.

2B.1.13 Period of Performance. The period of performance for task orders shall be in accordance with dates specified in the task order. No task order will be written which extends beyond the expiration date of this Agreement.

2B.1.14 Total Amount Payable. The total amount payable by City for an individual task order shall not exceed the amount agreed to in the task order, unless authorized by contract amendment.

2B.1.15 Failure to Complete Deliverable. If the ~~Contractor~~Consultant fails to satisfactorily complete a deliverable according to the schedule set forth in a task order, no payment will be made until the deliverable has been satisfactorily completed.

2B.1.16 No Amendment by Task Order. Task orders may not be used to amend this Agreement and may not exceed the scope of work under this Agreement.

2B.1.17 Not to Exceed Amount. The total amount payable by City for all Services resulting from this Agreement shall not exceed $~~4,000,000~~1,000,000, which may be renegotiated in emergency situations. It is understood and agreed that there is no guarantee, either expressed or implied that this dollar amount will be authorized under this Agreement through task orders or otherwise.

2B.2 Payment of Compensation. ~~Contractor~~Consultant shall submit to City a monthly itemized statement which indicates work completed and hours of Services rendered by ~~Contractor~~Consultant. The statement shall describe the amount of Services and supplies provided since the initial commencement date, or since the start of the subsequent billing periods, as appropriate, through the date of the statement. City shall, within thirty (30) days of receiving such statement, review the statement and pay all approved charges thereon. No retainage will be withheld by the City from progress payments due the ~~Contractor~~Consultant. Retainage by the ~~Contractor~~Consultant or sub~~contractor~~consultants is prohibited, and no retainage will be held by the ~~Contractor~~Consultant from progress due sub~~contractor~~consultants. Any violation of this provision shall subject the violating ~~Contractor~~Consultant or sub~~contractor~~consultants to the penalties, sanctions, and other remedies specified in Section 7108.5 of the California Business and Professions Code. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies, otherwise available to the ~~Contractor~~Consultant or sub~~contractor~~consultant in the event of a dispute involving late payment or nonpayment by the ~~Contractor~~Consultant or deficient sub~~contractor~~consultant performance, or noncompliance by a sub~~contractor~~consultant. This provision applies to both DBE and non-DBE ~~Contractor~~Consultants and sub~~contractor~~consultants.

2B.3 Extra Work. At any time during the term of this Agreement, City may request that ~~Contractor~~Consultant perform Extra Work. As used herein, "Extra Work" means any work

which is determined by City to be necessary for the proper completion of the Services, but which the Parties did not reasonably anticipate would be necessary at the execution of this Agreement. ~~Contractor~~Consultant shall not perform, nor be compensated for, Extra Work without written authorization from City's Representative.

2B.4 SAM.gov Validation Requirement. As a condition of this contract, Consultant must maintain an active registration in the System for Award Management (SAM.gov) throughout the term of this agreement. Consultant shall ensure that all necessary validations, including the Unique Entity Identifier (UEI), Taxpayer Identification Number (TIN), and bank information, are current and accurate in the SAM.gov database. Failure to maintain an active registration or comply with SAM.gov requirements may result in delays, suspension, or termination of this agreement. Consultant is responsible for promptly addressing any issues related to their SAM.gov registration and must notify City of any changes in registration status.

Formatted: Font: Bold
Formatted: Font: Bold, Underline
Formatted: Font: Bold
Formatted: Indent: Left: -0.5"

Section 3. FACILITIES AND EQUIPMENT. Except as set forth herein, ~~Contractor~~Consultant shall, at its sole cost and expense, provide all facilities and equipment that may be necessary to perform the services required by this Agreement. City shall make available to ~~Contractor~~Consultant only the facilities and equipment listed in this section, and only under the terms and conditions set forth herein.

City shall furnish physical facilities such as desks, filing cabinets, and conference space, as may be reasonably necessary for ~~Contractor~~Consultant's use while consulting with City employees and reviewing records and the information in possession of the City. The location, quantity, and time of furnishing those facilities shall be in the sole discretion of City. In no event shall City be obligated to furnish any facility that may involve incurring any direct expense, including but not limited to computer, long-distance telephone or other communication charges, vehicles, and reproduction facilities.

Section 4. INSURANCE REQUIREMENTS. Before beginning any work under this Agreement, ~~Contractor~~Consultant, at its own cost and expense, shall procure "occurrence coverage" insurance against claims for injuries to persons or damages to property that may arise from or in connection with the performance of the work hereunder by the ~~Contractor~~Consultant and its agents, representatives, employees, and sub~~contractor~~consultants. ~~Contractor~~Consultant shall provide proof satisfactory to City of such insurance that meets the requirements of this section and under forms of insurance satisfactory in all respects to the City, and that such insurance is in effect prior to commencing work under this Agreement. ~~Contractor~~Consultant shall maintain the insurance policies required by this section throughout the term of this Agreement. The cost of such insurance shall be included in the ~~Contractor~~Consultant's bid. ~~Contractor~~Consultant shall not allow any sub~~contractor~~consultant to commence work on any subcontract until ~~Contractor~~Consultant has obtained all insurance required herein for the sub~~contractor~~consultant(s) and provided evidence thereof to City. Verification of the required insurance shall be submitted and made part of this Agreement prior to execution. Verification of the required insurance is attached hereto and incorporated herein as Exhibit C.

4.1 Variation. The City may approve a variation in the insurance requirements, upon a determination that the coverage, scope, limit, and form of such insurance is either not commercially available, or that the City's interests are otherwise fully protected.

4.2 Notice of Reduction in Coverage. In the event that any coverage required by this section is reduced, limited, or materially affected in any other manner, ~~Contractor~~Consultant shall provide written notice to City at ~~Contractor~~Consultant's earliest possible opportunity and in no case later than five days after ~~Contractor~~Consultant is notified of the change in coverage.

4.3 Remedies. In addition to any other remedies City may have if ~~Contractor~~Consultant fails to provide or maintain any insurance policies or policy endorsements to the extent and within the

time herein required, City may, at its sole option, exercise any of the following remedies, which are alternatives to other remedies City may have and are not the exclusive remedy for ~~Contractor~~Consultant's breach:

- Obtain such insurance and deduct and retain the amount of the premiums for such insurance from any sums due under the Agreement;
- Order ~~Contractor~~Consultant to stop work under this Agreement or withhold any payment that becomes due to ~~Contractor~~Consultant hereunder, or both stop work and withhold any payment, until ~~Contractor~~Consultant demonstrates compliance with the requirements hereof; and/or
- Terminate this Agreement.

Section 5. INDEMNIFICATION AND ~~CONTRACTOR~~CONSULTANT RESPONSIBILITIES. ~~Contractor~~Consultant shall to the fullest extent allowed by law, with respect to all Services performed in connection with this Agreement, defend with counsel acceptable to the City, and indemnify and hold the City and its officials, officers, employees, agents, and volunteers harmless from and against any and all losses that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the ~~Contractor~~Consultant ("Claims"). ~~Contractor~~Consultant will bear all loses, costs, damages, expense and liability of every kind, nature and description that arise out of, pertain to, or relate to such Claims, whether directly or indirectly ("Liability"). Such obligations to defend, hold harmless and indemnify the City shall not apply to the extent that such Liability is caused the City's own negligence, or willful misconduct.

With respect to third party claims against the ~~Contractor~~Consultant, the ~~Contractor~~Consultant waives any and all rights of any type of express or implied indemnity against the indemnitees, except to the extent such claims arise from the City's own negligence or willful misconduct.

However, notwithstanding the foregoing, in accordance with California Civil Code Section 1668, nothing in this Agreement shall be construed to exempt the City from its own fraud, willful injury to the person or property of another, or violation of law. In addition, and notwithstanding the foregoing, in accordance with California Civil Code Section 1668, nothing in this Agreement shall be construed to exempt the City from its own fraud, willful injury to the person or property of another, or violation of law.

Section 6. STATUS OF ~~CONTRACTOR~~CONSULTANT.

6.1 Independent ~~Contractor~~Consultant. At all times during the term of this Agreement, ~~Contractor~~Consultant shall be an independent ~~contractor~~Consultant and shall not be an employee of City. City shall have the right to control ~~Contractor~~Consultant only insofar as the results of ~~Contractor~~Consultant's services rendered pursuant to this Agreement and assignment of personnel pursuant to Subparagraph 1.3; however, otherwise City shall not have the right to control the means by which ~~Contractor~~Consultant accomplishes services rendered pursuant to this Agreement. Notwithstanding any other City, state, or federal policy, rule, regulation, law, or ordinance to the contrary, ~~Contractor~~Consultant and any of its employees, agents, and sub~~contractor~~consultants providing services under this Agreement shall not qualify for or become entitled to, and hereby agree to waive any and all claims to, any compensation, benefit, or any incident of employment by City, including but not limited to eligibility to enroll in the California Public Employees Retirement System (PERS) as an employee of City and entitlement to any contribution to be paid by City for employer contributions and/or employee contributions for PERS benefits.

6.2 **~~Contractor~~Consultant, Not Agent.** Except as City may specify in writing, ~~Contractor~~Consultant shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. ~~Contractor~~Consultant shall have no authority, express or implied, pursuant to this Agreement to bind City to any obligation whatsoever.

Section 7. LEGAL REQUIREMENTS.

7.1 **Governing Law.** The laws of the State of California shall govern this Agreement.

7.2 **Compliance with Applicable Laws.** ~~Contractor~~Consultant and any sub~~contractor~~consultants shall comply with all laws applicable to the performance of the work hereunder.

7.3 **Other Governmental Regulations.** To the extent that this Agreement may be funded by fiscal assistance from another governmental entity, ~~Contractor~~Consultant and any sub~~contractor~~consultants shall comply with all applicable rules and regulations to which City is bound by the terms of such fiscal assistance program.

7.4 **Licenses and Permits.** ~~Contractor~~Consultant represents and warrants to City that ~~Contractor~~Consultant and its employees, agents, and any sub~~contractor~~consultants have all licenses, permits, qualifications, and approvals of whatsoever nature that are legally required to practice their respective professions. ~~Contractor~~Consultant represents and warrants to City that ~~Contractor~~Consultant and its employees, agents, any sub~~contractor~~consultants shall, at their sole cost and expense, keep in effect at all times during the term of this Agreement any licenses, permits, and approvals that are legally required to practice their respective professions. In addition to the foregoing, ~~Contractor~~Consultant and any sub~~contractor~~consultants shall obtain and maintain during the term of this Agreement valid business licenses from City.

7.5 **Nondiscrimination and Equal Opportunity.** ~~Contractor~~Consultant shall not discriminate, on the basis of a person's race, religion, color, national origin, age, physical or mental handicap or disability, medical condition, marital status, sex, or sexual orientation, against any employee, applicant for employment, sub~~contractor~~consultant, bidder for a subcontract, or participant in, recipient of, or applicant for any services or programs provided by ~~Contractor~~Consultant under this Agreement. ~~Contractor~~Consultant shall comply with all applicable federal, state, and local laws, policies, rules, and requirements related to equal opportunity and nondiscrimination in employment, contracting, and the provision of any services that are the subject of this Agreement.

~~Contractor~~Consultant shall include the provisions of this Subsection in any subcontract approved by the Contract Administrator of this Agreement.

Section 8. TERMINATION AND MODIFICATION.

8.1 **Termination.** City may cancel this Agreement at any time and without cause upon written 30 days written notice to ~~Contractor~~Consultant.

~~Contractor~~Consultant may cancel this Agreement upon 30 days written notice to City and shall include in such notice the reasons for cancellation.

In the event of termination, ~~Contractor~~Consultant shall be entitled to compensation for services performed to the effective date of termination; City, however, may condition payment of such

compensation upon ~~Contractor~~Consultant delivering to City any or all documents, photographs, computer software, video and audio tapes, and other materials provided to ~~Contractor~~Consultant or prepared by or for ~~Contractor~~Consultant or the City in connection with this Agreement.

8.2 **Amendments.** The parties may amend this Agreement only by a writing signed by all the parties.

8.3 **Assignment and Subcontracting.** City and ~~Contractor~~Consultant recognize and agree that this Agreement contemplates personal performance by ~~Contractor~~Consultant and is based upon a determination of ~~Contractor~~Consultant's unique personal competence, experience, and specialized personal knowledge. Moreover, a substantial inducement to City for entering into this Agreement was and is the professional reputation and competence of ~~Contractor~~Consultant. ~~Contractor~~Consultant may not assign this Agreement or any interest therein without the prior written approval of the Contract Administrator. ~~Contractor~~Consultant shall not subcontract any portion of the performance contemplated and provided for herein, other than to the sub~~contractor~~consultants noted in the proposal, without prior written approval of the Contract Administrator.

8.4 **Survival.** All obligations arising prior to the termination of this Agreement and all provisions of this Agreement allocating liability between City and ~~Contractor~~Consultant shall survive the termination of this Agreement.

8.5 **Options upon Breach by ~~Contractor~~Consultant.** If ~~Contractor~~Consultant materially breaches any of the terms of this Agreement, City's remedies shall include, but not be limited to the following:

8.5.1 Immediately terminate the Agreement;

8.5.2 Retain the plans, specifications, drawings, reports, design documents, and any other work product prepared by ~~Contractor~~Consultant pursuant to this Agreement;

8.5.3 Retain a different ~~Contractor~~Consultant to complete the work described in Exhibit A not finished by ~~Contractor~~Consultant; or

8.5.4 Charge ~~Contractor~~Consultant the difference between the cost to complete the work described in Exhibit A that is unfinished at the time of breach and the amount that City would have paid ~~Contractor~~Consultant pursuant to Section 2 of this Agreement if ~~Contractor~~Consultant had completed the work.

Commented [DC1]: I don't accept the deletion of this provision.

Section 9. **KEEPING AND STATUS OF RECORDS.**

9.1 **Records Created as Part of ~~Contractor~~Consultant's Performance.** All reports, data, maps, models, charts, studies, surveys, photographs, memoranda, plans, studies, specifications, records, files, or any other documents or materials, in electronic or any other form, that ~~Contractor~~Consultant prepares or obtains pursuant to this Agreement and that relate to the matters covered hereunder shall be the property of the City. ~~Contractor~~Consultant hereby agrees to deliver those documents to the City upon termination of the Agreement. It is understood and agreed that the documents and other materials, including but not limited to those described above, prepared pursuant to this Agreement are prepared specifically for the City and are not necessarily suitable for any future or other use. City and ~~Contractor~~Consultant agree that, until final approval by City, all data, plans, specifications, reports and other

documents are confidential and will not be released to third parties without prior written consent of both parties.

9.2 **~~Contractor~~Consultant's Books and Records.** ~~Contractor~~Consultant shall maintain any and all ledgers, books of account, invoices, vouchers, canceled checks, and other records or documents evidencing or relating to charges for services or expenditures and disbursements charged to the City under this Agreement for a minimum of three (3) years, or for any longer period required by law, from the date of final payment to the ~~Contractor~~Consultant to this Agreement.

9.3 **Inspection and Audit of Records.** Any records or documents that Section 9.2 of this Agreement requires ~~Contractor~~Consultant to maintain shall be made available for inspection, audit, and/or copying at any time during regular business hours, upon oral or written request of the City. Under California Government Code Section 8546.7, if the amount of public funds expended under this Agreement exceeds TEN THOUSAND DOLLARS ($10,000.00), the Agreement shall be subject to the examination and audit of the State Auditor, at the request of City or as part of any audit of the City, for a period of three (3) years after final payment under the Agreement.

Section 10 MISCELLANEOUS PROVISIONS.

10.1 **Attorneys' Fees.** If a party to this Agreement brings any action, including an action for declaratory relief, to enforce or interpret the provision of this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees in addition to any other relief to which that party may be entitled. The court may set such fees in the same action or in a separate action brought for that purpose.

10.2 **Venue.** In the event that either party brings any action against the other under this Agreement, the parties agree that trial of such action shall be vested exclusively in the state courts of California in the County of Amador or in the United States District Court for the Eastern District of California.

10.3 **Severability.** If a court of competent jurisdiction finds or rules that any provision of this Agreement is invalid, void, or unenforceable, the provisions of this Agreement not so adjudged shall remain in full force and effect. The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any other provision of this Agreement.

10.4 **No Implied Waiver of Breach**. The waiver of any breach of a specific provision of this Agreement does not constitute a waiver of any other breach of that term or any other term of this Agreement.

10.5 **Successors and Assigns.** The provisions of this Agreement shall inure to the benefit of and shall apply to and bind the successors and assigns of the parties.

10.6 **Use of Recycled Products.** ~~Contractor~~Consultant shall prepare and submit all reports, written studies and other printed material on recycled paper to the extent it is available at equal or less cost than virgin paper.

10.7 **Conflict of Interest.** ~~Contractor~~Consultant may serve other clients, but none whose activities within the corporate limits of City or whose business, regardless of location, would place

~~Contractor~~Consultant in a "conflict of interest," as that term is defined in the Political Reform Act, codified at California Government Code Section 81000 *et seq.*

~~Contractor~~Consultant shall not employ any City official in the work performed pursuant to this Agreement. No officer or employee of City shall have any financial interest in this Agreement that would violate California Government Code Sections 1090 *et seq.*

~~Contractor~~Consultant hereby warrants that it is not now, nor has it been in the previous twelve (12) months, an employee, agent, appointee, or official of the City. If ~~Contractor~~Consultant was an employee, agent, appointee, or official of the City in the previous twelve months, ~~Contractor~~Consultant warrants that it did not participate in any manner in the forming of this Agreement. ~~Contractor~~Consultant understands that, if this Agreement is made in violation of Government Code §1090 *et.seq.*, the entire Agreement is void and ~~Contractor~~Consultant will not be entitled to any compensation for services performed pursuant to this Agreement, including reimbursement of expenses, and ~~Contractor~~Consultant will be required to reimburse the City for any sums paid to the ~~Contractor~~Consultant. ~~Contractor~~Consultant understands that, in addition to the foregoing, it may be subject to criminal prosecution for a violation of Government Code § 1090 and, if applicable, will be disqualified from holding public office in the State of California.

10.8 Solicitation. ~~Contractor~~Consultant agrees not to solicit business at any meeting, focus group, or interview related to this Agreement, either orally or through any written materials.

10.9 Contract Administration. This Agreement shall be administered by the City Manager ("Contract Administrator"). All correspondence shall be directed to or through the Contract Administrator or his or her designee.

10.10 Notices.

Any written notice to ~~Contractor~~Consultant shall be sent to:

HydroScience Engineers, Inc.
10569 Old Placerville Road
Sacramento, CA 95827

Any written notice to City shall be sent to:

City of Sutter Creek
Attn: City Manager
18 Main Street
Sutter Creek, CA 95685

10.11 Integration. This Agreement, including the Scope of Work, Compensation Schedule, Provisions Required for Public Works Contracts, and Insurance Requirements, attached hereto and incorporated herein as Exhibits A and B respectively, represents the entire and integrated agreement between City and ~~Contractor~~Consultant and supersedes all prior negotiations, representations, or agreements, either written or oral.

Exhibit A	Scope of Work and Compensation
Exhibit B	Insurance Requirements

10.12 Counterparts. This Agreement may be executed in multiple counterparts, each of which shall be an original and all of which together shall constitute one agreement.

10.13 Authorized Signature. Each person and party signing this Agreement warrants that he/she has the authority to execute this Agreement and that the party will be bound by such signature.

~~**10.13**~~ *[Signatures on next page]*

The parties have executed this Agreement as of the Effective Date.

CITY	~~**CONTRACTOR**~~**CONSULTANT**
City of Sutter Creek, a municipal corporation of the State of California	HydroScience Engineers, Inc.
By: _____ Tom DuBois, City Manager	By: _____ Bill Slenter, P.E., Principal

Approved as to Form:

_____
Derek P. Cole, City Attorney

Formatted: Font: Not Bold, Italic
Formatted: Indent: Left: 0.5", No bullets or
Formatted: Font: Italic
Formatted: Font: Bold

EXHIBIT A

SCOPE OF SERVICES AND COMPENSATION

Scope of Services

HydroScience will act as the City's (and ARSA's until the JPA dissolution is completed) Wastewater Engineer for engineering planning and capital projects. Bill Slenter will be the principal engineer, with support from other members of the Hydroscience team.

This scope assumes HydroScience will participate on a time and materials bases ongoing in issues related to the wastewater treatment plant, including in particular planning the bidding and construction of a new plant, as well as issues related to disposal. The Tasks and Scope of work will be discussed and agreed to between the Hydroscience principal and the City Manager. Changes to the Scope of Work will be documented in writing.

Task 1 – Project Management and Coordination

This task includes overall management of wastewater projects, schedule management, monthly reporting and budget tracking, and coordination meetings.

Task 2 – Owners Advocate in Design Build Process

HydroScience will represent the city in discussions with external firms who bid, design and construct the City's wastewater system.

Task 3 – Captial Improvement project

HydroScience will provide engineering services to support the creation of specifications, manage the bidding process, and oversee construction on wastewater capital improvement projects.

Formatted: Font: (Default) Times New Roman, Not Bold

Formatted: Font: (Default) Times New Roman, Not Bold

Formatted: Font: Bold

Formatted: Body Text, Indent: Left: 0.18", Right: 0.27", Space Before: 7.3 pt, Line spacing: Multiple 1.1 li, No bullets or numbering, Tab stops: Not at 0.68"

HYDROSCIENCE ENGINEERS, INC.

2025 Standard Schedule of Billing Rates
Rates are subject to increase annually on January 1
of each calendar year.

LABOR CLASSIFICATION	HOURLY RATE
Principal	$315
Engineer IX	$305
Engineer VIII	$295
Engineer VII	$279
Engineer VI	$266
Engineer V	$255
Engineer IV	$244
Engineer III	$227
Engineer II	$215
Engineer I	$197
Engineering Aide	$110
Construction Professional VI	$210
Construction Professional V	$200
Construction Professional IV	$190
Construction Professional III	$180
Construction Professional II	$160
Construction Professional I	$150
Cross Connection Control Specialist	$135
CAD Manager	$168
CAD Designer I	$147
Marketing Professional	$125
Administrative II	$115
Administrative	$100

Hourly billing rates include postage and telephone charges that are normal to the work authorized. Other direct costs for travel, reproduction, mail service, outside services, etc. will be invoiced at 110 percent of the actual cost. Rates for expert witness services shall be billed at the quoted rates plus $50/hour.

Formatted: Left

INSURANCE REQUIREMENTS

Specific Insurance Requirements and Required Policy Limits

PROFESSIONAL SERVICES CONTRACTS:

Including, but not limited to architects, engineers, ~~Contractor~~Consultants, counselors, attorneys and accountants.

~~Contractor~~Consultant shall procure and maintain for the duration of its contract insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the work hereunder by the ~~Contractor~~Consultant, his agents, representatives, employees or sub~~contractor~~consultants.

Minimum scope of coverage
Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001).
2. Insurance Services Office form number CA 0001 (Ed. 1/87) covering Automobile Liability, code 1 (any auto).
3. Workers' Compensation insurance as required by the State of California and Employer's Liability insurance.
4. Errors and Omissions liability insurance appropriate to the ~~Contractor~~Consultant's profession. Architects and Engineers coverage shall be endorsed to include contractual liability.

Minimum limits of insurance

1. General Liability: $1,000,000 per occurrence for bodily injury, personal injury and property damage including operations, products and completed operations. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately for this project/location or the general aggregate limit shall be twice the required occurrence limit (e.g. $2,000,000).
2. Automobile Liability: $1,000,000 per accident for bodily injury and property damage.
3. Employer's Liability: $1,000,000 per accident for bodily injury or disease.
4. Professional Liability (Errors and Omissions) Insurance appropriates to the ~~Contractor~~Consultant's profession, with limit no less than $1,000,000 per occurrence or claim, $2,000,000 aggregate.

Other insurance provisions
The Commercial General Liability and Automobile Liability policies are to contain, or be endorsed to contain, the following provisions:

1. The City, its officers, officials, employees and volunteers are to be covered as insured as respects: liability arising out of work or operations as performed by or on behalf of ~~Contractor~~Consultant; or automobiles owned, leased, hired or borrowed by the ~~Contractor~~Consultant.

2. For any claims related to this project, the ~~Contractor~~Consultant's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees and volunteers shall be in excess of the ~~Contractor~~Consultant's insurance and shall not contribute with it.

3. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be cancelled by either party, unless thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City.

Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under Subdivision (b) of Section 2782 of the Civil Code.

Waiver of Subrogation
The Workers' Compensation policy is to be endorsed with a waiver of subrogation. The insurance company, in its endorsement, agrees to waive all rights of subrogation against the City, its officers, officials, employees and volunteers for losses paid under the terms of this policy which arises from the work performed by the named insured for the City.

Deductibles and Self-Insurance Retentions
Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers, or the ~~Contractor~~Consultant shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Acceptability of Insurers
Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise approved in writing by the City.

Verification of Coverage
~~Contractor~~Consultant shall furnish the City with original certificates and amendatory endorsements effecting coverage required by this clause. The endorsements should be on forms provided by the City or on other than the City's forms provided those endorsements conform to the City's requirements. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications at any time.

Sub~~contractor~~consultants

~~Contractor~~Consultants shall include all sub~~contractor~~consultants as insured under its policies or shall furnish separate certificates and endorsements for each sub~~contractor~~consultant. All coverage for sub~~contractor~~consultants shall be subject to all of the requirements stated herein.

Bill Slenter, PE

Principal

HydroScience



Bill is a civil engineer with 32 years of experience. His areas of expertise include permitting, funding, planning, design, and construction support of wastewater, water, and recycled water systems. A principal with HydroScience, he has served as principal, project manager and project engineer on a wide range of water and wastewater projects.

EDUCATION
B.S., Civil Engineering, San Francisco State University

REGISTRATION
Civil Engineer, California, Registration No. 57640

AFFILIATIONS
California Water Environment Association (CWEA)

Central Valley Clean Water Association – Outreach Committee Chairperson

Former Chairperson, CWEA San Francisco Bay Section Communications Committee

CWEA Sacramento Area Section

SELECT PROJECT EXPERIENCE

Wastewater Master Plans

City of Sutter Creek and Amador Regional Sanitation Authority (ARSA), Amador County, California

Principal-in-Charge. The City of Sutter Creek owns and operates a regional wastewater treatment plant (WWTP) which discharges it effluent to the Amador Regional Sanitation Authority (ARSA) for disposal. Since the City's WWTP is nearing capacity, and the ARSA storage and disposal infrastructure is in need of full rehabilitation, the agencies are considering joining a potential regional WWTP in the City of Ione. Using an asset-management approach of cost and risk assessments, HydroScience conducted an alternatives evaluation of four potential WWTP locations and their related conveyance, storage, and disposal options to guide the City and ARSA in choosing the option which best meets their long-term needs. Once the long-term wastewater management alternative is chosen, it will be developed further and incorporated into the existing Wastewater Master Plans for both agencies.

Wastewater Treatment Plant Reliability Improvements

Silicon Valley Clean Water, Redwood City, California

Principal-in-Charge and QA/QC. HydroScience was the engineer-of-record for the Overaa/HydroScience design-build team for this design-build project to provide plant reliability improvements for Silicon Valley Clean Water's 24 MGD WWTP in Redwood Shores, California. Work included upgrading the aeration basin blower system to high speed turbo blowers with all new distribution piping and control valves, correcting basin flow split issues, installing a fan press solids dewatering system and conveyors, and replacing their granular media filter backwash pumps. Electrical improvements included installing new VFDs and turbo blower, enhancing the aeration control, installing new rotary presses with an integrated control scheme that allowed for redundant control/ power systems, replacing 125 HP Dual Media Filter Backwash Pump with more efficient pump while maintaining the existing power draw and updating the process control narratives.

Davis WWTP Secondary and Tertiary Improvements

City of Davis, California

Principal-in-Charge. HydroScience provided process design, coordination, and commissioning assistance as part of a design-build team for the construction of secondary and tertiary improvements at the City's WWTP. The peak treatment capacity is 18 MGD. This $70M upgrade modernized the facility and brought it into compliance with current discharge regulations. The project included design and construction of activated sludge secondary treatment facilities (aeration and clarification), tertiary disc filters, chlorine disinfection, post-aeration, effluent pumping, flood control facilities, and a new administration building. HydroScience's core areas of responsibility on this project included the chlorine contact basin, chemical mixers, chlorine residual monitors, utility water systems, effluent reaeration system, field instrumentation, leading roles on commissioning and process transitioning, and support for plant tie-ins and owner coordination.

Regional Wastewater Control Facilities

City of Stockton, California

Principal-in-Charge. HydroScience played a lead role on the rehabilitation of the primary clarifiers and sludge and scum pumping systems as part of this Progressive Design-Build project. The existing clarifiers consisted of three discrete banks constructed at different

times (as far back as the 1940s) and configured differently. Two of the clarifiers were "squircular" (circular mechanisms in square tanks) while the remaining ones are rectangular. HydroScience performed a mechanical condition assessment, utilized a facility mass balance to determine anticipated future sludge removal rates and flows for pumping, developed proposed rehabilitation approaches for the clarifiers, worked with the contractor to refine construction approach and develop cost estimates for the improvements, and presented our findings in a workshop to City staff. HydroScience helped develop the process control narratives and finalized the construction plans and specifications and is currently providing review of construction submittals. Once construction is complete, the clarifiers will have a total capacity of 80 MGD.

Copper Cove WWTF Tertiary and Pond 6 Utilities Upgrades

Calaveras County Water District, California

Project Manager. The Copper Cove Wastewater Treatment Facility treats mostly domestic wastewater in a series of aerated ponds and storage ponds. Secondary effluent is stored in a large effluent storage pond, Pond 6. Water from this pond is treated to Title 22 tertiary recycled water standards using a Trident Microfloc filter, disinfected in a single-channel UV disinfection process, and delivered to the Saddle Creek Golf Course for irrigation reuse with a portion discharged to wetlands. HydroScience is preparing the design to replace the aging and poorly performing existing filter unit with a continuous backwash sand filtration process, add algae removal pretreatment utilizing suspended air floatation, add solids dewatering for treating tertiary sludge, and relocate pumps and piping. CEQA documentation is also being completed under HydroScience's oversight. Expandability provisions for future buildout conditions are incorporated into the design, and the construction sequencing will implement the upgrades around ongoing facility operations. A separate design package also being prepared by HydroScience will relocate buried piping and two pump stations to make room for enlargement of the Pond 6 dam. HydroScience is also assisting with US Army Corps of Engineers (USACE) grant funding coordination.

St. Helena WWTRP Upgrades

City of St. Helena, California

QA/QC. The City of St. Helena was issued a CDO containing effluent limitations the City could not reliably obtain with their existing pond treatment plant. The City commissioned HydroScience Engineers to develop a Conceptual Design Report (CDR) to analyze treatment alternatives that would comply with the new NPDES effluent discharge limitations, while also modernizing the facility's treatment process. HydroScience identified a packaged MBR treatment system as the preferred WWTRP upgrade alternative, and developed the design around this approach. The WWTRP will maintain its permitted capacity of 0.5 MGD with the flexibility to operate the plant at a peak day hydraulic capacity of 1.33 MGD. This new system will result in tens of millions of dollars in cost savings when combined with repurposing four of the existing WWTRP ponds for use as flow equalization. The design is modular so that the City can cost-effectively expand the new system to meet anticipated build-out flows, if necessary. The RWQCB accepted the CDR findings without comment.

Memorial Park Wastewater Treatment Facilities Improvements

County of San Mateo, California

Project Manager. Memorial County Park is a family and group campground facility. Wastewater generated within the park is collected in two separate collection systems, with a total length of approximately 1.8 miles of 4- to 8-inch gravity sewer. Most of the wastewater flowed to a 30,000 gallon per day (gpd) extended aeration WWTP. Wastewater was treated to secondary standards, disinfected, and discharged to a dedicated spray field with an unlined retention lagoon to handle larger flows. The remainder of the wastewater flows to a septic tank and leach field system. The collection system and WWTP were over 50 years old. Due to age, poor performance, reliability concerns, and high maintenance requirements, HydroScience planned, designed, and oversaw construction for a new, modern 50,000 gpd sequencing batch reactor WWTP. The design included new yard piping and modifications to the existing WWTP, to repurpose it as a new sewer lift station. HydroScience developed a collaborative, forward-looking project approach that provides reliable operation and permit compliance in a small, low-impact footprint, and that reduces the cost and staff time to operate and maintain.

Wastewater Treatment and Effluent Management Facilities

Lytton Rancheria, Sonoma County, California

Design Manager. As part of a design/build team, HydroScience completed design of wastewater and recycled water facilities serving a new tribal residential development in Sonoma County. The Lytton Rancheria project consists of construction of new homes, a community center, and a retreat center. HydroScience designed a complete Membrane Bioreactor (MBR) Wastewater Treatment Facility utilizing shop-fabricated treatment units to treat 250,000 gpd of peak dry weather flow. The design includes an administration building, UV disinfection, solids dewatering system using screw presses, effluent storage pond, and recycled water pump station. The design was developed through a collaborative progressive design build process.

Steven Whittlesey, PE, Grade D2/T2

Project Manager

HydroScience



Steven has seven years of experience performing civil engineering design and project management for water and wastewater projects including pump stations, treatment plants, water supplies, and wells. He has prepared wastewater treatment process models using GPS-X and has lead many projects to completion.

EDUCATION

M.S., Environmental Engineering, University of California, Riverside

B.S., Chemical Engineering, University of California, Davis

REGISTRATION

Civil Engineer, California, Registration No. 93241

Grade D2 Distribution System Operator, No. 53228, California

Grade T2 Water Treatment Operator, No. 44371, California

AFFILIATIONS

California Water Environment Association

American Society of Civil Engineers

SELECT PROJECT EXPERIENCE

Mule Creek State Prison WDR Update & CDO Recission

California Department of Corrections and Rehabilitation, City of Ione, California

Project Engineer. In response to a Cease and Desist Order from the State Water Resources Control Board, the CDCR required extensive permitting to alleviate concerns that the vocational schools of the prison were contributing to fugitive contaminants in the stormwater and wastewater system. This project consisted of the completion of land application area management plans, a wastewater evaluation report, a soil sampling evaluation report, groundwater evaluation report, and ultimately a new report of waste discharge to completely characterize all vocational practices. The CDCR retained all treatment and disposal methods and capacities and had the Cease and Desist Order rescinded.

D.A. Porath Sanitation Facility Upgrades

Santa Cruz County Sanitation District, California

Engineering Support. The D.A. Porath Sanitation Facility includes a below-grade pumping station with a wet well and an adjacent dry pump room. Access to the wet well area is provided by a 30-inch diameter manhole located in the laboratory and a 72-inch by 11-inch opening located in an adjacent room which are insufficient to provide access to the wet well for maintenance and monitoring purposes. HydroScience designed an expanded access opening for better access and an additional access hatch for the wet well in an adjacent room. The project included new double leaf access doors with safety grates, removable guardrails, and provisions for protective equipment anchors for wet well entry. HydroScience also designed an actuated main isolation valve replacement in the yard. The team developed the design in close collaboration with SCCSD engineering and O&M staff.

Woodbridge WWTP Rehabilitation Project

Woodbridge Sanitary District, Woodbridge, California

Project Engineer & Assistant Project Manager. Steven managed the USDA Water & Environmental Program $1.6M loan application, design, bidding, and construction management for the rehabilitation of the headworks screen, the 1930s Imhoff tank concrete and lining, slide gates and the aerators for the Woodbridge Sanitary District.

Dunnigan WWTF Commissioning and WDR Update

Dunnigan, California

Project Engineer. The Dunnigan WWTF was originally a series of four unlined aerated lagoons and to increase the treatment and disposal capacity, two ponds were converted to in-series lined aeration ponds and two ponds were converted to rapid infiltration basins. Steven completed the report of waste discharge, groundwater monitoring well installation report and field testing, and infiltration testing and water balance for the disposal capacity of the system.

Avenal State Prison Wastewater Effluent Disposal Feasibility Study

California Department of Corrections and Rehabilitation, City of Avenal, California

Assistant Project Manager. Coordinated internal engineering and subconsultants for evaluation of the City of Avenal and Avenal State Prison percolation rate investigations, dam embankment stability evaluation, and preliminary facility layouts and comparative

Steven Whittlesey, PE, Grade D2/T2

HydroScience

life cycle cost estimates for $16–$30 million wastewater storage and disposal improvements.

Salida Wastewater Master Plan & Preliminary Design of SBR / Solids Systems

Salida Sanitary District, City of Salida, California

Lead Project Engineer. Developed the project scope and fee, and preliminary master planning efforts including wastewater flow and constituent characterization. This project primarily focused on replacement of the solids drying beds, and expansion and optimization of the secondary SBR system to enhance denitrification.

Penn Valley WWTF Decommissioning

Penn Valley, North San Juan, California

Project Manager. Due to the regionalization of the Penn Valley Wastewater Collection System, the Penn Valley Wastewater Treatment Facility became a stranded asset for the County. As the County was continuing to pay for monitoring and reporting on the treatment system, Steven was tasked with investigating, scoping and general project management for the recision of the Waste Discharge Requirements and Cease and Desist Order prior to the County selling the property.

San Andreas WWTP Disposal Capacity Assessment

San Andreas Sanitary District, San Andreas, California

Project Engineer. Steven prepared design calculations, and technical memo and response to the State Waterboard's comments for a disposal capacity assessment of the WWTP which allowed increased NPDES surface water discharges closer to rainfall events.

Woodard Bottom Disposal System Design & Permitting

California Department of Corrections and Rehabilitation, City of Ione, California

Project Engineer. This project involved commissioning and startup of a secondary disinfected effluent disposal system for CDCR, who shared the pond storage facilities with the Amador Regional Sanitation Agency and the disposal facilities with the Castle Oaks Golf Course. As part of the acceptance of the project by the State Water Resources Control Board, an update to the Waste Discharge Requirements was required, which was Steven's other main role in the project besides commissioning.

Riverbank Recycled Water Project, Feasibility Study and Preliminary Design

City of Riverbank, California

Project Manager. Developed preliminary engineering reports and design documents for the City of Riverbank's application to the Clean Water State Revolving Fund Proposition 1 Grant Program. The preliminary design included plans, treatment modelling, life cycle cost estimation, user rate and environmental studies, and design reports to evaluate the City's impact to user rates for the $65 Million recycled water treatment and conveyance facilities.

Lockeford Wastewater Master Plan

Lockeford Community Services District, City of Lockeford, California

Project Manager. Led a team of three engineers and one GIS technician to develop feasible treatment, storage, and disposal system improvements for the long-range planning and rate setting basis for the wastewater system. Alternatives identified included deepening the in-series treatment pond system, adding a membrane ultra filtration plant and recycled water disposal via local orchard crop evapotranspiration.

Vaca Valley Water System Consolidation Master Plan

Solano Irrigation District, City of Vacaville, California

Project Manager. Led the team's alternatives analysis of options of up to $29 Million for interconnection of two water distribution and treatment systems. This project included working alongside the District staff and a hired economist to develop an implementation and financing plan to establish a potential capacity charge or connection fee program for in recommended improvements.

City of Live Oak, P Street Lift Station Upgrade and Modification Project

City of Live Oak, California

Project Engineer. Steven assisted with preparing design calculations, drawings and specifications for the $3.5 million project. Worked with vendors and manufacturers to develop sole source specifications and bidding criteria. He also managed permitting under the Limited Threat Discharges NPDES General Order.

Del Valle Water System Replacement Project

East Bay Regional Parks District, Alameda County, California

Project Engineer. This project involved replacement of the Del Valle Water System which was a surface water treatment, storage and distribution system installed in the 1960s. The system was replaced with a conventional clarifier to pressure filter treatment plant and two new storage tanks. Additionally, all of the original asbestos piping was bursted and replaced with HDPE piping. Steven was responsible for commissioning and start up of the system, as well as developing the operations and maintenance manual and the Title 22 Engineers Report.

SUTTER CREEK
JEWEL OF THE MOTHER LODE

=3

TO:	THE HONERABLE MAYOR AND MEMBERS OF THE CITY COUNCIL
MEETING DATE:	MARCH 17, 2025
FROM:	DAN LAFONTAINE, PUBLIC WORKS DIRECTOR
SUBJECT:	MINNIE PROVIS PARK IMPROVEMENTS, PROJECT UPDATE

RECOMMENDATION:
Receive council approval to proceed with project as planned.

BACKGROUND:
The council has approved a capital improvement budget item of 30K to improve the entrance of Minnie Provis park in the 2024/2025 fiscal year. The recognized problem is that the entrance to Minnie Provis park (from the Community Building) needs repair and improvements. The decomposed granite (DG) base from Church Street to the playground is eroding down the hill and towards the creek. The erosion has occurred to a point where the fabric underneath has become exposed causing a tripping hazard. Erosion is also occurring on the hill behind the bathrooms down to the creek causing unstable ground and a tripping hazard. This erosion around the playground is a potential liability for the City that needs to be rectified. A secondary issue is the path of travel from the bathroom to the playground leads foot traffic to walk across the grass making a dead spot in the grass that is unsightly. This pathway also contains a drinking fountain that does not work and cannot be repaired. See pictures of the issues below:



Figure 1: Community Center Entrance to Minnie Provis Park



Figure 2: Bathroom Travel Path and Broken Drinking Fountain



Figure 3: Erosion of DG around playground and behind Community Center



Figure 4: Erosion down the hill behind Minnie Provis Bathroom

PROJECT UPDATE:

The project intends to remove the drinking fountain and the bench and install a concrete path of travel from the Church Street entrance (walking path side) to the bathrooms. The estimate for this concrete work is 15K. The drinking fountain will be destroyed as it cannot be removed and reinstalled. A new drinking fountain will be purchased and installed against the bathroom wall (closer to the water connection). The new drinking fountain will include bi-level fountains, a pet station (dog water filling bowl) and a bottle filing station on top. This type of fountain promotes conservation by reducing plastic waste and creates an easier way for residents of Sutter Creek to stay hydrated.



The bench will also be removed (and reinstalled if possible or a new bench purchased) that will be installed around the bathroom. The cost for the fountain and the benches is estimated at 4K. Grass will fill in the void area between the new concrete path and the existing grass.

Most of the remaining DG area has been eroded away and will require new DG to be purchased and installed. We estimate that the amount of DG required will be around 30 cubic yards with a cost of 5K. To prevent erosion of the new DG we will be mixing a stabilizer into the DG. This stabilizer is a

permeable paving solution for projects that can be incorporated into the DG to give a firm, stable and porous end surface, that reduces water padding and soil erosion. The stabilizer is a combination of pre-consumer recycled aggregate, gypsum by-product, fine clays and colorant. There are no oils, resins, polymers, or enzymes to leach into the environment making this solution environmentally friendly. The stabilizer is added to the new DG in batches and once installed can be compacted with either a sod roller or a vibra plate. No special experience is needed so the installation can be accomplished by public works staff. The mixture is naturally resistant to weeds, which removes the need for weed barrier fabric. The stabilizer/DG mixture will be installed to a depth of 2 to 3-inches which is ideal for long term coverage. The cost of the stabilizer is estimated at 5K. A curtain drain will also be installed at the transition between the DG and the concrete behind the community building.



Based on estimates from contractors and the amount of work that needs to be completed, the project should be completed one month after initiation. Based on the timeline of the project, counsel approval of the project needs to be granted as soon as possible to ensure that everything is finished for the Duck race event (end of April).

PROJECT COSTS:

Item	**Quantity**	**Costs**
Concrete	Lump sum	$14,500
DG	30 yds^3	$ 5,000
Stabilizer	2 pallets	$ 5,000
Drinking fountain (w bottle filler) and benches	1fountain and 2 benches	$ 4,500
Grass and equipment rental	Lump sum	$ 1,000
	Total	**$30,000**

BUDGET IMPACT:
There is no budget impact. The project has been budgeted and is within the amount budgeted.

SUTTER CREEK
JEWEL OF THE MOTHER LODE

STAFF REPORT

TO:	**THE HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL**
MEETING DATE:	**MARCH 17, 2025**
FROM:	**CITY MANAGER DUBOIS**
SUBJECT:	**NUISANCE ABATEMENT ORDINANCE**

RECOMMENDATION:
Review the proposed ordinance revisions to our existing weed and nuisance ordinance, to add enforcement language and process. If there are no changes or minor revisions, Council can make a motion to pass the first hearing tonight. If there are more significant changes, Council can make a motion capturing requested changes and have it brought back in a future meeting.

BACKGROUND:
As we experience more severe weather, the concern about extreme fire events increases. Winter storms knock down trees that can lay fallow on the ground for some time. Heat and drought in the summer create tinder box situations.

While the City currently has a nuisance and weed abatement ordinance on the books, the current ordinance lacks any enforcement mechanism. Every year, the Fire District inspected properties throughout town and cajoles people to reduce vegetation to improve fire safety. If people don't comply, the Fire District provides a list to the City, and the City police department reaches out to ask people to comply. Most residents do comply however, some ignore the warnings. Absentee property owners do not respond. And some owners that are residents also ignore the requests.

Without better cooperation, our efforts to reduce fire risk can only go so far.

In addition, we sometimes experience other types of nuisances – trash or other potentially unsafe health hazards on properties that should be removed. We can use our code enforcement process, but by clarifying clearer penalties for these types of nuisances, along with a process to add fines and clean up costs to the property tax lien, the City will have a much better enforcement tool.

DISCUSSION:
Staff feels that passage of enforcement provisions is a critical tool for the City to be able to improve fire safety as well as clean up other property that represents a threat to public health or is an extreme eyesore.

With passage of an improved ordinance, City staff will develop a communication plan, working in concert with the Fire District, to get out the word about the change. The intent is NOT to generate a lot of penalties and enforcement action but to continue to encourage people to do this work. We will work with the Fire District to help anyone that wants to remove weeds but may be unable to do so either because of

their physical ability or financial situation. For the worse offenders, those with dangerous properties who either do not respond OR refuse to comply, the City will move to enforcement. Staff will establish a budget for how much to spend on hiring crews to perform weed abatement each year. Projects will be prioritized - we will not be able to afford to enforce against everyone each year.

Jackson and Ione both enforce their vegetation management ordinances. Based on what they experienced, we can expect that once residents become aware that the City is serious and will follow through with enforcement, more and more people will voluntarily comply.

Staff are in the process of discussing with both the Police Department and the Fire District to work out operational details. The operational processes and communication plan are separate from getting the ordinance in place.

Staff recommends that Council pass the first hearing of the ordinance. It will return for a second reading in thirty days before coming into effect. The timeline is pretty tight to be prepared for this Spring and Summer season.

BUDGET IMPACT:
We anticipate budgeting around $20,000 for enforcement in the first year. The City will recover these funds through property tax liens, but there will be a cash flow delay of up to 12 months.

ATTACMENT:
Proposed Ordinance and Resolution.

ORDINANCE NO. ____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SUTTER CREEK ENACTING CHAPTER 10.40 OF THE SUTTER CREEK MUNICIPAL CODE REGARDING THE ABATEMENT OF WEEDS AND RUBBISH

The City Council of the City of Sutter Creek, California does ordain as follows:

Section 1

Chapter 10.40 of the Sutter Creek Municipal Code is enacted to read as follows:

CHAPTER 10.40 - ABATEMENT OF WEEDS AND RUBBISH

10.40.010 - Purpose.

The purpose of this chapter is to provide for the abatement of fire hazards within the city.

10.40.020 - Definitions.

For the purposes of this chapter, the following words shall mean as follows:

A. "Enforcement officer" means the city manager, or his or her designee, and shall include any official or officials the city manager duly appoints to administer the provisions of this chapter. For the purposes of the provisions of this chapter dealing with removal and destruction of weeds and waste, "enforcement officer" shall include any person who, pursuant to contract with the city, is authorized to abate nuisances.

B. "Fire hazard" means any condition which increases or may cause an increase in the degree of danger from fire over that which is customarily recognized as normal by persons in the public service of preventing or extinguishing fire. It shall also mean any condition or any act which may obstruct, delay or hinder, or may become the cause of an obstruction, delay or hindrance to the prevention, suppression, or extinguishment of fire.

C. "Nuisance" means any condition or use of premises or of building exterior which is detrimental to the property of others or which poses an immediate or potential health, safety, or fire hazard. This includes, but is not limited to, the keeping of, or depositing on, or the scattering over the premises of the following:

1. Weeds, grass, dead trees, lumber;

2. Rubbish, refuse, junk, trash, debris, garbage;

3. Waste material;

4. Abandoned, discarded or unused objects or equipment of any type, including, but not limited to, furniture, stoves, refrigerators, freezers, vehicles, cans, or containers.

D. "Owner" means the owner, agent of the owner, lessee, and/or occupant or person in possession of any lot, parcel, tract, or piece of land.

E. "Tax collector" shall mean the person collecting property taxes levied on real property for the city.

F. "Weeds" as used in this chapter means all weeds growing upon streets, alleys, sidewalks, or private property in the city and includes any of the following:

1. Weeds that bear or may bear seeds of a downy or wingy nature;

2. Sagebrush, chaparral, blackberries, weeds, indigenous grasses or any other brush which may attain large growth as to become a fire hazard as determined by the enforcement officer;

3. Weeds that are otherwise noxious or dangerous;

4. Poison oak and poison ivy when the conditions of growth are such as to constitute a menace to the public health; and

5. Accumulation of dry grass, stubble, brush, litter, garden refuse, cuttings, and other combustible trash that endangers the public safety by creating a fire hazard.

10.40.030 - Owner to remove weeds.

It shall be the duty of the owner of land, improved or unimproved, to immediately remove, upon notice by the enforcement officer, any nuisance from the sidewalk abutting or adjoining such parcel of land, including, but not limited to, all grass, weeds, dead trees, tin cans, rubbish, refuse, and waste material or other unsanitary or dangerous substances or objects.

All combustible weeds shall be removed from parcels less than one acre in size. Parcels larger than one acre shall be clear of all weeds within one hundred feet of any structure and thirty feet of any street, driveway, and all property lines on improved property.

Unimproved parcels larger than one acre shall be cleared of all combustible weeds within thirty feet of any public access point including, but not limited to, public streets, public roads, trails, parking lots, and sidewalks. Unimproved parcels larger than one acre shall create a defensible space clear of all weeds a minimum of one hundred feet from any building or structure. Structures less than one hundred twenty square feet with no electricity or plumbing (i.e., do not require a building permit) are exempt. Owners of unimproved parcels larger than one acre may present, in writing, an individual vegetation management plan to the enforcement officer that creates defensible space to protect structures and buildings. Individual management plans will be reviewed and may be approved at the discretion of the enforcement officer.

The enforcement officer may exclude cultivated grasses and pastures where grazing or equivalent practices clearly demonstrate that vegetation is subject to ongoing best agricultural management practices and removal is unnecessary to protect adjacent improved property or ingress/egress routes from fire exposure. If active grazing land must be removed to provide defensible space, compensation will be made to landowners. Compensation shall be based on the

square footage of clearance required for defensible space. Per-acre compensation shall be established by the total production value, in dollars, of "cattle and calves" produced for the year divided by the total acres of "rangeland" in production for the year (generally holds steady at one hundred ninety-eight thousand(±) acres) as reported in the Calaveras County annual crop report for the most recent year available. Total compensation to property owners citywide shall not exceed two thousand dollars annually unless otherwise authorized by the city council. "Active grazing land" for the purpose of this section means land where the primary use is or has been livestock grazing for commercial purposes within the preceding three-year period. The landowner would remain responsible for costs associated with providing the necessary defensible space.

Abatement may be accomplished in any manner that reduces vegetation to less than four inches above the soil line and is not in violation of any environmental rules, regulations or statutes applicable within the city.

This chapter shall not be construed to hold the city or any officer, employee, or agent thereof responsible for any damage to persons or property by reason of any inspection authorized herein or for any action or omission in connection with the application or enforcement of this chapter. By adopting the provisions of this chapter, the city does not intend to impose on itself, its employees or agents any mandatory duties of care toward persons and property within its jurisdiction so as to provide a basis of civil liability for damages.

10.40.040 - Owner to keep premises clean.

It shall be the duty of the owner, agent, lessee or other person occupying or having charge or control of any parcel of land, improved or unimproved, to keep such parcel of land free from all nuisances thereon, including, but not limited to, grass, weeds, tin cans, rubbish, refuse and waste material of any kind, and other unsanitary substances or objects which may endanger or injure neighboring property of the health, safety, or welfare, or be offensive to the senses, of the residents of the vicinity of such property.

10.40.050 - Declaration of public nuisance.

A. Whenever any condition exists upon the streets, sidewalks, parkways or private property within the city which is defined as a nuisance pursuant to Section 10.40.020, or whenever weeds on specified parcels of property are seasonal and recurrent nuisances, the enforcement officer may declare the same to be a public nuisance.

B. Notice of Nuisance. The enforcement officer shall give written notice to the owner of record to abate the nuisance within fifteen days. The notice of nuisance shall state that the property owner is required to abate the nuisance, shall state the nature of the nuisance to be abated, what is required to abate it, and that if the nuisance is not abated the code enforcement officer shall issue a citation and levy a fine in the sum of five hundred dollars.

C. Notice of Abatement Proceedings. If the nuisance has not been abated by the owner within fifteen days after service of the notice of nuisance, the enforcement officer is ordered to take appropriate remedial actions. The enforcement officer shall notify the owner of affected

properties, as shown on the latest equalized tax assessment roll, by mail, of intention to abate the nuisance.

D. Service of Notice. Notice shall be mailed by certified mail to the address of the property owner not less than fifteen days prior to the date of the proposed abatement. Failure of any owner, or any party concerned, to receive a notice shall not affect the validity of any proceeding taken, if the procedure for service of notice has been followed.

10.40.060 - Appeals.

The property owner may appeal the decision of the enforcement officer requiring the abatement of the nuisance by sending a written appeal to the enforcement officer requesting a hearing with the enforcement officer within fifteen days of the notice.

10.40.070 - Hearing procedure.

A. The enforcement officer shall only consider evidence that is relevant to whether a nuisance existed and whether the property owner caused or maintained the nuisance.

B. The property owner contesting the notice of abatement shall be given the opportunity to testify and present witnesses and evidence.

C. The failure of any recipient of a notice of abatement to appear at the appeal hearing shall constitute a waiver of the appeal, waiver of abatement costs, and failure to exhaust administrative remedies.

D. The notice of abatement proceeding and any additional documents submitted by the enforcement officer shall constitute prima facie evidence of the respective facts contained in those documents.

E. If the enforcement officer submits additional written information concerning the notice of abatement proceeding for consideration of the appeal hearing, a copy of the written information shall be served by mail on the person requesting the hearing at least five days prior to the date of the hearing.

F. At least five days prior to the appeal hearing, the recipient of a notice of abatement proceeding shall be provided a copy of the documents relied upon by the enforcement officer. No other discovery is permitted. Formal rules of evidence shall not apply.

G. A hearing before the enforcement officer shall be set for a date that is not less than ten days and not more than twenty days from the date the request for hearing is filed. The person requesting the hearing shall be notified of the time and place set for the hearing at least five days prior to the date of the hearing.

10.40.080 - Decision on appeal.

A. After considering all the testimony and evidence submitted at the appeal hearing, the enforcement officer shall issue a written decision within seventy-two hours of the hearing upholding or denying the notice of abatement proceeding and shall list within the decision the

reasons for that decision. The enforcement officer may impose such conditions and take such other actions as is deemed appropriate to carry out the purpose of the provisions of this chapter.

B. The decision of the enforcement officer shall be final and shall be served by mail on the property owner within forty-eight hours.

10.40.090 - City removal of nuisance.

A. The enforcement officer and his deputies, assistants, contracting agents and other representatives are expressly authorized to enter upon private property for the purpose of abatement of nuisances or causing nuisances to be abated pursuant to this chapter by having weeds or waste destroyed or removed by cutting, disking, chemical spraying or such other method as may be determined by the city council. Any property owner shall have the right to destroy or remove such weeds or waste himself, or have the same destroyed or removed at his own expense; provided, that such weeds or waste shall have been removed prior to the arrival of the enforcement officer or his authorized representatives to destroy or remove them.

B. No person shall refuse to allow the enforcement officer or his deputies, assistants, contracting agents, or other representatives from entering upon any premises at any time during the hours of daylight for the purpose of abatement of any nuisance pursuant to this chapter.

10.40.100 - Assessment costs--Liens—Attorney fees--Other procedures.

A. The enforcement officer or his designee shall notify, in writing, all parties concerned of the amount of total costs costs incurred by the city resulting from the nuisance abatement. If the total costs determined as provided for in this section is not paid within thirty days after mailing of such notice, the charges shall be placed as a special assessment on the tax bill for the property pursuant to Section 38773.5 of the Government Code. In addition to the costs of abatement, a nuisance abatement service administrative overhead fee in an amount which may be established from time to time by resolution of the city council shall be assessed against each parcel for the city and other city-incurred costs associated with abatement. Unpaid fines may also be included in the total costs.

B. Notice shall be given at the time of imposing the assessment which shall specify that the property may be sold after three years by the tax collector for unpaid delinquent assessments. The tax collector’s power of sale shall not be affected by the failure of the property owner to receive notice. The assessment may be collected at the same time and in the same manner as ordinary municipal taxes are collected, and shall be subject to the same penalties and the same procedure and sale in case of delinquency as provided for ordinary municipal taxes. All laws applicable to the levy, collection and enforcement of municipal taxes shall be applicable to the special assessment. However, if any real property to which the cost of abatement relates has been transferred or conveyed to a bona fide purchase for value, or if a lien of a bona fide encumbrance for value has been created and attaches thereon, prior to the date on which the first installment of the taxes would become delinquent, then the cost of abatement shall not result in a lien against the real property but instead shall be transferred to the unsecured roll for collection.

C. Other Abatement Procedures. The provisions of this chapter shall not in any manner limit or restrict the city from enforcing city ordinances or abating public nuisances in any other manner provided by law.

10.40.110 - Payment of costs.

The owner, or other person interested in the premises on which any work has been performed under the provisions of this chapter, may pay the costs thereof to the city clerk after the filing of the statement by the enforcement officer with the city clerk and until the first day of August of the year in which such statement was filed.

10.40.120 - Statement of unpaid amounts.

A statement of all amounts remaining unpaid after August 1st, certified by the city clerk and giving the descriptions of the respective pieces or parcels of land upon which such charges exist, shall thereupon be prepared and certified by the city clerk, and shall be by him or her immediately forwarded to and filed with the tax collector who shall thereupon cause an entry to be made on the tax roll opposite the description of the property therein described as follows: "~~Weed~~ Nuisance Abatement Lien _____ $_____," filling in the amount of the expense shown in the statement of the city clerk in each particular case, plus a penalty of twenty percent to cover the incidental expense of collection. The tax collector shall thereafter cause a corresponding entry to be made on the tax bill for the property; and thereafter before any payment shall be received for any tax for the redemption of the property, the amount of ~~weed~~ nuisance abatement lien shall first be paid.

10.40.130 - Manner of collection.

In all respects, other than as is in this chapter recited, the ~~weed~~ nuisance abatement lien shall be collected and the collection of them enforced, in the same manner, under the same conditions, and pursuant to the same notices as other taxes upon real property in the city.

10.40.140 - Refunds.

Any ~~weed~~ nuisance abatement lien, penalties or costs on them paid more than once or erroneously or illegally collected by reason of a clerical error may, by order of the city council, be refunded; provided, however, that no order of the city council to refund ~~weed~~ nuisance abatement lien, penalties or costs shall be made except upon a verified claim therefor, filed within six months after making of the payment sought to be refunded, or in the case of a double assessment of such taxes, within two years after such payment.

10.40.150 - Legality of abatement taxes.

No assessment or act relating to the assessment or collection of nuisance~~weed~~ abatement lien is illegal on account of informality, nor because the same was not completed within the time required by law; nor shall any such assessments ever be held illegal on account thereof.

10.40.160 - Severability.

If any part or provision of this chapter is found to be invalid or unenforceable by a court of law, such invalidity shall not affect any other part or provision herein, and all remaining provisions of this chapter will be valid and enforceable to the fullest extent permitted by law.

Section 2

All ordinances and parts of ordinances in conflict herewith are hereby repealed.

Section 3

The City Council determines that the provisions of this Ordinance are exempt from the California Environmental Quality Act because the instant ordinance involves continuing administrative activities and thus is not a project, as the Act defines, pursuant to Section 15378(b)(2) of the California Environmental Quality Act Guidelines. To the extent the adoption of this Ordinance constitutes a project, the City Council finds pursuant to CEQA Guideline Section 15061(b)(3) that the project is exempt from environmental review because it can be seen with certainty that the adoption of the ordinance would not have any significant impact on the environment.

This ordinance shall be published and posted in the manner required by law by the City Clerk.

Introduced at a meeting of the City Council of Sutter Creek on April 8, 2025 and enacted by the City Council of the City of Sutter Creek at a regular meeting held on April 22, 2025.

PASSED, APPROVED AND ADOPTED at a regular meeting of the Sutter Creek City Council, held on this 22nd day of April 2025, by the following vote, to wit:

AYES:
NAYS:
ABSENT:
ABSTAIN:

_____
Claire Gunselman, Mayor

ATTEST:

_____
……, City Clerk

SUTTER CREEK

JEWEL OF THE MOTHER LODE

STAFF REPORT

TO:	**THE HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL**
MEETING DATE:	**MARCH 17, 2025**
FROM:	**CITY MANAGER DUBOIS**
SUBJECT:	**DISCUSSION ABOUT EMPTY STOREFRONT ORDINANCE**

RECOMMENDATION:
Discuss whether Sutter Creek should adopt an empty storefront ordinance and, if so, what parameters should be included.

BACKGROUND:
A thriving retail space needs to be attractive and lively. We periodically experience periods with a lot of empty storefronts on Main Street, which can be detrimental to the remaining businesses. Most of the buildings are pretty well maintained but we also have a couple with peeling paint and less attractive appearance.

Many cities have an "Enpty Storefront Ordiannce". Staff has attached one from Nevada City as an example. Generally, a first step is to require that the display windows be attractive and have an interesting display, even if the building is unoccupied. Windows should not be papered over, frosted, or the space left empty visible from the street. Buildings should be maintained and can be cited if not complying.

DISCUSSION:
Council should discuss their interest in putting a similar ordinance in place for Sutter Creek. . If interested in such an ordinance the next step would be outreach to the business community and, primarily, to building owners, to explain the oridinance and give people time to comply. Staff would ask for assistance in communicating the benefits and requirements by Council to the business community

BUDGET IMPACT:
Budget impact will primarily be staff time to work on this and the opportunity cost of not working on something else. Once in place, code enforcement will need to be conducted to implement it. Once its understood, the economic benefits should be to help encourage buildings to be occupied, and hopefully generating sales tax.

ATTACMENT:
Sample ordinance

ORDINANCE NO. 2023-04

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF NEVADA CITY, STATE OF CALIFORNIA, ADDING CHAPTER 8.05 ("VACANT BUILDING AND STOREFRONT NUISANCES") TO TITLE 8 ("HEALTH AND SAFETY") TO THE CITY OF NEVADA CITY MUNICIPAL CODE, RELATING TO VACANT BUILDING AND STOREFRONT NUISANCES

WHEREAS, the City of Nevada City is continuing to experience the economic impacts of the Covid 19 pandemic, in which many nonresidential properties became vacant, vacancies remained unfilled, and vacant properties became blighted;

WHEREAS, the City Council believes, based on experiences of other communities, that blight can be arrested and reversed through a program of registration and proper maintenance by property owners, and monitoring and enforcement by the City; and

WHEREAS, the City of Nevada City, California, pursuant to the provisions of the California Environmental Quality Act ("CEQA") (Cal. Pub. Res. Code §§21000 and following) and State CEQA Guidelines (14 CCR §§15000 and following) has determined that this ordinance is not a project under CEQA pursuant to Title 14, Section 15378 (b)(5) of the California Code of Regulations;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF NEVADA CITY DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. The above recitals are true and incorporated into this ordinance.

SECTION 2. Chapter 8.05 is hereby added to the Nevada City Municipal Code, to read as follows:

Chapter 8.05 - VACANT BUILDING AND STOREFRONT NUISANCES

8.05.010 - Purpose.

Vacant buildings and storefronts are a major cause and source of blight in nonresidential neighborhoods, especially when the owner of the building fails to actively maintain and manage the building to ensure that it does not become a liability to the neighborhood. Vacant buildings and storefronts (whether or not those buildings and storefront windows are boarded), substandard, or unkempt buildings, and long-term vacancies discourage economic development; retard appreciation of property values; invite criminal activity such as vandalism, squatting and dumping; and are an attractive nuisance to children. Vacant buildings are potential fire hazards and can jeopardize the ability of owners of neighboring property from securing or maintaining affordable fire insurance. It is the responsibility of property ownership to prevent owned property from becoming a burden to the neighborhood and community and a threat to the public health, safety, or welfare. One vacant building which is not actively and well maintained and managed can be the core and cause of spreading blight. It is the purpose and intent of the city council, through the

adoption of this chapter, to define the responsibilities of owners of, and to establish registration and monitoring programs for, vacant buildings, storefronts and properties.

8.05.020 - Definitions.
As used in this chapter:

ADMINISTERING OFFICIAL means the City Planner and/or designees authorized to administer and create and implement administrative rules for this chapter.

BUILDING means any physical edifice that is built or installed and is located on and affixed to the land and used for or intended for supporting or sheltering any commercial use or occupancy. The term "building" shall include any portion thereof. The term "building" does not include residential buildings or structures.

DISPLAY means an exhibit of objects arranged for people to look at. A display may be presented in two or three dimensions and may include artwork, window paintings, or other items that serve to screen a vacant building's interior from the view of those on public rights-of-way, public places, and private parking lots serving the building.

ENFORCEMENT OFFICIAL means the Police Chief and/or designees authorized to enforce this chapter.

EVIDENCE OF VACANCY means any condition that on its own or combined with other conditions present would lead a reasonable person to believe that the property is vacant. Such conditions may include, but are not limited to, overgrown and/or dead vegetation, utilities turned off, statements by neighbors, passers-by, delivery agents or other officials, lack of response to notices, returned or forwarded mail, unsecured doors, absence of, or condition of, personal belongings on the property, habitation by trespassers, or lack of marketing for purposes of selling or renting property.

PROPERTY OWNER means the owner or owners of record of real property as shown on the latest equalized assessment roll of Nevada County and any person, partnership, co-partnership, association, corporation, beneficiary in a deed of trust, fiduciary, including a trustee or substitute trustee, or any other legal entity having a legal or equitable interest in the subject property as otherwise known to the Enforcement Official by virtue of more recent and reliable information, including any beneficiary that is pursuing foreclosure of a property subject to this section secured by a mortgage, deed of trust or similar instrument or a property that has been acquired by the beneficial interest at a trustee's sale. The terms "owner" and "property owner" shall be synonymous, except where specified.

VACANT BUILDING means a building that shows evidence of vacancy, including where substantially all lawful business or construction activity or occupancy has ceased, or which is substantially devoid of contents. Property shall be considered vacant if business operations are conducted daily on less than ten (10%) percent of the overall square footage of the building. Property shall not be considered vacant if the building is the subject of an active, valid building permit for repair or rehabilitation and the owner provides proof to the enforcement official, such as receipts, invoices or executed contracts, that the repair or rehabilitation is proceeding without significant delay.

VACANT STOREFRONT BUILDING means a vacant building that includes windows visible from a public right of way or other public place, or from a private parking lot serving the building.

8.05.030 - Compliance Required; authority.

A. Every property owner shall maintain vacant buildings in accordance with this chapter.

B. Every property owner is liable for violation of this chapter regardless of any contract or agreement the owner has with any third party.

C. Except as otherwise provided herein, the administering official shall have the authority to administer and create and implement administrative rules for this chapter.

D. Except as otherwise provided herein, the enforcement official shall have the authority to enforce the provisions of this chapter.

8.05.040 - Public Nuisance and City remedies.

Any vacant building in violation of this chapter shall constitute a public nuisance. The City shall have the right to address violations of this chapter using any admirative or legal proceeding provided in this Code.

8.05.050 - Vacant building registration and removal from registration.

A. The property owner of a vacant building shall register it in accordance with this section:

1. Within 30 days after it has become vacant; or

2. Within 10 days after notice to do so from the enforcement official; whichever occurs first.

B. The property owner shall register vacant buildings by providing information to the administering official in a format approved by Nevada City, including:

1. The address of the vacant building.

2. The assessor parcel number of the real property where the vacant building is located.

3. The name, address, and daytime telephone number of the owner. If a notice of default has been issued, the name, address, and daytime phone number of the beneficiary or trustee on the deed of trust shall be included. In the case of a corporation or out of area beneficiary or trustee or owner, the local property management company or agent responsible for the security, maintenance, and monitoring of the property shall be included.

4. The date the building became vacant.

5. For vacant storefront buildings, a picture of each display, as defined in this chapter, that the owner has caused to be placed in each window visible from a public right of way or other public place, or from a private parking lot serving the building.

6. Any other information reasonably needed to aid the administration of this chapter.

C. Any change in the information provided pursuant to this section, including but not limited to a change in ownership, shall be filed with the enforcement official within fifteen days of the change.

D. The property owner may be relieved from the obligation of registration if the owner demonstrates with evidence to the administering official that:

1. The building is occupied; and

2. The building has not been in violation of this Code for at least six consecutive months; or

3. The building is the subject of an active, valid building permit for repair or rehabilitation and the owner provides evidence, such as receipts, invoices or executed contracts, that the repair or rehabilitation is proceeding without significant delay.

8.05.060 - Inspections and monitoring.

A. The owner of a vacant building shall cause it to be inspected at least weekly for compliance with the maintenance standards of this chapter.

B. Upon payment of the monitoring fee provided in this chapter, the enforcement official will monitor the vacant building for compliance with the maintenance standards of this chapter.

8.05.070 - Maintenance standards.

A. **Vacant buildings.** The owner of a vacant building shall maintain it and the property where it is located in accordance with the following standards, without limitation:

a. Landscaping and plant material alive, growing, and healthy.

b. Building exterior well maintained; with finishes, doors, roofing, windows and paint intact and no cracks, peeling, rust or worn areas.

c. No exterior trash, debris, personal property, or graffiti.

d. The building in continuing compliance with all applicable codes and regulations.

e. Criminal activity prevented on the premises and in the building, including but not limited to use and sale of controlled substances, prostitution, criminal street gang activity, vandalism, loitering or trespassing.

B. **Vacant storefront buildings.** The owner of a vacant storefront building shall comply with all maintenance standards for vacant buildings, and in addition shall maintain a display in each window visible from a public right of way or other public place, or from a private parking lot serving the building. Except insofar as windows are painted or otherwise covered with displayed objects, windows shall be cleaned and maintained so that display objects inside the building are clearly visible.

C. **Updated window displays in vacant storefront buildings.** For each window visible from a public right of way or other public place, or from a private parking lot serving the building: the owner shall submit pictures to the administering official showing updated window displays no less than every six months while the building remains vacant.

8.05.080 - Processing fees.

The owner of the vacant building shall pay the following fees, in the amount as established by resolution of the City Council, at the following times:

A. Vacant building registration processing fee: at the time of submitting an application for vacant building registration or removal from registration.

B. Vacant building monitoring fee: at the time of submitting a registration for vacant building registration, and quarterly thereafter while the building remains vacant.

SECTION 3. **ENVIRONMENTAL DETERMINATION.** The project has been reviewed for compliance with the California Environmental Quality Act (CEQA), the CEQA Guidelines, and the City's environmental procedures, and has been found to be not a project under Section 15378 (b)(5) of the CEQA Guidelines.

SECTION 4. **INCONSISTENCIES.** Any provision of the Nevada City Municipal Code or appendices thereto inconsistent with the provisions of this ordinance, to the extent of such inconsistencies and/or further, is hereby repealed or modified to the extent necessary to affect the provisions of this ordinance.

SECTION 5. **SEVERABILITY.** If any provision or clause of this ordinance or the application thereof to any person or circumstances is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect other provisions or clauses or applications of this ordinance which can be implemented without the invalid provision, clause or application; and to this end, the provisions of this ordinance are declared to be severable.

SECTION 6. **EFFECTIVE DATE.** This ordinance shall be in full force and effect commencing thirty (30) days after its final adoption and a summary hereof shall be published once within fifteen

(15) days in The Union, a newspaper of general circulation printed and published in the County of Nevada and circulated in the City of Nevada City and hereby designated for that purpose by the City Council.

SECTION 7. The City Clerk shall certify to the passage and adoption of this ordinance and shall cause the same to be published in the manner and form provided by law in The Union, a newspaper of general circulation printed and published in the City of Nevada City, State of California, which said newspaper is hereby designated for that purpose.

Introduced at a regular meeting of the City Council on the 12th day of April, 2023, by the following roll call vote:

MOTION:

AYES: **FLEMING, PETERSEN, KLINE, CECI**
NOES:
ABSENT: **FERNÂNDEZ**
ABSTAINED:

Passed and approved at the regular meeting of the City Council on the 26th day of April, 2023, by the following roll call vote:

MOTION:

AYES: **FERNÂNDEZ, PETERSEN, KLINE, CECI**
NOES:
ABSENT: **FLEMING**
ABSTAINED:

ATTEST:

Gabrielle Christakes, Deputy City Clerk

Daniela Fernàndez, Vice-Mayor

APPROVED AS TO FORM:

Dean J. Pucci, City Attorney

City of Sutter Creek
City Treasurer's Report
February 2025

Receipts & Disbursements Report

City's Checking Account

Receipts

	Deposits	$ 405,044	
	Reversal of Bank Charges	-	
	Total		$ 405,044

Disbursements

	Accounts Payable	$ 163,930	
	Payroll & Benefits	128,262	
	Bank Charges	5	
	Total		$ 292,197

Net Amount of Investment Transfers $ -

Recap of City Treasury

Investments on Hand February 28, 2025

		Market or Withdrawal Value	Rate of Return
	Bank of Marin Checking	$ 1,499,902	0.01%
	Bank of Marin Money Market	$ 11,954	4.60%
	Bank of Marin Money Market #2	$ 1,958,952	4.60%
*	California State Treasurer's LAIF	$ 1,716,756	4.62%
	Total	$ 5,187,564	
	Total this month last year	$ 5,944,991	

* LAIF 1 $ 63,124
LAIF 2 $ 1,653,632

The investment information provided in this report reflects the City's ability to meet expenditure requirements for the next six months. The investment portfolio is in compliance with the City's investment policy. Victoria Runquist 3/7/2025

SUTTER CREEK
1854
John Sutter
JEWEL OF THE MOTHER LODE

TO: **TOM DUBOIS, CITY MANAGER**

MEETING DATE: **MARCH 17, 2025**

FROM: **MASON PETERS, FINANCE SUPERVISOR**

SUBJECT: **FINANCE DEPT. FEBRUARY 2025 REPORT**

CITY HALL/FINANCE DEPARTMENT UPDATE

- Staff are continuing to take necessary trainings for the new ERP software provided by Tyler Technologies. I have been in consistent meetings with implementation and programming staff at Tyler to go over more details regarding our sewer billing processes and how we will improve things once we move over to their software. We are doing a lot of work updating our Chart of Accounts to streamline internal coding for revenues, expenditures, etc. It will also make the reporting more succinct.
- We are in the final phase of the audit for FY24. I am working with our partner and his staff to wrap up the last few questions.
- Mary Ann Solbrig retired on February 27th. She was a crucial member of our team and is greatly missed. We are currently interviewing to find a new Account Clerk for our office.

ACCOUNTS PAYABLE ACTIVITY

In January 2025, 61 warrants were issued, totaling $163,930. For comparison, in February 2024, all warrants totaled $362,519.

ACCOUNTS RECEIVABLE ACTIVITY

In January 2025, we received:

- Transient Occupancy Tax (TOT):
  - So far for February 2025, we have received $6,071.81 for January short term rentals. For comparison, in February 2024, we received $13,527.63.
- Building Permits:
  - In February 2025, we issued 8 building permits, totaling $4,870. Compared to February 2024, we issued 11 permits and total revenue generated at that time was $5,390. The projects completed were mostly HVAC installations.
- Sewer Billing
  - Auto Pay Customers

- Current Month: 385 (+3)
- Prior Month: 382

- E-Bill Customers
  - Current month: 233 (+3)
  - Prior Month: 230

11344 COLOMA RD *** VENDOR.: ABS01 (ABSO TECHNOLOGIES)
SUITE 349

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
5369	SOFTWARE INSTALLATION	02-25	01/17/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	SOFTWARE INSTALLATION	10 67010 1510	1	1286.71	1286.71
		(Sewer M&O O&M Equipment Sewer Treatment)			
				Invoice Extension ---->	1286.71

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
5399	IT SERVICES JANUARY 2025	02-25	02/01/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	IT SERVICES JANUARY 2025	01 60013 6100	1	876.50	876.50
		(General Fund Network Svcs Co Central Servies)			
0002	IT SERVICES JANUARY 2025	10 60013 6100	1	876.50	876.50
		(Sewer M&O Network Svcs Co Central Servies)			
0003	IT SERVICES JANUARY 2025	10 60011 1510	1	270.00	270.00
		(Sewer M&O Computer Softwr Sewer Treatment)			
				Invoice Extension ---->	2023.00
				Vendor Total --------->	3309.71

P.O. Box 5077 *** VENDOR.: ACC03 (ACC BUSINESS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
250111190	INTERNET CITY HALL	02-25	01/27/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	INTERNET CITY HALL	01 60014 6100	1	375.98	375.98
		(General Fund Internet Servic Central Servies)			
0002	INTERNET CITY HALL	10 60014 6100	1	375.98	375.98
		(Sewer M&O Internet Servic Central Servies)			
				Invoice Extension ---->	751.96
				Vendor Total --------->	751.96

6500 BUENA VISTA RD *** VENDOR.: ACE02 (ACES WASTE SERVICES)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
806850	YD DB HAUL CHARGE	02-25	01/01/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	YD DB HAUL CHARGE	10 67060 1510	1	532.96	532.96
		(Sewer M&O Sludge Sewer Treatment)			
				Invoice Extension ---->	532.96
				Vendor Total --------->	532.96

P.O. BOX 40 *** VENDOR.: ACT01 (AMADOR COUNCIL OF TOURISM)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
02102025	TOURISM FEES FROM TOT PYMTS	02-25	02/10/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	TOURISM FEES FROM TOT PYMTS	01 22115	1	9969.02	9969.02
		(General Fund County Tourism fee)			
				Invoice Extension ---->	9969.02
				Vendor Total --------->	9969.02

PO BOX 660579 *** VENDOR.: ALH02 (ALHAMBRA)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
73550225	WATER DELIVERY	02-25	01/30/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	WATER DELIVERY	01 52010 1060	1	52.97	52.97
		(General Fund Gen. Supplies Police Dept)			
0002	WATER DELIVERY	01 52010 1050	1	27.01	27.01
		(General Fund Gen. Supplies Finance)			
0003	WATER DELIVERY	03 52010 1050	1	4.77	4.77
		(Streets/Sidewal Gen. Supplies Finance)			

PO BOX 660579 *** VENDOR.: ALH02 (ALHAMBRA)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0004	WATER DELIVERY	10 52010 1050		1	16.95	16.95
		(Sewer M&O Gen. Supplies Finance)				
0005	WATER DELIVERY	80 52010 1050		1	4.23	4.23
		(Effluent Disp. Gen. Supplies Finance)				
					Invoice Extension ---->	105.93
					Vendor Total --------->	105.93

208 MASON STREET *** VENDOR.: ALP01 (ALPHA ANALYTICAL LABORATORIES, INC.)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
STMTJAN25	JANUARY 2025 STATEMENT	02-25	01/31/25	N	N	N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	JANUARY 2025 STATEMENT	10 52020 1510		1	420.00	420.00
		(Sewer M&O Supplies - Lab Sewer Treatment)				
0002	JANUARY 2025 STATEMENT	80 52010 1600		1	65.00	65.00
		(Effluent Disp. Gen. Supplies Effluent)				
					Invoice Extension ---->	485.00
					Vendor Total --------->	485.00

P.O. BOX 611450 *** VENDOR.: AMA02 (Amador Water Agency)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
30000125	MONTEVERDE STORE	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	MONTEVERDE STORE	01 66012 1720		1	74.14	74.14
		(General Fund Water Utilities MonteVerde Muse)				
					Invoice Extension ---->	74.14

P.O. BOX 611450 *** VENDOR.: AMA02 (Amador Water Agency)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50010125	BRYSON DR PARK	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	BRYSON DR PARK	01 66012 1130	1	162.89	162.89
		(General Fund Water Utilities Parks & Recreat)			
				Invoice Extension ---->	162.89

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50030125	MEDIAN STRIP & MINERS BEND	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	MEDIAN STRIP & MINERS BEND	01 66012 1130	1	74.14	74.14
		(General Fund Water Utilities Parks & Recreat)			
				Invoice Extension ---->	74.14

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50040125	MAIN ST PARK	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	MAIN ST PARK	01 66012 1130	1	74.14	74.14
		(General Fund Water Utilities Parks & Recreat)			
				Invoice Extension ---->	74.14

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50050125	ORO MADRE WAY	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	ORO MADRE WAY	10 66012 1510	1	341.45	341.45
		(Sewer M&O Water Utilities Sewer Treatment)			
				Invoice Extension ---->	341.45

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50060125	CEMETARY	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

P.O. BOX 611450 *** VENDOR.: AMA02 (Amador Water Agency)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	CEMETARY	01 66012 1400		1	108.86	108.86
		(General Fund Water Utilities Cemetery)				
					Invoice Extension ---->	108.86

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
50070125	CHURCH ST PARK	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	CHURCH ST PARK	01 66012 1130		1	310.84	310.84
		(General Fund Water Utilities Parks & Recreat)				
					Invoice Extension ---->	310.84

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
50080125	COMMUNITY & ADMIN BLDGS	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	COMMUNITY & ADMIN BLDGS	01 66012 1130		1	67.25	67.25
		(General Fund Water Utilities Parks & Recreat)				
0002	COMMUNITY & ADMIN BLDGS	01 66012 1040		1	4.20	4.20
		(General Fund Water Utilities City Manager)				
0003	COMMUNITY & ADMIN BLDGS	03 66012 1040		1	.84	.84
		(Streets/Sidewal Water Utilities City Manager)				
0004	COMMUNITY & ADMIN BLDGS	10 66012 1040		1	1.68	1.68
		(Sewer M&O Water Utilities City Manager)				
0005	COMMUNITY & ADMIN BLDGS	80 66012 1040		1	1.68	1.68
		(Effluent Disp. Water Utilities City Manager)				
0006	COMMUNITY & ADMIN BLDGS	01 66012 1020		1	4.20	4.20
		(General Fund Water Utilities City Clerk)				
0007	COMMUNITY & ADMIN BLDGS	80 66012 1020		1	1.68	1.68
		(Effluent Disp. Water Utilities City Clerk)				
0008	COMMUNITY & ADMIN BLDGS	10 66012 1020		1	1.68	1.68
		(Sewer M&O Water Utilities City Clerk)				
0009	COMMUNITY & ADMIN BLDGS	03 66012 1020		1	.85	.85
		(Streets/Sidewal Water Utilities City Clerk)				
					Invoice Extension ---->	84.06

P.O. BOX 611450 *** VENDOR.: AMA02 (Amador Water Agency)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50090125	AUDITORIUM & CITY HALL	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	AUDITORIUM & CITY HALL	01 66012 1130 (General Fund Water Utilities Parks & Recreat)	1	156.06	156.06
0002	AUDITORIUM & CITY HALL	01 66012 1060 (General Fund Water Utilities Police Dept)	1	33.44	33.44
0003	AUDITORIUM & CITY HALL	01 66012 1050 (General Fund Water Utilities Finance)	1	17.05	17.05
0004	AUDITORIUM & CITY HALL	03 66012 1050 (Streets/Sidewal Water Utilities Finance)	1	3.01	3.01
0005	AUDITORIUM & CITY HALL	10 66012 1050 (Sewer M&O Water Utilities Finance)	1	10.70	10.70
0006	AUDITORIUM & CITY HALL	80 66012 1050 (Effluent Disp. Water Utilities Finance)	1	2.68	2.68
			Invoice Extension ---->		222.94

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50100125	84 MAIN ST	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	84 MAIN ST	01 66012 1130 (General Fund Water Utilities Parks & Recreat)	1	108.86	108.86
			Invoice Extension ---->		108.86

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50120125	GOPHER FLAT & MAIN	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	GOPHER FLAT & MAIN	01 66012 1130 (General Fund Water Utilities Parks & Recreat)	1	74.14	74.14
			Invoice Extension ---->		74.14

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50140125	SOUTHWEST RIDGE RD	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount

P.O. BOX 611450 *** VENDOR.: AMA02 (Amador Water Agency)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SOUTHWEST RIDGE RD	10 66012 1510 (Sewer M&O Water Utilities Sewer Treatment)		1	851.63	851.63

Invoice Extension ----> 851.63

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50000125	HWY 49 GATEWAY	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	HWY 49 GATEWAY	01 66012 1130 (General Fund Water Utilities Parks & Recreat)		1	74.14	74.14

Invoice Extension ----> 74.14

Vendor Total ---------> 2562.23

700 Court St *** VENDOR.: AMA08 (Amador Co Sheriff's Dept)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
DEC2024	DISPATCH SERVICES	02-25	01/21/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	DISPATCH SERVICES	01 62010 1060 (General Fund Communications Police Dept)		1	425.06	425.06

Invoice Extension ----> 425.06

Vendor Total ---------> 425.06

12200-B AIRPORT RD. *** VENDOR.: AMA15 (Amador Co Animal Control)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

12200-B AIRPORT RD. *** VENDOR.: AMA15 (Amador Co Animal Control)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
02072025	ANIMAL CONTROL SERVICES	02-25	02/07/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	ANIMAL CONTROL SERVICES	01 61057 1060	1	12932.10	12932.10
		(General Fund Contracts-Other Police Dept)			
				Invoice Extension ---->	12932.10
				Vendor Total --------->	12932.10

10877 CONDUCTOR BLVD *** VENDOR.: AMA63 (AMADOR COUNTY RECREATION AGENCY)
SUITE 100

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
02202025	REMAINING ACRA IMPACT FEES FY24	02-25	02/10/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	REMAINING ACRA IMPACT FEES FY24	01 23700	1	6586.00	6586.00
		(General Fund ACRA Regional Developmt Fee)			
				Invoice Extension ---->	6586.00
				Vendor Total --------->	6586.00

P.O. BOX 258886 *** VENDOR.: AME14 (AMERICAN FIDELITY HEALTH SERVICES ADMIN)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
FEB2025	HSA FEBRUARY 2025	02-25	02/04/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	HSA FEBRUARY 2025	01 41040 1040	1	397.91	397.91
		(General Fund Employee Benefi City Manager)			
0002	HSA FEBRUARY 2025	10 41040 1040	1	159.16	159.16
		(Sewer M&O Employee Benefi City Manager)			
0003	HSA FEBRUARY 2025	80 41040 1040	1	159.16	159.16
		(Effluent Disp. Employee Benefi City Manager)			

P.O. BOX 258886 *** VENDOR.: AME14 (AMERICAN FIDELITY HEALTH SERVICES ADMIN)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE		TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0004	HSA FEBRUARY 2025	03 41040 1120 (Streets/Sidewal Employee Benefi Streets/Roads)		1	287.48	287.48
0005	HSA FEBRUARY 2025	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	199.50	199.50
0006	HSA FEBRUARY 2025	10 41040 1520 (Sewer M&O Employee Benefi Sewer Collectio)		1	81.66	81.66
0007	HSA FEBRUARY 2025	10 41040 1510 (Sewer M&O Employee Benefi Sewer Treatment)		1	310.06	310.06
0008	HSA FEBRUARY 2025	10 41040 1520 (Sewer M&O Employee Benefi Sewer Collectio)		1	88.40	88.40
0009	HSA FEBRUARY 2025	80 41040 1600 (Effluent Disp. Employee Benefi Effluent)		1	210.00	210.00
0010	HSA FEBRUARY 2025	01 41040 1140 (General Fund Employee Benefi Swimming Pool)		1	8.00	8.00
0011	HSA FEBRUARY 2025	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	36.81	36.81
					Invoice Extension ---->	1938.14
					Vendor Total --------->	1938.14

P.O. BOX 268805 *** VENDOR.: AME15 (AMERICAN FIDELITY ASSURANCE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE		TERM-DESCRIPTION	G/L ACCOUNT No
D812568	INSURANCE PREMIUMS	02-25	01/29/25	N	N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	INSURANCE PREMIUMS	01 41040 1060 (General Fund Employee Benefi Police Dept)		1	651.61	651.61
0002	INSURANCE PREMIUMS	03 41040 1120 (Streets/Sidewal Employee Benefi Streets/Roads)		1	56.01	56.01
0003	INSURANCE PREMIUMS	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	98.94	98.94
0004	INSURANCE PREMIUMS	10 41040 1510 (Sewer M&O Employee Benefi Sewer Treatment)		1	142.14	142.14
0005	INSURANCE PREMIUMS	10 41040 1520 (Sewer M&O Employee Benefi Sewer Collectio)		1	66.55	66.55
0006	INSURANCE PREMIUMS	80 41040 1600 (Effluent Disp. Employee Benefi Effluent)		1	77.96	77.96

P.O. BOX 268805 *** VENDOR.: AME15 (AMERICAN FIDELITY ASSURANCE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0007	INSURANCE PREMIUMS	01 41040 1140		1	13.02	13.02
		(General Fund Employee Benefi Swimming Pool)				
0008	INSURANCE PREMIUMS	01 41040 1130		1	101.00	101.00
		(General Fund Employee Benefi Parks & Recreat)				
0009	INSURANCE PREMIUMS	01 41040 1130		1	8.23	8.23
		(General Fund Employee Benefi Parks & Recreat)				
0010	INSURANCE PREMIUMS	03 41040 1120		1	6.17	6.17
		(Streets/Sidewal Employee Benefi Streets/Roads)				
0011	INSURANCE PREMIUMS	01 41040 1130		1	6.17	6.17
		(General Fund Employee Benefi Parks & Recreat)				
0012	INSURANCE PREMIUMS	10 41040 1510		1	12.35	12.35
		(Sewer M&O Employee Benefi Sewer Treatment)				
0013	INSURANCE PREMIUMS	80 41040 1600		1	8.23	8.23
		(Effluent Disp. Employee Benefi Effluent)				
					Invoice Extension ---->	1248.38
					Vendor Total --------->	1248.38

6306 North Alpine Road *** VENDOR.: AQU02 (Aqua-Aerobic Systems, Inc)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
1044918	WWTP INTERM TREATMENT IMPROVEMENTS	02-25	11/21/24	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP INTERM TREATMENT IMPROVEMENTS	10 70040 1510		1	1016.69	1016.69
		(Sewer M&O Machinery & Sewer Treatment)				
					Invoice Extension ---->	1016.69
					Vendor Total --------->	1016.69

PO BOX 9011 *** VENDOR.: AT&T2 (AT&T CALNET 3)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

PO BOX 9011 *** VENDOR.: AT&T2 (AT&T CALNET 3)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
22901119	COMMUNICATIONS WWTP	02-25	01/17/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	COMMUNICATIONS WWTP	10 62010 1510	1	31.61	31.61
		(Sewer M&O Communications Sewer Treatment)			
				Invoice Extension ---->	31.61

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
22901122	Communications Police Dep	02-25	01/17/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	Communications Police Dep	01 62010 1060	1	63.93	63.93
		(General Fund Communications Police Dept)			
				Invoice Extension ---->	63.93

Vendor Total ---------> 95.54

80 FULLEN ST *** VENDOR.: BOI02 (Heidi A Boitano)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
020325	MONTHLY PARKING LOT RENT	02-25	02/03/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	MONTHLY PARKING LOT RENT	01 68012 1130	1	2915.46	2915.46
		(General Fund Lease-Prkg lot Parks & Recreat)			
				Invoice Extension ---->	2915.46

Vendor Total ---------> 2915.46

1234 N. MARKET BLVD *** VENDOR.: CAL31 (CALIFORNIA RURAL WATER ASSOCIATION)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

1234 N. MARKET BLVD *** VENDOR.: CAL31 (CALIFORNIA RURAL WATER ASSOCIATION)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
2025-02	ANNUAL CRWA MEMBERSHIP	02-25	01/24/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	ANNUAL CRWA MEMBERSHIP	10 65030 1510	1	782.00	782.00
		(Sewer M&O Membership/Dues Sewer Treatment)			
				Invoice Extension ---->	782.00
				Vendor Total --------->	782.00

175 SUTTER HILL RD *** VENDOR.: CAM05 (CAMPBELL CONSTRUCTION GEN. ENGINEERING)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
QM-0274	MAINTENANCE SUPPLIES	02-25	01/28/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	MAINTENANCE SUPPLIES	01 55085 1130	1	856.61	856.61
		(General Fund Weed Control Parks & Recreat)			
				Invoice Extension ---->	856.61
				Vendor Total --------->	856.61

6001 ELVAS AVE *** VENDOR.: CAP10 (CAPITOL BARRICADE INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
174344	FLAGGER TRAINING	02-25	02/06/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	FLAGGER TRAINING	03 52010 1120	1	750.00	750.00
		(Streets/Sidewal Gen. Supplies Streets/Roads)			
				Invoice Extension ---->	750.00

6001 ELVAS AVE *** VENDOR.: CAP10 (CAPITOL BARRICADE INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Vendor Total ---------> 750.00

PO BOX 6463 *** VENDOR.: CIN02 (AT&T Mobility)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
296912240	CELLULAR SERVICE	02-25	01/06/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	CELLULAR SERVICE	01 62010 1060 (General Fund Communications Police Dept)		1	95.37	95.37
0002	CELLULAR SERVICE	01 62010 6100 (General Fund Communications Central Servies)		1	55.91	55.91
0003	CELLULAR SERVICE	10 62010 6100 (Sewer M&O Communications Central Servies)		1	55.91	55.91
0004	CELLULAR SERVICE	01 62010 1040 (General Fund Communications City Manager)		1	83.02	83.02
0005	CELLULAR SERVICE	03 62010 1040 (Streets/Sidewal Communications City Manager)		1	16.60	16.60
0006	CELLULAR SERVICE	10 62010 1040 (Sewer M&O Communications City Manager)		1	33.21	33.21
0007	CELLULAR SERVICE	80 62010 1040 (Effluent Disp. Communications City Manager)		1	33.21	33.21

Invoice Extension ----> 373.23

Vendor Total ---------> 373.23

PO BOX 60533 *** VENDOR.: COM16 (COMCAST BUSINESS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
092702012	INTERNET SERVICE	02-25	02/01/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	INTERNET SERVICE	01 60014 1130 (General Fund Internet Servic Parks & Recreat)		1	567.70	567.70

Invoice Extension ----> 567.70

PO BOX 60533 *** VENDOR.: COM16 (COMCAST BUSINESS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
877312240	INTERNET SERVICE	02-25	01/12/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	INTERNET SERVICE	10 66014 1510 (Sewer M&O PG&E Utilities Sewer Treatment)		1	204.40	204.40
					Invoice Extension ---->	204.40
					Vendor Total --------->	772.10

P.O. BOX 701 *** VENDOR.: CON13 (CONSOLIDATED ENGINEERING INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
240434#1	EUREKA ROAD OVERLAY PROJECT	02-25	01/13/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	EUREKA ROAD OVERLAY PROJECT	03 70030 1120 (Streets/Sidewal Improvements Streets/Roads)		1	2000.00	2000.00
					Invoice Extension ---->	2000.00
					Vendor Total --------->	2000.00

3755 Washington Blvd. *** VENDOR.: COR01 (Corbin Willits Systems, Inc.)
Suite 204

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
C501151	FINANCIAL SOFTWARE	02-25	01/15/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	FINANCIAL SOFTWARE	01 60013 1050 (General Fund Network Svcs Co Finance)		1	432.30	432.30
0002	FINANCIAL SOFTWARE	03 60013 1050 (Streets/Sidewal Network Svcs Co Finance)		1	76.29	76.29
0003	FINANCIAL SOFTWARE	10 60013 1050 (Sewer M&O Network Svcs Co Finance)		1	271.24	271.24

3755 Washington Blvd. *** VENDOR.: COR01 (Corbin Willits Systems, Inc.)
Suite 204

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0004	FINANCIAL SOFTWARE	80 60013 1050		1	67.81	67.81
		(Effluent Disp. Network Svcs Co Finance)				
					Invoice Extension ---->	847.64
					Vendor Total --------->	847.64

2281 LAVA RIDGE CT, STE 300 *** VENDOR.: COT01 (COLE HUBER LLP)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
200463726	LEGAL SERVICES	02-25	01/09/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	LEGAL SERVICES	01 61030 6130		1	1318.25	1318.25
		(General Fund Legal City Attorney)				
0002	LEGAL SERVICES	10 61030 6130		1	1318.25	1318.25
		(Sewer M&O Legal City Attorney)				
0003	LEGAL SERVICES	01 61030 6130		1	1357.00	1357.00
		(General Fund Legal City Attorney)				
0004	LEGAL SERVICES	80 61030 1600		1	299.00	299.00
		(Effluent Disp. Legal Effluent)				
					Invoice Extension ---->	4292.50
					Vendor Total --------->	4292.50

705 E BIDWILL ST *** VENDOR.: DPR01 (DPREP INC)
STE 2-357

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
20250205	DISASTER PREP TRAINING	02-25	02/07/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount

705 E BIDWILL ST *** VENDOR.: DPR01 (DPREP INC)
STE 2-357

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	DISASTER PREP TRAINING	01 65040 1060		1	249.00	249.00
		(General Fund Travel,Conf,Trg Police Dept)				
					Invoice Extension ---->	249.00
					Vendor Total --------->	249.00

P.O. BOX 208728 *** VENDOR.: EWI01 (EWING IRRIGATION PRODUCTS, INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
24661941	IRRIGATION PARKS	02-25	01/15/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	IRRIGATION PARKS	01 53015 1130		1	43.50	43.50
		(General Fund Repair/Maint Parks & Recreat)				
					Invoice Extension ---->	43.50

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
24661969	IRRIGATION PARKS	02-25	01/15/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	IRRIGATION PARKS	01 53015 1130		1	673.11	673.11
		(General Fund Repair/Maint Parks & Recreat)				
					Invoice Extension ---->	673.11
					Vendor Total --------->	716.61

P.O. BOX 740827 *** VENDOR.: FER02 (FERGUSON ENTER,INC.#686)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

P.O. BOX 740827 *** VENDOR.: FER02 (FERGUSON ENTER,INC.#686)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
5732687	MAINTENANCE SUPPLIES	02-25	01/27/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	MAINTENANCE SUPPLIES	01 53015 1130	1	206.40	206.40
		(General Fund Repair/Maint Parks & Recreat)			
				Invoice Extension ---->	206.40
				Vendor Total --------->	206.40

PO BOX 31001-2265 *** VENDOR.: FOR07 (FORWARD, INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
66019	SLUDGE HAULING	02-25	01/15/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	SLUDGE HAULING	10 67060 1510	1	948.81	948.81
		(Sewer M&O Sludge Sewer Treatment)			
				Invoice Extension ---->	948.81
				Vendor Total --------->	948.81

3606A GREYSTONE DRIVE *** VENDOR.: HAU02 (HAUGE BRUECK ASSOCIATES, LLC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
1949	PLANNER	02-25	01/21/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	PLANNER	01 61045 1090	1	1981.33	1981.33
		(General Fund Planner Planning)			
0002	PANNER CREEK-TRAFALGAR INC	01 55065 1115 P76	1	452.80	452.80
		(General Fund E&P Reimb Engr. Engineering)			
0003	SUTTER CREEK RANCH-CLAVERAN	01 55065 1115 112	1	1080.00	1080.00
		(General Fund E&P Reimb Engr. Engineering)			

3606A GREYSTONE DRIVE *** VENDOR.: HAU02 (HAUGE BRUECK ASSOCIATES, LLC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0004	92 RIDGE ROAJACKSON RANCHERIA	01 55065 1115 141 (General Fund E&P Reimb Engr. Engineering)		1	80.00	80.00
0005	8 GREENSTONE TERRACE	01 55065 1115 155 (General Fund E&P Reimb Engr. Engineering)		1	288.00	288.00
0006	12201 EUREKA RD-RUSSU	01 55065 1115 160 (General Fund E&P Reimb Engr. Engineering)		1	80.00	80.00
0007	130 LINCOLN-PRICE	01 55065 1115 167 (General Fund E&P Reimb Engr. Engineering)		1	984.00	984.00
					Invoice Extension ---->	4946.13
					Vendor Total --------->	4946.13

P.O. BOX 101630 *** VENDOR.: HUN04 (HUNT & SONS, INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
345831	FUEL	02-25	01/15/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	FUEL	01 52012 1060 (General Fund Fuel Police Dept)		1	1246.55	1246.55
0002	FUEL	01 52012 1130 (General Fund Fuel Parks & Recreat)		1	169.23	169.23
0003	FUEL	10 52012 1510 (Sewer M&O Fuel Sewer Treatment)		1	200.22	200.22
0004	FUEL	03 52012 1120 (Streets/Sidewal Fuel Streets/Roads)		1	216.82	216.82
					Invoice Extension ---->	1832.82

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
358362	FUEL	02-25	01/31/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	FUEL	01 52012 1060 (General Fund Fuel Police Dept)		1	1254.46	1254.46

P.O. BOX 101630 *** VENDOR.: HUN04 (HUNT & SONS, INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0002	FUEL	01 52012 1130 (General Fund Fuel Parks & Recreat)		1	306.30	306.30
0003	FUEL	10 52012 1510 (Sewer M&O Fuel Sewer Treatment)		1	124.03	124.03
0004	FUEL	03 52012 1120 (Streets/Sidewal Fuel Streets/Roads)		1	102.31	102.31
				Invoice Extension ---->		1787.10
				Vendor Total --------->		3619.92

100 Academy Dr *** VENDOR.: JAC01 (Brusatori Enterprises Inc)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
34132	VEHICLE MAINTENANCE/REPAIRS	02-25	01/08/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	VEHICLE MAINTENANCE/REPAIRS	01 67009 1060 (General Fund Vehicle Maintna Police Dept)		1	1717.80	1717.80
				Invoice Extension ---->		1717.80

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
34138	VEHICLE MAINTENACE/REPAIRS	02-25	01/20/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	VEHICLE MAINTENACE/REPAIRS	01 67009 1060 (General Fund Vehicle Maintna Police Dept)		1	113.12	113.12
				Invoice Extension ---->		113.12
				Vendor Total --------->		1830.92

823 N. Hwy. 49 - 88 *** VENDOR.: JAC04 (Jackson Glass Service Center)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
10485	INSTALLATION OF A NEW DUAL PAIN	02-25	02/07/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	INSTALLATION OF A NEW DUAL PAIN	01 53015 1130 (General Fund Repair/Maint Parks & Recreat)		1	243.35	243.35
					Invoice Extension ---->	243.35
					Vendor Total --------->	243.35

801 SO HIGHWAY 49 *** VENDOR.: JAC05 (JACKSON TIRE SERVICE, INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
STMT0125	TIRES/SERVICES	02-25	01/25/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	TIRES/SERVICES	10 67009 1520 (Sewer M&O Vehicle Maintna Sewer Collectio)		1	138.54	138.54
					Invoice Extension ---->	138.54
					Vendor Total --------->	138.54

170 MAIN STREET *** VENDOR.: JBS01 (JB'S AWARDS & ENGRAVING)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
8078	PUBLIC WORKS LOGO EMBROIDERY	02-25	01/29/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	PUBLIC WORKS LOGO EMBROIDERY	10 55040 1510 (Sewer M&O Clothing Sewer Treatment)		1	68.40	68.40
0002	PUBLIC WORKS LOGO EMBROIDERY	10 55040 1520 (Sewer M&O Clothing Sewer Collectio)		1	68.40	68.40
0003	PUBLIC WORKS LOGO EMBROIDERY	80 55040 1600 (Effluent Disp. Clothing Effluent)		1	91.20	91.20
					Invoice Extension ---->	228.00

170 MAIN STREET *** VENDOR.: JBS01 (JB'S AWARDS & ENGRAVING)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Vendor Total ---------> 228.00

P.O. BOX 4328 *** VENDOR.: KEE01 (KEENAN & ASSOCIATES/PACE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
FEB2025	HEALTH INSURANCE PREIMIUM FEB 2025	02-25	02/11/25	N	N	N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1060		1	1468.81	1468.81
		(General Fund Employee Benefi Police Dept)				
0002	HEALTH INSURANCE PREIMIUM FEB 2025	03 41040 1120		1	404.75	404.75
		(Streets/Sidewal Employee Benefi Streets/Roads)				
0003	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1130		1	539.93	539.93
		(General Fund Employee Benefi Parks & Recreat)				
0004	HEALTH INSURANCE PREIMIUM FEB 2025	10 41040 1510		1	1151.88	1151.88
		(Sewer M&O Employee Benefi Sewer Treatment)				
0005	HEALTH INSURANCE PREIMIUM FEB 2025	10 41040 1520		1	594.74	594.74
		(Sewer M&O Employee Benefi Sewer Collectio)				
0006	HEALTH INSURANCE PREIMIUM FEB 2025	80 41040 1600		1	1615.14	1615.14
		(Effluent Disp. Employee Benefi Effluent)				
0007	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1140		1	98.42	98.42
		(General Fund Employee Benefi Swimming Pool)				
0008	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1130		1	502.18	502.18
		(General Fund Employee Benefi Parks & Recreat)				
0009	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1130		1	20.23	20.23
		(General Fund Employee Benefi Parks & Recreat)				
0010	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1400		1	25.11	25.11
		(General Fund Employee Benefi Cemetery)				
0011	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1050		1	2372.04	2372.04
		(General Fund Employee Benefi Finance)				
0012	HEALTH INSURANCE PREIMIUM FEB 2025	03 41040 1050		1	202.31	202.31
		(Streets/Sidewal Employee Benefi Finance)				
0013	HEALTH INSURANCE PREIMIUM FEB 2025	80 41040 1050		1	202.31	202.31
		(Effluent Disp. Employee Benefi Finance)				
0014	HEALTH INSURANCE PREIMIUM FEB 2025	10 41040 1050		1	1083.06	1083.06
		(Sewer M&O Employee Benefi Finance)				
0015	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1040		1	703.55	703.55
		(General Fund Employee Benefi City Manager)				
0016	HEALTH INSURANCE PREIMIUM FEB 2025	03 41040 1040		1	63.96	63.96
		(Streets/Sidewal Employee Benefi City Manager)				
0017	HEALTH INSURANCE PREIMIUM FEB 2025	10 41040 1040		1	319.80	319.80
		(Sewer M&O Employee Benefi City Manager)				

P.O. BOX 4328 *** VENDOR.: KEE01 (KEENAN & ASSOCIATES/PACE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0018	HEALTH INSURANCE PREIMIUM FEB 2025	80 41040 1040 (Effluent Disp. Employee Benefi	City Manager)	1	191.88	191.88
0019	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1130 (General Fund Employee Benefi	Parks & Recreat)	1	267.55	267.55
0020	HEALTH INSURANCE PREIMIUM FEB 2025	03 41040 1120 (Streets/Sidewal Employee Benefi	Streets/Roads)	1	222.96	222.96
0021	HEALTH INSURANCE PREIMIUM FEB 2025	01 41040 1130 (General Fund Employee Benefi	Parks & Recreat)	1	222.96	222.96
0022	HEALTH INSURANCE PREIMIUM FEB 2025	10 41040 1510 (Sewer M&O Employee Benefi	Sewer Treatment)	1	297.27	297.27
0023	HEALTH INSURANCE PREIMIUM FEB 2025	80 41040 1520 (Effluent Disp. Employee Benefi	Sewer Collectio)	1	148.64	148.64
0024	HEALTH INSURANCE PREIMIUM FEB 2025	01 21711 (General Fund P/R - Medical	Health Pay.)	1	3269.78	3269.78
					Invoice Extension ---->	15989.26
					Vendor Total --------->	15989.26

1400 K STREET, 4TH FLOOR *** VENDOR.: LEA02 (League of Calif. Cities)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
5436	MEMBERSHIP SACRAMENTO VALLEU DIVISION	02-25	01/20/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	MEMBERSHIP SACRAMENTO VALLEU DIVISION	01 65030 1010 (General Fund Membership/Dues	City Council)	1	100.00	100.00
					Invoice Extension ---->	100.00

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
26864	MEMBERSHIP 2025	02-25	01/20/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	MEMBERSHIP 2025	01 65030 1010 (General Fund Membership/Dues	City Council)	1	2031.00	2031.00
					Invoice Extension ---->	2031.00

1400 K STREET, 4TH FLOOR *** VENDOR.: LEA02 (League of Calif. Cities)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Vendor Total ---------> 2131.00

PO BOX 669824 *** VENDOR.: LOW01 (LOWE'S BUSINESS ACCOUNT)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
STMTFEB25	FEBRUARY 2025 STATEMENT	02-25	02/02/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	FEBRUARY 2025 STATEMENT	01 53015 1130 (General Fund Repair/Maint Parks & Recreat)	1	154.00	154.00
0002	FEBRUARY 2025 STATEMENT	01 53015 1130 (General Fund Repair/Maint Parks & Recreat)	1	110.98	110.98
0003	FEBRUARY 2025 STATEMENT	01 53015 1130 (General Fund Repair/Maint Parks & Recreat)	1	797.14	797.14
0004	FEBRUARY 2025 STATEMENT	03 55060 1120 (Streets/Sidewal Patching Streets/Roads)	1	411.45	411.45
0005	FEBRUARY 2025 STATEMENT	03 52010 1120 (Streets/Sidewal Gen. Supplies Streets/Roads)	1	11.24	11.24
0006	FEBRUARY 2025 STATEMENT	10 67050 1510 (Sewer M&O O & M-Sewer Plt Sewer Treatment)	1	871.50	871.50
0007	FEBRUARY 2025 STATEMENT	01 67009 1130 (General Fund Vehicle Maintna Parks & Recreat)	1	12.77	12.77
0008	FEBRUARY 2025 STATEMENT	03 67009 1120 (Streets/Sidewal Vehicle Maintna Streets/Roads)	1	168.86	168.86
0009	FEBRUARY 2025 STATEMENT	01 55090 1130 (General Fund Restrooms Parks & Recreat)	1	145.99	145.99

Invoice Extension ----> 2683.93

Vendor Total ---------> 2683.93

PO BOX 7690 *** VENDOR.: MCM02 (MCMASTER-CARR SUPPLY CO)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
39827382	WWTP MAINTENANCE SUPPLIES	02-25	01/28/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount

PO BOX 7690 *** VENDOR.: MCM02 (MCMASTER-CARR SUPPLY CO)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP MAINTENANCE SUPPLIES	10 67050 1510 (Sewer M&O O & M-Sewer Plt Sewer Treatment)		1	1337.64	1337.64
					Invoice Extension ---->	1337.64
					Vendor Total --------->	1337.64

6440 OAK CANYON *** VENDOR.: MIS02 (MISCOWATER)
SUITE 150

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
39359B301	SAFE TANK	02-25	01/13/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SAFE TANK	10 70040 1510 (Sewer M&O Machinery & Sewer Treatment)		1	8815.09	8815.09
					Invoice Extension ---->	8815.09
					Vendor Total --------->	8815.09

P.O. Box 4432 *** VENDOR.: MOT12 (Mission IT Solutions)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
INV-3034	IT SERVICES	02-25	02/01/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	IT SERVICES	01 60013 6100 (General Fund Network Svcs Co Central Servies)		1	234.00	234.00
0002	IT SERVICES	10 60013 6100 (Sewer M&O Network Svcs Co Central Servies)		1	234.00	234.00
					Invoice Extension ---->	468.00

P.O. Box 4432 *** VENDOR.: MOT12 (Mission IT Solutions)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Vendor Total ---------> 468.00

PAYMENT PROCESSING CENTER *** VENDOR.: MUT01 (MUTUAL OF OMAHA)
PO BOX 2147

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
182637019	LTD/STD PREMIUMS FEBRUARY 2025	02-25	01/27/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	LTD/STD PREMIUMS FEBRUARY 2025	01 41040 1060		1	283.97	283.97
		(General Fund Employee Benefi Police Dept)				
0002	LTD/STD PREMIUMS FEBRUARY 2025	01 41040 1040		1	63.25	63.25
		(General Fund Employee Benefi City Manager)				
0003	LTD/STD PREMIUMS FEBRUARY 2025	10 41040 1040		1	28.75	28.75
		(Sewer M&O Employee Benefi City Manager)				
0004	LTD/STD PREMIUMS FEBRUARY 2025	03 41040 1120		1	38.12	38.12
		(Streets/Sidewal Employee Benefi Streets/Roads)				
0005	LTD/STD PREMIUMS FEBRUARY 2025	01 41040 1130		1	45.01	45.01
		(General Fund Employee Benefi Parks & Recreat)				
0006	LTD/STD PREMIUMS FEBRUARY 2025	10 41040 1510		1	76.06	76.06
		(Sewer M&O Employee Benefi Sewer Treatment)				
0007	LTD/STD PREMIUMS FEBRUARY 2025	10 41040 1520		1	37.87	37.87
		(Sewer M&O Employee Benefi Sewer Collectio)				
0008	LTD/STD PREMIUMS FEBRUARY 2025	80 41040 1600		1	87.15	87.15
		(Effluent Disp. Employee Benefi Effluent)				
0009	LTD/STD PREMIUMS FEBRUARY 2025	01 41040 1140		1	5.37	5.37
		(General Fund Employee Benefi Swimming Pool)				
0010	LTD/STD PREMIUMS FEBRUARY 2025	01 41040 1130		1	40.91	40.91
		(General Fund Employee Benefi Parks & Recreat)				
0011	LTD/STD PREMIUMS FEBRUARY 2025	01 41040 1130		1	.00	.00
		(General Fund Employee Benefi Parks & Recreat)				

Invoice Extension ----> 706.46

Vendor Total ---------> 706.46

FILE 56893 *** VENDOR.: NAP01 (NAPA AUTO PARTS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

FILE 56893 *** VENDOR.: NAP01 (NAPA AUTO PARTS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
STMT0125	STMT0225	02-25	01/31/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	JANUARY 2025 STATEMENT	01 67009 1130	1	80.80	80.80
		(General Fund Vehicle Maintna Parks & Recreat)			
0002	JANUARY 2025 STATEMENT	03 67009 1120	1	79.71	79.71
		(Streets/Sidewal Vehicle Maintna Streets/Roads)			

Invoice Extension ----> 160.51

Vendor Total ---------> 160.51

PO Box 997300 *** VENDOR.: PAC01 (PG&E (Lighting District))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
29440125	CRESTVIEW ESTATES	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	CRESTVIEW ESTATES	04 66025 1450	1	123.48	123.48
		(Crestview Lgt/D Street Lights CrestView Lgt)			

Invoice Extension ----> 123.48

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
42830125	PLAZA LIGHTING	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount
0001	PLAZA LIGHTING	03 66025 1120	1	210.58	210.58
		(Streets/Sidewal Street Lights Streets/Roads)			

Invoice Extension ----> 210.58

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
50170125	SIERRA WEST BUSINESS PARK	02-25	01/13/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No CTR	Unit(s)	Unit Cost	Amount

PO Box 997300 *** VENDOR.: PAC01 (PG&E (Lighting District))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SIERRA WEST BUSINESS PARK	03 66025 1120		1	170.30	170.30
		(Streets/Sidewal Street Lights Streets/Roads)				
0002	SIERRA WEST BUSINESS PARK	03 66025 1120		1	.00	.00
		(Streets/Sidewal Street Lights Streets/Roads)				
					Invoice Extension ---->	170.30

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
63050125	VALLEY VIEW/BOWERS	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	VALLEY VIEW/BOWERS	03 66025 1120		1	60.19	60.19
		(Streets/Sidewal Street Lights Streets/Roads)				
					Invoice Extension ---->	60.19

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
83880125	CHURCH STREET	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	CHURCH STREET	03 66025 1120		1	150.88	150.88
		(Streets/Sidewal Street Lights Streets/Roads)				
					Invoice Extension ---->	150.88

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
92690125	MAIN STREET	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	MAIN STREET	03 66025 1120		1	2306.87	2306.87
		(Streets/Sidewal Street Lights Streets/Roads)				
					Invoice Extension ---->	2306.87

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
96690125	SUTTER CREST & MANOR ST	02-25	01/13/25	N	N	N	A-NET30 FROM INVOICE	20200

PO Box 997300 *** VENDOR.: PAC01 (PG&E (Lighting District))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SUTTER CREST & MANOR ST	03 66025 1120		1	399.23	399.23
		(Streets/Sidewal Street Lights Streets/Roads)				
					Invoice Extension ---->	399.23

Vendor Total ---------> 3421.53

PO Box 997300 *** VENDOR.: PAC02 (PG&E (Electric,Gas))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
02200125	MONTEVERDE STORE	02-25	01/26/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	MONTEVERDE STORE	01 66014 1720		1	154.10	154.10
		(General Fund PG&E Utilities MonteVerde Muse)				
					Invoice Extension ---->	154.10

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
12900125	WWTP OUTSIDE LIGHTS	02-25	01/26/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP OUTSIDE LIGHTS	10 66014 1510		1	10.41	10.41
		(Sewer M&O PG&E Utilities Sewer Treatment)				
					Invoice Extension ---->	10.41

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE			TERM-DESCRIPTION	G/L ACCOUNT No
14660125	FLAG POLE	02-25	01/26/25	N	N	N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	FLAG POLE	03 66025 1120		1	338.64	338.64
		(Streets/Sidewal Street Lights Streets/Roads)				
					Invoice Extension ---->	338.64

PO Box 997300 *** VENDOR.: PAC02 (PG&E (Electric,Gas))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
16050125	LIFT STATION	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	LIFT STATION	10 66014 1510		1	107.91	107.91
		(Sewer M&O PG&E Utilities Sewer Treatment)				
					Invoice Extension ---->	107.91

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
42950125	ADMIN BUILDING	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	ADMIN BUILDING	01 66014 1040		1	58.37	58.37
		(General Fund PG&E Utilities City Manager)				
0002	ADMIN BUILDING	03 66014 1040		1	11.68	11.68
		(Streets/Sidewal PG&E Utilities City Manager)				
0003	ADMIN BUILDING	10 66014 1040		1	23.35	23.35
		(Sewer M&O PG&E Utilities City Manager)				
0004	ADMIN BUILDING	80 66014 1040		1	23.35	23.35
		(Effluent Disp. PG&E Utilities City Manager)				
0005	CITY CLERK	01 66014 1020		1	99.24	99.24
		(General Fund PG&E Utilities City Clerk)				
0006	CITY CLERK	10 66014 1020		1	11.68	11.68
		(Sewer M&O PG&E Utilities City Clerk)				
0007	CITY CLERK	80 66014 1020		1	5.84	5.84
		(Effluent Disp. PG&E Utilities City Clerk)				
					Invoice Extension ---->	233.51

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
44590125	AUDITORIUM & CITY HALL	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	AUDITORIUM & CITY HALL	01 66014 1130		1	3198.27	3198.27
		(General Fund PG&E Utilities Parks & Recreat)				
0002	POLICE	01 66014 1060		1	685.34	685.34
		(General Fund PG&E Utilities Police Dept)				
0003	FINANCE DEPT	01 66014 1050		1	349.53	349.53
		(General Fund PG&E Utilities Finance)				
0004	FINANCE DEPT	03 66014 1050		1	61.68	61.68
		(Streets/Sidewal PG&E Utilities Finance)				
0005	FINANCE DEPT	10 66014 1050		1	219.31	219.31
		(Sewer M&O PG&E Utilities Finance)				

PO Box 997300 *** VENDOR.: PAC02 (PG&E (Electric,Gas))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0006	FINANCE DEPT	80 66014 1050 (Effluent Disp. PG&E Utilities Finance)		1	54.83	54.83
				Invoice Extension ---->		4568.96

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
45850125	HWY 104/BOWERS	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	HWY 104/BOWERS	03 66025 1120 (Streets/Sidewal Street Lights Streets/Roads)		1	114.40	114.40
				Invoice Extension ---->		114.40

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
56240126	COMMUNITY BUILDING GAS	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	COMMUNITY BUILDING GAS	01 66014 1130 (General Fund PG&E Utilities Parks & Recreat)		1	246.14	246.14
				Invoice Extension ---->		246.14

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
66480125	WWTP	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP	10 66014 1510 (Sewer M&O PG&E Utilities Sewer Treatment)		1	2895.34	2895.34
				Invoice Extension ---->		2895.34

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
77120125	WWTP OFFICE	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount

PO Box 997300 *** VENDOR.: PAC02 (PG&E (Electric,Gas))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP OFFICE	10 66014 1510 (Sewer M&O PG&E Utilities Sewer Treatment)		1	201.41	201.41
				Invoice Extension ---->		201.41

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
78130125	PUBLIC RESTROOMS	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	PUBLIC RESTROOMS	01 66014 1130 (General Fund PG&E Utilities Parks & Recreat)		1	93.82	93.82
				Invoice Extension ---->		93.82

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
82130125	COMMUNITY BUILDING	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	COMMUNITY BUILDING	01 66014 1130 (General Fund PG&E Utilities Parks & Recreat)		1	758.02	758.02
				Invoice Extension ---->		758.02

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
82990125	LITTLE LEAGUE PARK	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	LITTLE LEAGUE PARK	01 66014 1130 (General Fund PG&E Utilities Parks & Recreat)		1	56.12	56.12
				Invoice Extension ---->		56.12

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
95900125	HISTORICAL GRAMMER SCHOOL	02-25	01/26/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount

PO Box 997300 *** VENDOR.: PAC02 (PG&E (Electric,Gas))

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	HISTORICAL GRAMMER SCHOOL	01 66014 1130		1	1441.49	1441.49
		(General Fund PG&E Utilities Parks & Recreat)				
					Invoice Extension ---->	1441.49

Vendor Total ---------> 11220.27

8570--23RD AVENUE *** VENDOR.: PAC06 (PAC MACHINE CO INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
96855	INLINE METER	02-25	02/03/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	INLINE METER	10 67010 1510		1	9952.06	9952.06
		(Sewer M&O O&M Equipment Sewer Treatment)				
					Invoice Extension ---->	9952.06

Vendor Total ---------> 9952.06

P.O. BOX 77202 *** VENDOR.: PRI08 (PRINCIPAL LIFE INS. COMPANY)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
FEB2025	FEBRUARY 2024 DENTAL & VISION PREMIUMS	02-25	02/11/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1060		1	321.98	321.98
		(General Fund Employee Benefi Police Dept)				
0002	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1400		1	8.10	8.10
		(General Fund Employee Benefi Cemetery)				
0003	FEBRUARY 2024 DENTAL & VISION PREMIUMS	03 41040 1120		1	144.45	144.45
		(Streets/Sidewal Employee Benefi Streets/Roads)				

P.O. BOX 77202 *** VENDOR.: PRI08 (PRINCIPAL LIFE INS. COMPANY)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0004	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	86.50	86.50
0005	FEBRUARY 2024 DENTAL & VISION PREMIUMS	10 41040 1510 (Sewer M&O Employee Benefi Sewer Treatment)		1	155.10	155.10
0006	FEBRUARY 2024 DENTAL & VISION PREMIUMS	10 41040 1520 (Sewer M&O Employee Benefi Sewer Collectio)		1	98.95	98.95
0007	FEBRUARY 2024 DENTAL & VISION PREMIUMS	80 41040 1600 (Effluent Disp. Employee Benefi Effluent)		1	174.08	174.08
0008	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1140 (General Fund Employee Benefi Swimming Pool)		1	10.74	10.74
0009	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	90.05	90.05
0010	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	.52	.52
0011	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1050 (General Fund Employee Benefi Finance)		1	136.58	136.58
0012	FEBRUARY 2024 DENTAL & VISION PREMIUMS	10 41040 1050 (Sewer M&O Employee Benefi Finance)		1	78.94	78.94
0013	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	34.05	34.05
0014	FEBRUARY 2024 DENTAL & VISION PREMIUMS	03 41040 1120 (Streets/Sidewal Employee Benefi Streets/Roads)		1	28.37	28.37
0015	FEBRUARY 2024 DENTAL & VISION PREMIUMS	01 41040 1130 (General Fund Employee Benefi Parks & Recreat)		1	28.37	28.37
0016	FEBRUARY 2024 DENTAL & VISION PREMIUMS	10 41040 1510 (Sewer M&O Employee Benefi Sewer Treatment)		1	37.83	37.83
0017	FEBRUARY 2024 DENTAL & VISION PREMIUMS	80 41040 1600 (Effluent Disp. Employee Benefi Effluent)		1	37.83	37.83
				Invoice Extension ---->		1472.44
				Vendor Total --------->		1472.44

10656 INDUSTRIAL AVE *** VENDOR.: QUA02 (AQUALITY WATER MANAGEMENT, INC.)
SUITE 100

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
202007134	WWTP CONTRACT SERVICES	02-25	01/26/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount

10656 INDUSTRIAL AVE *** VENDOR.: QUA02 (AQUALITY WATER MANAGEMENT, INC.)
SUITE 100

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP CONTRACT SERVICES	10 61057 1510 (Sewer M&O Contracts-Other Sewer Treatment)		1	2750.00	2750.00

Invoice Extension ----> 2750.00

Vendor Total ---------> 2750.00

PO Box 1144 *** VENDOR.: SAF03 (Safeguard Pest Control)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
400356	PEST CONTROL SERVICES	02-25	01/08/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	PEST CONTROL SERVICES	01 67015 1720 (General Fund O&M Blg/Structu MonteVerde Muse)		1	86.00	86.00

Invoice Extension ----> 86.00

Vendor Total ---------> 86.00

P.O. BOX 7523 *** VENDOR.: SEI01 (SEIU Local 1021)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
JAN2025	JANUARY 2025 UNION DUES	02-25	02/07/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	JANUARY 2025 UNION DUES	01 21730 (General Fund P/R - S.C. Employees Assoc.)		1	439.65	439.65

Invoice Extension ----> 439.65

Vendor Total ---------> 439.65

11751 SWEET PEA WAY *** VENDOR.: SIE23 (SIERRA SEPTIC SERVICES, INC.)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
3577	GRAVITY BOX RENTAL	02-25	02/03/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	GRAVITY BOX RENTAL	10 67060 1510		1	3800.00	3800.00
		(Sewer M&O Sludge Sewer Treatment)				
					Invoice Extension ---->	3800.00
					Vendor Total --------->	3800.00

286 SUTTER CREST WEST *** VENDOR.: SIE26 (JULIA SIERK)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
01212025	FRAMES & STATIONARY FOR PROVLAMATIONS	02-25	01/21/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	FRAMES & STATIONARY FOR PROVLAMATIONS	01 52010 1020		1	73.23	73.23
		(General Fund Gen. Supplies City Clerk)				
					Invoice Extension ---->	73.23
					Vendor Total --------->	73.23

PO BOX 597 *** VENDOR.: SIG01 (SIGNAL SERVICE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
396987	SUTTER CREEK GRAMMAR SCHOOL LABOR	02-25	01/13/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SUTTER CREEK GRAMMAR SCHOOL LABOR	01 67015 1130		1	113.07	113.07
		(General Fund O&M Blg/Structu Parks & Recreat)				
					Invoice Extension ---->	113.07

PO BOX 597 *** VENDOR.: SIG01 (SIGNAL SERVICE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
397435	SUTTER CREEK GRAMMAR SCHOOL ALARM MONITORING	02-25	01/17/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SUTTER CREEK GRAMMAR SCHOOL ALARM MONITORING	01 67015 1130		1	601.17	601.17
		(General Fund O&M Blg/Structu Parks & Recreat)				
					Invoice Extension ---->	601.17
					Vendor Total --------->	714.24

ATTN: A/P 775 FIERO LN STE 200 *** VENDOR.: SUN07 (SUNRUN INC)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
020425	REFUND BUILDING PERMIT #2024-SET-08	02-25	02/04/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	REFUND BUILDING PERMIT #2024-SET-08	01 34139		1	336.07	336.07
		(General Fund Building Permit Fees)				
					Invoice Extension ---->	336.07
					Vendor Total --------->	336.07

PO BOX 600 *** VENDOR.: SUT26 (SUTTER CREEK BUSINESS & PROFESSIONAL ASS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
SUE020625	SPONSORSHIP FOR FY 24/25	02-25	02/06/24	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	SPONSORSHIP FOR FY 24/25	01 64010 1150		1	2000.00	2000.00
		(General Fund Advertising Marketing)				
					Invoice Extension ---->	2000.00

PO BOX 600 *** VENDOR.: SUT26 (SUTTER CREEK BUSINESS & PROFESSIONAL ASS)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Vendor Total ---------> 2000.00

PO BOX 35146 *** VENDOR.: THA02 (THATCHER COMPANY - LB1106)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
0100471	Supplies - Chem Sewer Tre	02-25	01/23/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	Supplies - Chem Sewer Tre	10 52015 1510 (Sewer M&O Supplies - Chem Sewer Treatment)		1	3333.84	3333.84

Invoice Extension ----> 3333.84

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
5010093	Supplies - Chem Sewer Tre	02-25	01/09/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	Supplies - Chem Sewer Tre	10 52015 1510 (Sewer M&O Supplies - Chem Sewer Treatment)		1	3063.94	3063.94

Invoice Extension ----> 3063.94

Vendor Total ---------> 6397.78

P.O. BOX 209047 *** VENDOR.: TRA04 (TRANSUNION RISK & ALTERNATIVE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
202501-1	PD PERSON SEARCH	02-25	02/01/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	PD PERSON SEARCH	01 52010 1060 (General Fund Gen. Supplies Police Dept)		1	75.00	75.00

Invoice Extension ----> 75.00

P.O. BOX 209047 *** VENDOR.: TRA04 (TRANSUNION RISK & ALTERNATIVE)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Vendor Total ---------> 75.00

Attn: Accounts Receivable *** VENDOR.: ULI01 (Uline)
P.O. Box 88741

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
187474399	JANITORIAL SUPPLIES	02-25	01/06/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	JANITORIAL SUPPLIES	01 67020 1130 (General Fund Janitorial Parks & Recreat)		1	2634.61	2634.61

Invoice Extension ----> 2634.61

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
188293093	JANITORIAL SUPPLIES	02-25	01/23/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	JANITORIAL SUPPLIES	01 67020 1130 (General Fund Janitorial Parks & Recreat)		1	458.79	458.79

Invoice Extension ----> 458.79

Vendor Total ---------> 3093.40

PO Box 9004 *** VENDOR.: USA01 (USA BlueBook)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
616675	WWTP SUPPLIES	02-25	02/06/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP SUPPLIES	10 67010 1510 (Sewer M&O O&M Equipment Sewer Treatment)		1	207.58	207.58

Invoice Extension ----> 207.58

PO Box 9004 *** VENDOR.: USA01 (USA BlueBook)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
619114	WWTP SUPPLIES	02-25	02/10/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP SUPPLIES	10 67010 1510 (Sewer M&O O&M Equipment Sewer Treatment)		1	1506.90	1506.90
				Invoice Extension ---->		1506.90

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
006165414	WWTP SUPPLIES	02-25	02/06/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	WWTP SUPPLIES	10 67010 1510 (Sewer M&O O&M Equipment Sewer Treatment)		1	1282.80	1282.80
				Invoice Extension ---->		1282.80

Vendor Total ---------> 2997.28

2295 Bella Vista Drive *** VENDOR.: VIO01 (VIOLICH/SORACCO)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
FEB2025	PARKING LOT LEASE	02-25	02/03/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	PARKING LOT LEASE	01 68012 1130 (General Fund Lease-Prkg lot Parks & Recreat)		1	875.00	875.00
				Invoice Extension ---->		875.00

Vendor Total ---------> 875.00

P.O. BOX 251 *** VENDOR.: WEB01 (Weber, Ghio & Assoc, Inc.)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

P.O. BOX 251 *** VENDOR.: WEB01 (Weber, Ghio & Assoc, Inc.)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
73550125	GENERAL CITY ENGINEERING	02-25	01/10/25	N N N	A-NET30 FROM INVOICE	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	GENERAL CITY ENGINEERING	01 61025 1115		1	570.00	570.00
		(General Fund Engineering Engineering)				
0002	CIP ESTIMATE	01 61025 1115		1	3604.50	3604.50
		(General Fund Engineering Engineering)				
0003	SUTTER CREEK DRAINAGE ISSUES-ONGOING	03 70030 1120		1	766.00	766.00
		(Streets/Sidewal Improvements Streets/Roads)				
0004	ENCROACHMENT PLAN REVIEW	01 61028 1115		1	1228.78	1228.78
		(General Fund Plan Chk & Insp Engineering)				
0005	PC-PINEWOOD E&P 67	01 55065 1115	P67	1	788.01	788.01
		(General Fund E&P Reimb Engr. Engineering)				
0006	TM-GOLD RUSH RANC E&P112	01 55065 1115	112	1	445.50	445.50
		(General Fund E&P Reimb Engr. Engineering)				
0007	TI-MACT CLINIC	01 55065 1115	152	1	183.26	183.26
		(General Fund E&P Reimb Engr. Engineering)				
0008	FOGARTY ROAD/AMELIA -CATHOLIC CHURCH	01 55065 1115	156	1	1240.00	1240.00
		(General Fund E&P Reimb Engr. Engineering)				
0009	CUP-130 LINCOLN AVE	01 55065 1115	167	1	44.50	44.50
		(General Fund E&P Reimb Engr. Engineering)				
0010	BUILDING DEPARTMENT SERVICES	01 61028 1100	167	1	2071.61	2071.61
		(General Fund Plan Chk & Insp Building DEPT)				
0011	BUILDING PERMITS INSPECTIONS/PLAN CHECKS	01 61025 1100	167	1	2024.11	2024.11
		(General Fund Engineering Building DEPT)				
					Invoice Extension ---->	12966.27

Vendor Total ---------> 12966.27

PO BOX 77096 *** VENDOR.: WEL06 (WELLS FARGO FINANCIAL LEASING)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
32924756	COPIER LEASE	02-25	01/21/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	COPIER LEASE	01 52010 1050		1	99.56	99.56
		(General Fund Gen. Supplies Finance)				
0002	COPIER LEASE	03 52010 1050		1	18.96	18.96
		(Streets/Sidewal Gen. Supplies Finance)				
0003	COPIER LEASE	59 52010 1050		1	73.49	73.49
		(Building Facili Gen. Supplies Finance)				

PO BOX 77096 *** VENDOR.: WEL06 (WELLS FARGO FINANCIAL LEASING)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0004	COPIER LEASE	59 52010 1050 (Building Facili Gen. Supplies Finance)		1	26.08	26.08
0005	COPIER LEASE	80 52010 1050 (Effluent Disp. Gen. Supplies Finance)		1	18.96	18.96

Invoice Extension ----> 237.05

Vendor Total ---------> 237.05

2014 TAYLOR RD *** VENDOR.: WIZ01 (WIZIX TECHNOLOGY GROUP, INC.)

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
456461	COPIER MAINTENANCE	02-25	02/03/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	COPIER MAINTENANCE	01 53020 6100 (General Fund Equipmt Maint. Central Servies)		1	19.96	19.96
0002	COPIER MAINTENANCE	10 53020 6100 (Sewer M&O Equipmt Maint. Central Servies)		1	19.96	19.96

Invoice Extension ----> 39.92

INVOICE-TYPE	DESCRIPTION	PERIOD	DATE	SE	TERM-DESCRIPTION	G/L ACCOUNT No
458203	COPIER SUPPLIES	02-25	02/07/25	N N N	-Unknown Discount Trm	20200

Line	Description	G/L Account No	CTR	Unit(s)	Unit Cost	Amount
0001	COPIER SUPPLIES	01 53020 6100 (General Fund Equipmt Maint. Central Servies)		1	7.25	7.25
0002	COPIER SUPPLIES	10 53020 6100 (Sewer M&O Equipmt Maint. Central Servies)		1	7.25	7.25

Invoice Extension ----> 14.50

Vendor Total ---------> 54.42

** Total Invoices -----> 163929.52
** Total Checks -------> .00

*** Total Purchases ---> 163929.52

FUND	ACCT	DEPT	Description (ACCT/DEPT/FUND)	Activity	Actual	Encumbrance	Total	Budget	Variance
01	20200		Accounts Payable//General Fund	-94497.39					
01	21711		P/R - Medical Health Pay.//Gener	3269.78					
01	21730		P/R - S.C. Employees Assoc.//Gen	439.65					
01	22115		County Tourism fee//General Fund	9969.02					
01	23700		ACRA Regional Developmt Fee//Gen	6586.00					
01	34139	<*>	Building Permit Fees//General Fu	336.07	-72678.37	.00	-72342.30	-100000.00	-27657.70
01	41040	1040	Employee Bene/City Manager/Gener	1164.71	7625.68	.00	8790.39	27388.00	18597.61
01	41040	1050	Employee Bene/Finance/General Fu	2508.62	15104.03	.00	17612.65	25223.00	7610.35
01	41040	1060	Employee Bene/Police Dept/Genera	2726.37	67805.30	.00	70531.67	113880.00	43348.33
01	41040	1130	Employee Bene/Parks & Recre/Gene	2328.91	24989.64	.00	27318.55	49528.00	22209.45
01	41040	1140	Employee Bene/Swimming Pool/Gene	135.55	894.33	.00	1029.88	3212.00	2182.12
01	41040	1400	Employee Bene/Cemetery/General F	33.21	788.50	.00	821.71	3212.00	2390.29
01	52010	1020	Gen. Supplies/City Clerk/General	73.23	62.71	.00	135.94	150.00	14.06
01	52010	1050	Gen. Supplies/Finance/General Fu	126.57	5162.24	.00	5288.81	11650.00	6361.19
01	52010	1060	Gen. Supplies/Police Dept/Genera	127.97	851.29	.00	979.26	3800.00	2820.74
01	52012	1060	Fuel/Police Dept/General Fund	2501.01	14974.59	.00	17475.60	27000.00	9524.40
01	52012	1130	Fuel/Parks & Recre/General Fund	475.53	3475.90	.00	3951.43	9000.00	5048.57
01	53015	1130	Repair/Maint/Parks & Recre/Gener	2228.48	18877.44	.00	21105.92	31500.00	10394.08
01	53020	6100	Equipmt Maint/Central Servi/Gene	27.21	224.53	.00	251.74	650.00	398.26
01	55065	1115	E&P Reimb Eng/Engineering/Genera	5666.07	50361.73	.00	56027.80	60000.00	3972.20
01	55085	1130<*>	Weed Control/Parks & Recre/Gener	856.61	4000.00	.00	4856.61	1500.00	-3356.61
01	55090	1130<*>	Restrooms/Parks & Recre/General	145.99	51.76	.00	197.75	150.00	-47.75
01	60013	1050	Network Svcs/Finance/General Fun	432.30	2593.80	.00	3026.10	5318.00	2291.90
01	60013	6100	Network Svcs/Central Servi/Gener	1110.50	8044.26	.00	9154.76	22500.00	13345.24
01	60014	1130<*>	Internet Serv/Parks & Recre/Gene	567.70	.00	.00	567.70	.00	-567.70
01	60014	6100	Internet Serv/Central Servi/Gene	375.98	2250.14	.00	2626.12	7250.00	4623.88
01	61025	1100<*>	Engineering/Building DEPT/Genera	2024.11	.00	.00	2024.11	.00	-2024.11
01	61025	1115<*>	Engineering/Engineering/General	4174.50	90558.10	-1094.00	93638.60	60000.00	-33638.60
01	61028	1100	Plan Chk & In/Building DEPT/Gene	2071.61	29641.33	.00	31712.94	41000.00	9287.06
01	61028	1115	Plan Chk & In/Engineering/Genera	1228.78	1040.00	.00	2268.78	4000.00	1731.22
01	61030	6130	Legal/City Attorney/General Fund	2675.25	12785.25	.00	15460.50	28050.00	12589.50
01	61045	1090<*>	Planner/Planning/General Fund	1981.33	62068.40	.00	64049.73	40000.00	-24049.73
01	61057	1060	Contracts-Oth/Police Dept/Genera	12932.10	16380.66	.00	29312.76	43000.00	13687.24
01	62010	1040<*>	Communication/City Manager/Gener	83.02	497.64	.00	580.66	.00	-580.66
01	62010	1060	Communication/Police Dept/Genera	584.36	2559.36	.00	3143.72	5000.00	1856.28
01	62010	6100	Communication/Central Servi/Gene	55.91	1208.35	.00	1264.26	4375.00	3110.74
01	64010	1150	Advertising/Marketing/General Fu	2000.00	.00	.00	2000.00	4000.00	2000.00
01	65030	1010	Membership/Du/City Council/Gener	2131.00	.00	.00	2131.00	2150.00	19.00
01	65040	1060	Travel,Conf,T/Police Dept/Genera	249.00	3746.26	.00	3995.26	5000.00	1004.74
01	66012	1020<*>	Water Utiliti/City Clerk/General	4.20	45.88	.00	50.08	.00	-50.08
01	66012	1040	Water Utiliti/City Manager/Gener	4.20	41.90	.00	46.10	459.00	412.90
01	66012	1050	Water Utiliti/Finance/General Fu	17.05	152.87	.00	169.92	253.00	83.08
01	66012	1060	Water Utiliti/Police Dept/Genera	33.44	297.93	.00	331.37	500.00	168.63
01	66012	1130	Water Utiliti/Parks & Recre/Gene	1102.46	17669.82	.00	18772.28	22500.00	3727.72

FUND	ACCT	DEPT	Description (ACCT/DEPT/FUND)	Activity	Actual	Encumbrance	Total	Budget	Variance
01	66012	1400<*>	Water Utiliti/Cemetery/General F	108.86	555.33	.00	664.19	.00	-664.19
01	66012	1720<*>	Water Utiliti/MonteVerde Mu/Gene	74.14	446.55	.00	520.69	.00	-520.69
01	66014	1020<*>	PG&E Utilitie/City Clerk/General	99.24	126.29	.00	225.53	.00	-225.53
01	66014	1040	PG&E Utilitie/City Manager/Gener	58.37	78.07	.00	136.44	351.00	214.56
01	66014	1050<*>	PG&E Utilitie/Finance/General Fu	349.53	1734.12	.00	2083.65	203.00	-1880.65
01	66014	1060	PG&E Utilitie/Police Dept/Genera	685.34	3400.24	.00	4085.58	7000.00	2914.42
01	66014	1130<*>	PG&E Utilitie/Parks & Recre/Gene	5793.86	29419.27	.00	35213.13	22700.00	-12513.13
01	66014	1720<*>	PG&E Utilitie/MonteVerde Mu/Gene	154.10	497.07	.00	651.17	.00	-651.17
01	67009	1060<*>	Vehicle Maint/Police Dept/Genera	1830.92	14626.60	.00	16457.52	13000.00	-3457.52
01	67009	1130	Vehicle Maint/Parks & Recre/Gene	93.57	652.16	.00	745.73	6000.00	5254.27
01	67015	1130	O&M Blg/Struc/Parks & Recre/Gene	714.24	3207.26	.00	3921.50	5000.00	1078.50
01	67015	1720<*>	O&M Blg/Struc/MonteVerde Mu/Gene	86.00	258.00	.00	344.00	.00	-344.00
01	67020	1130	Janitorial/Parks & Recre/General	3093.40	2754.19	.00	5847.59	6500.00	652.41
01	68012	1130	Lease-Prkg lo/Parks & Recre/Gene	3790.46	26533.22	.00	30323.68	45500.00	15176.32
			Fund (01) Total ---->	.00	478441.62	-1094.00	551580.56	669452.00	117871.44
03	20200		Accounts Payable//Streets/Sidewa	-9906.74					
03	41040	1040	Employee Bene/City Manager/Stree	63.96	374.62	.00	438.58	2490.00	2051.42
03	41040	1050	Employee Bene/Finance/Streets/Si	202.31	1238.06	.00	1440.37	3140.00	1699.63
03	41040	1120	Employee Bene/Streets/Roads/Stre	1188.31	13379.18	.00	14567.49	18844.00	4276.51
03	52010	1050	Gen. Supplies/Finance/Streets/Si	23.73	575.98	.00	599.71	1451.00	851.29
03	52010	1120	Gen. Supplies/Streets/Roads/Stre	761.24	725.13	.00	1486.37	1560.00	73.63
03	52012	1120	Fuel/Streets/Roads/Streets/Sidew	319.13	1976.42	.00	2295.55	12540.00	10244.45
03	55060	1120	Patching/Streets/Roads/Streets/S	411.45	1650.92	.00	2062.37	21960.00	19897.63
03	60013	1050	Network Svcs/Finance/Streets/Sid	76.29	457.74	.00	534.03	662.00	127.97
03	62010	1040<*>	Communication/City Manager/Stree	16.60	99.54	.00	116.14	.00	-116.14
03	66012	1020<*>	Water Utiliti/City Clerk/Streets	.85	.00	.00	.85	.00	-.85
03	66012	1040	Water Utiliti/City Manager/Stree	.84	11.32	.00	12.16	42.00	29.84
03	66012	1050	Water Utiliti/Finance/Streets/Si	3.01	26.35	.00	29.36	32.00	2.64
03	66014	1040	PG&E Utilitie/City Manager/Stree	11.68	15.62	.00	27.30	32.00	4.70
03	66014	1050<*>	PG&E Utilitie/Finance/Streets/Si	61.68	306.03	.00	367.71	25.00	-342.71
03	66025	1120	Street Lights/Streets/Roads/Stre	3751.09	20338.35	.00	24089.44	38400.00	14310.56
03	67009	1120	Vehicle Maint/Streets/Roads/Stre	248.57	790.23	.00	1038.80	2000.00	961.20
03	70030	1120	Improvements/Streets/Roads/Stree	2766.00	541539.34	.00	544305.34	961000.00	416694.66
			Fund (03) Total ---->	.00	583504.83	.00	593411.57	1064178.00	470766.43
04	20200		Accounts Payable//Crestview Lgt/	-123.48					
04	66025	1450<*>	Street Lights/CrestView Lgt/Cres	123.48	726.65	.00	850.13	.00	-850.13
			Fund (04) Total ---->	.00	726.65	.00	850.13	.00	-850.13
10	20200		Accounts Payable//Sewer M&O	-55720.49					

FUND	ACCT	DEPT	Description (ACCT/DEPT/FUND)	Activity	Actual	Encumbrance	Total	Budget	Variance
10	41040	1040	Employee Bene/City Manager/Sewer	507.71	3315.18	.00	3822.89	12449.00	8626.11
10	41040	1050	Employee Bene/Finance/Sewer M&O	1162.00	6948.05	.00	8110.05	15992.00	7881.95
10	41040	1510	Employee Bene/Sewer Treatme/Sewe	2182.69	17841.89	.00	20024.58	23198.00	3173.42
10	41040	1520	Employee Bene/Sewer Collect/Sewe	968.17	8082.59	.00	9050.76	13919.00	4868.24
10	52010	1050<*>	Gen. Supplies/Finance/Sewer M&O	16.95	8369.04	.00	8385.99	7387.00	-998.99
10	52012	1510	Fuel/Sewer Treatme/Sewer M&O	324.25	2558.99	.00	2883.24	10000.00	7116.76
10	52015	1510	Supplies - Ch/Sewer Treatme/Sewe	6397.78	47744.83	.00	54142.61	120000.00	65857.39
10	52020	1510	Supplies - La/Sewer Treatme/Sewe	420.00	3221.50	.00	3641.50	6000.00	2358.50
10	53020	6100	Equipmt Maint/Central Servi/Sewe	27.21	224.49	.00	251.70	325.00	73.30
10	55040	1510	Clothing/Sewer Treatme/Sewer M&O	68.40	596.79	.00	665.19	1000.00	334.81
10	55040	1520	Clothing/Sewer Collect/Sewer M&O	68.40	446.79	.00	515.19	1400.00	884.81
10	60011	1510<*>	Computer Soft/Sewer Treatme/Sewe	270.00	8844.00	.00	9114.00	7500.00	-1614.00
10	60013	1050	Network Svcs/Finance/Sewer M&O	271.24	1627.44	.00	1898.68	3372.00	1473.32
10	60013	6100	Network Svcs/Central Servi/Sewer	1110.50	6072.26	.00	7182.76	11250.00	4067.24
10	60014	6100	Internet Serv/Central Servi/Sewe	375.98	2250.14	.00	2626.12	3625.00	998.88
10	61030	6130	Legal/City Attorney/Sewer M&O	1318.25	10232.25	.00	11550.50	38250.00	26699.50
10	61057	1510<*>	Contracts-Oth/Sewer Treatme/Sewe	2750.00	16500.00	.00	19250.00	.00	-19250.00
10	62010	1040<*>	Communication/City Manager/Sewer	33.21	199.05	.00	232.26	.00	-232.26
10	62010	1510	Communication/Sewer Treatme/Sewe	31.61	186.42	.00	218.03	1000.00	781.97
10	62010	6100	Communication/Central Servi/Sewe	55.91	1208.35	.00	1264.26	2188.00	923.74
10	65030	1510<*>	Membership/Du/Sewer Treatme/Sewe	782.00	.00	.00	782.00	750.00	-32.00
10	66012	1020<*>	Water Utiliti/City Clerk/Sewer M	1.68	18.19	.00	19.87	.00	-19.87
10	66012	1040	Water Utiliti/City Manager/Sewer	1.68	16.75	.00	18.43	208.00	189.57
10	66012	1050	Water Utiliti/Finance/Sewer M&O	10.70	94.87	.00	105.57	161.00	55.43
10	66012	1510	Water Utiliti/Sewer Treatme/Sewe	1193.08	5928.88	.00	7121.96	18000.00	10878.04
10	66014	1020<*>	PG&E Utilitie/City Clerk/Sewer M	11.68	14.86	.00	26.54	.00	-26.54
10	66014	1040	PG&E Utilitie/City Manager/Sewer	23.35	31.23	.00	54.58	159.00	104.42
10	66014	1050<*>	PG&E Utilitie/Finance/Sewer M&O	219.31	1088.07	.00	1307.38	128.00	-1179.38
10	66014	1510	PG&E Utilitie/Sewer Treatme/Sewe	3419.47	18110.83	.00	21530.30	28000.00	6469.70
10	67009	1520	Vehicle Maint/Sewer Collect/Sewe	138.54	707.15	.00	845.69	5000.00	4154.31
10	67010	1510	O&M Equipment/Sewer Treatme/Sewe	14236.05	19144.31	3499.72	36880.08	66000.00	29119.92
10	67050	1510	O & M-Sewer P/Sewer Treatme/Sewe	2209.14	15842.24	.00	18051.38	25000.00	6948.62
10	67060	1510	Sludge/Sewer Treatme/Sewer M&O	5281.77	33259.45	.00	38541.22	55000.00	16458.78
10	70040	1510	Machinery &/Sewer Treatme/Sewer	9831.78	68348.32	.00	78180.10	170000.00	91819.90
			Fund (10) Total ---->	.00	309075.20	3499.72	368295.41	647261.00	278965.59
59	20200		Accounts Payable//Building Facil	-99.57					
59	52010	1050<*>	Gen. Supplies/Finance/Building F	99.57	.00	.00	99.57	.00	-99.57
			Fund (59) Total ---->	.00	.00	.00	99.57	.00	-99.57
80	20200		Accounts Payable//Effluent Disp.	-3581.85					

FUND	ACCT	DEPT	Description (ACCT/DEPT/FUND)	Activity	Actual	Encumbrance	Total	Budget	Variance
80	41040	1040	Employee Bene/City Manager/Efflu	351.04	2305.78	.00	2656.82	7469.00	4812.18
80	41040	1050	Employee Bene/Finance/Effluent D	202.31	1245.18	.00	1447.49	5024.00	3576.51
80	41040	1520<*>	Employee Bene/Sewer Collect/Effl	148.64	.00	.00	148.64	.00	-148.64
80	41040	1600	Employee Bene/Effluent/Effluent	2210.39	16748.85	.00	18959.24	26767.00	7807.76
80	52010	1050	Gen. Supplies/Finance/Effluent D	23.19	1102.23	.00	1125.42	2320.00	1194.58
80	52010	1600	Gen. Supplies/Effluent/Effluent	65.00	459.28	.00	524.28	600.00	75.72
80	55040	1600<*>	Clothing/Effluent/Effluent Disp.	91.20	.00	.00	91.20	.00	-91.20
80	60013	1050	Network Svcs/Finance/Effluent Di	67.81	406.86	.00	474.67	1059.00	584.33
80	61030	1600<*>	Legal/Effluent/Effluent Disp.	299.00	.00	.00	299.00	.00	-299.00
80	62010	1040<*>	Communication/City Manager/Efflu	33.21	199.07	.00	232.28	.00	-232.28
80	66012	1020<*>	Water Utiliti/City Clerk/Effluen	1.68	16.75	.00	18.43	.00	-18.43
80	66012	1040	Water Utiliti/City Manager/Efflu	1.68	16.75	.00	18.43	125.00	106.57
80	66012	1050	Water Utiliti/Finance/Effluent D	2.68	23.83	.00	26.51	50.00	23.49
80	66014	1020<*>	PG&E Utilitie/City Clerk/Effluen	5.84	7.45	.00	13.29	.00	-13.29
80	66014	1040	PG&E Utilitie/City Manager/Efflu	23.35	31.23	.00	54.58	96.00	41.42
80	66014	1050<*>	PG&E Utilitie/Finance/Effluent D	54.83	272.04	.00	326.87	40.00	-286.87
			Fund (80) Total ---->	.00	22835.30	.00	26417.15	43550.00	17132.85

Ctr	FUND	ACCT	DEPT	Description (ACCT/DEPT/FUND)	Activity	Actual	Encumbrance	Total	Budget	Variance
112	01	55065	1115	E&P Reimb Eng/Engineering/Genera	1525.50	50361.73	4140.57	56027.80	60000.00	3972.20
141	01	55065	1115	E&P Reimb Eng/Engineering/Genera	80.00	50361.73	5586.07	56027.80	60000.00	3972.20
152	01	55065	1115	E&P Reimb Eng/Engineering/Genera	183.26	50361.73	5482.81	56027.80	60000.00	3972.20
155	01	55065	1115	E&P Reimb Eng/Engineering/Genera	288.00	50361.73	5378.07	56027.80	60000.00	3972.20
156	01	55065	1115	E&P Reimb Eng/Engineering/Genera	1240.00	50361.73	4426.07	56027.80	60000.00	3972.20
160	01	55065	1115	E&P Reimb Eng/Engineering/Genera	80.00	50361.73	5586.07	56027.80	60000.00	3972.20
167	01	55065	1115	E&P Reimb Eng/Engineering/Genera	1028.50	50361.73	4637.57	56027.80	60000.00	3972.20
167	01	61025	1100	Engineering/Building DEPT/Genera	2024.11	.00	.00	2024.11	.00	-2024.11
167	01	61028	1100	Plan Chk & In/Building DEPT/Gene	2071.61	29641.33	.00	31712.94	41000.00	9287.06
P67	01	55065	1115	E&P Reimb Eng/Engineering/Genera	788.01	50361.73	4878.06	56027.80	60000.00	3972.20
P76	01	55065	1115	E&P Reimb Eng/Engineering/Genera	452.80	50361.73	5213.27	56027.80	60000.00	3972.20

CITY OF SUTTER CREEK
CASH FLOW REPORT
PERIOD ENDING FEBRUARY 28, 2025

FUND	BEG BAL	CASH IN	CASH OUT	JOURNALS	END BAL
01 - General Fund	755,177	133,446	94,497	-70,918	723,208
03 - Streets and Sidewalks	117,130	12,831	9,907	-8,923	111,131
04 - Crestview Light District	3,601	0	123	-77	3,401
07 - Cemetary Sell of Plots	-192	0	0	0	-192
09 - HMGP	1,239	0	0	0	1,239
10 - Sewer M&O	2,449,315	167,451	55,720	46,219	2,607,265
11 - Sewer WCRF Hook up Fees	116,107	0	0	0	116,107
12 - Sewer Line Replacement	617,664	0	0	0	617,664
14 - Sewer Cap Reserves	1,000,439	0	0	0	1,000,439
17 - Monteverde Store	750	380	0	-586	544
19 - Knights Foundary Restore	2,917	0	0	0	2,917
23 - General Fixed Assets	-563,168	0	0	0	-563,168
26 - COSC Community Facilities	970	0	0	0	970
28 - Public Safety/AB109, Grant	11,613	0	0	0	11,613
29 - Swimming Pool	-2,361	0	0	0	-2,361
30 - Trafffic Mitig - S. Crest Gopher Flat	-77,710	0	0	0	-77,710
31 - Traffic Mitig - S.Hill/Mesa de Oro	82,778	0	0	0	82,778
32 - Traffic Mitig - Crestview	-24,779	0	0	0	-24,779
33 - Traffic Mitig - Sutter Ione	-38,262	0	0	0	-38,262
34 - Traffic Mitig - Highway 49 Bypass	61,760	0	0	0	61,760
35 - Traffic Mitig - General	244,215	0	0	0	244,215
36 - Traffic Mitig - County Regional	1,712	0	0	0	1,712
37 - Parking In Lieu	66,456	0	0	0	66,456
38 - Fire Mitigation	40,119	0	0	0	40,119
39 - General Reserve	378,817	0	0	0	378,817
42 - AB1600	145,061	0	0	0	145,061
47 - Grant Projects non-CIP	55,245	0	0	0	55,245
48 - Covid-19	1,221	0	0	0	1,221
50 - COPS Fast Program	2,694	0	0	0	2,694
55 - SC Bridge Replacement	-253,806	0	0	0	-253,806
57 - HOME Grant	187,796	0	0	0	187,796
59 - Facility Rentals	21,950	6,700	100	-13,607	14,943
60 - Oak Bypass Mitigation	90	0	0	0	90
73 - Park Impact Fee	110,814	0	0	0	110,814
80 - Effluent Disposal	-605,843	0	3,582	-15,021	-624,446
86 - General Savings Reserve	73,377	0	0	0	73,377
87 - Refuse	3,415	0	0	0	3,415
88 - City Council Discretionary	20,935	0	0	0	20,935
89 - Capital Improvement Projects	83,682	0	0	0	83,682
91 - Road Capital Improvements	-483,270	0	0	0	-483,270
92 - Pension & Ins Reserve	138,849	0	0	0	138,849
93 - Vehicle Cap Reserve	17,893	0	0	0	17,893
94 - Vac Cashouts	50,515	0	0	0	50,515
95 - General Operations Reserve	245,432	0	0	0	245,432
96 - General Capital Reserves	50,573	0	0	0	50,573
TOTALS	**5,112,930**	**320,808**	**163,929**	**-62,913**	**5,206,896**

FUND Name	ACCT Name	BUDGET	ACTUALS	YTD ACTUALS	FEB 24 YTD ACTUALS	%	Remaining Budget
General Fund	Prop Tax - Secured (County)	700,400.00	-	350,716.02	373,261.71	50.07%	349,683.98
General Fund	Property Tax in Lieu of MVLF	316,210.00	-	155,983.00	148,918.00	49.33%	160,227.00
General Fund	Prop Tax - Curr Supple(County)	15,000.00	-	-	6,763.48	0.00%	15,000.00
General Fund	Delinquent Supplemental	2,100.00	-	-	111.28	0.00%	2,100.00
General Fund	Prop Tax - Unsecured (County)	12,000.00	-	14,904.91	18,165.06	124.21%	(2,904.91)
General Fund	Tax, Franchise - Aces Waste	66,500.00	10,066.13	41,691.61	42,247.09	62.69%	24,808.39
General Fund	Tax, Franchise - Comcast	31,000.00	6,732.54	20,677.80	22,173.51	66.70%	10,322.20
General Fund	Tax, Franchise - PG&E	56,000.00	-	-	-	0.00%	56,000.00
General Fund	Tax, Transfer - Real Property	20,000.00	-	5,339.13	13,495.92	26.70%	14,660.87
General Fund	Tax, Users - Utility	-	260.77	655.83	-	0.00%	(655.83)
General Fund	Tax, TOT - Transient Lodge Tax	300,000.00	12,973.00	200,599.72	223,558.10	66.87%	99,400.28
General Fund	Tax - Gen'l Retail Sales	472,262.00	73,578.03	253,667.69	308,293.33	53.71%	218,594.31
General Fund	License - Business	60,000.00	1,526.00	36,121.00	44,529.29	60.20%	23,879.00
General Fund	Permit - Encroachments	5,000.00	-	4,411.50	2,802.50	88.23%	588.50
General Fund	Permit - Banner	500.00	-	50.00	-	10.00%	450.00
General Fund	Permit - Garage Sale	50.00	-	35.00	45.00	70.00%	15.00
General Fund	Permit / Licenses - Other	2,000.00	200.00	1,639.55	1,160.00	81.98%	360.45
General Fund	Permit - Signs	1,000.00	100.00	580.55	1,100.00	58.06%	419.45
General Fund	Reimbursed E&P Costs	-	-	1,000.00	-	0.00%	(1,000.00)
General Fund	Sales Tax-Public Safety	16,000.00	1,091.77	9,127.20	9,303.39	57.05%	6,872.80
General Fund	LEAP	57,110.00	-	56,445.60	-	98.84%	664.40
General Fund	State Cops Grant	228,800.00	16,686.18	163,717.67	152,968.94	71.55%	65,082.33
General Fund	Hm Prop Tax Relief - Exemption	5,250.00	-	3,148.10	3,152.93	59.96%	2,101.90
General Fund	Zoning Application Fees	150.00	-	-	-	0.00%	150.00
General Fund	Subdivision fees	5,500.00	-	-	5,680.00	0.00%	5,500.00
General Fund	Fees - Variance & conditional	1,000.00	762.01	21,596.27	1,264.12	2159.63%	(20,596.27)
General Fund	Site Plans	48,000.00	-	26,189.90	35,784.49	54.56%	21,810.10
General Fund	Building Permit Fees	100,000.00	5,615.00	78,293.37	89,064.04	78.29%	21,706.63
General Fund	Plan Check Fees	42,000.00	2,521.60	45,963.44	27,568.07	109.44%	(3,963.44)
General Fund	Fees-PD Services	350.00	-	-	152.45	0.00%	350.00
General Fund	Fees - Police Reports	800.00	105.00	315.00	665.00	39.38%	485.00
General Fund	Concealed Weapon	600.00	100.00	700.00	500.00	116.67%	(100.00)
General Fund	P.D. & Legal restitution	1,200.00	-	-	-	0.00%	1,200.00
General Fund	PD Fee Special Services	-	100.00	1,400.00	904.76	0.00%	(1,400.00)
General Fund	Cemetery Revenues	-	-	1,000.00	-	0.00%	(1,000.00)
General Fund	Historical Grammer School Rev	18,000.00	1,895.00	11,525.00	11,800.00	64.03%	6,475.00
General Fund	Cribbs Field/Snack Shack Rent	400.00	-	185.00	240.00	46.25%	215.00
General Fund	Cribbs/Snack Utilities	-	-	25.00	75.00	0.00%	(25.00)
General Fund	Fees - Community Ctr Utilities	2,750.00	275.00	1,775.00	1,675.00	64.55%	975.00
General Fund	Fees - Community Center	6,150.00	790.00	3,895.00	4,296.00	63.33%	2,255.00
General Fund	Fees - Auditorium Use	7,500.00	440.00	5,825.00	5,325.00	77.67%	1,675.00
General Fund	Lease Revenue-AT&T Wireless	35,000.00	2,900.00	33,578.59	23,200.00	95.94%	1,421.41
General Fund	Fees- Auditorium Utilities	2,150.00	-	2,150.00	1,850.00	100.00%	-
General Fund	Fees-Jazzercise Rental Income	10,350.00	840.00	7,085.00	6,870.00	68.45%	3,265.00
General Fund	Fines - Vehicle Code	7,600.00	310.44	1,913.28	5,347.82	25.17%	5,686.72
General Fund	Income - Interest Earnings	2,680.00	6,797.07	89,381.70	-	3335.14%	(86,701.70)
General Fund	Income - Rents Other	3,900.00	380.00	2,557.08	-	65.57%	1,342.92
General Fund	Income - Donations, Private So	300.00	261.00	1,455.99	165.85	485.33%	(1,155.99)
General Fund	Swimming Pool Revenues	-	-	380.00	9,548.00	0.00%	(380.00)
General Fund	Income - Other Revenue	-	-	19,767.85	-	0.00%	(19,767.85)

FUND Name	ACCT Name	BUDGET	ACTUALS	YTD ACTUALS	FEB 24 YTD ACTUALS	%	Remaining Budget
TOTAL		**2,663,562.00**	**147,306.54**	**1,677,469.35**	**1,604,025.13**	**62.98%**	**986,092.65**
Streets/Sidewal	Vehicle License Fee	3,265.00	-	4,169.03	3,264.71	127.69%	(904.03)
Streets/Sidewal	Grants - County, local, misc	405,000.00	-	309,596.15	-	76.44%	95,403.85
Streets/Sidewal	2107 Highway User Tax	22,752.00	1,784.99	13,421.65	14,746.89	58.99%	9,330.35
Streets/Sidewal	2106 Highway User Tax	16,806.00	1,433.79	10,450.76	11,052.87	62.18%	6,355.24
Streets/Sidewal	2105 Highway User Tax	16,683.00	1,306.86	9,977.85	10,633.72	59.81%	6,705.15
Streets/Sidewal	2107-5 Highway User Tax	1,000.00	-	1,000.00	1,000.00	100.00%	-
Streets/Sidewal	2103 Highway User Tax	24,934.00	1,769.86	16,443.79	16,892.82	65.95%	8,490.21
Streets/Sidewal	Road Maintenance & Rehabilit	68,453.00	6,535.50	43,276.69	43,529.31	63.22%	25,176.31
TOTAL		**558,893.00**	**12,831.00**	**408,335.92**	**101,120.32**	**73.06%**	**150,557.08**
Crestview Lgt/D	Street Lighting Charges	2,650.00	-	-	-	0.00%	2,650.00
TOTAL		**2,650.00**	**-**	**-**	**-**	**0.00%**	**2,650.00**
Sewer M&O	Effluent Disposal	131,000.00	9,640.71	119,396.37	41,625.50	91.14%	11,603.63
Sewer M&O	Fees - Sewer Service Undist	2,472,989.00	215,268.19	1,657,955.07	1,166,700.56	67.04%	815,033.93
Sewer M&O	Septic Dumping Fee	50,000.00	3,289.14	27,361.55	32,522.56	54.72%	22,638.45
Sewer M&O	Contract Sewer Rev AWA	266,341.00	22,195.00	185,966.00	145,883.66	69.82%	80,375.00
Sewer M&O	Sewer Svc Chrges Amador City	54,715.00	4,560.00	38,174.00	26,600.66	69.77%	16,541.00
Sewer M&O	Late Charges	40,000.00	5,363.84	43,366.23	23,636.63	108.42%	(3,366.23)
Sewer M&O	Income - Interest Earnings	16,000.00	-	-	15,457.27	0.00%	16,000.00
TOTAL		**3,031,045.00**	**260,316.88**	**2,072,219.22**	**1,452,426.84**	**68.37%**	**958,825.78**
Sewer WWTP	Fees - Sewer Connection Charge	30,741.00	-	-	41,579.05	0.00%	30,741.00
Sewer WWTP	Income - Interest Earnings	7,000.00	-	-	-	0.00%	7,000.00
TOTAL		**37,741.00**	**-**	**-**	**41,579.05**	**0.00%**	**37,741.00**
Sewer Line Rep.	Income - Interest Earnings	7,000.00	-	-	-	0.00%	7,000.00
TOTAL		**7,000.00**	**-**	**-**	**-**	**0.00%**	**7,000.00**
Sewer Cap Res	Income - Interest Earnings	11,000.00	-	-	-	0.00%	11,000.00
TOTAL		**11,000.00**	**-**	**-**	**-**	**0.00%**	**11,000.00**
FEMA	FEMA	27,192.00	-	123,190.51	-	453.04%	(95,998.51)
TOTAL		**27,192.00**	**-**	**123,190.51**	**-**	**0.00%**	**(95,998.51)**
COSC ComFac07-1	Income - Interest Earnings	1,000.00	-	-	-	0.00%	1,000.00
TOTAL		**1,000.00**	**-**	**-**	**-**	**0.00%**	**1,000.00**
AB 1600	General Developer Impact Fee	5,000.00	-	-	5,248.45	0.00%	5,000.00
TOTAL		**5,000.00**	**-**	**-**	**5,248.45**	**0.00%**	**5,000.00**
Vehicle Cap Res	Sale of Real Property	-	-	400.00	-	0.00%	(400.00)
TOTAL		**-**	**-**	**400.00**	**-**	**0.00%**	**(400.00)**
Gen'l Oper Res	FEMA	169,308.00	-	140,110.47	-	82.75%	29,197.53
TOTAL		**169,308.00**	**-**	**140,110.47**	**-**	**0.00%**	**29,197.53**

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
General Fund	PERS Unfunded	Non Department	$ 295,440.00	$ -	$ 289,517.00	$ 160,716.56	98.00%	$ 5,923.00
General Fund	Sal/Wages-Elect	City Council	$ 15,120.00	$ 1,260.00	$ 10,080.00	$ 8,820.00	66.67%	$ 5,040.00
General Fund	FICA	City Council	$ 940.00	$ 78.12	$ 624.96	$ 546.84	66.49%	$ 315.04
General Fund	SUI	City Council	$ 250.00	$ 23.46	$ 173.40	$ 162.18	69.36%	$ 76.60
General Fund	Medicare	City Council	$ 220.00	$ 18.27	$ 146.16	$ 127.89	66.44%	$ 73.84
General Fund	Gen. Supplies	City Council	$ 150.00	$ -	$ 179.00	$ 107.75	119.33%	$ (29.00)
General Fund	Elections	City Council	$ 1,000.00	$ -	$ 3,315.00	$ -	331.50%	$ (2,315.00)
General Fund	Membership/Dues	City Council	$ 2,150.00	$ 2,131.00	$ 2,131.00	$ 1,972.00	99.12%	$ 19.00
General Fund	CONTINGENCY	City Council	$ 2,000.00	$ -	$ -	$ -	0.00%	$ 2,000.00
City Council Total			**$ 21,830.00**	**$ 3,510.85**	**$ 16,649.52**	**$ 11,736.66**	**76.27%**	**$ 5,180.48**
General Fund	Salaries	City Clerk	$ 78,606.00	$ -	$ 21,405.41	$ 27,507.20	27.23%	$ 57,200.59
General Fund	Vacation Payout	City Clerk	$ 3,070.00	$ -	$ 8,022.60	$ -	261.32%	$ (4,952.60)
General Fund	FICA	City Clerk	$ 4,873.00	$ -	$ 1,824.54	$ 1,705.44	37.44%	$ 3,048.46
General Fund	SUI	City Clerk	$ 137.00	$ -	$ -	$ 80.37	0.00%	$ 137.00
General Fund	PERS	City Clerk	$ 6,280.00	$ -	$ 1,784.61	$ 2,112.48	28.42%	$ 4,495.39
General Fund	Medicare	City Clerk	$ 1,140.00	$ -	$ 426.73	$ 398.88	37.43%	$ 713.27
General Fund	Employee Benefi	City Clerk	$ 21,164.00	$ -	$ 6,666.77	$ 7,365.88	31.50%	$ 14,497.23
General Fund	Workers Comp.	City Clerk	$ 6,076.00	$ -	$ 3,145.94	$ 2,510.40	51.78%	$ 2,930.06
General Fund	Gen. Supplies	City Clerk	$ 150.00	$ 73.23	$ 135.94	$ 45.67	90.63%	$ 14.06
General Fund	Muni Code Web	City Clerk	$ 5,100.00	$ -	$ 3,375.00	$ -	66.18%	$ 1,725.00
General Fund	Water Utilities	City Clerk	$ -	$ 6.66	$ 50.08	$ 54.61	0.00%	$ (50.08)
General Fund	PG&E Utilities	City Clerk	$ -	$ 99.24	$ 225.53	$ 139.60	0.00%	$ (225.53)
City Clerk Total			**$ 126,596.00**	**$ 179.13**	**$ 47,063.15**	**$ 41,920.53**	**37.18%**	**$ 79,532.85**
General Fund	Sal/Wages-Elect	City Treasurer	$ 2,250.00	$ 187.50	$ 1,500.00	$ 1,312.50	66.67%	$ 750.00
General Fund	FICA	City Treasurer	$ 140.00	$ 11.63	$ 93.04	$ 81.41	66.46%	$ 46.96
General Fund	SUI	City Treasurer	$ 47.00	$ -	$ -	$ -	0.00%	$ 47.00
General Fund	Medicare	City Treasurer	$ 33.00	$ 2.72	$ 21.76	$ 19.04	65.94%	$ 11.24
City Treasurer Total			**$ 2,470.00**	**$ 201.85**	**$ 1,614.80**	**$ 1,412.95**	**65.38%**	**$ 855.20**
General Fund	Salaries	City Manager	$ 131,995.00	$ 7,843.00	$ 65,391.55	$ 51,366.08	49.54%	$ 66,603.45
General Fund	Vacation Payout	City Manager	$ 5,078.00	$ -	$ 959.75	$ -	18.90%	$ 4,118.25
General Fund	FICA	City Manager	$ 8,185.00	$ 462.08	$ 3,764.74	$ 3,161.40	46.00%	$ 4,420.26
General Fund	SUI	City Manager	$ 176.00	$ -	$ 73.65	$ 161.01	41.85%	$ 102.35
General Fund	PERS	City Manager	$ 10,389.00	$ 593.64	$ 4,154.49	$ 1,912.53	39.99%	$ 6,234.51
General Fund	Medicare	City Manager	$ 1,915.00	$ 108.06	$ 921.43	$ 739.34	48.12%	$ 993.57
General Fund	Employee Benefi	City Manager	$ 27,388.00	$ 1,859.71	$ 9,485.39	$ 4,451.00	34.63%	$ 17,902.61
General Fund	Workers Comp.	City Manager	$ 10,268.00	$ -	$ 5,316.40	$ 4,613.54	51.78%	$ 4,951.60
General Fund	Gen. Supplies	City Manager	$ 270.00	$ 20.00	$ 481.77	$ 281.30	178.43%	$ (211.77)
General Fund	Prof Services	City Manager	$ 13,200.00	$ -	$ 10,454.35	$ 4,144.09	79.20%	$ 2,745.65
General Fund	Communications	City Manager	$ -	$ 83.02	$ 580.66	$ 493.72	0.00%	$ (580.66)
General Fund	Travel,Conf,Trg	City Manager	$ 2,750.00	$ -	$ 911.54	$ 592.01	33.15%	$ 1,838.46
General Fund	Water Utilities	City Manager	$ 459.00	$ 4.20	$ 46.10	$ 48.53	10.04%	$ 412.90
General Fund	PG&E Utilities	City Manager	$ 351.00	$ 58.37	$ 136.44	$ 139.58	38.87%	$ 214.56

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
General Fund	CONTINGENCY	City Manager	$ 2,750.00	$ -	$ -	$ -	0.00%	$ 2,750.00
City Manager Total			**$ 215,174.00**	**$ 11,032.08**	**$ 102,678.26**	**$ 72,104.13**	**47.72%**	**$ 112,495.74**
General Fund	Salaries	Finance	$ 89,548.00	$ 7,730.56	$ 63,010.87	$ 59,136.15	70.37%	$ 26,537.13
General Fund	Vacation Payout	Finance	$ 2,580.00	$ -	$ 1,120.00	$ -	43.41%	$ 1,460.00
General Fund	FICA	Finance	$ 5,551.00	$ 454.76	$ 3,701.79	$ 3,688.42	66.69%	$ 1,849.21
General Fund	SUI	Finance	$ 326.00	$ 76.92	$ 201.04	$ 407.02	61.67%	$ 124.96
General Fund	PERS	Finance	$ 5,281.00	$ 463.06	$ 3,903.46	$ 3,597.64	73.92%	$ 1,377.54
General Fund	Medicare	Finance	$ 1,299.00	$ 100.64	$ 856.51	$ 862.68	65.94%	$ 442.49
General Fund	Employee Benefi	Finance	$ 25,223.00	$ 2,508.62	$ 17,612.65	$ 11,020.79	69.83%	$ 7,610.35
General Fund	Workers Comp.	Finance	$ 6,900.00	$ -	$ 3,572.58	$ 5,166.36	51.78%	$ 3,327.42
General Fund	Gen. Supplies	Finance	$ 11,650.00	$ 834.48	$ 10,306.29	$ 4,600.33	88.47%	$ 1,343.71
General Fund	Network Svcs Co	Finance	$ 5,318.00	$ 432.30	$ 3,026.10	$ 3,436.80	56.90%	$ 2,291.90
General Fund	MOM online fees	Finance	$ 6,078.00	$ 1,399.85	$ 11,300.82	$ 8,273.07	185.93%	$ (5,222.82)
General Fund	Audit & Acctg	Finance	$ 20,514.00	$ -	$ 12,893.30	$ 19,696.12	62.85%	$ 7,620.70
General Fund	Prof Services	Finance	$ 12,157.00	$ -	$ -	$ -	0.00%	$ 12,157.00
General Fund	Contracts-Other	Finance	$ 1,621.00	$ -	$ 600.00	$ 900.00	37.01%	$ 1,021.00
General Fund	Travel,Conf,Trg	Finance	$ 760.00	$ -	$ 138.89	$ 771.14	18.28%	$ 621.11
General Fund	Water Utilities	Finance	$ 253.00	$ 17.05	$ 169.92	$ 191.37	67.16%	$ 83.08
General Fund	PG&E Utilities	Finance	$ 203.00	$ 349.53	$ 2,083.65	$ -	1026.43%	$ (1,880.65)
General Fund	O&M Equipment	Finance	$ 27,858.00	$ -	$ 510.00	$ -	1.83%	$ 27,348.00
General Fund	PayChex & Bank	Finance	$ 7,345.00	$ 576.82	$ 4,798.26	$ 4,454.37	65.33%	$ 2,546.74
General Fund	Interest Expens	Finance	$ -	$ -	$ 281.89	$ 68.22	0.00%	$ (281.89)
Finance Total			**$ 230,465.00**	**$ 14,944.59**	**$ 140,088.02**	**$ 126,270.48**	**60.78%**	**$ 94,686.55**
General Fund	Salaries	Police Dept	$ 485,869.00	$ 43,764.34	$ 311,107.25	$ 267,892.64	64.03%	$ 174,761.75
General Fund	Overtime	Police Dept	$ 30,000.00	$ 4,312.77	$ 26,001.44	$ 20,223.41	86.67%	$ 3,998.56
General Fund	Vacation Payout	Police Dept	$ 14,311.00	$ -	$ 8,574.46	$ -	59.92%	$ 5,736.54
General Fund	FICA	Police Dept	$ 29,049.00	$ 2,980.77	$ 21,432.33	$ 18,518.11	73.78%	$ 7,616.67
General Fund	SUI	Police Dept	$ 966.00	$ 109.30	$ 938.33	$ 1,312.24	97.14%	$ 27.67
General Fund	PERS	Police Dept	$ 78,529.00	$ 6,231.42	$ 50,388.60	$ 42,226.46	64.17%	$ 28,140.40
General Fund	Medicare	Police Dept	$ 6,794.00	$ 697.13	$ 5,012.47	$ 4,330.81	73.78%	$ 1,781.53
General Fund	Employee Benefi	Police Dept	$ 113,880.00	$ 9,490.01	$ 73,913.49	$ 64,257.65	64.90%	$ 39,966.51
General Fund	Workers Comp.	Police Dept	$ 33,302.00	$ -	$ 17,242.67	$ 25,204.27	51.78%	$ 16,059.33
General Fund	Gen. Supplies	Police Dept	$ 3,800.00	$ 173.57	$ 1,024.86	$ 2,852.57	26.97%	$ 2,775.14
General Fund	Fuel	Police Dept	$ 27,000.00	$ 2,501.01	$ 17,475.60	$ 16,866.10	64.72%	$ 9,524.40
General Fund	Repair/Maint	Police Dept	$ -	$ -	$ 73.25	$ 374.71	0.00%	$ (73.25)
General Fund	Special Depart	Police Dept	$ 1,000.00	$ -	$ 1,332.48	$ 1,109.00	133.25%	$ (332.48)
General Fund	Clothing	Police Dept	$ 3,500.00	$ -	$ 142.83	$ 2,611.48	4.08%	$ 3,357.17
General Fund	Safety Equip	Police Dept	$ 5,000.00	$ -	$ -	$ -	0.00%	$ 5,000.00
General Fund	Network Svcs Co	Police Dept	$ -	$ -	$ 90.00	$ 3,450.00	0.00%	$ (90.00)
General Fund	Contracts-Other	Police Dept	$ 43,000.00	$ 12,932.10	$ 29,312.76	$ -	68.17%	$ 13,687.24
General Fund	Dispatching	Police Dept	$ 155,936.00	$ -	$ 86,246.39	$ 101,090.33	55.31%	$ 69,689.61
General Fund	Communications	Police Dept	$ 5,000.00	$ 584.36	$ 3,143.72	$ 3,097.32	62.87%	$ 1,856.28
General Fund	Membership/Dues	Police Dept	$ 350.00	$ -	$ 525.00	$ -	150.00%	$ (175.00)
General Fund	Travel,Conf,Trg	Police Dept	$ 5,000.00	$ 249.00	$ 3,995.26	$ 4,271.52	79.91%	$ 1,004.74
General Fund	Water Utilities	Police Dept	$ 500.00	$ 33.44	$ 331.37	$ 367.11	66.27%	$ 168.63

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
General Fund	PG&E Utilities	Police Dept	$ 7,000.00	$ 685.34	$ 4,085.58	$ -	58.37%	$ 2,914.42
General Fund	Vehicle Maintna	Police Dept	$ 13,000.00	$ 1,893.39	$ 16,519.99	$ 12,936.01	127.08%	$ (3,519.99)
General Fund	O&M Equipment	Police Dept	$ 1,000.00	$ -	$ 517.20	$ 241.47	51.72%	$ 482.80
General Fund	Misc-Bookings	Police Dept	$ 150.00	$ -	$ 140.00	$ 125.00	93.33%	$ 10.00
General Fund	Misc-Court/Invs	Police Dept	$ 100.00	$ -	$ -	$ -	0.00%	$ 100.00
Police Total			**$ 1,064,036.00**	**$ 86,637.95**	**$ 679,567.33**	**$ 593,358.21**	**63.87%**	**$ 384,468.67**
General Fund	Sal/Wages-Elect	Planning	$ 6,750.00	$ 562.50	$ 4,500.00	$ 3,712.50	66.67%	$ 2,250.00
General Fund	FICA	Planning	$ 425.00	$ 34.90	$ 279.20	$ 230.34	65.69%	$ 145.80
General Fund	SUI	Planning	$ 130.00	$ 10.36	$ 76.44	$ 66.42	58.80%	$ 53.56
General Fund	Medicare	Planning	$ 100.00	$ 8.15	$ 65.20	$ 53.79	65.20%	$ 34.80
General Fund	Gen. Supplies	Planning	$ 200.00	$ -	$ -	$ 159.72	0.00%	$ 200.00
General Fund	Planner	Planning	$ 40,000.00	$ 1,981.33	$ 64,049.73	$ 11,608.80	160.12%	$ (24,049.73)
General Fund	LAFCO Expense	Planning	$ 6,000.00	$ -	$ 5,601.00	$ 5,358.00	93.35%	$ 399.00
General Fund	Contracts-Other	Planning	$ 7,996.00	$ -	$ 7,996.00	$ 7,996.00	100.00%	$ -
General Fund	PH Notices	Planning	$ 4,000.00	$ -	$ 673.01	$ 1,921.10	16.83%	$ 3,326.99
Planning Total			**$ 65,601.00**	**$ 2,597.24**	**$ 83,240.58**	**$ 31,106.67**	**126.89%**	**$ (17,639.58)**
General Fund	E&P Reimb Engr.	Building DEPT	$ -	$ -	$ 2,583.80	$ -	0.00%	$ (2,583.80)
General Fund	Engineering	Building DEPT	$ -	$ 2,024.11	$ 2,024.11	$ -	0.00%	$ (2,024.11)
General Fund	Plan Chk & Insp	Building DEPT	$ 41,000.00	$ 2,071.61	$ 31,712.94	$ 38,020.38	77.35%	$ 9,287.06
Building Total			**$ 41,000.00**	**$ 4,095.72**	**$ 36,320.85**	**$ 38,020.38**	**88.59%**	**$ 4,679.15**
General Fund	E&P Reimb Engr.	Engineering	$ 60,000.00	$ 5,666.07	$ 56,027.80	$ 35,811.32	93.38%	$ 3,972.20
General Fund	Engineering	Engineering	$ 60,000.00	$ 4,174.50	$ 94,732.60	$ 27,462.50	157.89%	$ (34,732.60)
General Fund	Plan Chk & Insp	Engineering	$ 4,000.00	$ 1,228.78	$ 2,268.78	$ 1,653.00	56.72%	$ 1,731.22
Engineering Total			**$ 124,000.00**	**$ 11,069.35**	**$ 153,029.18**	**$ 64,926.82**	**123.41%**	**$ (29,029.18)**
General Fund	Salaries	Parks & Recreat	$ 156,354.00	$ 11,306.75	$ 86,192.15	$ 50,948.84	55.13%	$ 70,161.85
General Fund	Overtime	Parks & Recreat	$ -	$ -	$ 101.37	$ 373.89	0.00%	$ (101.37)
General Fund	Vacation Payout	Parks & Recreat	$ 5,854.00	$ 244.14	$ 3,182.42	$ 1,042.79	54.36%	$ 2,671.58
General Fund	FICA	Parks & Recreat	$ 9,694.00	$ 646.81	$ 5,121.79	$ 3,192.11	52.83%	$ 4,572.21
General Fund	SUI	Parks & Recreat	$ 373.00	$ 72.25	$ 309.24	$ 516.51	82.91%	$ 63.76
General Fund	PERS	Parks & Recreat	$ 19,995.00	$ 883.71	$ 6,952.50	$ 3,926.42	34.77%	$ 13,042.50
General Fund	Medicare	Parks & Recreat	$ 2,267.00	$ 151.27	$ 1,197.81	$ 737.69	52.84%	$ 1,069.19
General Fund	Employee Benefi	Parks & Recreat	$ 49,528.00	$ 3,656.27	$ 27,982.23	$ 17,820.95	56.50%	$ 21,545.77
General Fund	Workers Comp.	Parks & Recreat	$ 11,931.00	$ -	$ 6,177.44	$ 4,640.85	51.78%	$ 5,753.56
General Fund	Gen. Supplies	Parks & Recreat	$ 450.00	$ 111.65	$ 555.28	$ 126.17	123.40%	$ (105.28)
General Fund	Fuel	Parks & Recreat	$ 9,000.00	$ 475.53	$ 3,951.43	$ 5,630.89	43.90%	$ 5,048.57
General Fund	Repair/Maint	Parks & Recreat	$ 31,500.00	$ 2,228.48	$ 21,105.92	$ 12,515.33	67.00%	$ 10,394.08
General Fund	Beautification	Parks & Recreat	$ 5,000.00	$ -	$ 1,495.03	$ -	29.90%	$ 3,504.97
General Fund	Clothing	Parks & Recreat	$ 2,000.00	$ -	$ 684.47	$ 2,317.41	34.22%	$ 1,315.53
General Fund	Weed Control	Parks & Recreat	$ 1,500.00	$ 856.61	$ 4,856.61	$ -	323.77%	$ (3,356.61)
General Fund	Restrooms	Parks & Recreat	$ 150.00	$ 145.99	$ 197.75	$ 73.89	131.83%	$ (47.75)
General Fund	Taxes/Fees/Lics	Parks & Recreat	$ 500.00	$ 157.21	$ 427.21	$ 345.95	85.44%	$ 72.79

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
General Fund	Computer Eqpmt	Parks & Recreat	$ -	$ -	$ 74.14	$ -	0.00%	$ (74.14)
General Fund	Internet Servic	Parks & Recreat	$ -	$ 567.70	$ 567.70	$ -	0.00%	$ (567.70)
General Fund	Engineering	Parks & Recreat	$ -	$ -	$ 64.11	$ -	0.00%	$ (64.11)
General Fund	Contracts-Other	Parks & Recreat	$ 19,500.00	$ -	$ 16,511.69	$ 16,835.00	84.68%	$ 2,988.31
General Fund	Water Utilities	Parks & Recreat	$ 22,500.00	$ 1,102.46	$ 18,772.28	$ 16,808.10	83.43%	$ 3,727.72
General Fund	PG&E Utilities	Parks & Recreat	$ 22,700.00	$ 5,793.86	$ 35,213.13	$ 20,570.27	155.12%	$ (12,513.13)
General Fund	Vehicle Maintna	Parks & Recreat	$ 6,000.00	$ 93.57	$ 745.73	$ 2,022.85	12.43%	$ 5,254.27
General Fund	O&M Equipment	Parks & Recreat	$ 4,500.00	$ 425.65	$ 2,580.38	$ 15.60	57.34%	$ 1,919.62
General Fund	O&M Blg/Structu	Parks & Recreat	$ 5,000.00	$ 714.24	$ 3,921.50	$ 3,495.78	78.43%	$ 1,078.50
General Fund	Janitorial	Parks & Recreat	$ 6,500.00	$ 3,093.40	$ 5,847.59	$ 5,002.92	89.96%	$ 652.41
General Fund	Lease-Prkg lot	Parks & Recreat	$ 45,500.00	$ 3,790.46	$ 30,323.68	$ 31,864.14	66.65%	$ 15,176.32
Parks & Rec Total			**$ 438,296.00**	**$ 36,518.01**	**$ 285,112.58**	**$ 200,824.35**	**65.05%**	**$ 153,183.42**
General Fund	Salaries	Swimming Pool	$ 10,140.00	$ 494.39	$ 3,973.71	$ 3,545.55	39.19%	$ 6,166.29
General Fund	Vacation Payout	Swimming Pool	$ 380.00	$ 81.38	$ 324.14	$ -	85.30%	$ 55.86
General Fund	FICA	Swimming Pool	$ 629.00	$ 35.70	$ 266.45	$ 204.28	42.36%	$ 362.55
General Fund	SUI	Swimming Pool	$ 24.00	$ 7.87	$ 47.37	$ 10.18	197.38%	$ (23.37)
General Fund	PERS	Swimming Pool	$ 1,297.00	$ 69.83	$ 567.58	$ 579.91	43.76%	$ 729.42
General Fund	Medicare	Swimming Pool	$ 147.00	$ 8.35	$ 62.30	$ 49.66	42.38%	$ 84.70
General Fund	Employee Benefi	Swimming Pool	$ 3,212.00	$ 135.55	$ 1,029.88	$ 1,020.33	32.06%	$ 2,182.12
General Fund	Workers Comp.	Swimming Pool	$ 774.00	$ -	$ 400.76	$ 314.90	51.78%	$ 373.24
General Fund	Gen. Supplies	Swimming Pool	$ 125.00	$ -	$ -	$ 22.12	0.00%	$ 125.00
General Fund	Supplies - Chem	Swimming Pool	$ 11,000.00	$ -	$ 505.49	$ 723.14	4.60%	$ 10,494.51
General Fund	Taxes/Fees/Lics	Swimming Pool	$ 450.00	$ -	$ 748.00	$ 444.00	166.22%	$ (298.00)
General Fund	Contracts-Other	Swimming Pool	$ 40,500.00	$ -	$ 33,945.40	$ 38,326.57	83.82%	$ 6,554.60
General Fund	O&M Equipment	Swimming Pool	$ 1,500.00	$ -	$ 249.51	$ -	16.63%	$ 1,250.49
General Fund	O&M Blg/Structu	Swimming Pool	$ 3,500.00	$ -	$ -	$ -	0.00%	$ 3,500.00
Pool Total			**$ 73,678.00**	**$ 833.07**	**$ 42,120.59**	**$ 45,240.64**	**57.17%**	**$ 31,557.41**
General Fund	Community Prom	Marketing	$ 16,585.00	$ 1,810.98	$ 13,900.68	$ 7,741.74	83.81%	$ 2,684.32
General Fund	Holiday decor	Marketing	$ -	$ (1,445.00)	$ -	$ 1,786.68	0.00%	$ -
General Fund	Beautification	Marketing	$ 3,900.00	$ -	$ 588.31	$ -	15.08%	$ 3,311.69
General Fund	Internet Servic	Marketing	$ 3,000.00	$ -	$ -	$ 800.00	0.00%	$ 3,000.00
General Fund	Advertising	Marketing	$ 4,000.00	$ 2,000.00	$ 2,000.00	$ -	50.00%	$ 2,000.00
General Fund	Membership/Dues	Marketing	$ -	$ -	$ 125.00	$ 125.00	0.00%	$ (125.00)
Marketing Total			**$ 27,485.00**	**$ 2,365.98**	**$ 16,613.99**	**$ 10,453.42**	**60.45%**	**$ 10,871.01**
General Fund	Salaries	Cemetery	$ 10,140.00	$ -	$ -	$ -	0.00%	$ 10,140.00
General Fund	Vacation Payout	Cemetery	$ 380.00	$ -	$ -	$ -	0.00%	$ 380.00
General Fund	FICA	Cemetery	$ 629.00	$ -	$ -	$ -	0.00%	$ 629.00
General Fund	SUI	Cemetery	$ 24.00	$ -	$ -	$ -	0.00%	$ 24.00
General Fund	PERS	Cemetery	$ 1,297.00	$ -	$ -	$ -	0.00%	$ 1,297.00
General Fund	Medicare	Cemetery	$ 147.00	$ -	$ -	$ -	0.00%	$ 147.00
General Fund	Employee Benefi	Cemetery	$ 3,212.00	$ 110.23	$ 860.22	$ 433.54	26.78%	$ 2,351.78
General Fund	Workers Comp.	Cemetery	$ 774.00	$ -	$ 400.74	$ -	51.78%	$ 373.26
General Fund	Repair/Maint	Cemetery	$ -	$ -	$ 35.41	$ 58.06	0.00%	$ (35.41)

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
General Fund	Water Utilities	Cemetery	$ -	$ 108.86	$ 664.19	$ 689.91	0.00%	$ (664.19)
Cemetery Total			**$ 16,603.00**	**$ 219.09**	**$ 1,960.56**	**$ 1,181.51**	**11.81%**	**$ 14,642.44**
General Fund	Salaries	MonteVerde Muse	$ 33,801.00	$ 174.88	$ 1,317.45	$ -	3.90%	$ 32,483.55
General Fund	Vacation Payout	MonteVerde Muse	$ 1,266.00	$ -	$ -	$ -	0.00%	$ 1,266.00
General Fund	FICA	MonteVerde Muse	$ 2,096.00	$ 10.84	$ 81.67	$ -	3.90%	$ 2,014.33
General Fund	SUI	MonteVerde Muse	$ 81.00	$ 10.37	$ 49.87	$ -	61.57%	$ 31.13
General Fund	PERS	MonteVerde Muse	$ 4,322.00	$ -	$ -	$ -	0.00%	$ 4,322.00
General Fund	Medicare	MonteVerde Muse	$ 490.00	$ 2.54	$ 19.12	$ -	3.90%	$ 470.88
General Fund	Employee Benefi	MonteVerde Muse	$ 10,707.00	$ -	$ 0.48	$ -	0.00%	$ 10,706.52
General Fund	Workers Comp.	MonteVerde Muse	$ 2,579.00	$ -	$ 1,335.32	$ -	51.78%	$ 1,243.68
General Fund	Water Utilities	MonteVerde Muse	$ -	$ 74.14	$ 520.69	$ 499.80	0.00%	$ (520.69)
General Fund	PG&E Utilities	MonteVerde Muse	$ -	$ 154.10	$ 651.17	$ 228.80	0.00%	$ (651.17)
General Fund	O&M Blg/Structu	MonteVerde Muse	$ -	$ 86.00	$ 344.00	$ 258.00	0.00%	$ (344.00)
Monteverde Total			**$ 55,342.00**	**$ 512.87**	**$ 4,319.77**	**$ 986.60**	**7.81%**	**$ 51,022.23**
General Fund	Employee Benefi	Central Servies	$ 2,340.00	$ -	$ 472.50	$ 1,395.00	20.19%	$ 1,867.50
General Fund	Gen. Supplies	Central Servies	$ 1,250.00	$ 174.96	$ 1,139.38	$ 727.62	91.15%	$ 110.62
General Fund	Equipmt Maint.	Central Servies	$ 650.00	$ 27.21	$ 251.74	$ 209.62	38.73%	$ 398.26
General Fund	Computer Hardwr	Central Servies	$ 750.00	$ -	$ 682.46	$ 329.33	90.99%	$ 67.54
General Fund	Network Svcs Co	Central Servies	$ 22,500.00	$ 1,152.00	$ 9,196.26	$ 9,246.55	40.87%	$ 13,303.74
General Fund	Internet Servic	Central Servies	$ 7,250.00	$ 375.98	$ 2,626.12	$ 5,452.49	36.22%	$ 4,623.88
General Fund	Communications	Central Servies	$ 4,375.00	$ 347.32	$ 1,555.67	$ 2,700.25	35.56%	$ 2,819.33
General Fund	Risk Management	Central Servies	$ 217,663.00	$ -	$ 227,533.50	$ 153,113.32	104.53%	$ (9,870.50)
General Fund	Membership/Dues	Central Servies	$ 1,250.00	$ -	$ 512.50	$ 792.30	41.00%	$ 737.50
General Fund	O&M Equipment	Central Servies	$ 750.00	$ -	$ -	$ -	0.00%	$ 750.00
Central Services Total			**$ 258,778.00**	**$ 2,077.47**	**$ 243,970.13**	**$ 173,966.48**	**94.28%**	**$ 14,807.87**
General Fund	Legal	City Attorney	$ 28,050.00	$ 2,675.25	$ 15,460.50	$ 18,446.68	55.12%	$ 12,589.50
General Fund Total			**$ 3,084,844.00**	**$ 179,470.50**	**$ 2,154,961.44**	**$ 1,431,956.51**	**69.86%**	**$ 929,882.56**
Streets/Sidewal	Salaries	City Manager	$ 12,000.00	$ 713.00	$ 5,944.69	$ 10,273.22	49.54%	$ 6,055.31
Streets/Sidewal	Vacation Payout	City Manager	$ 462.00	$ -	$ 87.25	$ -	18.89%	$ 374.75
Streets/Sidewal	FICA	City Manager	$ 744.00	$ 44.20	$ 347.77	$ 613.69	46.74%	$ 396.23
Streets/Sidewal	SUI	City Manager	$ 16.00	$ -	$ 14.73	$ 32.20	92.06%	$ 1.27
Streets/Sidewal	PERS	City Manager	$ 944.00	$ 61.29	$ 383.74	$ 382.51	40.65%	$ 560.26
Streets/Sidewal	Medicare	City Manager	$ 174.00	$ 5.17	$ 55.04	$ 143.54	31.63%	$ 118.96
Streets/Sidewal	Employee Benefi	City Manager	$ 2,490.00	$ 128.96	$ 503.58	$ 674.85	20.22%	$ 1,986.42
Streets/Sidewal	Workers Comp.	City Manager	$ 934.00	$ -	$ 483.60	$ 923.51	51.78%	$ 450.40
Streets/Sidewal	Gen. Supplies	City Manager	$ 25.00	$ 3.99	$ 96.33	$ 34.26	385.32%	$ (71.33)
Streets/Sidewal	Prof Services	City Manager	$ 1,200.00	$ -	$ 122.50	$ 806.02	10.21%	$ 1,077.50
Streets/Sidewal	Communications	City Manager	$ -	$ 16.60	$ 116.14	$ 80.14	0.00%	$ (116.14)
Streets/Sidewal	Travel,Conf,Trg	City Manager	$ 250.00	$ -	$ 129.59	$ 70.00	51.84%	$ 120.41
Streets/Sidewal	Water Utilities	City Manager	$ 42.00	$ 0.84	$ 12.16	$ 7.87	28.95%	$ 29.84
Streets/Sidewal	PG&E Utilities	City Manager	$ 32.00	$ 11.68	$ 27.30	$ 27.92	85.31%	$ 4.70

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Streets/Sidewal	CONTINGENCY	City Manager	$ 250.00	$ -	$ -	$ -	0.00%	$ 250.00
City Manager Total			**$ 19,563.00**	**$ 985.73**	**$ 8,324.42**	**$ 14,069.73**	**42.55%**	**$ 11,238.58**
Streets/Sidewal	Salaries	Finance	$ 11,147.00	$ 753.80	$ 5,933.36	$ 8,926.21	53.23%	$ 5,213.64
Streets/Sidewal	Vacation Payout	Finance	$ 321.00	$ -	$ -	$ -	0.00%	$ 321.00
Streets/Sidewal	FICA	Finance	$ 691.00	$ 46.74	$ 366.64	$ 539.34	53.06%	$ 324.36
Streets/Sidewal	SUI	Finance	$ 41.00	$ 9.07	$ 39.20	$ 39.40	95.61%	$ 1.80
Streets/Sidewal	PERS	Finance	$ 657.00	$ 64.78	$ 470.81	$ 543.08	71.66%	$ 186.19
Streets/Sidewal	Medicare	Finance	$ 162.00	$ 5.46	$ 80.20	$ 126.13	49.51%	$ 81.80
Streets/Sidewal	Employee Benefi	Finance	$ 3,140.00	$ 202.31	$ 1,440.37	$ 1,523.72	45.87%	$ 1,699.63
Streets/Sidewal	Workers Comp.	Finance	$ 859.00	$ -	$ 444.76	$ 779.98	51.78%	$ 414.24
Streets/Sidewal	Gen. Supplies	Finance	$ 1,451.00	$ 268.62	$ 844.60	$ 492.18	58.21%	$ 606.40
Streets/Sidewal	Network Svcs Co	Finance	$ 662.00	$ 76.29	$ 534.03	$ 439.53	80.67%	$ 127.97
Streets/Sidewal	MOM online fees	Finance	$ 757.00	$ -	$ -	$ -	0.00%	$ 757.00
Streets/Sidewal	Audit & Acctg	Finance	$ 2,554.00	$ -	$ 2,270.70	$ 2,456.32	88.91%	$ 283.30
Streets/Sidewal	Prof Services	Finance	$ 1,513.00	$ -	$ -	$ -	0.00%	$ 1,513.00
Streets/Sidewal	Contracts-Other	Finance	$ 202.00	$ -	$ -	$ -	0.00%	$ 202.00
Streets/Sidewal	Travel,Conf,Trg	Finance	$ 95.00	$ -	$ 16.34	$ -	17.20%	$ 78.66
Streets/Sidewal	Water Utilities	Finance	$ 32.00	$ 3.01	$ 29.36	$ 27.23	91.75%	$ 2.64
Streets/Sidewal	PG&E Utilities	Finance	$ 25.00	$ 61.68	$ 367.71	$ 119.62	1470.84%	$ (342.71)
Streets/Sidewal	O&M Equipment	Finance	$ 3,468.00	$ -	$ 60.00	$ -	1.73%	$ 3,408.00
Streets/Sidewal	PayChex & Bank	Finance	$ 914.00	$ 58.74	$ 518.87	$ 228.24	56.77%	$ 395.13
Finance Total			**$ 28,691.00**	**$ 1,550.50**	**$ 13,416.95**	**$ 16,240.98**	**46.76%**	**$ 15,274.05**
Streets/Sidewal	Salaries	Streets/Roads	$ 59,490.00	$ 4,794.65	$ 38,723.33	$ 50,234.84	65.09%	$ 20,766.67
Streets/Sidewal	Overtime	Streets/Roads	$ -	$ -	$ 101.36	$ 640.68	0.00%	$ (101.36)
Streets/Sidewal	Vacation Payout	Streets/Roads	$ 2,227.00	$ 244.14	$ 2,060.84	$ -	92.54%	$ 166.16
Streets/Sidewal	FICA	Streets/Roads	$ 3,688.00	$ 312.41	$ 2,538.55	$ 3,121.85	68.83%	$ 1,149.45
Streets/Sidewal	SUI	Streets/Roads	$ 142.00	$ 23.61	$ 142.10	$ 162.93	100.07%	$ (0.10)
Streets/Sidewal	PERS	Streets/Roads	$ 7,607.00	$ 595.62	$ 4,589.43	$ 5,042.85	60.33%	$ 3,017.57
Streets/Sidewal	Medicare	Streets/Roads	$ 863.00	$ 35.95	$ 556.56	$ 726.77	64.49%	$ 306.44
Streets/Sidewal	Employee Benefi	Streets/Roads	$ 18,844.00	$ 2,031.89	$ 14,989.28	$ 16,416.14	79.54%	$ 3,854.72
Streets/Sidewal	Workers Comp.	Streets/Roads	$ 4,539.00	$ -	$ 2,350.07	$ 3,843.15	51.78%	$ 2,188.93
Streets/Sidewal	Gen. Supplies	Streets/Roads	$ 1,560.00	$ 761.24	$ 1,486.37	$ 1,028.10	95.28%	$ 73.63
Streets/Sidewal	Fuel	Streets/Roads	$ 12,540.00	$ 319.13	$ 2,295.55	$ 9,072.76	18.31%	$ 10,244.45
Streets/Sidewal	Clothing	Streets/Roads	$ 810.00	$ -	$ 230.89	$ 766.80	28.50%	$ 579.11
Streets/Sidewal	Patching	Streets/Roads	$ 21,960.00	$ 411.45	$ 2,062.37	$ 1,342.85	9.39%	$ 19,897.63
Streets/Sidewal	Signs	Streets/Roads	$ 250.00	$ -	$ -	$ -	0.00%	$ 250.00
Streets/Sidewal	Flood Control	Streets/Roads	$ 1,000.00	$ -	$ -	$ -	0.00%	$ 1,000.00
Streets/Sidewal	Weed Control	Streets/Roads	$ 3,000.00	$ -	$ -	$ -	0.00%	$ 3,000.00
Streets/Sidewal	Contracts-Other	Streets/Roads	$ 17,000.00	$ -	$ 5,472.30	$ -	32.19%	$ 11,527.70
Streets/Sidewal	PG&E Utilities	Streets/Roads	$ -	$ -	$ 19.95	$ 563.18	0.00%	$ (19.95)
Streets/Sidewal	Street Lights	Streets/Roads	$ 38,400.00	$ 3,751.09	$ 24,089.44	$ 22,152.89	62.73%	$ 14,310.56
Streets/Sidewal	Vehicle Maintna	Streets/Roads	$ 2,000.00	$ 248.57	$ 1,038.80	$ 839.47	51.94%	$ 961.20
Streets/Sidewal	O&M Equipment	Streets/Roads	$ 1,000.00	$ -	$ 425.20	$ -	42.52%	$ 574.80
Streets/Sidewal	Improvements	Streets/Roads	$ 961,000.00	$ 2,766.00	$ 544,305.34	$ -	56.64%	$ 416,694.66

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Streets Total			**$ 1,157,920.00**	**$ 16,295.75**	**$ 647,477.73**	**115,955.26**	**55.92%**	**$ 510,442.27**
Streets Fund Total			**$ 1,206,174.00**	**$ 18,831.98**	**$ 669,219.10**	**146,265.97**	**55.48%**	**$ 536,954.90**
Crestview Lgt/D	Salaries	Finance	$ 1,486.00	$ 62.82	$ 800.07	$ -	53.84%	$ 685.93
Crestview Lgt/D	Vacation Payout	Finance	$ 43.00	$ -	$ -	$ -	0.00%	$ 43.00
Crestview Lgt/D	FICA	Finance	$ 92.00	$ 3.90	$ 49.01	$ -	53.27%	$ 42.99
Crestview Lgt/D	SUI	Finance	$ 5.00	$ 4.53	$ 19.61	$ -	392.20%	$ (14.61)
Crestview Lgt/D	PERS	Finance	$ 88.00	$ 4.94	$ 62.16	$ -	70.64%	$ 25.84
Crestview Lgt/D	Medicare	Finance	$ 22.00	$ 0.92	$ 11.51	$ -	52.32%	$ 10.49
Crestview Lgt/D	Employee Benefi	Finance	$ 419.00	$ -	$ 30.90	$ -	7.37%	$ 388.10
Crestview Lgt/D	Workers Comp.	Finance	$ 115.00	$ -	$ 59.54	$ -	51.77%	$ 55.46
Crestview Lgt/D	Gen. Supplies	Finance	$ 194.00	$ -	$ -	$ -	0.00%	$ 194.00
Crestview Lgt/D	Network Svcs Co	Finance	$ 88.00	$ -	$ -	$ -	0.00%	$ 88.00
Crestview Lgt/D	MOM online fees	Finance	$ 101.00	$ -	$ -	$ -	0.00%	$ 101.00
Crestview Lgt/D	Audit & Acctg	Finance	$ 340.00	$ -	$ 5.00	$ -	1.47%	$ 335.00
Crestview Lgt/D	Prof Services	Finance	$ 202.00	$ -	$ -	$ -	0.00%	$ 202.00
Crestview Lgt/D	Contracts-Other	Finance	$ 27.00	$ -	$ -	$ -	0.00%	$ 27.00
Crestview Lgt/D	Travel,Conf,Trg	Finance	$ 13.00	$ -	$ -	$ -	0.00%	$ 13.00
Crestview Lgt/D	Water Utilities	Finance	$ 4.00	$ -	$ -	$ -	0.00%	$ 4.00
Crestview Lgt/D	PG&E Utilities	Finance	$ 3.00	$ -	$ -	$ -	0.00%	$ 3.00
Crestview Lgt/D	O&M Equipment	Finance	$ 462.00	$ -	$ 10.00	$ -	2.16%	$ 452.00
Crestview Lgt/D	PayChex & Bank	Finance	$ 122.00	$ -	$ -	$ -	0.00%	$ 122.00
Finance Total			**$ 3,826.00**	**$ 77.11**	**$ 1,047.80**	**$ -**	**27.39%**	**$ 2,778.20**
Crestview Lgt/D	Vehicle Maintna	Streets/Roads	$ -	$ -	$ 2.85	$ -	0.00%	$ (2.85)
Crestview Lgt/D	Employee Benefi	CrestView Lgt	$ -	$ -	$ 0.96	$ -	0.00%	$ (0.96)
Crestview Lgt/D	Street Lights	CrestView Lgt	$ -	$ 123.48	$ 850.13	620.23	0.00%	$ (850.13)
Crestview Total			**$ -**	**$ 123.48**	**$ 851.09**	**620.23**	**0.00%**	**$ (851.09)**
Crestview Fund Total			**$ 3,826.00**	**$ 200.59**	**$ 1,901.74**	**620.23**	**49.71%**	**$ 1,924.26**
Sewer M&O	Salaries	City Clerk	$ 9,248.00	$ -	$ 4,308.02	11,002.88	46.58%	$ 4,939.98
Sewer M&O	Vacation Payout	City Clerk	$ 361.00	$ -	$ 2,674.20	$ -	740.78%	$ (2,313.20)
Sewer M&O	FICA	City Clerk	$ 573.00	$ -	$ 432.89	682.24	75.55%	$ 140.11
Sewer M&O	SUI	City Clerk	$ 16.00	$ -	$ -	48.21	0.00%	$ 16.00
Sewer M&O	PERS	City Clerk	$ 739.00	$ -	$ 339.03	844.96	45.88%	$ 399.97
Sewer M&O	PERS Unfunded	City Clerk	$ 7,894.00	$ -	$ 7,894.00	2,094.32	100.00%	$ -
Sewer M&O	Medicare	City Clerk	$ 134.00	$ -	$ 101.24	159.52	75.55%	$ 32.76
Sewer M&O	Employee Benefi	City Clerk	$ 2,490.00	$ -	$ 730.92	422.44	29.35%	$ 1,759.08
Sewer M&O	Workers Comp.	City Clerk	$ 715.00	$ -	$ 370.20	1,004.56	51.78%	$ 344.80
Sewer M&O	Gen. Supplies	City Clerk	$ 18.00	$ -	$ 20.90	18.28	116.11%	$ (2.90)
Sewer M&O	Muni Code Web	City Clerk	$ 600.00	$ -	$ -	$ -	0.00%	$ 600.00
Sewer M&O	Water Utilities	City Clerk	$ -	$ 1.68	$ 19.87	15.75	0.00%	$ (19.87)
Sewer M&O	PG&E Utilities	City Clerk	$ -	$ 11.68	$ 26.54	55.85	0.00%	$ (26.54)

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
City Clerk Total			**$ 22,788.00**	**$ 13.36**	**$ 16,917.81**	**$ 16,349.01**	**74.24%**	**$ 5,870.19**
Sewer M&O	Salaries	City Manager	$ 59,998.00	$ 3,565.00	$ 29,723.43	$ 20,546.43	49.54%	$ 30,274.57
Sewer M&O	Vacation Payout	City Manager	$ 2,308.00	$ -	$ 436.25	$ -	18.90%	$ 1,871.75
Sewer M&O	FICA	City Manager	$ 3,720.00	$ 221.04	$ 1,612.30	$ 1,250.59	43.34%	$ 2,107.70
Sewer M&O	SUI	City Manager	$ 81.00	$ -	$ 44.19	$ 64.40	54.56%	$ 36.81
Sewer M&O	PERS	City Manager	$ 4,722.00	$ 280.56	$ 1,842.50	$ 765.01	39.02%	$ 2,879.50
Sewer M&O	PERS Unfunded	City Manager	$ 13,408.00	$ -	$ 13,408.00	$ 2,094.32	100.00%	$ -
Sewer M&O	Medicare	City Manager	$ 870.00	$ 51.70	$ 429.95	$ 292.47	49.42%	$ 440.05
Sewer M&O	Employee Benefi	City Manager	$ 12,449.00	$ 821.46	$ 4,136.64	$ 1,780.39	33.23%	$ 8,312.36
Sewer M&O	Workers Comp.	City Manager	$ 4,668.00	$ -	$ 2,416.92	$ 1,845.01	51.78%	$ 2,251.08
Sewer M&O	Gen. Supplies	City Manager	$ 123.00	$ 8.00	$ 192.70	$ 68.52	156.67%	$ (69.70)
Sewer M&O	Prof Services	City Manager	$ 6,000.00	$ -	$ 245.00	$ 1,612.04	4.08%	$ 5,755.00
Sewer M&O	Communications	City Manager	$ -	$ 33.21	$ 232.26	$ 222.30	0.00%	$ (232.26)
Sewer M&O	Travel,Conf,Trg	City Manager	$ 1,250.00	$ -	$ 390.95	$ 382.01	31.28%	$ 859.05
Sewer M&O	Water Utilities	City Manager	$ 208.00	$ 1.68	$ 18.43	$ 21.86	8.86%	$ 189.57
Sewer M&O	PG&E Utilities	City Manager	$ 159.00	$ 23.35	$ 54.58	$ 55.84	34.33%	$ 104.42
Sewer M&O	CONTINGENCY	City Manager	$ 1,250.00	$ -	$ -	$ -	0.00%	$ 1,250.00
City Manager Total			**$ 111,214.00**	**$ 5,006.00**	**$ 55,184.10**	**$ 31,001.19**	**49.62%**	**$ 56,029.90**
Sewer M&O	Salaries	Finance	$ 56,775.00	$ 4,316.16	$ 35,057.02	$ 34,589.08	61.75%	$ 21,717.98
Sewer M&O	Vacation Payout	Finance	$ 1,636.00	$ -	$ 480.00	$ -	29.34%	$ 1,156.00
Sewer M&O	FICA	Finance	$ 3,520.00	$ 243.06	$ 2,156.47	$ 2,130.43	61.26%	$ 1,363.53
Sewer M&O	SUI	Finance	$ 207.00	$ 57.60	$ 223.07	$ 147.74	107.76%	$ (16.07)
Sewer M&O	PERS	Finance	$ 3,348.00	$ 218.94	$ 1,796.29	$ 2,104.30	53.65%	$ 1,551.71
Sewer M&O	PERS Unfunded	Finance	$ 13,072.00	$ -	$ 13,072.00	$ 6,492.24	100.00%	$ -
Sewer M&O	Medicare	Finance	$ 823.00	$ 62.58	$ 513.71	$ 498.24	62.42%	$ 309.29
Sewer M&O	Employee Benefi	Finance	$ 15,992.00	$ 1,162.00	$ 8,110.05	$ 11,113.23	50.71%	$ 7,881.95
Sewer M&O	Workers Comp.	Finance	$ 4,374.00	$ -	$ 2,264.70	$ 3,021.40	51.78%	$ 2,109.30
Sewer M&O	Gen. Supplies	Finance	$ 7,387.00	$ 2,260.85	$ 6,419.89	$ 6,689.99	86.91%	$ 967.11
Sewer M&O	Network Svcs Co	Finance	$ 3,372.00	$ 271.24	$ 1,898.68	$ 1,703.10	56.31%	$ 1,473.32
Sewer M&O	MOM online fees	Finance	$ 3,854.00	$ -	$ -	$ -	0.00%	$ 3,854.00
Sewer M&O	Audit & Acctg	Finance	$ 13,006.00	$ -	$ 8,664.00	$ 10,327.24	66.62%	$ 4,342.00
Sewer M&O	Prof Services	Finance	$ 7,707.00	$ -	$ -	$ -	0.00%	$ 7,707.00
Sewer M&O	Contracts-Other	Finance	$ 1,028.00	$ -	$ -	$ -	0.00%	$ 1,028.00
Sewer M&O	Travel,Conf,Trg	Finance	$ 482.00	$ -	$ 89.87	$ 469.70	18.65%	$ 392.13
Sewer M&O	Water Utilities	Finance	$ 161.00	$ 10.70	$ 105.57	$ 117.73	65.57%	$ 55.43
Sewer M&O	PG&E Utilities	Finance	$ 128.00	$ 219.31	$ 1,307.38	$ -	1021.39%	$ (1,179.38)
Sewer M&O	O&M Equipment	Finance	$ 17,663.00	$ -	$ 420.00	$ -	2.38%	$ 17,243.00
Sewer M&O	PayChex & Bank	Finance	$ 4,657.00	$ 348.45	$ 2,856.94	$ 4,031.29	61.35%	$ 1,800.06
Finance Total			**$ 159,192.00**	**$ 9,170.89**	**$ 85,435.64**	**$ 83,435.71**	**53.67%**	**$ 73,756.36**
Sewer M&O	E&P Reimb Engr.	Engineering	$ -	$ -	$ 2,092.50	$ 1,620.00	0.00%	$ (2,092.50)
Sewer M&O	Engineering	Engineering	$ -	$ -	$ 742.50	$ 3,303.75	0.00%	$ (742.50)
Engineering Total			**$ -**	**$ -**	**$ 2,835.00**	**$ 4,923.75**	**0.00%**	**$ (2,835.00)**

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Sewer M&O	Salaries	Sewer Treatment	$ 73,236.00	$ 8,079.58	$ 65,433.53	$ 63,000.39	89.35%	$ 7,802.47
Sewer M&O	Overtime	Sewer Treatment	$ 10,000.00	$ 511.87	$ 6,059.55	$ 7,542.94	60.60%	$ 3,940.45
Sewer M&O	Vacation Payout	Sewer Treatment	$ 2,742.00	$ 976.56	$ 4,989.67	$ -	181.97%	$ (2,247.67)
Sewer M&O	FICA	Sewer Treatment	$ 4,541.00	$ 548.26	$ 4,687.39	$ 4,331.03	103.22%	$ (146.39)
Sewer M&O	SUI	Sewer Treatment	$ 175.00	$ 41.49	$ 199.48	$ 274.94	113.99%	$ (24.48)
Sewer M&O	PERS	Sewer Treatment	$ 9,365.00	$ 1,203.33	$ 9,973.80	$ 9,802.85	106.50%	$ (608.80)
Sewer M&O	PERS Unfunded	Sewer Treatment	$ 25,641.00	$ -	$ 25,641.00	$ 15,707.20	100.00%	$ -
Sewer M&O	Medicare	Sewer Treatment	$ 1,062.00	$ 128.22	$ 1,096.24	$ 1,020.45	103.22%	$ (34.24)
Sewer M&O	Employee Benefi	Sewer Treatment	$ 23,198.00	$ 2,793.23	$ 20,329.85	$ 22,131.51	87.64%	$ 2,868.15
Sewer M&O	Workers Comp.	Sewer Treatment	$ 5,588.00	$ -	$ 2,893.26	$ 6,317.96	51.78%	$ 2,694.74
Sewer M&O	Gen. Supplies	Sewer Treatment	$ 2,500.00	$ -	$ 1,139.68	$ 3,115.64	45.59%	$ 1,360.32
Sewer M&O	Fuel	Sewer Treatment	$ 10,000.00	$ 324.25	$ 2,883.24	$ 5,411.39	28.83%	$ 7,116.76
Sewer M&O	Supplies - Chem	Sewer Treatment	$ 120,000.00	$ 6,397.78	$ 73,197.93	$ 77,673.09	61.00%	$ 46,802.07
Sewer M&O	Supplies - Lab	Sewer Treatment	$ 6,000.00	$ 420.00	$ 3,641.50	$ 3,644.00	60.69%	$ 2,358.50
Sewer M&O	Repair/Maint	Sewer Treatment	$ -	$ -	$ 961.88	$ 70.10	0.00%	$ (961.88)
Sewer M&O	Clothing	Sewer Treatment	$ 1,000.00	$ 68.40	$ 665.19	$ 375.66	66.52%	$ 334.81
Sewer M&O	Taxes/Fees/Lics	Sewer Treatment	$ 32,000.00	$ -	$ 31,666.47	$ 31,786.15	98.96%	$ 333.53
Sewer M&O	Computer Softwr	Sewer Treatment	$ 7,500.00	$ 270.00	$ 9,114.00	$ 150.00	121.52%	$ (1,614.00)
Sewer M&O	Computer Eqpmt	Sewer Treatment	$ -	$ -	$ 1,984.02	$ -	0.00%	$ (1,984.02)
Sewer M&O	Internet Servic	Sewer Treatment	$ 2,500.00	$ -	$ 1,226.40	$ 1,400.80	49.06%	$ 1,273.60
Sewer M&O	Engineering	Sewer Treatment	$ 10,000.00	$ -	$ 4,050.00	$ 5,122.50	40.50%	$ 5,950.00
Sewer M&O	Contracts-Other	Sewer Treatment	$ -	$ 2,750.00	$ 19,250.00	$ 20,419.05	0.00%	$ (19,250.00)
Sewer M&O	Communications	Sewer Treatment	$ 1,000.00	$ 31.61	$ 218.03	$ 188.95	21.80%	$ 781.97
Sewer M&O	Membership/Dues	Sewer Treatment	$ 750.00	$ 782.00	$ 782.00	$ 744.00	104.27%	$ (32.00)
Sewer M&O	Travel,Conf,Trg	Sewer Treatment	$ 2,000.00	$ -	$ 393.98	$ -	19.70%	$ 1,606.02
Sewer M&O	Water Utilities	Sewer Treatment	$ 18,000.00	$ 1,193.08	$ 7,121.96	$ 10,501.31	39.57%	$ 10,878.04
Sewer M&O	PG&E Utilities	Sewer Treatment	$ 28,000.00	$ 3,419.47	$ 21,530.30	$ 13,966.27	76.89%	$ 6,469.70
Sewer M&O	Vehicle Maintna	Sewer Treatment	$ 3,500.00	$ -	$ 4,426.11	$ 148.38	126.46%	$ (926.11)
Sewer M&O	O&M Equipment	Sewer Treatment	$ 66,000.00	$ 14,236.05	$ 33,380.36	$ 8,829.49	50.58%	$ 32,619.64
Sewer M&O	O & M-Sewer Plt	Sewer Treatment	$ 25,000.00	$ 2,209.14	$ 18,051.38	$ 11,010.15	72.21%	$ 6,948.62
Sewer M&O	Sludge	Sewer Treatment	$ 55,000.00	$ 5,281.77	$ 38,541.22	$ 26,506.66	70.07%	$ 16,458.78
Sewer M&O	Rentals-Mach/Eq	Sewer Treatment	$ 50,000.00	$ -	$ -	$ -	0.00%	$ 50,000.00
Sewer M&O	Principal Pymt	Sewer Treatment	$ 25,000.00	$ -	$ -	$ -	0.00%	$ 25,000.00
Sewer M&O	Interest Expens	Sewer Treatment	$ 19,395.00	$ 9,697.50	$ 9,697.50	$ 6,654.37	50.00%	$ 9,697.50
Sewer M&O	Improvements	Sewer Treatment	$ 225,000.00	$ -	$ -	$ 15,306.32	0.00%	$ 225,000.00
Sewer M&O	Machinery &	Sewer Treatment	$ 170,000.00	$ 9,831.78	$ 78,180.10	$ -	45.99%	$ 91,819.90
Sewer M&O	Pumps-Equipment	Sewer Treatment	$ -	$ -	$ 574.52	$ 8,782.38	0.00%	$ (574.52)
WWTP Total			**$ 1,035,693.00**	**$ 71,195.37**	**$ 503,981.54**	**$ 381,935.93**	**48.66%**	**$ 531,711.46**
Sewer M&O	Salaries	Sewer Collectio	$ 43,941.00	$ 4,039.34	$ 32,678.50	$ 27,567.74	74.37%	$ 11,262.50
Sewer M&O	Overtime	Sewer Collectio	$ -	$ 244.14	$ 244.14	$ 541.61	0.00%	$ (244.14)
Sewer M&O	Vacation Payout	Sewer Collectio	$ 1,645.00	$ 488.28	$ 2,458.51	$ -	149.45%	$ (813.51)
Sewer M&O	FICA	Sewer Collectio	$ 2,724.00	$ 280.71	$ 2,189.66	$ 1,906.15	80.38%	$ 534.34
Sewer M&O	SUI	Sewer Collectio	$ 105.00	$ 20.75	$ 198.85	$ 132.37	189.38%	$ (93.85)
Sewer M&O	PERS	Sewer Collectio	$ 5,619.00	$ 601.59	$ 5,025.57	$ 3,515.17	89.44%	$ 593.43
Sewer M&O	PERS Unfunded	Sewer Collectio	$ 13,814.00	$ -	$ 13,814.00	$ 7,853.60	100.00%	$ -
Sewer M&O	Medicare	Sewer Collectio	$ 637.00	$ 65.65	$ 512.11	$ 442.62	80.39%	$ 124.89
Sewer M&O	Employee Benefi	Sewer Collectio	$ 13,919.00	$ 1,371.50	$ 9,308.83	$ 10,933.56	66.88%	$ 4,610.17

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Sewer M&O	Workers Comp.	Sewer Collectio	$ 3,353.00	$ -	$ 1,736.06	$ 2,991.07	51.78%	$ 1,616.94
Sewer M&O	Clothing	Sewer Collectio	$ 1,400.00	$ 68.40	$ 515.19	$ 479.30	36.80%	$ 884.81
Sewer M&O	Taxes/Fees/Lics	Sewer Collectio	$ -	$ -	$ 3,945.00	$ -	0.00%	$ (3,945.00)
Sewer M&O	Computer Softwr	Sewer Collectio	$ 7,500.00	$ -	$ 7,494.00	$ -	99.92%	$ 6.00
Sewer M&O	Engineering	Sewer Collectio	$ 20,000.00	$ -	$ 4,117.50	$ 11,745.00	20.59%	$ 15,882.50
Sewer M&O	Prof Services	Sewer Collectio	$ 2,000.00	$ -	$ 846.00	$ -	42.30%	$ 1,154.00
Sewer M&O	Vehicle Maintna	Sewer Collectio	$ 5,000.00	$ 138.54	$ 845.69	$ -	16.91%	$ 4,154.31
Sewer M&O	O&M Equipment	Sewer Collectio	$ 3,000.00	$ -	$ -	$ 1,756.27	0.00%	$ 3,000.00
Sewer M&O	O&M Blg/Structu	Sewer Collectio	$ 5,000.00	$ -	$ -	$ 950.15	0.00%	$ 5,000.00
Sewer M&O	Improvements	Sewer Collectio	$ 655,000.00	$ -	$ 119,466.83	$ 37,284.30	18.24%	$ 535,533.17
Sewer M&O	Machinery &	Sewer Collectio	$ 37,500.00	$ -	$ 17,812.50	$ -	47.50%	$ 19,687.50
Collections Total			**$ 822,157.00**	**$ 7,318.90**	**$ 223,208.94**	**$ 108,098.91**	**27.15%**	**$ 598,948.06**
Sewer M&O	Employee Benefi	Central Servies	$ 1,170.00	$ -	$ 472.50	$ 945.00	40.38%	$ 697.50
Sewer M&O	Gen. Supplies	Central Servies	$ 625.00	$ 174.95	$ 976.37	$ 727.57	156.22%	$ (351.37)
Sewer M&O	Equipmt Maint.	Central Servies	$ 325.00	$ 27.21	$ 251.70	$ 209.57	77.45%	$ 73.30
Sewer M&O	Computer Hardwr	Central Servies	$ 375.00	$ -	$ 341.23	$ -	90.99%	$ 33.77
Sewer M&O	Network Svcs Co	Central Servies	$ 11,250.00	$ 1,110.50	$ 7,182.76	$ 9,246.55	63.85%	$ 4,067.24
Sewer M&O	Internet Servic	Central Servies	$ 3,625.00	$ 375.98	$ 2,626.12	$ 5,452.50	72.44%	$ 998.88
Sewer M&O	Communications	Central Servies	$ 2,188.00	$ 347.32	$ 1,555.67	$ 2,700.23	71.10%	$ 632.33
Sewer M&O	Risk Management	Central Servies	$ 108,831.00	$ -	$ 113,766.75	$ 153,113.32	104.54%	$ (4,935.75)
Sewer M&O	Membership/Dues	Central Servies	$ 625.00	$ -	$ 512.50	$ 792.30	82.00%	$ 112.50
Sewer M&O	O&M Equipment	Central Servies	$ 375.00	$ -	$ -	$ -	0.00%	$ 375.00
Central Services Total			**$ 129,389.00**	**$ 2,035.96**	**$ 127,685.60**	**$ 173,187.04**	**98.68%**	**$ 1,703.40**
Sewer M&O	Legal	City Attorney	$ 38,250.00	$ 1,318.25	$ 11,550.50	$ 17,254.18	30.20%	$ 26,699.50
			$ 2,318,683.00	**$ 96,058.73**	**$ 1,026,799.13**	**$ 816,185.72**	**44.28%**	**$ 1,291,883.87**
Public Safety	Travel,Conf,Trg	Police Dept	$ -	$ -	$ 1,107.59	$ 708.41	0.00%	$ (1,107.59)
			$ -	**$ -**	**$ 1,107.59**	**$ 708.41**	**0.00%**	**$ (1,107.59)**
AB 1600	Machinery &	Police Dept	$ 40,000.00	$ -	$ 37,031.09	$ -	92.58%	$ 2,968.91
AB 1600	Machinery &	Parks & Recreat	$ 40,000.00	$ -	$ 360.00	$ -	0.90%	$ 39,640.00
			$ 80,000.00	**$ -**	**$ 37,391.09**	**$ -**	**46.74%**	**$ 42,608.91**
Park Impact Fee	Beautification	Parks & Recreat	$ -	$ -	$ 732.04	$ -	0.00%	$ (732.04)
Park Impact Fee	Park Improvemen	Parks & Recreat	$ 35,000.00	$ -	$ -	$ -	0.00%	$ 35,000.00
Parks & Rec Total			**$ 35,000.00**	**$ -**	**$ 732.04**	**$ -**	**2.09%**	**$ 34,267.96**
			$ 35,000.00	**$ -**	**$ 732.04**	**$ -**	**2.09%**	**$ 34,267.96**
Effluent Disp.	Salaries	City Clerk	$ 4,624.00	$ -	$ 1,353.34	$ 11,002.88	29.27%	$ 3,270.66

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Effluent Disp.	Vacation Payout	City Clerk	$ 181.00	$ -	$ -	$ -	0.00%	$ 181.00
Effluent Disp.	FICA	City Clerk	$ 287.00	$ -	$ 83.89	$ 682.24	29.23%	$ 203.11
Effluent Disp.	SUI	City Clerk	$ 8.00	$ -	$ -	$ 16.08	0.00%	$ 8.00
Effluent Disp.	PERS	City Clerk	$ 369.00	$ -	$ 106.50	$ 844.96	28.86%	$ 262.50
Effluent Disp.	Medicare	City Clerk	$ 67.00	$ -	$ 19.65	$ 159.52	29.33%	$ 47.35
Effluent Disp.	Employee Benefi	City Clerk	$ 1,245.00	$ -	$ 453.26	$ 2,930.31	36.41%	$ 791.74
Effluent Disp.	Workers Comp.	City Clerk	$ 357.00	$ -	$ 184.84	$ 1,004.56	51.78%	$ 172.16
Effluent Disp.	Gen. Supplies	City Clerk	$ 9.00	$ -	$ 20.90	$ 18.28	232.22%	$ (11.90)
Effluent Disp.	Muni Code Web	City Clerk	$ 300.00	$ -	$ -	$ -	0.00%	$ 300.00
Effluent Disp.	Water Utilities	City Clerk	$ -	$ 1.68	$ 18.43	$ 20.85	0.00%	$ (18.43)
Effluent Disp.	PG&E Utilities	City Clerk	$ -	$ 5.84	$ 13.29	$ 55.84	0.00%	$ (13.29)
City Clerk Total			**$ 7,447.00**	**$ 7.52**	**$ 2,254.10**	**$ 16,735.52**	**30.27%**	**$ 5,192.90**
Effluent Disp.	Salaries	City Manager	$ 35,999.00	$ 2,139.00	$ 17,834.06	$ 20,546.43	49.54%	$ 18,164.94
Effluent Disp.	Vacation Payout	City Manager	$ 1,385.00	$ -	$ 261.75	$ -	18.90%	$ 1,123.25
Effluent Disp.	FICA	City Manager	$ 2,232.00	$ 132.62	$ 1,043.46	$ 1,250.61	46.75%	$ 1,188.54
Effluent Disp.	SUI	City Manager	$ 48.00	$ -	$ 14.73	$ 64.40	30.69%	$ 33.27
Effluent Disp.	PERS	City Manager	$ 2,833.00	$ 168.34	$ 1,135.56	$ 765.03	40.08%	$ 1,697.44
Effluent Disp.	Medicare	City Manager	$ 522.00	$ 31.02	$ 262.42	$ 292.47	50.27%	$ 259.58
Effluent Disp.	Employee Benefi	City Manager	$ 7,469.00	$ 542.27	$ 2,848.05	$ 1,711.39	38.13%	$ 4,620.95
Effluent Disp.	Workers Comp.	City Manager	$ 2,801.00	$ -	$ 1,450.26	$ 1,845.01	51.78%	$ 1,350.74
Effluent Disp.	Gen. Supplies	City Manager	$ 74.00	$ 8.00	$ 192.70	$ 68.53	260.41%	$ (118.70)
Effluent Disp.	Prof Services	City Manager	$ 3,600.00	$ -	$ 245.00	$ 1,612.03	6.81%	$ 3,355.00
Effluent Disp.	Communications	City Manager	$ -	$ 33.21	$ 232.28	$ 211.99	0.00%	$ (232.28)
Effluent Disp.	Travel,Conf,Trg	City Manager	$ 750.00	$ -	$ 302.15	$ 140.00	40.29%	$ 447.85
Effluent Disp.	Water Utilities	City Manager	$ 125.00	$ 1.68	$ 18.43	$ 20.85	14.74%	$ 106.57
Effluent Disp.	PG&E Utilities	City Manager	$ 96.00	$ 23.35	$ 54.58	$ 55.84	56.85%	$ 41.42
Effluent Disp.	CONTINGENCY	City Manager	$ 750.00	$ -	$ -	$ -	0.00%	$ 750.00
City Manager Total			**$ 58,684.00**	**$ 3,079.49**	**$ 25,895.43**	**$ 28,584.58**	**44.13%**	**$ 32,788.57**
Effluent Disp.	Salaries	Finance	$ 17,835.00	$ 628.16	$ 5,179.52	$ 8,926.21	29.04%	$ 12,655.48
Effluent Disp.	Vacation Payout	Finance	$ 514.00	$ -	$ -	$ -	0.00%	$ 514.00
Effluent Disp.	FICA	Finance	$ 1,106.00	$ 38.94	$ 319.41	$ 539.36	28.88%	$ 786.59
Effluent Disp.	SUI	Finance	$ 65.00	$ 16.46	$ 44.82	$ 39.40	68.95%	$ 20.18
Effluent Disp.	PERS	Finance	$ 1,052.00	$ 49.44	$ 405.53	$ 543.09	38.55%	$ 646.47
Effluent Disp.	Medicare	Finance	$ 259.00	$ 9.10	$ 74.64	$ 126.13	28.82%	$ 184.36
Effluent Disp.	Employee Benefi	Finance	$ 5,024.00	$ 202.31	$ 1,447.49	$ 4,922.23	28.81%	$ 3,576.51
Effluent Disp.	Workers Comp.	Finance	$ 1,374.00	$ -	$ 711.40	$ 1,949.95	51.78%	$ 662.60
Effluent Disp.	Gen. Supplies	Finance	$ 2,320.00	$ 125.41	$ 1,227.64	$ 848.46	52.92%	$ 1,092.36
Effluent Disp.	Network Svcs Co	Finance	$ 1,059.00	$ 67.81	$ 474.67	$ 439.53	44.82%	$ 584.33
Effluent Disp.	MOM online fees	Finance	$ 1,211.00	$ -	$ -	$ -	0.00%	$ 1,211.00
Effluent Disp.	Audit & Acctg	Finance	$ 4,086.00	$ -	$ 1,447.00	$ 2,474.32	35.41%	$ 2,639.00
Effluent Disp.	Prof Services	Finance	$ 2,421.00	$ -	$ -	$ -	0.00%	$ 2,421.00
Effluent Disp.	Contracts-Other	Finance	$ 323.00	$ -	$ -	$ -	0.00%	$ 323.00
Effluent Disp.	Travel,Conf,Trg	Finance	$ 151.00	$ -	$ 27.24	$ -	18.04%	$ 123.76
Effluent Disp.	Water Utilities	Finance	$ 50.00	$ 2.68	$ 26.51	$ 30.77	53.02%	$ 23.49
Effluent Disp.	PG&E Utilities	Finance	$ 40.00	$ 54.83	$ 326.87	$ -	817.18%	$ (286.87)

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Effluent Disp.	O&M Equipment	Finance	$ 5,549.00	$ -	$ -	$ -	0.00%	$ 5,549.00
Effluent Disp.	PayChex & Bank	Finance	$ 1,463.00	$ 43.63	$ 171.79	$ 1,147.06	11.74%	$ 1,291.21
Finance Total			**$ 45,902.00**	**$ 1,238.77**	**$ 11,884.53**	**$ 21,986.51**	**25.89%**	**$ 34,017.47**
Effluent Disp.	Salaries	Effluent	$ 84,503.00	$ 7,954.77	$ 63,677.43	$ -	75.36%	$ 20,825.57
Effluent Disp.	Overtime	Effluent	$ 10,000.00	$ 206.71	$ 5,505.15	$ -	55.05%	$ 4,494.85
Effluent Disp.	Vacation Payout	Effluent	$ 3,164.00	$ 1,220.70	$ 4,591.96	$ -	145.13%	$ (1,427.96)
Effluent Disp.	FICA	Effluent	$ 5,239.00	$ 581.70	$ 4,574.04	$ -	87.31%	$ 664.96
Effluent Disp.	SUI	Effluent	$ 202.00	$ 31.12	$ 149.61	$ -	74.06%	$ 52.39
Effluent Disp.	PERS	Effluent	$ 10,806.00	$ 1,162.51	$ 9,449.84	$ -	87.45%	$ 1,356.16
Effluent Disp.	PERS Unfunded	Effluent	$ 21,693.00	$ -	$ 17,833.00	$ -	82.21%	$ 3,860.00
Effluent Disp.	Medicare	Effluent	$ 1,225.00	$ 135.97	$ 1,069.30	$ -	87.29%	$ 155.70
Effluent Disp.	Employee Benefi	Effluent	$ 26,767.00	$ 2,564.54	$ 19,136.31	$ -	71.49%	$ 7,630.69
Effluent Disp.	Workers Comp.	Effluent	$ 6,448.00	$ -	$ 3,338.54	$ -	51.78%	$ 3,109.46
Effluent Disp.	Gen. Supplies	Effluent	$ 600.00	$ 65.00	$ 524.28	$ -	87.38%	$ 75.72
Effluent Disp.	Fuel	Effluent	$ 19,000.00	$ -	$ -	$ -	0.00%	$ 19,000.00
Effluent Disp.	Supplies - Lab	Effluent	$ -	$ -	$ 126.50	$ -	0.00%	$ (126.50)
Effluent Disp.	Repair/Maint	Effluent	$ -	$ -	$ 1,236.47	$ -	0.00%	$ (1,236.47)
Effluent Disp.	Clothing	Effluent	$ -	$ 91.20	$ 91.20	$ -	0.00%	$ (91.20)
Effluent Disp.	Flood Control	Effluent	$ 1,500.00	$ -	$ -	$ -	0.00%	$ 1,500.00
Effluent Disp.	Taxes/Fees/Lics	Effluent	$ 210,000.00	$ -	$ 1,454.12	$ -	0.69%	$ 208,545.88
Effluent Disp.	Engineering	Effluent	$ 47,000.00	$ -	$ 1,080.00	$ -	2.30%	$ 45,920.00
Effluent Disp.	Legal	Effluent	$ -	$ 299.00	$ 299.00	$ -	0.00%	$ (299.00)
Effluent Disp.	Membership/Dues	Effluent	$ 3,000.00	$ -	$ -	$ -	0.00%	$ 3,000.00
Effluent Disp.	PG&E Utilities	Effluent	$ -	$ -	$ 0.38	$ -	0.00%	$ (0.38)
Effluent Disp.	Vehicle Maintna	Effluent	$ 5,200.00	$ -	$ 382.19	$ -	7.35%	$ 4,817.81
Effluent Disp.	O&M Equipment	Effluent	$ 54,000.00	$ -	$ -	$ -	0.00%	$ 54,000.00
Effluent Disp.	O&M Blg/Structu	Effluent	$ 1,500.00	$ -	$ -	$ -	0.00%	$ 1,500.00
Effluent Disp.	ARSA	Effluent	$ -	$ -	$ 320,498.50	$ 320,238.91	0.00%	$ (320,498.50)
Effluent Disp.	ARSA =Rep/Main	Effluent	$ -	$ -	$ 11.05	$ -	0.00%	$ (11.05)
Effluent Disp.	Improvements	Effluent	$ 425,000.00	$ -	$ -	$ -	0.00%	$ 425,000.00
Effluent Disp.	Machinery &	Effluent	$ 25,000.00	$ -	$ -	$ -	0.00%	$ 25,000.00
Effluent Disposal Total			**$ 961,847.00**	**$ 14,313.22**	**$ 455,028.87**	**$ 320,238.91**	**47.31%**	**$ 506,818.13**
Effluent Disp.	Employee Benefi	Central Servies	$ 1,170.00	$ -	$ -	$ -	0.00%	$ 1,170.00
Effluent Disp.	Gen. Supplies	Central Servies	$ 625.00	$ -	$ 162.97	$ -	26.08%	$ 462.03
Effluent Disp.	Equipmt Maint.	Central Servies	$ 325.00	$ -	$ -	$ -	0.00%	$ 325.00
Effluent Disp.	Computer Hardwr	Central Servies	$ 375.00	$ -	$ 341.23	$ -	90.99%	$ 33.77
Effluent Disp.	Network Svcs Co	Central Servies	$ 11,250.00	$ -	$ -	$ -	0.00%	$ 11,250.00
Effluent Disp.	Internet Servic	Central Servies	$ 3,625.00	$ -	$ -	$ -	0.00%	$ 3,625.00
Effluent Disp.	Communications	Central Servies	$ 2,188.00	$ -	$ -	$ -	0.00%	$ 2,188.00
Effluent Disp.	Risk Management	Central Servies	$ 108,831.00	$ -	$ 113,766.75	$ -	104.54%	$ (4,935.75)
Effluent Disp.	Membership/Dues	Central Servies	$ 625.00	$ -	$ -	$ -	0.00%	$ 625.00
Effluent Disp.	O&M Equipment	Central Servies	$ 375.00	$ -	$ -	$ -	0.00%	$ 375.00
Central Services Total			**$ 129,389.00**	**$ -**	**$ 114,270.95**	**$ -**	**88.32%**	**$ 15,118.05**

FUND Name	ACCT Name	DEPT Name	BUDGET	CURRENT ACTUAL	YTD ACTUAL	FEB 2024 YTD ACTUAL	%	BALANCE
Effluent Disp.	Legal	City Attorney	$ 18,700.00	$ -	$ -	$ -	0.00%	$ 18,700.00
Effluent Fund Total			**$ 1,221,969.00**	**$ 18,603.17**	**$ 609,482.52**	**$ 387,545.52**	**49.88%**	**$ 612,486.48**

POLICE
SUTTER CREEK

Monthly Report
February 2025

To: **Tom DuBois, City Manager**
From: **Jim O'Connell, Chief of Police**
Date: **March 17, 2025**
Re: **February 2025 Staff Report**

January 2025 Department Statistics			
Calls For Service	131	+16	↑
Traffic Stops	128	-36	↓
Officer Initiated Incidents	364	-88	↓
Business Checks	183	-55	↓
Vehicle/Pedestrian Checks	17	-5	↓
Total Officer Reports	35	-8	↓
Arrests	25	+8	↑
Moving Citations	6	-6	↓
Parking Citations	0	0	↓
TOTAL	**889**	**-70**	↓

131	128	25	35
			
Calls For Service	**Traffic Stops**	**Arrests**	**Officer Reports**

Volunteer Contributions:

During the month of February, our dedicated volunteers provided 20 hours of service to the community.

Community Engagement:

SCPD Officers continue to conduct regular foot patrol downtown on each of their respective shifts. Officers also spend regular time on our school campuses.

Notable Accomplishments:

During the month of February, SCPD made two DUI arrests, made one stolen vehicle arrest and 22 other criminal arrests.

Staff Report

To: Tom DuBois, City Manager

Meeting Date: March 17, 2025

From: Matt Ospital, PE City Engineer

Subject: Project Status Update

Type: Project Status Memo

Tom, the following is a status update of all projects WGA is currently working on:

1. **Building Inspections/Plan Check** – Continuing building inspections on Tuesdays and Thursdays or as needed. Building plan check is being performed on a continual basis as plans are submitted. For February 2025:

   5 Plan checks were completed
   13 Inspections were completed

2. **Encroachment Permit Review** – Encroachment permits are reviewed as needed when requested by the City's Account Clerk, Holly Boehme. For February 2025:

   2 Permit reviews were completed
   0 Inspections were completed

3. **Code Enforcement**

   A. **30 Ridge Road** – Met with owner on site. They have retained an attorney to represent them to evict the tenant and all of his belongings. Reached out to Caltrans to see if any of the vehicles encroached into the state right of way and was advised that there are none.

   B. **300 Hanford Street** –Verified that the abandoned motorhome was on city property. Reached out to county code enforcement for removal. Awaiting process. Met with Mr. Navarro and discussed property boundaries identified by the land surveyor. Reminded him that he owes the city an application sooner rather than later for a use permit.

C. **Eureka Mine Site** – Planner and/or city manager would need to provide update on this. No action by code enforcement at this time.

D. **Vehicles** – Travel trailer at 253 Sutter Crest West. Posted trailer on 2/18/2025 notifying owner trailer needs to be removed from city street. As of 3/4/2025 the trailer has been relocated onto private property.

Non-registered vehicle located at 264 Sutter Crest West. Posted vehicle on 2/18/2025 notifying owner vehicle needs to be registered or removed from city street. Owner called and confirmed they were out of town and would take care of it upon their return. As of 3/4/2025 the car has current registration. The owner called and said he would get it moved regularly.

SUTTER CREEK

JEWEL OF THE MOTHER LODE

STAFF REPORT

TO:	**TOM DUBOIS, CITY MANAGER**
MEETING DATE:	**MARCH 17, 2025**
FROM:	**DAN LAFONTAINE, PUBLIC WORKS DIRECTOR**
SUBJECT	**PUBLIC WORKS DEPARTMENT REPORT FOR FEBRUARY 2025**

Objective: The objective of this staff report is to provide a monthly status update regarding activities within the Public Works Department.

Executive Summary: As the majority of winter passes (with the exception of a few atmospheric rivers) we turn to spring and a time of growth. In public works, the nicer weather means that we have growth of landscaping that we planted in late summer (gateway park) and nice enough weather to finish some long outstanding projects (cemetery road paving) while also the growth of all types of unsightly weeds that require spraying around town. During the past month we have made substantial progress with fuel fire mitigation by removing debris and brush from the Minehead site. We also managed to close one lane of Gopher Flat Rd. and removed all the bush that had been encroaching onto our road. We will continue to tackle the biggest areas of fuel mitigation while also working to spray and reduce the growth of new fuel.

In terms of sustainability, the public works team has prepared a list of collection system work that we are bringing to the council. The list includes seven projects that have been on our problem list for infiltration and/or repeat clogs. We also had the flow meters pulled as the consultant believes that enough data has been collected. We will be receiving a briefing in the next few weeks. We also submitted our individual water balance and are collaborating with our regional partners to produce a joint water balance, which will be vital information as we move forward with our WWTP project.

Upcoming: We will also be sitting down with our flow meter consultant to review data and discuss our targeted approach to repairs that will maximize every dollar that we spend. Working with our local regulators, the water board has requested a site visit of ARSA to develop a better understanding of our waste disposal system. We will also be collaborating with our regional partners to produce a joint water balance. We will begin preparing the RFQ for the new WWTP and hope to have that our to bid in April. We will also be working with the ARSA engineer to fully define and scope our Henderson underdrain project. Minie Provis park will also be getting an upgrade between the community building and the playground as we look to upgrade the park and improve the accessibility to everyone.

Detailed Summary: Below is a detailed summary and/or status of the main PW responsibilities; Collection System, Wastewater Treatment Plant, Effluent Disposal, Streets and City Right of Way, Parks and Buildings, and Service Callouts.

Collection System Status:

CIP work

- On February 25 and 26, 2025, RH Borden removed the collection system flow meters from the sewer manholes. During the removal all manholes were scanned for leaks (an additional service being given to the City). The data is currently being compiled, and we will be getting the next steps and recommendations in March. If the data the flow meters have collected is not adequate (not enough storms), the consultant will redeploy the flowmeters at no cost to the City.
- The list of collection system repairs has been completed and finalized. Plans and specifications are currently being developed. The list of collection system projects identified this year are the following:
    - Replace Main from Rayland Drive to Highland Drive
    - Install Manhole at rear of NAPA Auto Parts
    - Replace Main on Dennis Street
    - Replace Main from Sutter Hotel to Creek
    - Replace Main at Highway 49 from Highland Drive to Old Sutter Hill Road
    - Replace Main at Greenstone Terrace
    - Replace Main at rear of Duplexes at 50 Eureka Street

SSMP Activity

Calls for service.

- 2/11/2025; 175 Spanish St. plugged City Main.
- 2/27/2025; 140 Eureka St. plugged City main. This City owned main is only three inches in diameter and is made of vitrified clay. The sewer line was installed in the 1948 sewer collection system upgrade. This line is in need of being replaced.

Sewer System Cleaning and Maintenance.

- For January 2025, there was 510 feet of sewer line cleaned. The total amount cleaned for the calendar year 2025 is 1,021 ft. The total cleaned for the calendar year 2024 is 19,207 feet.

Wastewater Treatment Plant Status:

The WWTP met all the effluent quality discharge requirements for the month of January 2025.

Table 1. Monthly Status of required reporting constituents.

Constituent	Monthly Results	Monthly Limits
Monthly Influent Flow	12.194 MG 0.642 MGD daily avg	0.48 mgd[1]
Effluent BOD, mg/L	20 mg/L	30 mg/l
Effluent Settleable Matter, mL/L	< 0.1 ml/L	0.5 ml/l
Effluent TSS, mg/L	16 mg/L	30 mg/l
Total Coliform, MPN	< 1.8 mpn	23 mpn
Sludge Wasted	18,632 gallons	
Rain	7.93 in.	18.58 in. YTD –27.52" Last YTD

[1] The 0.48 MGD is daily dry weather flow (May through October).

Plant Compliance Issues: The monthly January 2025 report was electronically submitted to the Regional Water Quality Control Board.

Operational Strategy Modifications:

- The rag bin was hauled on February 21, 2025.
- We continued normal sludge wasting in January with 18K gallons dewatered.
- Roto strainer #3 is currently being installed. New couplers had to be ordered and were received in February. Operators are currently piecing all parts of the roto strainers back into service.
- One of the two E-pumps showed signs of failing (low amperages while running at full capacity) and was replaced with a new pump.
- The second Chlorine tank has been moved into the chlorine building to be plumbed into the process train.
- The chlorine pumps (lead and lag) have shown signs of failure (motor overheating and constant tripping). New pumps have been ordered, and lead times have been estimated at 3 months. The old pumps continue to operate until we can get the new ones delivered and in hand. In February the pumps operated and did not have to be rebuilt.
- We continue to meet with firms to discuss the new WWTP. We are hopeful that in the next few months we will issue a request for qualifications (RFQ) to move forward with the WWTP direction and design.

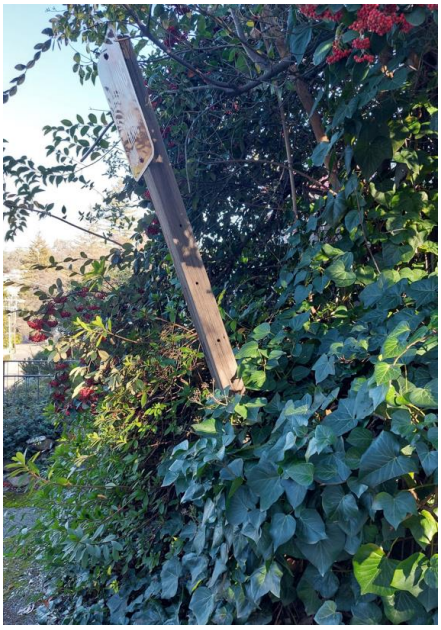
Effluent Disposal

- Bowers and Hoskins irrigation were discontinued for the season on October 31, 2024.
- Ione has received approximately 250 acre-ft from the ARSA pipeline for the 2024 disposal season.
- On February 24, 2025, ARSA submitted a revised water balance to the regional water board that included. The results of the ARSA water balance indicated that the ARSA system in combination with the Castle Oaks Water Reclamation Facility and Castle Oaks Gold Course can adequately contain and dispose of all Sutter Creek WWTP effluent, precipitation, and runoff for the RP100WY without violation of storage capacity or agronomic application rates. These calculations result in only 12.5 to 13.0 acre-feet of surplus disposal capacity in the disposal system. Capacity for additional flows from other dischargers appears to be limited. Both Mule Creek State Prison and the City of Ione submitted their individual water balances. All parties are currently waiting for comments from the water board before commencing with the joint water balance.
- The City has retained HydroScience to assist with the project management of the Henderson underdrain repair in late summer early fall of this calendar year. HydroScience toured the Henderson reservoir on February 12, 2025, to review the plans and specifications (produced by Stantec in Jan 2023). We anticipate having a request for proposal ready for the ARSA Board to review in March. Construction of the underdrain is anticipated to begin in July 2025.

- The replacement flow meter for the Bowers irrigation has arrived and will be installed in the coming months.
- Ongoing maintenance of the cattle water troughs along the pipeline. Irrigation sprinklers and valves are being repaired constantly.
- Weed and rodent abatement at the three reservoirs.
- Send weekly updates to the Regional Board on reservoir levels and volumes.
- Daily flow checks and level readings.

Streets and City Right of Way.

- On February 19, 2025, public works workers received non-DOT flagger training in the Cities commitment to ensure the safety of every City employee while working in the public roadways.
- The Public works team and City engineer toured the walking path to see what can be done about erosion of the path and mud being washed into the driveway. During the tour, the homeowner pointed out that the walking trail sign was beginning to fail and needed assistance. Public works fixed the post by adding some new concrete. See below:

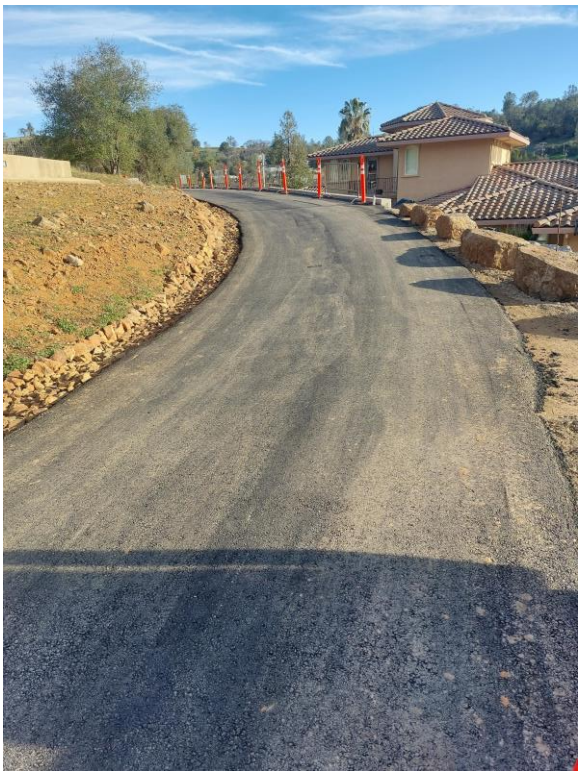


Walking Sign Before



Walking Sign after fixing

- The cemetery road has been repaved, and the City cemetery loop is back open. See picture below:



- Another round of sidewalk shaving has been performed in the downtown area. This time Precision Concrete shaved all remaining trip hazards on Main street from Eureka to Gopher Flat.
- The public works team has been at work filling potholes around town in anticipation of more rain to come, hopefully.

Parks and Buildings

- On March 5, 2025, The California Department of Fish and Wildlife (CDFW) issued a second version of the draft agreement to address the Cities concerns. The City is currently reviewing the changes to the agreement and will respond in 30 days.
- Public works has begun to spray for weeds. In an effort to promote our fire fuel mitigation efforts around the City we began with spraying the triangle lot located between Ridge Road and Prospect Drive across from the bowling alley at the end of February.
- While driving around I noticed that the flowers had begun to grow at the Gateway park. We feel that the new bark and the flowers look great and provide a beautiful entrance to the City. See below:



- CalFire crews were present for a few weeks during February and have cleared a lot of debris off the shoulders of roads. Working with CalFire, Public works managed to clear both Gopher flat road just past Werner Road on February 26th. The crews were also able to spend a few days at the bottom of Sutter Hill Rd and cleared Old Hwy 49 from the book to Sutter Hill Rd. See pictures below of the completed work at both locations below:



Gopher Flat Crew and Public Works clearing



Gopher Flat hedge before and after clearing.



Old Hwy 49 clearing between the Book and Old Sutter Hill Rd

Service Requests

Responded to seven service requests in February.

- Two were for street issues.
- Two were for facility issues.
- One was for a storm drain issue.
- Three were for sewer issues.

SUTTER CREEK
JEWEL OF THE MOTHER LODE

TO: **TOM DUBOIS, CITY MANAGER**

MEETING DATE: **MARCH 17, 2025**

FROM: **ERIN VENTURA, CONTRACT PLANNER**

SUBJECT **PLANNING DEPARTMENT REPORT FOR FEBRUARY/MARCH 2025**

Executive Summary

The Planning Commission did not hold a meeting in February due to lack of items.

The Following items will be reviewed at the March 10, 2025 meeting:

- 90 Boston Alley- Short Term Rental
- 190 Mahoney Mill Road- Variance/DRC
- 551 Hwy 49- Site Plan/DRC

Detailed Summary

Applicant Projects:

- Gold Rush Ranch Phase 1A – 150-Lot Subdivision: On March 3, 2025 staff previewed the application in front of the City Council, with the Planning Commission and public in attendance. Staff believes that the meeting was a success and the applicant acknowledged they were pleased with the feedback received and was looking at making some additional amendments to their application.

  Staff is continuing to work on a comprehensive list of comments and should have it to the applicant by the second week in March.

- Panner Creek Estates: Staff met with the applicant to review some outstanding issues.

Commission and Committee Work:

Additional Projects:

- Housing Element: Annual Progress Report will be submitted by the second week of March (April 1st due date)

- County Wide Planners Working Group scheduled for March 10th.
- Impact Fee Study: The City is revising its LEAP Grant application to secure additional funding. A consultant is updating the Nexus Study.
- Zoning Code Cleanup: The City is utilizing remaining LEAP funds to clarify and update the zoning code. This project is currently in progress.

SUMMARY OF FINAL INDIVIDUAL WATER BALANCE LETTERS

- MCSP:
    - Under current 0.54 MGD ADWF they need about 17 Ac-ft of additional storage/disposal capacity. Under the 0.67 MGD scenario they need 239 Ac-ft of storage/disposal.
    - They proposed either expanding their LAAs by 163 net acres or utilizing the tri-party agreement to discharge to COWRF the maximum of 350 Ac-ft per year.
- City of Ione
    - At current flows of 0.41 MGD, the City requires 594 Ac-ft of additional storage/disposal capacity. Under the future 2030 flow of 0.51 MGD, the City requires 697 Ac-ft of additional storage/disposal capacity. No projects were identified for increasing storage/disposal capacity.
- ARSA:
    - At 0.313 MGD current ADWF ARSA would have 24-25 Ac-ft of available disposal capacity and 64-70 Ac-ft of storage capacity.
    - At 0.319 MGD future ADWF ARSA would have 12.5-13 Ac-ft of available disposal capacity and 60-65 Ac-ft of storage capacity

KJELDSEN SINNOCK NEUDECK
CIVIL ENGINEERS & LAND SURVEYORS

Stephen [illegible]
Christopher H. Neudeck, P.E.
Neal T. Colwell, P.E.
Barry O'Regan, P.E.

2518-0050
01-001

TECHNICAL MEMORANDUM

December 13, 2024
Revised February 24, 2025

To: Teauna Miranda, Warden, Mule Creek State Prison
Catherine Frazer, Staff Director, California Dept. of Forestry and Fire Protection

CC: Isolette Gunther, California Department of Corrections and Rehabilitation
Gregor Larabee, California Department of Corrections and Rehabilitation
Laurie Perri, California Department of Corrections and Rehabilitation
Estevan Fregeau, Mule Creek State Prison
Anthony Orta, Mule Creek State Prison
Anthony Stark, Mule Creek State Prison
Antony Wilson, Mule Creek State Prison

Subject: Mule Creek State Prison Individual Water Balance

Project: Mule Creek State Prison Water Balance Calculations and Revised Report of Waste Discharge

Prepared By: Jade Fredeen E.I.T.
Todd Thompson, R.C.E. 58278

Reviewed By: Neal Colwell R.C.E. 59437

1.0 Purpose and Objective

This technical memorandum is a response to the California Regional Water Quality Control Board's August 14, 2024 letter to the California Department of Corrections and Rehabilitation (CDCR) regarding the treatment and disposal capacity of the Wastewater Treatment Plant (WWTP) serving Mule Creek State Prison (MCSP). The wastewater treatment system serves not only MCSP, but includes the Mule Creek Infill Complex (MCIC), the CalFire Training Academy (CFTA), and the Preston Youth Correctional Facility (PYCF). In particular, the letter, issued under Section 13267 of the California Water Code, requested:

- Forecasted wastewater flows for the next 5 years, based from official planning documents, broken down by each source;
- The forecasted wastewater flows should be broken down for all influent sources, including Mule Creek State Prison, the CalFire Training Academy, and the Preston Youth Correctional Facility;
- Any changes to treatment and/or disposal capacity or demand caused by the selected option related to the industrial waste stream;

- The additional disposal capacity from the selected option in Land Application Area Development Technical Report required by the October 6, 2023, Notice of Violation.

If the facility does not have sufficient capacity to treat and dispose of all wastewater onsite, the response is requested to identify the volume of excess effluent that would need to be treated and disposed each year without causing a permit violation or a condition of pollution.

The water balance needed to identify the treatment and disposal capacity conditions noted above, is required to comply with the requirement and guidance of a document attached to the letter entitled: Attachment A: Requirements for Water Balance and Calibration. It is to be limited to CDCR owned and operated property and facilities.

2.0 Historical Water Balance Calculations and Summary of Results

The previous water balance submitted to the Regional Water Quality Control Board, Central Valley Region (RWQCB) was completed on June 1, 2020, and prepared by Kjeldsen, Sinnock, and Neudeck, Inc. (KSN, Inc). The balance was performed in response to a Notice of Violation (NOV) issued on August 13, 2018 and included with a Report of Waste Discharge submitted to the RWQCB. That NOV requested an "Evaluation of compliance under the Waste Discharge Requirements (WDRs) under reduced land application area (LAA)". Since that submission, the LAA use for disposal has not changed.

MCSP has a total of 6 areas used as LAAs, composing a total of approximately 200 acres. The effective area of these LAAs were estimated through an evaluation of historical LAA layouts, modifications to the irrigation system/LAAs as a result of improvements to the site (e.g., construction of the Mule Creek Infill Complex [MCIC]), and through examination of existing aerial imagery indicating the area effectively having treated effluent applied.

The purpose of the MCSP LAAs is to achieve land disposal of treated effluent originating from the MCSP, CFTA, and remaining limited wastewater generated from the now closed PYCF. Land disposal is accomplished through evapotranspiration and limited percolation of treated effluent applied to the LAAs, with remaining effluent constituents being treated, retained in the soil, and/or volatized into the atmosphere. Waste Discharge Order R5-2015-0129 (2015 Order or WDRs) issued for the WWTP includes discharge specifications and LAA specifications to protect beneficial uses of receiving waters. Receiving water objectives are as listed in the Basin Plan and are applicable as noted in the 2015 Order.

The last water balance proposed changes to the management and the operation of the LAAs, which were incorporated into the June 2020 Report of Waste Discharge Technical Report. In particular, the last water balance proposed that MCSP operations promote the establishment of perennial vegetation on the LAAs through the elimination of the use of herbicides and a reduction of disking and mowing of the LAAs. The last water balance also looked at salinity and nitrate in the LAAs. It recommended rotation of the LAA of several years to promote leaching of salts and promote vegetative growth and minimize soil accumulations that may be detrimental (i.e., salt accumulations).

Projected loading was estimated for each LAA and over a range of hydraulic conditions for a projected 0.57 Mgal/d Average Dry Weather Flow (ADWF), where 0.57 represented the projected average influent flow to the MCSP WWTP

from MCSP, the MCIC, CFTA, and PYCF. Water balance evaluations of storage and disposal were performed with that flow scenario and assuming that disposal was performed using:

- Application to the currently existing LAAs,
- Discharge to the Castle Oaks Water Recycling Plant (COWRP) of no more than 350 ac-ft per year (approximately 114 million gallons)
- With a 1-in-100 yr precipitation season followed by 1-in-50 and average year precipitation seasons.

The resulting calculations showed that the projected average influent flow could be treated and disposed of by the current infrastructure. However, under a 1-in-100 year precipitation season with a 0.57 Mgal/d flow would result in water that cannot be applied to fields without the need for discharge of up to 350 ac-feet (114 million gallons) of excess water to the COWRP system. Some conservative assumptions do affect the result, such as using the crop coefficient for a wet year and assuming no percolation out of the MCSP effluent storage reservoir. While not inappropriate for high rainfall season, using a wet year crop coefficient adds another conservative factor to the estimate that reduces how much the LAA can dispose. This is a worst-case scenario with a very low probability of ever occurring.

3.0 MCSP, MCIC, Cal Fire, and PYCF Historical Flows and Flow Projections

The flows treated by MCSP WWTP have generally remained stable since the last water balance. As noted above, the MCSP system has several sub-systems, in addition to MCSP, that use the system for wastewater treatment and disposal. They are MCIC, PYCF, and the CFTA. A summary of the recent average relative contribution by source to the MCSP WWTP is given below in Table 1.

Table 1
Proportion of Recent Average Flow Contributions to the MCSP WWTP

Source	Flow Contribution, %
MCSP	72%
MCIC	26%
CFTA	1.4%
PYCF	0.2%
Total:	100%

A schematic of the interrelation of the existing sources and current flow monitoring locations is presented below in Figure 1.

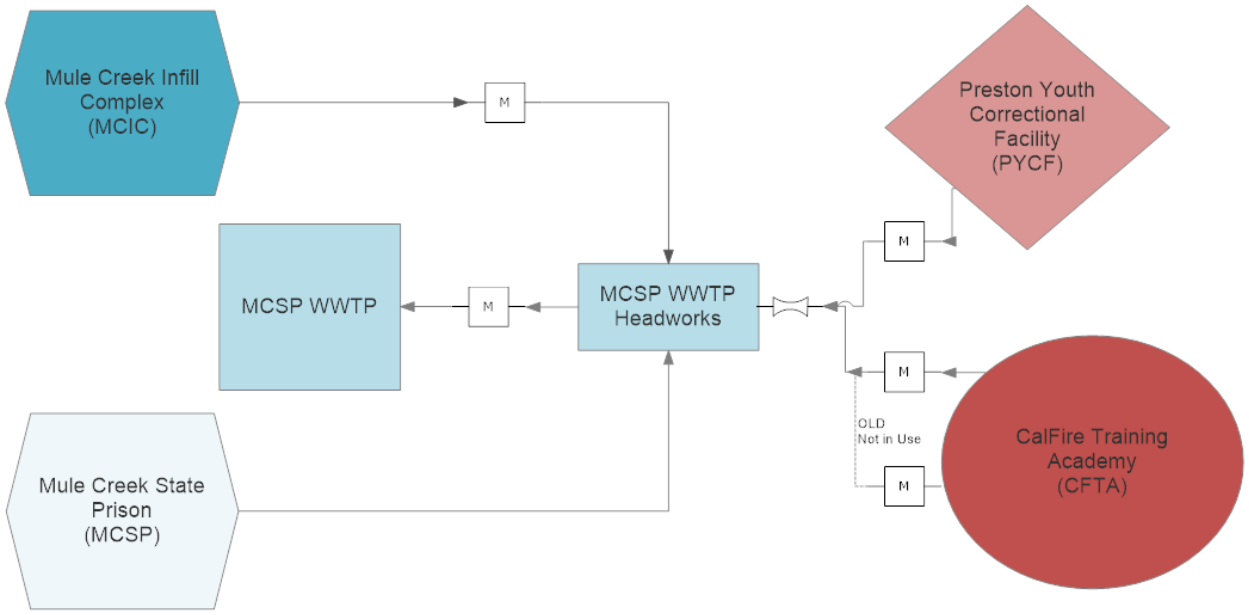


Figure 1
Schematic of Existing Sources and Flow Monitoring Points

The influent flow meter at the MCSP WWTP captures flows from all sources, including, MCSP (with all flows internal to the MCSP operations), MCIC (including all flows internal to the MCIC operations), inputs from the PYCF, and flows from the CFTA. A map of the locations of the sub-systems served by the MCSP WWTP is provided in Figure 2.

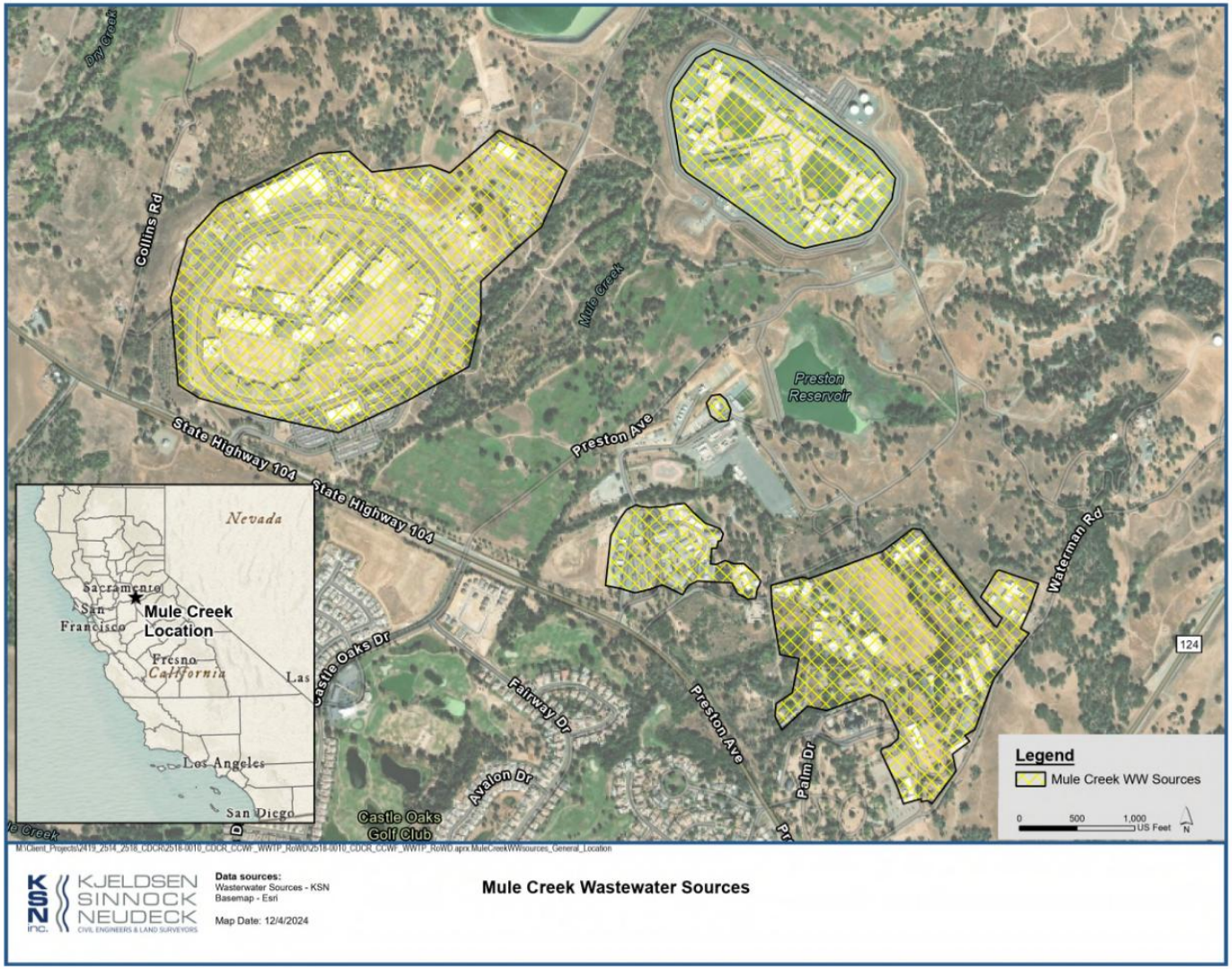


Figure 2
MCSP Wastewater Service Area Map

3.1 MCSP and MCIC Flows and Population

As can be seen from Figure 1, the MCSP WWTP influent flow captures the total influent flow from all sources with a separate measurement of flows originating from the MCIC and PYCF and CFTA. To calculate the flows originating from the MCSP only, those other flows must be subtracted from the WWTP influent flow total. The total MCSP WWTP influent wastewater flows have increased since 2016 as the populations between MCSP and MCIC shifted and as the MCIC population increased to current levels, resulting in a recent stabilized average dry weather influent flow[1] of approximately 0.51 Mgal/d. A review of winter-month average flows and storm-period daily flow totals, indicates that the overall system appears to have some Infiltration and Inflow (I&I). This is indicated by recent peak day influent flows of 1.04 Mgal/d (March 3, 2019), 0.97 Mgal/d (January 28, 2021) and recent peak month influent average flow of up to 0.58 Mgal/d (Feb. 28, 2023). During these time periods the combined MCSP/MCIC population average was 3,876, with a range of 3,743 to 4,051. Reported population data is presented in Exhibit A.

While MCSP does not have industrial waste streams per se, MCSP has several training facilities for prisoner rehabilitation. These include garment and mattress assembly, medical/clinical training, janitorial and HVAC training, coffee roasting, lunch packaging, woodworking and metal working training. None of these facilities appear to generate much wastewater. There is also a meat packing and a laundry. The additional wastewater stream associated with the meat packing is limited but does exist. It is mostly limited to the daily post-operation wash down. The laundry facility operates regularly, producing wastewater generated from laundry service provided to the MCSP, MCIC, CFTA, and other Northern California institutions. However, the wastewater flows from the meat packing and the laundry services are included in the MCSP WWTP influent flow measurement and are part of the per-capita distribution. The waste discharge requirements, Order R5-2015-0129, assigned 0.13 Mgal/day for the laundry. However, adding that flow to the actual measured influent flows would result in a double counting error because they are included in the existing flow basis.

MCIC wastewater flows have nominally increased since 2019 but stabilized at about 0.14 Mgal/d through 2024. The system appears to have no discernable infiltration and inflow as seen with no identifiable flow increases during winter storm events such as the storms in late December 2022 and early January 2023 and through March 2023. MCIC also has rehabilitation and training activities. Like MCSP, those activities do not appear to contribute much to the waste stream and are captured in the per capita flow estimate for the facility. Historical MCSP and MCIC average monthly flow totals and population is shown below in Figure 3 through September 2024.

[1] Calculated based on the average of monthly flows for June, July, and August.

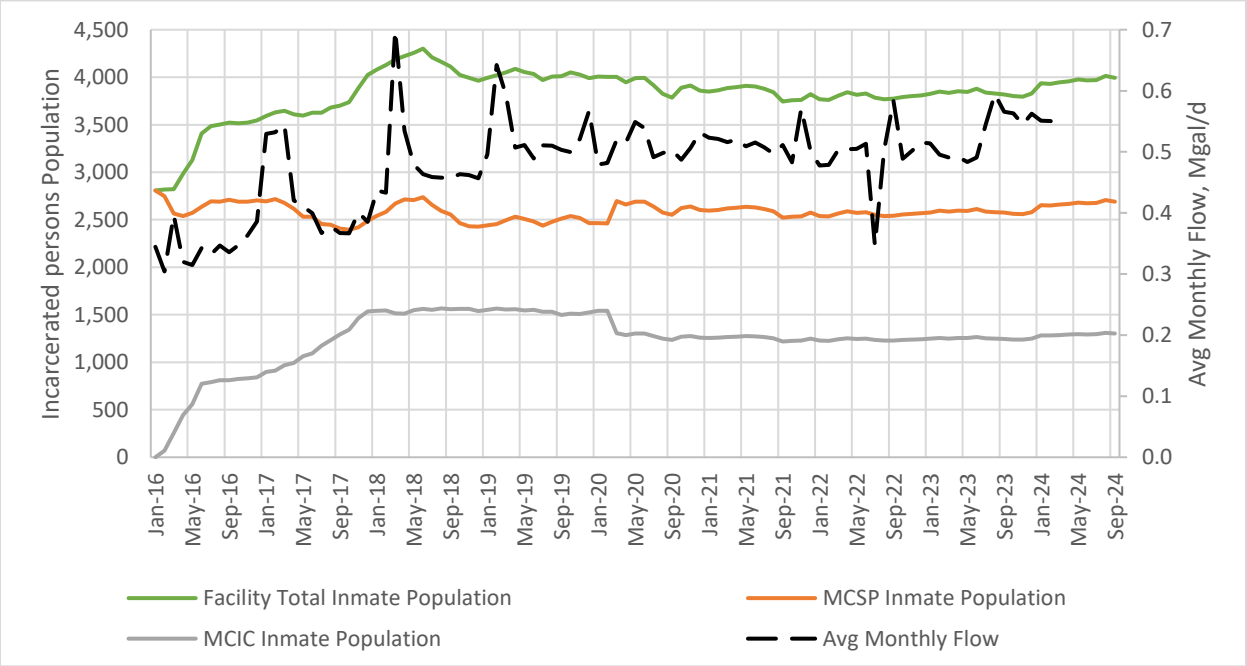


Figure 3
Average MCSP and MCIC Monthly Flow Totals and Incarcerated persons Populations

3.2 CFTA Flows and Population

CFTA wastewater flows vary seasonally and year to year depending upon the number of trainees at the facility. The program objective for cadet training is set by the Governor's office on an annual basis[2], with training assignments to the various statewide facilities varying based on facility capacity and other factors. The recent annual cadet population at the CFTA has been approximately 1,216 cadets in 2023 and 1,373 cadets in 2024, and a projected 1,321 cadets for 2025, with a weekly staff of 120[3]. Current CFTA facilities are limited by the 238 dormitory-style beds for cadets (see Exhibit B) with the 120 staff supporting the CFTA operations split into shifts. The facility has a cafeteria that serves breakfast and lunch. The dormitories have laundry facilities for the residents and for fire equipment. CFTA sends all bedding to be washed to MCSP.

Assuming that 75% to 100% of the CFTA bed capacity is used for any given cohort of cadets, then the recent historical and projected 2025 cadet annual totals would suggest that five to eight training groups come through the CFTA per year. CFTA staff indicated that typical courses rotations occur from January to July[4]. A conservative assumption would be that the facility is fully occupied with 238 cadets and 120 staff during each training session.

Historical flow monitoring for the CFTA occurred at a flow monitoring manhole on the CFTA site, with an existing combined flow meter located at the MCSP WWTP headworks intended to measure combined flow from the CFTA and PYCF using a flume and level sensor on the incoming wastewater line at the WWTP headworks. In mid-2023 (around May 2023) the CFTA installed a flow measurement device in a manhole that serves the CFTA facilities. This flow

[2] Personal communication Jonathan Allen, Chief of Plant Operations, Cal Fire Training Center, November 12, 2024.
[3] Ibid.
[4]Personal communication Jonathan Allen, Chief of Plant Operations, Cal Fire Training Center, November 12, 2024.

measurement device is reported to consist of a SonicSens 3 level sensor and data logging device. At this time the accuracy of this instrumentation to measure and record flow totals in this manhole are suspect and therefore this flow data is not considered to be accurate. Because of a noted backwater effect on the flume level sensor at the MCSP WWTP headworks, the combined influent flow intended to measure flow from the PYCF and CFTA is not expected to be accurate. Therefore, existing, and potential future flows from the CFTA are estimated as outlined below in Table 2.

Table 2
Estimated Cal Fire Training Academy Maximum Wastewater Generation Rate

Occupancy Group	Unit Wastewater Generation Rate (gal/unit/day)[5]	Daily Occupancy	Estimated Wastewater Generation, gallons per day
Cadet Trainees	100	238	23,800
Staff	20	120	2,400
		Total	**26,200**

The above estimated wastewater generation rates are supported by recent recorded potable water use at the CFTA from Amador Water Agency records provided by CFTA for 2020, 2022 and 2023. The records were evaluated for recent average daily use in 2022 to 2023 during the highest expected occupancy time frame of March to June. The average daily water use from 2022 to 2023 during the maximum occupancy timeframe is estimated at 25,952 gallons per day.

3.3 PYCF Flows

PYCF is currently in a warm shut down status meaning that the facilities are maintained in a semi-ready status for potential use or occupancy sometime in the future. At this time there are no plans for the PYCF to be occupied with any wastewater to be discharged to the MCSP WWTP. The only flows coming from the PYCF are associated with rain events. Due to its age, the wastewater system is interconnected with the old storm sewers giving the system significant flows during wet weather. The flow from the PYCF facility is negligible for most dry days as evidenced by the available flow records for the dry months of the year, for 2022 and 2023. 2024 flow data are indicative of reported water system leaks that were discovered in February and partially repaired in May 2024. Current dry-period flow monitoring for the PYCF suggests that water leaks still exist in the PYCF and are continuing to contribute to the wastewater stream. Since circa 2014, a separate flow meter at Preston Lift Station has existed to record and report daily flow from the PYCF. However, for the purposes of this assessment, it was found that the only useable data started in January 2022. The maximum recorded flow during wet weather is 293,898 gallons per day (Dec. 31, 2022). Table 3 presents an assessment of the recent water year 2023 and 2024 meter data and Infiltration and Inflow as a function of monthly total precipitation. This recent data is compared to the previous estimates of I&I generated during preparation of prior MCSP technical studies and as used in the June 2020 Report of Waste Discharge, as estimated based on water year 2017 data. Based on this analysis, continued use of the water year 2017 PYCF flows are supported for this water balance as a reasonably conservative basis for flows occurring during a 1-in-100 year precipitation season from the PYCF system.

[5] Based on Table H201.1(4) of Appendix H of the California Plumbing Code.

Table 3
PYCF Monthly Average Flow Rates and Estimated I&I

	WY 2023			WY 2024			WY 2017 Estimates		
Month	Average Flow (gal/d)	Monthly Rain (in)	I&I (Avg. gallons per day per inch)	Average Flow (gal/d)	Monthly Rain (in)	I&I (Avg. gallons per day per inch)	2016/2017 Estimated I&I (gal/d)	Monthly Rain (in)	Equivalent I&I (Avg. gallons per day per inch)
October	44	0	-	111	0	-	11,000	5.98	1,839
November	717	1.89	379	299	1.06	282	14,000	3.08	4,545
December	49,624	9.42	4,949	204	2.11	97	16,000	3.48	4,597
January	70,416	9.73	7,237	8,451	3.86	2,189	67,000	11.97	5,597
February	5,143	2.19	2,348	31,620	4.49	Water Leak[1]	97,000	9.75	9,948
March	62,084	6.27	9,901	31,516	3.19	Water Leak	29,000	3.29	8,815
April	5,920	0.26	22,769	31,767	1.73	Water Leak	23,000	3.18	7,232
May	743	0.46	1,615	11,816	0.75	Water Leak	1,000	0.25	4,000
June	201	0.03	-	4,663	0	Water Leak[2]	0	0.19	-
July	45	0	-	3,577	0	Water Leak	0	0	-
August	128	0	-	5,135	0	Water Leak	0	0	-
September	51	0.43	-	3,740	0	Water Leak	0	0	-
Total	**-**	**30.68**	**-**	**-**	**17.19**	**-**	**-**	**41.17**	**-**

[1] PYCF Leaks found and reported in the Wastewater Transmission Line Inspection Form, February 2024.

[2] PYCF Wastewater Transmission Line Inspection Form noted no leaks as of June 2024. Uncharacteristically high flows are still reported from June to September 2024 indicating leaks still exist.

3.4 Flow Summary and Estimates

Flows used in the water balance calculations consist of the following:

1. Average dry weather flows for the MCSP, MCIC, and CFTA; and
2. Monthly I&I rates for the MCSP, MCIC, and PYCF.

For these monthly-based water balance calculations, I&I is estimated based on subtracting the flow of wastewater origins, calculated as the ADWF, from the total influent flow on a monthly basis. This requires a reasonable estimate of the flow of wastewater origins contemporaneous with the winter-period flow assumed to include I&I. The June 2020 Report of Waste Discharge evaluated available flow data from Water Year 2017 as a means to estimate I&I under a 1-in-100 year precipitation season. The evaluation summarized in Table 4 presents the estimated I&I from recent MCSP

(inclusive of PYCF and CFTA flows) and MCIC flow data and compares those values to the 1-in-100 year I&I values developed for the June 2020 Report of Waste Discharge. The data analysis is presented in more detail in Exhibit B.

Table 4
Assessment and Comparison of MCSP* and MCIC Estimated I&I

	WY 2020		WY 2021		WY 2022		WY 2023		WY 2024		WY 2017 Basis		
Month	MCSP I&I* (Mgal/d)	MCIC I&I* (Mgal/d)	MCSP I&I* (Mgal/d)	MCIC I&I (Mgal/d)	MCSP I&I* (Mgal/d)	MCIC I&I (Mgal/d)	MCSP I&I* (Mgal/d)	MCIC I&I (Mgal/d)	MCSP I&I* (Mgal/d)	MCIC I&I (Mgal/d)	MCSP I&I* (Mgal/d)	MCIC I&I (Mgal/d)	Total System I&I (Mgal/d)
October	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.011	0.013	0.024
November	0.00	0.006	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.014	0.002	0.016
December	0.033	0.008	0.024	0.00	0.117	0.00	N/A	0.00	0.00	0.00	0.016	0.00	0.016
January	0.00	0.008	0.036	0.00	0.056	0.00	N/A	N/A	0.037	0.00	0.154	0.00	0.154
February	0.00	0.011	0.032	0.00	0.00	0.00	0.004	0.00	0.085	0.00	0.148	0.001	0.149
March	0.00	0.00	0.014	0.00	0.027	0.00	0.082	0.00	0.059	0.00	0.029	0.005	0.034
April	0.00	0.024	0.00	0.00	0.048	0.00	0.00	0.00	0.005	0.00	0.026	0.010	0.036
May	N/A	N/A	0.00	0.00	0.00	0.00	0.024	0.00	0.00	0.00	0.026	0.002	0.028
June	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.018	0.002	0.020
July	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
August	0.00	0.00	0.00	0.00	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
September	0.00	0.00	0.00	0.00	N/A	0.001	N/A	0.00	0.00	0.00	0.00	0.00	0.00

* Represents combined estimated MCSP, PYCF, and CFTA flows.

N/A = Due to meter equipment errors data was not available for these periods.

Comparing the 2017 estimated infiltration and inflow to recent 2020 through 2024 water year system performance, the 2017-basis is supported and has been used to estimate infiltration and inflow into the system during a 1-in-100 year precipitation season. Average year infiltration and inflow has been estimated based on the average rate indicated by water years 2020 through 2024.

The current flows of wastewater origins consist of flows from the MCSP and MCIC population and activities and the CFTA population and activities. Recent influent flow monitoring indicated an average dry weather flow (ADWF)[6] of 0.51 Mgal/d, up from the previous ADWF of 0.48 Mgal/d as indicated by the average of 2018 and 2019 data. This increase in ADWF is likely due to a combination of variability in MCSP/MCIC populations, nominal increases in water use in the MCIC as the facilities' operations have matured, and potential nominal increase in activity at the CFTA (although not documented). Considering these conditions and the estimated values presented above, Table 5 summarizes the estimated wastewater flow contribution per system served by the MCSP WWTP.

[6] Calculated for the MCSP based on the average of flows from June, July, and August.

Table 5
Estimated Current Contribution to MCSP ADWF of 0.51 Mgal/d

	Source (Mgal/d)			
	MCSP	MCIC	CFTA	**Total**
ADWF Contribution	0.35	0.13	0.03	0.51
Per unit Wastewater Generation (gpid/gpcd)	135	101	126	

gpid = gallons per incarcerated persons per day

gpcd = gallons per cadet per day

3.5 Projection of Future Flows

The August 14, 2024 Water Code Section 13267 letter requests that CDCR project wastewater flows over the next 5 years. Unlike a traditional California community, such as the City of Ione or City of Sutter Creek, the population of institutional facilities such as the Mule Creek State Prison and the Cal Fire Training Academy depend on facilities capacity (such as bed capacity), staffing to support that capacity, and statewide policies and directives. At this time there are no known plans for expanding or modifying the MCSP or CFTA institutions within the next five years and therefore future flows to the MCSP WWTP will be driven by statewide policy such as incarcerated persons population management amongst the CDCR facilities across the state and the Governor's year-to-year direction on Cal Fire cadet training. CDCR's current projections for total incarcerated persons population indicate an average approximately 2% reduction per year through 2028[7]. Within the MCSP system (including the MCSP and MCIC), the incarcerated persons population will be limited to the capacity of the existing facilities and a degree of "overcrowding" that may occur as CDCR manages the statewide incarcerated persons population and its projected decrease over the next five years. As noted above and documented in Exhibit A, the recent total MCSP/MCIC population has ranged from 3,743 to 4,051 incarcerated persons, with an average of 3,876 incarcerated persons, with a report design capacity of 3,284 incarcerated persons as presented in Exhibit A. This current incarcerated persons population level indicates an occupancy at 114% to 123% of design capacity. Although statewide the total incarcerated persons population is projected to decrease, for the purpose of this capacity assessment the current population levels are assumed with a 5% safety factor applied as noted in Table 6. As an alternative potential worst-case condition, Table 6 also presents an estimated maximum potential MCSP/MCIC occupancy at 4,926 incarcerated persons at 150% of design capacity as a basis for projection.

[7] CDCR Spring 2024 Population Projections, May 2024, Table 1, Office of Research, Division of Correctional Policy Research and Internal Oversight, available through https://cdcr/ca/gov/research.

Table 6
Estimated Contributions to Future MCSP ADWF

	Source (Mgal/d)			
	MCSP	MCIC	CFTA	**Total**
Existing Conditions				
ADWF Contribution	0.35	0.13	0.03	0.51
Safety Factor (5%)				0.03
Total				0.54
Max Potential MCSP/MCIC Occupancy[1]				
ADWF Contribution	0.45	0.16	0.03	0.64
Safety Factor (5%)				0.03
Total				0.67

1 Current ADWF plus an additional 1,050 incarcerated persons over recent 3,876 average at 67% at MCSP generating 135 gpid and 33% at MCIC generating 101 gpid. Assumed CFTA at maximum 238 cadet occupancy with staffing at 120.

3.6 Existing Wastewater Treatment System

As documented in the Mule Creek State Prison Wastewater Treatment Plant Improvements design plans, dated August 29, 2014, prepared by GHD, and as reported in the Mule Creek State Prison Wastewater Treatment Plant Improvements Completion Report, dated May 31, 2017, the existing MCSP WWTP has the following hydraulic design capacity:

- Average daily influent flow capacity of 1.0 Mgal/d
- Dry weather daily influent flow of 1.0 Mgal/d
- Peak hour influent flow of 2.86 Mgal/d
- Peak day influent flow of 1.7 Mgal/d
- Peak month influent flow of 1.3 Mgal/d

Other than when the RWQCB requested that CDCR divert stormwater to the WWTP, historical influent flows have been well below the design capacity of these facilities. Projected future flows as noted in Table *6* are below these reported design capacities. The existing MCSP wastewater treatment facilities were designed and constructed to allow for the conveyance and treatment of wastewater under a variety of conditions. CDCR implements a maintenance program on wastewater treatment processes and elements of the sewer system described in detail in the MCSP Sewer System Management Plans (SSMP)[8]. For additional overflow prevention, the MCSP system is equipped alarms and reliability features including alarms and communications to Plant Operations for high water events.

[8] SSMP, Page 11 & 12.

4.0 MCSP Effluent Storage and LAA Characteristics and Operations

The effluent storage reservoir and LAAs are the components that allow the MCSP wastewater system to store and apply treated effluent in a controlled manner protective of water quality. The effluent storage reservoir, like its name implies, holds effluent until climate and LAA conditons and the operators are ready to apply wastewater to the LAAs. The LAAs are provided wastewater when they can readily receive the wastewater in compliance with the LAA discharge specifications. On November 26, 2019, a Land Application Area Management Plan was developed with the intent of aiding operators in meeting the requirements of WDR R5-2015-0129, with the ultimate objective of maintaining or improving groundwater quality to the extent practicable. This was submitted to the Regional Board on that same date. The long-term goal of land application management practices is to be able to maintain and operate the LAAs for the life of the treatment facilities. These characteristics, and the below specifics, have been incorporated into this update to the MCSP water balance calculations.

4.1 Land Application Area Characteristics

MCSP operations staff document the volume effluent applied to each LAA or combination thereof, as well as irrigation durations to each LAA on a daily basis. The approach for calculating the distribution of treated effluent applied to each field involved the following sources of information:

- Daily recorded total irrigation volume applied to the LAA as recorded by the irrigation pump station flow meter;
- Sprinkler counts and estimated spray nozzle capacities; and
- Daily recorded irrigation durations to each land application area.

Each LAA is a bit different, not only in size but soil depth and soil type, shown below in Figure 4. The soil type and depth is balanced with the irrigation timing and duration. CDCR has conducted significant investigation and characterization of the LAAs and their underlying soil characteristics as detailed in the June 2020 Report of Waste Discharge and the following technical reports submitted to the Regional Water Quality Control Board:

1. Technical Report Update, Mule Creek State Prison, October 15, 2018
2. Land Application Area Soil Sampling Plan, Mule Creek State Prison, October 15, 2018
3. Updated Land Application Area Management Plan, Mule Creek State Prison, November 26, 2019
4. Land Application Area Soil Evaluation Report, Mule Creek State Prison, November 26, 2019

The most current and relevant information regarding the MCSP effluent reservoir and LAA facilities characteristics from these prior studies have been incorporated into the enclosed water balance calculations.

As confirmed through site investigations and facilities mapping, the existing MCSP LAAs consist of six distinct irrigation areas, separated by location and irrigation system piping, with the estimated effective area as summarized in Table 7[9].

Table 7
Current LAA Designations and Approximate Net Area

LAA Number	Effective Area (acres)
1	28
2	28
3	31
4	39
6	31
7	43
Total	**200**

The effective area of these LAAs were estimated based on an evaluation of historical LAA layouts, modifications to the irrigation system/LAAs as a result of improvements to the site (e.g., construction of MCIC), and through examination of existing aerial imagery indicating the area effectively having treated effluent applied. The LAAs are managed to avoid any tailwater under normal application practices. This is achieved by closely monitoring and controlling the application durations such that surface soil saturation and runoff do not occur. Each LAA has a 3 to 5 ft earthen berm constructed along the downslope perimeters. Tailwater berms are located downslope of the LAAs and are maintained to capture and contain any runoff that may occur. The LAAs are not operated during or immediately following precipitation events. Below is a description of the LAAs, and their relative use.

LAA1 is located on the Southwest side and is currently divided into three sections for irrigation purposes. Historically LAA1 has been used mostly during the Fall, Spring and Summer (May through October). LAA1 is irrigated about 16 days per year, resting mostly during the Winter.

LAA2 is located in the upper Northwest of the effluent storage reservoir. It is currently divided into two sections for irrigation purposes. Irrigation of LAA2 has historically been mostly during the Fall, Spring, and Summer (May through October). LAA2 is irrigated about 16 days per year, resting mostly during the Winter.

LAA3 is located on the North side of the effluent storage reservoir and is currently divided into three sections for irrigation purposes. Historical irrigation of LAA3 is mostly during the Fall, Spring and Summer (May through October). LAA3 is irrigated about 14 days per year, resting mostly during the Winter.

LAA4 is located East of the effluent storage reservoir. It is currently divided into two sections for irrigation purposes. Irrigation of LAA4 is mostly during the Fall, Spring, and Summer (May through October). LAA4 is irrigated about 25 days per year, resting mostly during the Winter.

[9] LAA areas as validated and reported in the Table 2-1 of the Revised Land Application Area Management Plan, November 2019.

LAA6 is located on the Southwest side and is currently divided into three sections for irrigation purposes. Irrigation of LAA6 has been typically all year long when precipitation conditions allow. LAA6 is irrigated about 27 days per year.

LAA7 is located on the Southwest side and is currently divided into three sections for irrigation purposes. Irrigation of LAA7 has typically been almost all year long when precipitation conditions allow. LAA7 is irrigated about 41 days per year.

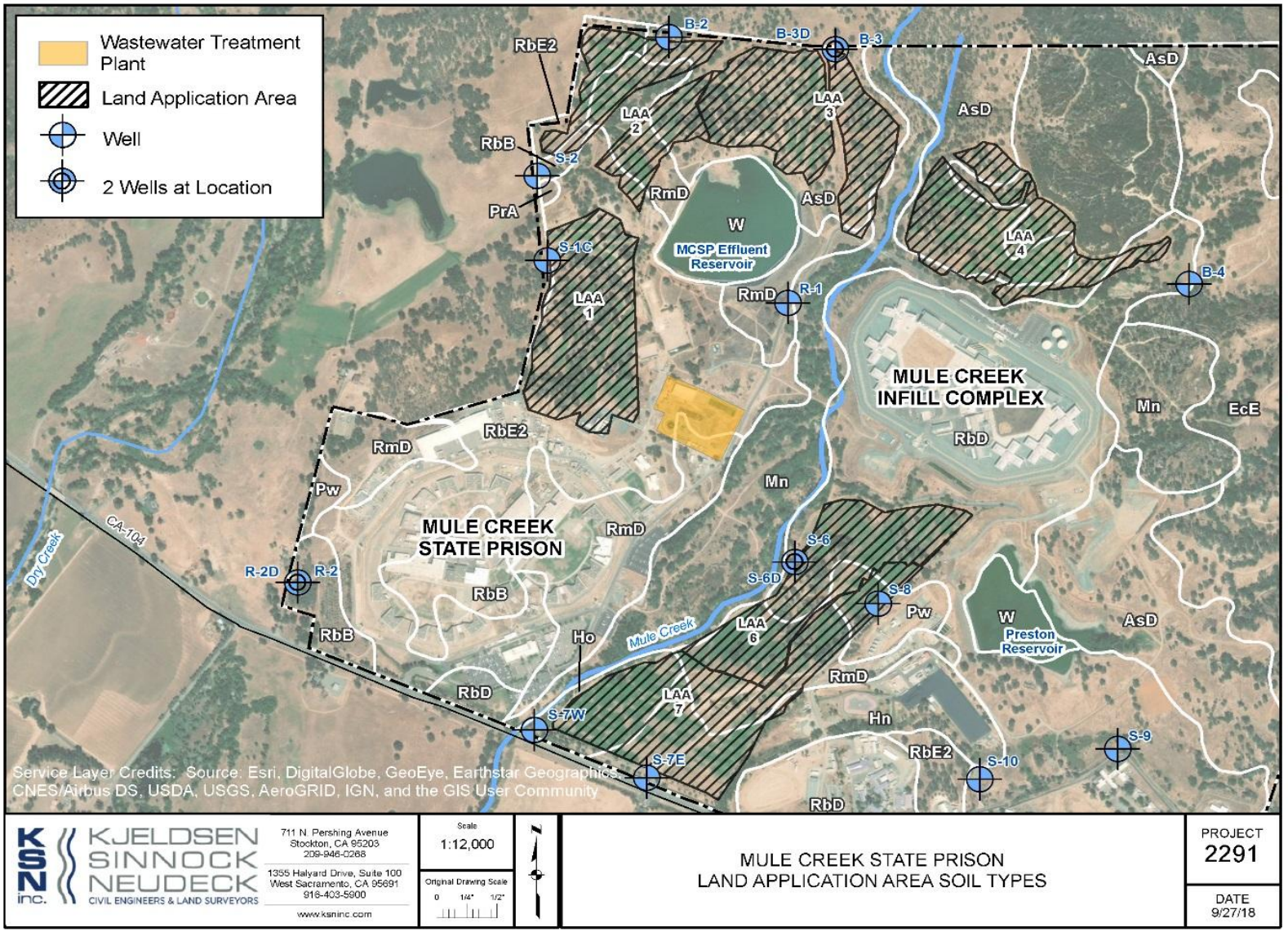


Figure 4.
Soil Types Underlying MCSP LAAs

4.2 Effluent Storage Reservoir Characteristics

The effluent storage reservoir is an integral component of the treatment system. The effluent reservoir is an earthen dam that stands 51 feet high. It is certified by the Department of Water Resources (DWR) and is listed as being in satisfactory condition. The maximum volume listed by DWR is 535 Acre-ft (174 MG). However, the Regional Water Quality Control Board, Central Valley Region requires two feet of freeboard, reducing its permitted capacity to 155 Mgal. The top area open for rainfall to enter the system is 21.6 acres. The bottom area is open for infiltration and groundwater is approximately 10 feet below the bottom of the effluent storage pond. The EPA Design Manual for Municipal Wastewater Stabilization Ponds[10] provides a conservative estimate of seepage rate for percolation ponds of approximately 0.3 in/day. Through the model calibration against the 2017 Water Year, the seepage rate was adjusted to 0.4 in/day to more closely represent actual conditions. Throughout the wet year, treated wastewater enters the reservoir and is held until temperatures increase. Eventually that water is used at the LAAs or the Castle Oaks Golf Course through the Castle Oaks Water Recycling Plant.

4.3 Off Site Discharge to the Castle Oaks Water Recycling Plant

In addition to discharging to on-site LAAs, the MCSP WWTP also has connection to the COWRP, which provides tertiary treated recycled water used for irrigation of the Castle Oaks Golf Course. There are two connections to COWRP, one is through Preston Reservoir and the Preston Outfall and the second is through a direct connection to the Preston Outfall located on the MCSP site consisting of piping and a bypass valve installed in 2017. Since the construction of the bypass valve in 2017, MCSP has delivered effluent directly through this pipeline, and has not sent any water to Preston Reservoir. The MCSP Effluent Storage Reservoir provides storage for MCSP WWTP effluent until it is discharged to either the on-site LAAs or the COWRP. Secondary disinfected effluent is conveyed to the COWRP based on an existing agreement among the Amador Regional Sanitation Authority (ARSA), CDCR, and the City of Ione, the Agreement to Regulate use of Henderson/Preston Wastewater Disposal System, or "Wastewater Agreement". The Wastewater Agreement was first approved in September 2007 by the three parties. This agreement specifies the amount of effluent that ARSA and CDCR have the right to convey for treatment at the COWRP. The Wastewater Agreement was supplemented with the execution by the three parties of the 2009 lease for the storage and conveyance facilities utilized by ARSA. This agreement provides for an allowable total annual discharge of effluent by CDCR to COWRP of 350 acre-feet, which is counted against the allowable annual ARSA discharge of 650 acre-feet. Under the Wastewater Agreement, CDCR has had average monthly discharges as summarized in Table 8. The 2013 to 2024 average discharge volume excludes the water year 2023 distributions, which had uncharacteristically low discharges due to the accommodation of ARSA's need for additional storage space due to reservoir storage repairs leading to atypical WWTP operations involving higher volume accumulation in the effluent storage reservoir throughout the wet season.

The historical average transfer to COWRP presented in Table 8 and the maximum allocations from the Tri Party Agreement were used as benchmarks in the water balance calculations, but the historical average discharge to COWRP was not used in the model scenarios. The waterbalance model scenarios utilized transfers to COWRP in two distinct ways: to demonstrate the need of COWRP transfers to maintain storage and capacity requirements, and to show the storage outcome under the maximized Tri Party Agreement allocation.

[10] EPA Design Manual for Municipal Wastewater Stabilization Ponds, October 1983

Table 8
2013 through 2024 Average COWRP Monthly Transfers

Flow to Castle Oaks, MG	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
WY 2012-2013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.09	9.58	15.03	23.67	11.84	**88.21**
WY 2013-2014[3]	12.34	8.56	0.00	3.22	12.11	0.00	0.00	0.00	45.16	28.59	0.00	10.05	**120.02**
WY 2014-2015	5.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.74	24.79	22.93	15.08	**84.29**
WY 2015-2016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	35.93	36.38	10.31	**83.27**
WY 2016-2017	4.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.57	32.33	**68.18**
WY 2017-2018	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	43.80	34.99	**81.41**
WY 2018-2019	21.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.30	24.54	**77.69**
WY 2019-2020[3]	20.58	18.91	2.10	23.12	0.00	0.00	0.00	0.00	0.00	0.00	29.82	30.82	**125.36**
WY 2020-2021	1.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.48	36.47	27.57	11.54	**100.54**
WY 2021-2022	10.50	0.00	0.00	0.00	0.00	0.00	9.53	14.37	8.03	23.33	25.00	17.95	**108.70**
WY 2022-2023[1]	6.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.88	**22.50**
WY 2023-2024	19.82	9.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.17	33.07	**94.60**
Average Discharges[2]:	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1	**93.8**

[1] MCSP staff reported that transfers to COWRP were curtailed as requested by the City of Ione and Sutter Creek to allow Sutter Creek/ARSA to use available capacity in the COWRP system. During WY 2023 virtually all of the MCSP effluent was applied to the MCSP LAAs, except for October 2022 and September 2023.

[2] Average transfers exclude the 2022-2023 Water Year which had an uncharacteristically low annual discharge of 22.5 Mgal.

[3] Water Year is acknowledged to have higher than normal distributions above the Tri-Party Agreement allocation. COWRP distributions are included for historical accuracy.

5.0 Water Balance Climatological Factors and Infiltration and Inflow Inputs

The water balance was updated using data provided by MCSP over the current period of record and review of updated published climatological data summaries and statistics.

5.1 Rainfall Characteristics

The Desert Research Institute publishes tabulated average monthly precipitation for Camp Pardee from 1926 through 2024 and for CalFire Precipitation Station CF1 in Ione from 2012 through 2024. The average of these two monthly precipitation characteristics have been assumed for the MCSP site.

Long-duration depth-duration-frequency statistics were updated based on the most recent data from the Ione Station B00 4283 00 as maintained and published by the California Department of Water Resources, Flood Emergency Response Information Exchange, FERIX. For the 100 year hydrologic condition average monthly rainfall was multiplied by the ratio of the 100 year, 365-day storm to the average annual storm. This ratio is 1.81 and remains unchanged from previous iterations of water balance calculations for the site.

5.2 Soil, Crop, and Evapotranspiration Characteristics

Typical monthly evapotranspiration (ETo) rates were obtained from California Polytechnic State University Irrigation Training and Research Center (ITRC). MCSP falls within reference evapotranspiration Zone 14. Crop evapotranspiration and crop coefficients are available for both average year and wet year conditions. Crop coefficients were based on a representative mixture of pasture grasses and deciduous oaks (see Table 10 and 23 of the referenced document).[11] The soil depth of the LAAs were assumed to be 14 inches for fields 1-4, and 6 and 60 inches for field 7. This is based on field observations. Soil Available Water Holding Capacity (AWHC) – or the total of available water in the root zone, and the Management Allowed Depletion (MAD) – or the amount of water that is allowed to be used by the plant between irrigations was estimated based on values as stated in the NRCS Web Soil Survey. The combination of the ETo, crop coefficients, and soil characteristics were used to estimate the amount of irrigation that each LAA could uptake on a monthly basis.

6.0 Water Balance Model Validation

The water balance was calibrated using available data from the 2017 water year, which had a reported annual total precipitation of over 41 inches, exceeding the 1-in-100 year precipitation season total for Ione, CA. Calibration of the water balance calculations were based on matching predicted peak effluent storage levels, end-of-season applications and remaining effluent as modeled in the water balance calculations with reported data. The following 2017 water year conditions were considered in the water balance calibration:

- Influent and effluent flow totals for the 2017 water year provided by MCSP and CDCR,
- 1-in-100 year infiltration and inflow (included in the total influent flows),

[11] California Crop and Soil Evapotranspiration, Cal Poly Irrigation Training and Research Center, ITRC Report No. R 03-001, January 2003.

- Actual ADWF of 0.38 Mgal/d, to establish a basis for model comparison at reported values;
- Average monthly rainfall totals measured at the MCSP WWTP,
- Recorded discharges to Preston reservoir, and
- Beginning effluent reservoir storage of 20 Mgal.

The ITRC Zone 14 Wet Year evapotranspiration and an adjusted evapotranspiration constant for grass and trees was referenced for consistency with modeled calculations. In effort to provide a basis for comparison between the modeled LAAs and the actual reported conditions, the AWHC between LAA7 and LAAs1-4 and 6 were analyzed separately. An adjustment factor was applied to the LAA application calculations to reflect modeled (calculated) vs. reported system conditions. The model provided full effluent storage disposal by the end of the water year, closely matching actual 1-in-100 year hydrologic conditions. The reported storage values presented an effluent storage accumulation which peaked earlier than the simulated model; however, the modeled volume and rate of increase/decrease were consistent with the values provided by the calibration, justifying the model formulas and processes. A conservative percolation factor of 0.3 in/day was initially used to estimate the percolation losses. After adjustment, a percolation factor of 0.4 in/day was found to provide the disposal conditions that most accurately represent reported system conditions, with this percolation factor still being within a reasonable range. The catchment area runoff coefficient to the effluent storage reservoir was also adjusted from the original conservative assumption of rational runoff coefficient of 0.9 to 0.5 providing for a model result better reflecting recorded water storage conditions. The current adjustment assumes the reservoir water surface capture is 100%, the 0.5 rational runoff coefficient only applies to the embankment surrounding the reservoir. The value was reduced to a more reasonable level of 0.5 during calibration. Soil Survey classified the regional soils in the area around the MCSP Effluent Storage Reservoir and determined them to be heavy and roughly 80% steep and 20% flat; therefore, a reasonable range for embankment runoff coefficients was found to be 0.3 to 0.5. As such the high end of this range is just fine, conservative. The 2017 1-in-100 year water balance calibration is provided in Exhibit D.

7.0 Water Balance Projections and Results

As required by the August 14, 2024 Water Code Section 13267 letter and further clarified by RWQCB staff, the following flow scenarios were evaluated with the water balance calculations under average year and 1-in-100 year precipitation conditions:

1. Under projected 5-year influent flow conditions, projected to 0.54 Mgal/d as presented in Table 6;
2. Under current permit capacity ADWF of 0.74 Mgal/d

In addition to these influent flow bases, a third scenario detailing the estimated maximum potential influent flow at a combined MCSP occupancy of 4,926 incarcerated persons, as presented in Table 6, has also been evaluated.

Disposal conditions assumed under each of these conditions include:

- Evaluation of potential or all effluent to be applied to existing LAAs.

- Need for and use of proposed 61 acres of new on-site LAAs.
- Discharge to COWRP consistent with 2009 Agreement and recent historical discharges.
- Discharge to some other off-site effluent disposal/recycled use location.

The water balance shows that the current system is capable of functioning in all but an extreme case. Conducted at the current annual average with a safety factor of 5% to account for seasonal variability, the water balance shows that the system is currently capable of functioning during both a normal wet weather season and 1-in-100 year season at an ADWF of 0.54 Mgal/d. The MCSP system is also shown to be able to function to treat, dispose and store treated effluent at the 0. 74 Mgal/d design flow, however the water balance does show that the system would have an excess of water if forced to operate at the projected permit design flow during a 1-in-100 year precipitation weather season. Results of the water balance scenarios are discussed below and presented in Table 9 and discussed further in the below sub-sections.

The summaries below include details regarding multiple scenarios including and assumed transfer to COWRP consistent with the average transfers for the past ten years as presented in Table *8*. This scenario is provided to allow for proper context to the interplay of seasonal storage to total disposal needs and the timing of when such disposal is available. Absent integrating proper context to the calculations, providing discharge volumes alone does not accurately depict the characteristics of facilities that could be required to meet capacity needs.

Table 9
Water Balance Result Summary at Current Disposal Capacity

	Item	SCENARIO 1 - 0.54 Mgal/d ADWF				SCENARIO 2 - 0.74 Mgal/d ADWF				SCENARIO 3 - 0.67 Mgal/d ADWF			
		Average Year		1-in-100 Year		Average Year		1-in-100 Year		Average Year		1-in-100 Year	
		MG	AF	MG	AF	MG	AF	MG	AF	MG	AF	MG	AF
ANNUAL INFLOW (MG/AF)	WASTEWATER INFLOW	195	599	195	599	270	829	270	829	245	752	245	752
	INFLOW AND INFILTRATION	5	15	14	43	5	15	14	43	5	15	14	43
	PRECIPITATION INTO RESERVOIR	13	40	24	74	14	43	26	80	13	40	25	77
	TOTAL INFLOW	**213**	**654**	**233**	**715**	**289**	**887**	**310**	**952**	**263**	**807**	**284**	**872**
ANNUAL OUTFLOW POTENTIAL (MG/AF)	EVAPORATION FROM RESERVOIR	18	55	18	55	26	80	25	77	23	71	22	68
	PERCOLATION FROM RESERVOIR	38	117	38	117	38	117	38	117	38	117	38	117
	ON-SITE LAND DISPOSAL	139	427	102	313	139	427	102	313	139	427	102	313
	DISCHARGE TO COWRP	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL OUTFLOW	**195**	**599**	**158**	**485**	**203**	**623**	**165**	**506**	**200**	**614**	**162**	**497**
OVERALL BALANCE (MG/AF)	LAA CAPACITY USED	139	427	102	312	139	427	102	312	139	427	102	312
	COWRP CAPACITY USED	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL DISPOSAL CAPACITY USED	139	427	102	312	139	427	102	312	139	427	102	312
	EFFLUENT REMAINING AT END OF SEASON	**17**	**54**	**76**	**234**	**85**	**261**	**144**	**442**	**62**	**190**	**120**	**368**
STORAGE (MG/AF)	TOTAL REQUIRED STORAGE CAPACITY[1]	86	265	124	382	129	396	172	528	114	351	155	476

1. Maximum available MCSP Effluent Storage Reservoir capacity is 155 Mgal/ 475 AF

7.1 Average and 1-in-100 Year Precipitation Season at Average Recent Flows of 0.54 Mgal/d

Under average conditions and current flows at no more than 0.54 Mgal/d, MCSP WWTP is able to treat and dispose of all seasonal flows through use of the existing on-site LAAs without exceeding the available maximum storage of 155 Mgal. The water balance predicts that the effluent storage reservoir would reach a maximum level of 86 Mgal by the end of April. The effluent generated through the duration of the water year would be accommodated by the existing LAAs leading to an ending storage reservoir balance of 18 Mgal.

Under 1-in-100 year precipitation season conditions, which adds substantial water to the reservoir and severely limits the availability and capacity of the LAAs, the effluent storage reservoir would reach a maximum level of approximately 125 Mgal, 30 Mgal below the facility capacity of 155 Mgal, by May. Once seasonal conditions allow application of effluent to the on-site LAAs, predicted to be no earlier than May, effluent would be applied to the maximum estimated capacity of these facilities throughout the irrigation season. At the end of the season an estimated 76 Mgal would remain in the effluent storage reservoir at the end of September. Utilizing a subsequent water balance calculation assuming an average year following the 1-in-100 year, the resultant following year effluent generation would exceed the capacity of the effluent storage reservoir by April. To remain within reservoir capacity throughout the year, the starting volume would need to less than 70 Mgal in the second year. Therefore, under current flow conditions additional storage and/or disposal capacity is needed. The water balance calculations contained in Exhibit D indicate the following:

- After expanding the on-site LAAs by 61 acres:
    - Maximum storage is reduced to 121 Mgal by May.
    - Effluent in storage is reduced to 50 Mgal by the end of September.
    - The calculations indicate that with the addition of the previously proposed 61 acres of LAA that the system may be able to accommodate wastewater flows, however with a risk of exceeding permitted effluent storage volumes with subsequent wet years.
- Utilizing the existing LAAs but discharging to the COWRP at 83 Mgal/year (lower than the historical rate of 93.8 Mgal):
    - Maximum storage is reduced to 114 Mgal by May.
    - Effluent in storage is reduced to 0 Mgal by the end of September.
    - The calculations indicate that using the COWRP discharge would result in the system being able to contain the 1-in-100 year conditions and subsequent average years without exceeding effluent storage capacity and being able to return to an empty reservoir by the end of the second year using only the onsite LAAs.

7.2 Average and 1-in-100 Year Precipitation Season at Permit Capacity Flow of 0.74 Mgal/d

Under current permit flow limit conditions of 0.74 Mgal/d and average year precipitation conditions, MCSP WWTP is able to treat and dispose of all seasonal flows through use of the existing on-site LAAs without exceeding the available maximum storage of

155 Mgal. The water balance predicts that the effluent storage reservoir would reach a maximum level of 129 Mgal by the end of April, leading to an effluent storage of 85 Mgal by the end of the water year. Although flows under the first average year condition remain within capacity, an ending storage balance of 85 Mgal is expected to cause violations in a following average year.

Under 1-in-100 year precipitation season conditions the effluent storage reservoir would exceed its maximum capacity of 155 Mgal in April. If the effluent could be stored, once seasonal conditions allow application of effluent to the on-site LAAs, predicted to be no earlier than May, effluent would be applied to the maximum estimated capacity of these facilities throughout the irrigation season. At the end of the season, effluent storage needs would continue to exceed the capacity of the effluent storage reservoir through the end of July. Therefore, under current permit flow limit of 0.74 Mgal/d conditions additional storage and/or disposal capacity is needed. The water balance calculations contained in Exhibit D indicate the following:

- After expanding the on-site LAAs by 61 acres:
    - Maximum effluent storage is exceeded in May.
    - The calculations indicate that additional storage and/or disposal capacity would be needed.
- Utilizing the existing LAAs but also discharging to the COWRP at 83 Mgal/year:
    - Maximum effluent storage is still exceeded in May.
    - The calculations indicate that additional storage and/or disposal capacity would be needed.
- After expanding the LAAs and discharging to the COWRP at 350 ac-ft per year in accordance with the Tri Party Agreement:
    - Maximum effluent storage is 126 Mgal in May.
    - Effluent storage would be reduced to nearly empty in June.
    - The calculations indicate that the yearly effluent storage need is fully accommodated with the utilization of the CDCR allocation of 350 ac-ft per year discharge to COWRP.

Expanded storage and effluent disposal capacity is expected to be needed if the MCSP system is to operate independently at a permit capacity of 0.74 Mgal/d, beyond that provided by expanding the on-site LAAs or utilizing the COWRP discharge consistent with historical rates.

7.3 Average and 1-in-100 Year Precipitation Season at Maximum Capacity Flow of 0.67 Mgal/d

The MCSP and MCIC maximum potential occupancy scenario condition is expected to generate 0.67 Mgal/d. In an average year rainfall condition, the water balance calculations indicate that the existing MCSP WWTP facilities have the capacity to dispose of all effluent flows within the 155 Mgal volume of the effluent storage reservoir. The peak volume contained within the effluent storage reservoir is estimated at 115 Mgal at the end of April. The effluent reservoir volume steadily decreases as land

application disposal is available by the end of March. In September, the remaining year end reservoir volume is 62 Mgal, which is anticipated to lead to an exceedance of storage reservoir volume in the following average year.

Under 1-in-100 year conditions, the maximum effluent storage reservoir volume of 155 Mgal is met by the end of May, therefore, the results of the water balance analysis indicate that additional effluent disposal is required. The water balance results for the maximum capacity ADWF condition provided in Exhibit D are summarized below:

- Expanding the on-site LAAs by 61 acres under a 1-in-100 year precipitation conditions:
    - Maximum storage capacity is nearly met in May.
    - The ending balance in the storage reservoir is 94 Mgal, which is expected to lead to an exceedance in storage volume in the following average year.
- Disposal to the existing LAAs with discharge to the COWRP at 83 Mgal/year under a 1-in-100 year precipitation conditions:
    - Maximum effluent storage capacity is nearly met in May.
    - The ending balance in effluent reservoir storage is 41 Mgal in September.
    - The calculations indicate that the yearly effluent storage need is fully accommodated in following average precipitation years with starting storage volume of 41 Mgal.
- After expanding the LAAs and discharging to the COWRP at 350 ac-ft per year in accordance with the Tri Party Agreement:
    - Maximum effluent storage is 112 Mgal in May.
    - Effluent storage would be emptied by the end of September.
    - The yearly effluent storage need is fully accommodated with the utilization of the CDCR allocation of 350 ac-ft per year discharge to COWRP.

If the MCSP system is to operate independently at a maximum population capacity flow of 0.67 Mgal/d, expanded storage and effluent disposal capacity is expected to be needed by at least what is provided by expanding the on-site LAAs by adding 61 acres of State lands or utilizing the COWRP discharge at historical rates.

8.0 Assessment of Needed Expanded Capacity

As is previously noted, the water balance shows that the current system is capable of functioning in all but the extreme cases. With a safety factor of 5% to account for seasonal variability, the water balance shows that the system is currently capable of functioning during both a normal wet weather season and a 1-in-100 year precipitation season at an ADWF of 0.54 Mgal/d,

except during the year following the 1-in-100 precipitation year. The MCSP system, designed for daily wastewater treatment flow rate of 1.0 Mgal/d, can treat all expected higher flows.

However, the MCSP system cannot dispose and store treated effluent at the higher flows of 0.74 and 0.67 Mgal/day. Subsequent years and, when combined with a 1-in-100 year precipitation inflow, compound the problem specifically in the permit capacity of 0.74 Mgal/d scenario. Adding storage alone will not relieve the additional flow contribution to the system. To address this, MCSP would have to increase LAA areas and/or storage to accommodate the larger events and subsequent events. The water balance model was run to conceptually establish to what extent MCSP needs additional storage capacity and/or LAA area to accommodate extreme events.

8.1 Conceptual Expansion With On and/or Offsite Facilities

Based on the above-summarized water balance analysis, disposal and/or storage improvements would be necessary for MCSP to be in compliance with permit requirements under 0.54, 0.74, and 0.67 Mgal/d flows. The amount of excess volume for the three scenarios is shown in Table 10. The volume of excess is the overflow volume in the 1-in-100 season plus the difference between the volume of the end of the first year and the maximum allowable volume in the second year without causing or threatening to cause a effluent storage violation of the permit in the third year. The requirements for additional area for use as net LAA disposal, whether onsite or offsite, depends on the type of land available, especially the soils and geology. However, assuming characteristics similar to the existing MCSP LAAs 1-4, general conclusions can be made in quantifying the required area needed to accommodate the current influent flows, estimated maximum capacity flow rate and permitted maximum flow rate of 0.54 Mgal/d, 0.67 Mgal/day and 0.74 Mgal/day, respectively.

Table 10
Annual Excess Volume

Item	SCENARIO 1 0.54 Mgal/d ADWF		SCENARIO 2 0.74 Mgal/d ADWF		SCENARIO 3 0.67 Mgal/d ADWF	
	1-in-100 Year		1-in-100 Year		1-in-100 Year	
	MG	AF	MG	AF	MG	AF
Additional Annual MCSP WWTP Effluent Storage and Disposal Need	6	17	134	411	78	239

Average Recent Flows of 0.54 Mgal/d

Under current influent flow and disposal conditions, 1-in-100 year precipitation flows are fully contained. However, in the average precipitation year following the 1-in-100 year precipitation conditions at current capacity ADWF of 0.54 Mgal, effluent storage capacity is exceeded in April with a starting storage volume of 76 Mgal. In the average year following a 1-in-100 precipitation year, a starting storage volume of 70 Mgal is the maximum volume to be accommodated in order to maintain compliance with the WDRs. Adding 61 net acres of additional LAA, equal to the area proposed in 2015, will relieve the problem, with the additional disposal area providing adequate disposal of effluent flows and remaining volume within the effluent storage reservoir at the year end.

Permit Capacity Flow of 0.74 Mgal/d

Under current disposal conditions, 1-in-100 year precipitation conditions, and permit capacity ADWF of 0.74 Mgal, effluent storage capacity is exceeded by April. Ending volume in the storage reservoir is estimated to be 144 Mgal. In an average year following a 1-in-100 precipitation year, a starting storage volume of 26 Mgal is the maximum volume to be accommodated to remain within storage capacity limits. The addition of 250 net acres of LAAs would lead to an ending storage balance of 36 Mgal, which is able to be processed within the next average year. Additional storage of at least 9 Mgal would also be needed to contain effluent flows through peak flow periods of the year.

Maximum Capacity Flow of 0.67 Mgal/d

Under current disposal limits and a 1-in-100 precipitation year condition, effluent storage is met in May and the year-end volume in reservoir storage is estimated to be 120 Mgal. This carryover into an average following year leads to consistent period of storage exceedance starting in December. The maximum beginning storage volume in year 2 would need to be reduced to 41 Mgal to remain within current storage capacity. The addition of a total of 163 net on or off-site acres would result in a year-end storage balance of 50 Mgal. With the additional land application area, all storage needs throughout the year would be met. With the addition of the 163 net acres of additional LAA areas, flows are also accommodated in an average year following a 1-in-100 precipitation year, including the starting effluent storage volume of 50 Mgal.

Tri-Party Agreement Maximum Discharge to COWRP at 350 Ac-ft/year

As was previously noted above, in addition to discharging to on-site LAAs, the MCSP WWTP also has connection to the COWRP, which provides treated secondary water for use in making tertiary treated recycled water used for irrigation of the Castle Oaks Golf Course. This is based on an existing agreement among the ARSA, CDCR, and the City of Ione. This agreement provides for an allowable total annual discharge of effluent by CDCR to COWRP of 350 acre-feet, which is counted against the allowable annual ARSA discharge of 650 acre-feet.

A review of the historical use of this agreement shows that MCSP has not been taking full advantage of it, although has been using quite a bit of the agreement's allowable use. In fact, full use of the agreement on the agreed monthly maximum increments provides a solution to capacity exceedances during peak storage accumulation points throughout the year by fully diverting effluent storage reservoir volumes to COWRP by June. If capacity were available, the use of the full CDCR allocation of the Wastewater Agreement would provide a viable option for additional disposal capacity needs in the Permit Capacity Flow and Maximum Capacity Flow scenarios under 0.74 and 0.67 Mgal/d ADWF respectively.

Exhibit A

MCSP Recent Population Reports

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
February 1, 2019

Monthly Report of Population
As of Midnight January 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,110	2,920	140.8	4,370
Calipatria State Prison (CAL)	3,490	2,308	151.2	3,333
California Correctional Center (CCC)	4,197	3,883	108.1	4,762
California Correctional Institution (CCI)	4,059	2,783	145.8	4,120
Centinela State Prison (CEN)	3,391	2,308	146.9	3,333
California Health Care Facility - Stockton (CHCF)	2,656	2,951	90.0	2,951
California Institution for Men (CIM)	3,662	2,976	123.1	4,186
California Men's Colony (CMC)	3,665	3,838	95.5	4,398
California Medical Facility (CMF)	2,330	2,361	98.7	2,847
California State Prison, Corcoran (COR)	3,291	3,116	105.6	4,270
California Rehabilitation Center (CRC)	2,314	2,491	92.9	3,210
Correctional Training Facility (CTF)	5,250	3,312	158.5	4,887
Chuckawalla Valley State Prison (CVSP)	2,733	1,738	157.2	2,478
Deuel Vocational Institution (DVI)	2,491	1,681	148.2	2,353
Folsom State Prison (FOL)	2,925	2,066	141.6	2,895
High Desert State Prison (HDSP)	3,240	2,324	139.4	3,361
Ironwood State Prison (ISP)	2,691	2,200	122.3	3,200
Kern Valley State Prison (KVSP)	3,703	2,448	151.3	3,522
California State Prison, Los Angeles County (LAC)	3,131	2,300	136.1	3,300
Mule Creek State Prison (MCSP)	3,993	3,284	121.6	4,009
North Kern State Prison (NKSP)	4,130	2,694	153.3	3,911
Pelican Bay State Prison (PBSP)	2,578	2,380	108.3	3,250
Pleasant Valley State Prison (PVSP)	3,129	2,308	135.6	3,333
RJ Donovan Correctional Facility (RJD)	3,841	2,992	128.4	3,942
California State Prison, Sacramento (SAC)	2,108	1,828	115.3	2,449
California Substance Abuse Treatment Facility (SATF)	5,586	3,424	163.1	5,111
Sierra Conservation Center (SCC)	4,167	3,936	105.9	4,570
California State Prison, Solano (SOL)	4,223	2,610	161.8	3,882
San Quentin State Prison (SQ)	3,977	3,082	129.0	3,984
Salinas Valley State Prison (SVSP)	3,353	2,452	136.7	3,409
Valley State Prison (VSP)	3,186	1,980	160.9	2,954
Wasco State Prison (WSP)	4,520	2,984	151.5	4,351
Male Total	112,120	85,958	130.4	116,931
Female Institutions				
Central California Women's Facility (CCWF)	2,812	2,004	140.3	2,964
California Institution for Women (CIW)	1,848	1,398	132.2	1,877
Folsom State Prison (FOL)	450	403	111.7	530
Female Total	5,110	3,805	134.3	5,371
Institution Total	117,230	89,763	130.6	122,302

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 1, 2019

Monthly Report of Population
As of Midnight February 28, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,133	2,920	141.5	4,370
Calipatria State Prison (CAL)	3,551	2,308	153.9	3,333
California Correctional Center (CCC)	4,120	3,883	106.1	4,762
California Correctional Institution (CCI)	4,000	2,783	143.7	4,120
Centinela State Prison (CEN)	3,450	2,308	149.5	3,333
California Health Care Facility - Stockton (CHCF)	2,667	2,951	90.4	2,951
California Institution for Men (CIM)	3,743	2,976	125.8	4,186
California Men's Colony (CMC)	3,647	3,838	95.0	4,398
California Medical Facility (CMF)	2,336	2,361	98.9	2,847
California State Prison, Corcoran (COR)	3,346	3,116	107.4	4,270
California Rehabilitation Center (CRC)	2,445	2,491	98.2	3,210
Correctional Training Facility (CTF)	5,426	3,312	163.8	4,887
Chuckawalla Valley State Prison (CVSP)	2,738	1,738	157.5	2,478
Deuel Vocational Institution (DVI)	2,573	1,681	153.1	2,353
Folsom State Prison (FOL)	2,972	2,066	143.9	2,895
High Desert State Prison (HDSP)	3,179	2,324	136.8	3,361
Ironwood State Prison (ISP)	2,584	2,200	117.5	3,200
Kern Valley State Prison (KVSP)	3,698	2,448	151.1	3,522
California State Prison, Los Angeles County (LAC)	3,116	2,300	135.5	3,300
Mule Creek State Prison (MCSP)	4,021	3,284	122.4	4,009
North Kern State Prison (NKSP)	4,057	2,694	150.6	3,911
Pelican Bay State Prison (PBSP)	2,559	2,380	107.5	3,250
Pleasant Valley State Prison (PVSP)	3,185	2,308	138.0	3,333
RJ Donovan Correctional Facility (RJD)	3,765	2,992	125.8	3,942
California State Prison, Sacramento (SAC)	2,043	1,828	111.8	2,449
California Substance Abuse Treatment Facility (SATF)	5,526	3,424	161.4	5,111
Sierra Conservation Center (SCC)	4,048	3,936	102.8	4,570
California State Prison, Solano (SOL)	4,263	2,610	163.3	3,882
San Quentin State Prison (SQ)	3,851	3,082	125.0	3,984
Salinas Valley State Prison (SVSP)	3,429	2,452	139.8	3,409
Valley State Prison (VSP)	3,124	1,980	157.8	2,954
Wasco State Prison (WSP)	4,501	2,984	150.8	4,351
Male Total	112,096	85,958	130.4	116,931
Female Institutions				
Central California Women's Facility (CCWF)	2,835	2,004	141.5	2,964
California Institution for Women (CIW)	1,835	1,398	131.3	1,877
Folsom State Prison (FOL)	415	403	103.0	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	5,086	3,805	133.7	8,644
Institution Total	117,182	89,763	130.5	125,575

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
April 1, 2019

Monthly Report of Population
As of Midnight March 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,043	2,920	138.5	4,370
Calipatria State Prison (CAL)	3,546	2,308	153.6	3,333
California Correctional Center (CCC)	3,984	3,883	102.6	4,762
California Correctional Institution (CCI)	3,930	2,783	141.2	4,120
Centinela State Prison (CEN)	3,488	2,308	151.1	3,333
California Health Care Facility - Stockton (CHCF)	2,646	2,951	89.7	2,951
California Institution for Men (CIM)	3,766	2,976	126.5	4,186
California Men's Colony (CMC)	3,524	3,838	91.8	4,398
California Medical Facility (CMF)	2,350	2,361	99.5	2,847
California State Prison, Corcoran (COR)	3,351	3,116	107.5	4,270
California Rehabilitation Center (CRC)	2,617	2,491	105.1	3,210
Correctional Training Facility (CTF)	5,447	3,312	164.5	4,887
Chuckawalla Valley State Prison (CVSP)	2,755	1,738	158.5	2,478
Deuel Vocational Institution (DVI)	2,569	1,681	152.8	2,353
Folsom State Prison (FOL)	2,983	2,066	144.4	2,895
High Desert State Prison (HDSP)	3,224	2,324	138.7	3,361
Ironwood State Prison (ISP)	2,578	2,200	117.2	3,200
Kern Valley State Prison (KVSP)	3,716	2,448	151.8	3,522
California State Prison, Los Angeles County (LAC)	3,136	2,300	136.3	3,300
Mule Creek State Prison (MCSP)	4,051	3,284	123.4	4,009
North Kern State Prison (NKSP)	4,148	2,694	154.0	3,911
Pelican Bay State Prison (PBSP)	2,553	2,380	107.3	3,250
Pleasant Valley State Prison (PVSP)	3,260	2,308	141.2	3,333
RJ Donovan Correctional Facility (RJD)	3,763	2,992	125.8	3,942
California State Prison, Sacramento (SAC)	2,057	1,828	112.5	2,449
California Substance Abuse Treatment Facility (SATF)	5,508	3,424	160.9	5,111
Sierra Conservation Center (SCC)	4,014	3,936	102.0	4,570
California State Prison, Solano (SOL)	4,294	2,610	164.5	3,882
San Quentin State Prison (SQ)	3,885	3,082	126.1	3,984
Salinas Valley State Prison (SVSP)	3,408	2,452	139.0	3,409
Valley State Prison (VSP)	3,068	1,980	154.9	2,954
Wasco State Prison (WSP)	4,788	2,984	160.5	4,351
Male Total	112,450	85,958	130.8	116,931
Female Institutions				
Central California Women's Facility (CCWF)	2,861	2,004	142.8	2,964
California Institution for Women (CIW)	1,796	1,398	128.5	1,877
Folsom State Prison (FOL)	447	403	110.9	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	5,105	3,805	134.2	8,644
Institution Total	117,555	89,763	131.0	125,575

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 1, 2019

Monthly Report of Population
As of Midnight April 30, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,989	2,920	136.6	4,370
Calipatria State Prison (CAL)	3,538	2,308	153.3	3,333
California Correctional Center (CCC)	4,018	3,883	103.5	4,762
California Correctional Institution (CCI)	3,891	2,783	139.8	4,120
Centinela State Prison (CEN)	3,513	2,308	152.2	3,333
California Health Care Facility - Stockton (CHCF)	2,647	2,951	89.7	2,951
California Institution for Men (CIM)	3,675	2,976	123.5	4,186
California Men's Colony (CMC)	3,427	3,838	89.3	4,398
California Medical Facility (CMF)	2,520	2,361	106.7	2,847
California State Prison, Corcoran (COR)	3,235	3,116	103.8	4,270
California Rehabilitation Center (CRC)	2,753	2,491	110.5	3,210
Correctional Training Facility (CTF)	5,551	3,312	167.6	4,887
Chuckawalla Valley State Prison (CVSP)	2,789	1,738	160.5	2,478
Deuel Vocational Institution (DVI)	2,368	1,681	140.9	2,353
Folsom State Prison (FOL)	3,015	2,066	145.9	2,895
High Desert State Prison (HDSP)	3,187	2,324	137.1	3,361
Ironwood State Prison (ISP)	2,642	2,200	120.1	3,200
Kern Valley State Prison (KVSP)	3,679	2,448	150.3	3,522
California State Prison, Los Angeles County (LAC)	3,200	2,300	139.1	3,300
Mule Creek State Prison (MCSP)	4,088	3,284	124.5	4,009
North Kern State Prison (NKSP)	3,954	2,694	146.8	3,911
Pelican Bay State Prison (PBSP)	2,588	2,380	108.7	3,250
Pleasant Valley State Prison (PVSP)	3,357	2,308	145.5	3,333
RJ Donovan Correctional Facility (RJD)	3,773	2,992	126.1	3,942
California State Prison, Sacramento (SAC)	2,101	1,828	114.9	2,449
California Substance Abuse Treatment Facility (SATF)	5,598	3,424	163.5	5,111
Sierra Conservation Center (SCC)	4,106	3,936	104.3	4,570
California State Prison, Solano (SOL)	4,373	2,610	167.5	3,882
San Quentin State Prison (SQ)	3,973	3,082	128.9	3,984
Salinas Valley State Prison (SVSP)	3,337	2,452	136.1	3,409
Valley State Prison (VSP)	2,962	1,980	149.6	2,954
Wasco State Prison (WSP)	4,992	2,984	167.3	4,351
Male Total	112,839	85,958	131.3	116,931
Female Institutions				
Central California Women's Facility (CCWF)	2,894	2,004	144.4	2,964
California Institution for Women (CIW)	1,759	1,398	125.8	1,877
Folsom State Prison (FOL)	450	403	111.7	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	5,104	3,805	134.1	8,644
Institution Total	117,943	89,763	131.4	125,575

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
June 1, 2019

Monthly Report of Population
As of Midnight May 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,775	2,920	129.3	4,370
Calipatria State Prison (CAL)	3,506	2,308	151.9	3,333
California Correctional Center (CCC)	4,050	3,883	104.3	4,762
California Correctional Institution (CCI)	3,858	2,783	138.6	4,120
Centinela State Prison (CEN)	3,531	2,308	153.0	3,333
California Health Care Facility - Stockton (CHCF)	2,675	2,951	90.6	2,951
California Institution for Men (CIM)	3,663	2,976	123.1	4,186
California Men's Colony (CMC)	3,463	3,838	90.2	4,398
California Medical Facility (CMF)	2,561	2,361	108.5	2,847
California State Prison, Corcoran (COR)	3,192	3,116	102.4	4,270
California Rehabilitation Center (CRC)	2,890	2,491	116.0	3,210
Correctional Training Facility (CTF)	5,571	3,312	168.2	4,887
Chuckawalla Valley State Prison (CVSP)	2,746	1,738	158.0	2,478
Deuel Vocational Institution (DVI)	2,343	1,681	139.4	2,353
Folsom State Prison (FOL)	3,006	2,066	145.5	2,895
High Desert State Prison (HDSP)	3,128	2,324	134.6	3,361
Ironwood State Prison (ISP)	2,626	2,200	119.4	3,200
Kern Valley State Prison (KVSP)	3,644	2,448	148.9	3,522
California State Prison, Los Angeles County (LAC)	3,193	2,300	138.8	3,300
Mule Creek State Prison (MCSP)	4,054	3,284	123.4	4,009
North Kern State Prison (NKSP)	4,033	2,694	149.7	3,911
Pelican Bay State Prison (PBSP)	2,600	2,380	109.2	3,250
Pleasant Valley State Prison (PVSP)	3,460	2,308	149.9	3,333
RJ Donovan Correctional Facility (RJD)	3,876	2,992	129.5	3,942
California State Prison, Sacramento (SAC)	2,100	1,828	114.9	2,449
California Substance Abuse Treatment Facility (SATF)	5,498	3,424	160.6	5,111
Sierra Conservation Center (SCC)	3,851	3,936	97.8	4,570
California State Prison, Solano (SOL)	4,478	2,610	171.6	3,882
San Quentin State Prison (SQ)	4,088	3,082	132.6	3,984
Salinas Valley State Prison (SVSP)	3,189	2,452	130.1	3,409
Valley State Prison (VSP)	2,907	1,980	146.8	2,954
Wasco State Prison (WSP)	5,011	2,984	167.9	4,351
Male Total	112,566	85,958	131.0	116,931
Female Institutions				
Central California Women's Facility (CCWF)	2,784	2,004	138.9	2,964
California Institution for Women (CIW)	1,782	1,398	127.5	1,877
Folsom State Prison (FOL)	454	403	112.7	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	5,021	3,805	132.0	8,644
Institution Total	117,587	89,763	131.0	125,575

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
July 1, 2019

Monthly Report of Population
As of Midnight June 30, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,744	2,920	128.2	4,370
Calipatria State Prison (CAL)	3,493	2,308	151.3	3,333
California Correctional Center (CCC)	3,853	3,883	99.2	4,762
California Correctional Institution (CCI)	3,739	2,783	134.4	4,120
Centinela State Prison (CEN)	3,515	2,308	152.3	3,333
California Health Care Facility - Stockton (CHCF)	2,704	2,951	91.6	2,951
California Institution for Men (CIM)	3,665	2,976	123.2	4,186
California Men's Colony (CMC)	3,540	3,838	92.2	4,398
California Medical Facility (CMF)	2,539	2,361	107.5	2,847
California State Prison, Corcoran (COR)	3,179	3,116	102.0	4,270
California Rehabilitation Center (CRC)	2,933	2,491	117.7	3,210
Correctional Training Facility (CTF)	5,492	3,312	165.8	4,887
Chuckawalla Valley State Prison (CVSP)	2,741	1,738	157.7	2,478
Deuel Vocational Institution (DVI)	2,249	1,681	133.8	2,353
Folsom State Prison (FOL)	2,995	2,066	145.0	2,895
High Desert State Prison (HDSP)	3,127	2,324	134.6	3,361
Ironwood State Prison (ISP)	2,693	2,200	122.4	3,200
Kern Valley State Prison (KVSP)	3,604	2,448	147.2	3,522
California State Prison, Los Angeles County (LAC)	3,207	2,300	139.4	3,300
Mule Creek State Prison (MCSP)	4,035	3,284	122.9	4,009
North Kern State Prison (NKSP)	4,246	2,694	157.6	3,911
Pelican Bay State Prison (PBSP)	2,663	2,380	111.9	3,250
Pleasant Valley State Prison (PVSP)	3,416	2,308	148.0	3,333
RJ Donovan Correctional Facility (RJD)	3,980	2,992	133.0	3,942
California State Prison, Sacramento (SAC)	2,112	1,828	115.5	2,449
California Substance Abuse Treatment Facility (SATF)	5,454	3,424	159.3	5,111
Sierra Conservation Center (SCC)	3,918	3,936	99.5	4,570
California State Prison, Solano (SOL)	4,533	2,610	173.7	3,882
San Quentin State Prison (SQ)	4,243	3,082	137.7	3,984
Salinas Valley State Prison (SVSP)	3,148	2,452	128.4	3,409
Valley State Prison (VSP)	2,885	1,980	145.7	2,954
Wasco State Prison (WSP)	5,023	2,984	168.3	4,351
Male Total	112,668	85,958	131.1	116,931
Female Institutions				
Central California Women's Facility (CCWF)	2,781	2,004	138.8	2,964
California Institution for Women (CIW)	1,798	1,398	128.6	1,877
Folsom State Prison (FOL)	434	403	107.7	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	5,014	3,805	131.8	8,644
Institution Total	117,682	89,763	131.1	125,575

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
August 1, 2019

Monthly Report of Population
As of Midnight July 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,751	2,920	128.5	4,370
Calipatria State Prison (CAL)	3,474	2,308	150.5	3,333
California Correctional Center (CCC)	3,964	3,883	102.1	4,762
California Correctional Institution (CCI)	3,678	2,783	132.2	4,120
Centinela State Prison (CEN)	3,495	2,308	151.4	3,333
California Health Care Facility - Stockton (CHCF)	2,784	2,951	94.3	2,951
California Institution for Men (CIM)	3,644	2,976	122.4	4,186
California Men's Colony (CMC)	3,682	3,838	95.9	4,398
California Medical Facility (CMF)	2,556	2,361	108.3	2,847
California State Prison, Corcoran (COR)	3,161	3,116	101.4	4,233
California Rehabilitation Center (CRC)	2,958	2,491	118.7	3,210
Correctional Training Facility (CTF)	5,414	3,312	163.5	4,887
Chuckawalla Valley State Prison (CVSP)	2,709	1,738	155.9	2,478
Deuel Vocational Institution (DVI)	2,169	1,681	129.0	2,353
Folsom State Prison (FOL)	2,994	2,066	144.9	2,895
High Desert State Prison (HDSP)	3,130	2,324	134.7	3,361
Ironwood State Prison (ISP)	2,681	2,200	121.9	3,200
Kern Valley State Prison (KVSP)	3,568	2,448	145.8	3,522
California State Prison, Los Angeles County (LAC)	3,175	2,300	138.0	3,300
Mule Creek State Prison (MCSP)	3,970	3,284	120.9	4,009
North Kern State Prison (NKSP)	4,195	2,694	155.7	3,911
Pelican Bay State Prison (PBSP)	2,625	2,380	110.3	3,250
Pleasant Valley State Prison (PVSP)	3,332	2,308	144.4	3,333
RJ Donovan Correctional Facility (RJD)	4,099	2,992	137.0	3,942
California State Prison, Sacramento (SAC)	2,126	1,828	116.3	2,449
California Substance Abuse Treatment Facility (SATF)	5,516	3,424	161.1	5,111
Sierra Conservation Center (SCC)	4,066	3,936	103.3	4,570
California State Prison, Solano (SOL)	4,575	2,610	175.3	3,882
San Quentin State Prison (SQ)	4,329	3,082	140.5	3,984
Salinas Valley State Prison (SVSP)	3,143	2,452	128.2	3,409
Valley State Prison (VSP)	2,845	1,980	143.7	2,954
Wasco State Prison (WSP)	4,906	2,984	164.4	4,351
Male Total	112,714	85,958	131.1	116,894
Female Institutions				
Central California Women's Facility (CCWF)	2,826	2,004	141.0	2,964
California Institution for Women (CIW)	1,752	1,398	125.3	1,877
Folsom State Prison (FOL)	454	403	112.7	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	5,033	3,805	132.3	8,644
Institution Total	117,747	89,763	131.2	125,538

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
September 1, 2019

Monthly Report of Population
As of Midnight August 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,778	2,920	129.4	4,370
Calipatria State Prison (CAL)	3,449	2,308	149.4	3,333
California Correctional Center (CCC)	3,648	3,883	93.9	4,762
California Correctional Institution (CCI)	3,709	2,783	133.3	4,120
Centinela State Prison (CEN)	3,530	2,308	152.9	3,333
California Health Care Facility - Stockton (CHCF)	2,780	2,951	94.2	2,951
California Institution for Men (CIM)	3,633	2,976	122.1	4,186
California Men's Colony (CMC)	3,833	3,838	99.9	4,308
California Medical Facility (CMF)	2,571	2,361	108.9	2,847
California State Prison, Corcoran (COR)	3,182	3,116	102.1	4,233
California Rehabilitation Center (CRC)	3,054	2,491	122.6	3,210
Correctional Training Facility (CTF)	5,329	3,312	160.9	4,887
Chuckawalla Valley State Prison (CVSP)	2,692	1,738	154.9	2,478
Deuel Vocational Institution (DVI)	2,336	1,681	139.0	2,353
Folsom State Prison (FOL)	2,953	2,066	142.9	2,895
High Desert State Prison (HDSP)	3,321	2,324	142.9	3,361
Ironwood State Prison (ISP)	2,740	2,200	124.5	3,200
Kern Valley State Prison (KVSP)	3,584	2,448	146.4	3,522
California State Prison, Los Angeles County (LAC)	3,159	2,300	137.3	3,300
Mule Creek State Prison (MCSP)	4,008	3,284	122.0	4,009
North Kern State Prison (NKSP)	4,058	2,694	150.6	3,911
Pelican Bay State Prison (PBSP)	2,616	2,380	109.9	3,250
Pleasant Valley State Prison (PVSP)	3,233	2,308	140.1	3,333
RJ Donovan Correctional Facility (RJD)	4,071	2,992	136.1	3,942
California State Prison, Sacramento (SAC)	2,135	1,828	116.8	2,449
California Substance Abuse Treatment Facility (SATF)	5,540	3,424	161.8	5,111
Sierra Conservation Center (SCC)	4,145	3,936	105.3	4,570
California State Prison, Solano (SOL)	4,559	2,610	174.7	3,882
San Quentin State Prison (SQ)	4,193	3,082	136.0	3,984
Salinas Valley State Prison (SVSP)	3,051	2,452	124.4	3,409
Valley State Prison (VSP)	2,855	1,980	144.2	2,954
Wasco State Prison (WSP)	4,979	2,984	166.9	4,351
Male Total	112,724	85,958	131.1	116,804
Female Institutions				
Central California Women's Facility (CCWF)	2,752	2,004	137.3	2,964
California Institution for Women (CIW)	1,701	1,398	121.7	1,877
Folsom State Prison (FOL)	488	403	121.1	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	4,942	3,805	129.9	8,644
Institution Total	117,666	89,763	131.1	125,448

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 1, 2019

Monthly Report of Population
As of Midnight September 30, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,885	2,920	133.0	4,370
Calipatria State Prison (CAL)	3,442	2,308	149.1	3,333
California Correctional Center (CCC)	3,640	3,883	93.7	4,762
California Correctional Institution (CCI)	3,779	2,783	135.8	4,120
Centinela State Prison (CEN)	3,544	2,308	153.6	3,333
California Health Care Facility - Stockton (CHCF)	2,819	2,951	95.5	2,951
California Institution for Men (CIM)	3,605	2,976	121.1	4,186
California Men's Colony (CMC)	3,836	3,838	99.9	4,308
California Medical Facility (CMF)	2,626	2,361	111.2	2,847
California State Prison, Corcoran (COR)	3,212	3,116	103.1	4,233
California Rehabilitation Center (CRC)	3,284	2,491	131.8	3,210
Correctional Training Facility (CTF)	5,273	3,312	159.2	4,887
Chuckawalla Valley State Prison (CVSP)	2,716	1,738	156.3	2,478
Deuel Vocational Institution (DVI)	2,511	1,681	149.4	2,353
Folsom State Prison (FOL)	2,875	2,066	139.2	2,895
High Desert State Prison (HDSP)	3,190	2,324	137.3	3,361
Ironwood State Prison (ISP)	2,738	2,200	124.5	3,200
Kern Valley State Prison (KVSP)	3,554	2,448	145.2	3,522
California State Prison, Los Angeles County (LAC)	3,118	2,300	135.6	3,300
Mule Creek State Prison (MCSP)	4,009	3,284	122.1	4,009
North Kern State Prison (NKSP)	4,317	2,694	160.2	3,911
Pelican Bay State Prison (PBSP)	2,616	2,380	109.9	3,265
Pleasant Valley State Prison (PVSP)	3,143	2,308	136.2	3,333
RJ Donovan Correctional Facility (RJD)	4,015	2,992	134.2	3,942
California State Prison, Sacramento (SAC)	2,131	1,828	116.6	2,449
California Substance Abuse Treatment Facility (SATF)	5,477	3,424	160.0	5,111
Sierra Conservation Center (SCC)	4,077	3,936	103.6	4,570
California State Prison, Solano (SOL)	4,538	2,610	173.9	3,882
San Quentin State Prison (SQ)	4,234	3,082	137.4	3,984
Salinas Valley State Prison (SVSP)	3,015	2,452	123.0	3,409
Valley State Prison (VSP)	2,856	1,980	144.2	2,954
Wasco State Prison (WSP)	4,825	2,984	161.7	4,351
Male Total	112,900	85,958	131.3	116,819
Female Institutions				
Central California Women's Facility (CCWF)	2,775	2,004	138.5	2,964
California Institution for Women (CIW)	1,684	1,398	120.5	1,877
Folsom State Prison (FOL)	476	403	118.1	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	4,936	3,805	129.7	8,644
Institution Total	117,836	89,763	131.3	125,463

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 31, 2019

Monthly Report of Population
As of Midnight October 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,999	2,920	137.0	4,370
Calipatria State Prison (CAL)	3,384	2,308	146.6	3,333
California Correctional Center (CCC)	3,757	3,883	96.8	4,762
California Correctional Institution (CCI)	3,749	2,783	134.7	4,120
Centinela State Prison (CEN)	3,566	2,308	154.5	3,333
California Health Care Facility - Stockton (CHCF)	2,818	2,951	95.5	2,951
California Institution for Men (CIM)	3,680	2,976	123.7	4,186
California Men's Colony (CMC)	3,811	3,838	99.3	4,308
California Medical Facility (CMF)	2,587	2,361	109.6	2,847
California State Prison, Corcoran (COR)	3,225	3,116	103.5	4,233
California Rehabilitation Center (CRC)	3,481	2,491	139.7	3,210
Correctional Training Facility (CTF)	5,215	3,312	157.5	4,887
Chuckawalla Valley State Prison (CVSP)	2,745	1,738	157.9	2,478
Deuel Vocational Institution (DVI)	2,268	1,681	134.9	2,353
Folsom State Prison (FOL)	2,890	2,066	139.9	2,895
High Desert State Prison (HDSP)	3,201	2,324	137.7	3,361
Ironwood State Prison (ISP)	2,839	2,200	129.0	3,200
Kern Valley State Prison (KVSP)	3,574	2,448	146.0	3,522
California State Prison, Los Angeles County (LAC)	3,124	2,300	135.8	3,300
Mule Creek State Prison (MCSP)	4,051	3,284	123.4	4,009
North Kern State Prison (NKSP)	4,061	2,694	150.7	3,911
Pelican Bay State Prison (PBSP)	2,644	2,380	111.1	3,265
Pleasant Valley State Prison (PVSP)	3,150	2,308	136.5	3,333
RJ Donovan Correctional Facility (RJD)	3,946	2,992	131.9	3,942
California State Prison, Sacramento (SAC)	2,152	1,828	117.7	2,449
California Substance Abuse Treatment Facility (SATF)	5,380	3,424	157.1	5,111
Sierra Conservation Center (SCC)	4,247	3,936	107.9	4,570
California State Prison, Solano (SOL)	4,574	2,610	175.2	3,882
San Quentin State Prison (SQ)	4,182	3,082	135.7	3,984
Salinas Valley State Prison (SVSP)	2,931	2,452	119.5	3,409
Valley State Prison (VSP)	2,867	1,980	144.8	2,954
Wasco State Prison (WSP)	4,818	2,984	161.5	4,351
Male Total	112,916	85,958	131.4	116,819
Female Institutions				
Central California Women's Facility (CCWF)	2,832	2,004	141.3	2,964
California Institution for Women (CIW)	1,690	1,398	120.9	1,877
Folsom State Prison (FOL)	450	403	111.7	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	4,973	3,805	130.7	8,644
Institution Total	117,889	89,763	131.3	125,463

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
December 1, 2019

Monthly Report of Population
As of Midnight November 30, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,990	2,920	136.6	4,370
Calipatria State Prison (CAL)	3,292	2,308	142.6	3,333
California Correctional Center (CCC)	3,831	3,883	98.7	4,762
California Correctional Institution (CCI)	3,720	2,783	133.7	4,120
Centinela State Prison (CEN)	3,606	2,308	156.2	3,333
California Health Care Facility - Stockton (CHCF)	2,840	2,951	96.2	2,951
California Institution for Men (CIM)	3,656	2,976	122.8	4,186
California Men's Colony (CMC)	3,813	3,838	99.3	4,308
California Medical Facility (CMF)	2,548	2,361	107.9	2,847
California State Prison, Corcoran (COR)	3,147	3,116	101.0	4,233
California Rehabilitation Center (CRC)	3,540	2,491	142.1	3,210
Correctional Training Facility (CTF)	5,194	3,312	156.8	4,887
Chuckawalla Valley State Prison (CVSP)	2,763	1,738	159.0	2,478
Deuel Vocational Institution (DVI)	2,209	1,681	131.4	2,353
Folsom State Prison (FOL)	2,838	2,066	137.4	2,897
High Desert State Prison (HDSP)	3,164	2,324	136.1	3,361
Ironwood State Prison (ISP)	2,844	2,200	129.3	3,200
Kern Valley State Prison (KVSP)	3,619	2,448	147.8	3,522
California State Prison, Los Angeles County (LAC)	3,138	2,300	136.4	3,300
Mule Creek State Prison (MCSP)	4,027	3,284	122.6	4,009
North Kern State Prison (NKSP)	4,002	2,694	148.6	3,911
Pelican Bay State Prison (PBSP)	2,600	2,380	109.2	3,265
Pleasant Valley State Prison (PVSP)	3,159	2,308	136.9	3,333
RJ Donovan Correctional Facility (RJD)	3,925	2,992	131.2	3,942
California State Prison, Sacramento (SAC)	2,214	1,828	121.1	2,449
California Substance Abuse Treatment Facility (SATF)	5,362	3,424	156.6	5,111
Sierra Conservation Center (SCC)	4,334	3,836	113.0	4,570
California State Prison, Solano (SOL)	4,457	2,610	170.8	3,882
San Quentin State Prison (SQ)	4,216	3,082	136.8	3,984
Salinas Valley State Prison (SVSP)	2,963	2,452	120.8	3,409
Valley State Prison (VSP)	2,904	1,980	146.7	2,954
Wasco State Prison (WSP)	4,780	2,984	160.2	4,351
Male Total	112,695	85,858	131.3	116,821
Female Institutions				
Central California Women's Facility (CCWF)	2,801	2,004	139.8	2,964
California Institution for Women (CIW)	1,672	1,398	119.6	1,877
Folsom State Prison (FOL)	467	403	115.9	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	4,941	3,805	129.9	8,644
Institution Total	117,636	89,663	131.2	125,465

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
January 1, 2020

Monthly Report of Population
As of Midnight December 31, 2019

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,036	2,920	138.2	4,370
Calipatria State Prison (CAL)	3,189	2,308	138.2	3,333
California Correctional Center (CCC)	3,803	3,883	97.9	4,762
California Correctional Institution (CCI)	3,694	2,783	132.7	4,120
Centinela State Prison (CEN)	3,550	2,308	153.8	3,333
California Health Care Facility - Stockton (CHCF)	2,831	2,951	95.9	2,951
California Institution for Men (CIM)	3,646	2,976	122.5	4,186
California Men's Colony (CMC)	3,755	3,838	97.8	4,308
California Medical Facility (CMF)	2,554	2,361	108.2	2,847
California State Prison, Corcoran (COR)	3,141	3,116	100.8	4,233
California Rehabilitation Center (CRC)	3,573	2,491	143.4	3,210
Correctional Training Facility (CTF)	5,095	3,312	153.8	4,887
Chuckawalla Valley State Prison (CVSP)	2,756	1,738	158.6	2,478
Deuel Vocational Institution (DVI)	2,142	1,681	127.4	2,353
Folsom State Prison (FOL)	2,839	2,066	137.4	2,897
High Desert State Prison (HDSP)	3,110	2,324	133.8	3,361
Ironwood State Prison (ISP)	2,840	2,200	129.1	3,200
Kern Valley State Prison (KVSP)	3,589	2,448	146.6	3,522
California State Prison, Los Angeles County (LAC)	3,193	2,300	138.8	3,300
Mule Creek State Prison (MCSP)	3,989	3,284	121.5	4,009
North Kern State Prison (NKSP)	4,344	2,694	161.2	3,911
Pelican Bay State Prison (PBSP)	2,598	2,380	109.2	3,265
Pleasant Valley State Prison (PVSP)	3,159	2,308	136.9	3,333
RJ Donovan Correctional Facility (RJD)	3,874	2,992	129.5	3,942
California State Prison, Sacramento (SAC)	2,270	1,828	124.2	2,449
California Substance Abuse Treatment Facility (SATF)	5,303	3,424	154.9	5,111
Sierra Conservation Center (SCC)	4,381	3,836	114.2	4,570
California State Prison, Solano (SOL)	4,356	2,610	166.9	3,882
San Quentin State Prison (SQ)	4,161	3,082	135.0	3,984
Salinas Valley State Prison (SVSP)	2,946	2,452	120.1	3,409
Valley State Prison (VSP)	2,951	1,980	149.0	2,954
Wasco State Prison (WSP)	4,828	2,984	161.8	4,351
Male Total	112,496	85,858	131.0	116,821
Female Institutions				
Central California Women's Facility (CCWF)	2,779	2,004	138.7	2,964
California Institution for Women (CIW)	1,681	1,398	120.2	1,877
Folsom State Prison (FOL)	436	403	108.2	530
San Quentin State Prison (SQ)	1	3,082	0.0	3,273
Female Total	4,897	3,805	128.7	8,644
Institution Total	117,393	89,663	130.9	125,465

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
February 1, 2020

Monthly Report of Population
As of Midnight January 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,205	2,920	144.0	4,387
Calipatria State Prison (CAL)	3,113	2,308	134.9	3,451
California Correctional Center (CCC)	4,054	3,883	104.4	4,752
California Correctional Institution (CCI)	3,700	2,783	133.0	4,085
Centinela State Prison (CEN)	3,476	2,308	150.6	3,446
California Health Care Facility - Stockton (CHCF)	2,848	2,951	96.5	2,951
California Institution for Men (CIM)	3,627	2,976	121.9	4,226
California Men's Colony (CMC)	3,764	3,838	98.1	4,407
California Medical Facility (CMF)	2,507	2,361	106.2	2,861
California State Prison, Corcoran (COR)	3,042	3,116	97.6	4,476
California Rehabilitation Center (CRC)	3,812	2,491	153.0	3,159
Correctional Training Facility (CTF)	5,064	3,312	152.9	4,887
Chuckawalla Valley State Prison (CVSP)	2,771	1,738	159.4	2,578
Deuel Vocational Institution (DVI)	2,053	1,681	122.1	2,413
Folsom State Prison (FOL)	2,872	2,066	139.0	2,986
High Desert State Prison (HDSP)	3,161	2,324	136.0	3,461
Ironwood State Prison (ISP)	2,898	2,200	131.7	3,300
Kern Valley State Prison (KVSP)	3,553	2,448	145.1	3,622
California State Prison, Los Angeles County (LAC)	3,219	2,300	140.0	3,400
Mule Creek State Prison (MCSP)	4,007	3,284	122.0	4,105
North Kern State Prison (NKSP)	4,356	2,694	161.7	4,011
Pelican Bay State Prison (PBSP)	2,648	2,380	111.3	3,361
Pleasant Valley State Prison (PVSP)	3,131	2,308	135.7	3,433
RJ Donovan Correctional Facility (RJD)	3,845	2,992	128.5	4,038
California State Prison, Sacramento (SAC)	2,354	1,828	128.8	2,545
California Substance Abuse Treatment Facility (SATF)	5,296	3,424	154.7	5,111
Sierra Conservation Center (SCC)	4,396	3,836	114.6	4,570
California State Prison, Solano (SOL)	4,308	2,610	165.1	3,882
San Quentin State Prison (SQ)	4,033	3,082	130.9	3,984
Salinas Valley State Prison (SVSP)	2,921	2,452	119.1	3,509
Valley State Prison (VSP)	3,005	1,980	151.8	2,954
Wasco State Prison (WSP)	4,564	2,984	152.9	4,447
Male Total	112,603	85,858	131.2	118,798
Female Institutions				
Central California Women's Facility (CCWF)	2,816	2,004	140.5	2,988
California Institution for Women (CIW)	1,620	1,398	115.9	1,877
Folsom State Prison (FOL)	415	403	103.0	530
Female Total	4,851	3,805	127.5	5,395
Institution Total	117,454	89,663	131.0	124,193

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 1, 2020

Monthly Report of Population
As of Midnight February 29, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,223	2,920	144.6	4,387
Calipatria State Prison (CAL)	2,977	2,308	129.0	3,451
California Correctional Center (CCC)	4,177	3,883	107.6	4,752
California Correctional Institution (CCI)	3,659	2,783	131.5	4,085
Centinela State Prison (CEN)	3,405	2,308	147.5	3,446
California Health Care Facility - Stockton (CHCF)	2,822	2,951	95.6	2,951
California Institution for Men (CIM)	3,552	2,976	119.4	4,226
California Men's Colony (CMC)	3,782	3,838	98.5	4,407
California Medical Facility (CMF)	2,485	2,361	105.3	2,861
California State Prison, Corcoran (COR)	2,915	3,116	93.5	4,476
California Rehabilitation Center (CRC)	3,937	2,491	158.0	3,084
Correctional Training Facility (CTF)	5,073	3,312	153.2	4,887
Chuckawalla Valley State Prison (CVSP)	2,904	1,738	167.1	2,578
Deuel Vocational Institution (DVI)	1,994	1,681	118.6	2,190
Folsom State Prison (FOL)	2,871	2,066	139.0	2,986
High Desert State Prison (HDSP)	3,255	2,324	140.1	3,461
Ironwood State Prison (ISP)	2,925	2,200	133.0	3,300
Kern Valley State Prison (KVSP)	3,512	2,448	143.5	3,622
California State Prison, Los Angeles County (LAC)	3,200	2,300	139.1	3,400
Mule Creek State Prison (MCSP)	4,003	3,284	121.9	4,105
North Kern State Prison (NKSP)	4,249	2,694	157.7	4,011
Pelican Bay State Prison (PBSP)	2,628	2,380	110.4	3,361
Pleasant Valley State Prison (PVSP)	3,203	2,308	138.8	3,433
RJ Donovan Correctional Facility (RJD)	3,893	2,992	130.1	4,038
California State Prison, Sacramento (SAC)	2,425	1,828	132.7	2,545
California Substance Abuse Treatment Facility (SATF)	5,297	3,424	154.7	5,111
Sierra Conservation Center (SCC)	4,326	3,836	112.8	4,570
California State Prison, Solano (SOL)	4,243	2,610	162.6	3,882
San Quentin State Prison (SQ)	4,051	3,082	131.4	3,984
Salinas Valley State Prison (SVSP)	2,957	2,452	120.6	3,509
Valley State Prison (VSP)	2,988	1,980	150.9	2,954
Wasco State Prison (WSP)	4,611	2,984	154.5	4,447
Male Total	112,542	85,858	131.1	118,500
Female Institutions				
Central California Women's Facility (CCWF)	2,760	2,004	137.7	2,988
California Institution for Women (CIW)	1,635	1,398	117.0	1,877
Folsom State Prison (FOL)	407	403	101.0	530
Female Total	4,802	3,805	126.2	5,395
Institution Total	117,344	89,663	130.9	123,895

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
April 1, 2020

Monthly Report of Population
As of Midnight March 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,294	2,920	147.1	4,387
Calipatria State Prison (CAL)	3,055	2,308	132.4	3,451
California Correctional Center (CCC)	4,309	3,883	111.0	4,752
California Correctional Institution (CCI)	3,666	2,783	131.7	4,085
Centinela State Prison (CEN)	3,385	2,308	146.7	3,446
California Health Care Facility - Stockton (CHCF)	2,834	2,951	96.0	2,951
California Institution for Men (CIM)	3,515	2,976	118.1	4,226
California Men's Colony (CMC)	3,823	3,838	99.6	4,407
California Medical Facility (CMF)	2,475	2,361	104.8	2,861
California State Prison, Corcoran (COR)	2,819	3,116	90.5	4,476
California Rehabilitation Center (CRC)	4,015	2,491	161.2	3,084
Correctional Training Facility (CTF)	5,096	3,312	153.9	4,887
Chuckawalla Valley State Prison (CVSP)	2,948	1,738	169.6	2,578
Deuel Vocational Institution (DVI)	1,910	1,681	113.6	2,190
Folsom State Prison (FOL)	2,818	2,066	136.4	2,986
High Desert State Prison (HDSP)	3,352	2,324	144.2	3,461
Ironwood State Prison (ISP)	2,819	2,200	128.1	3,300
Kern Valley State Prison (KVSP)	3,602	2,448	147.1	3,622
California State Prison, Los Angeles County (LAC)	3,220	2,300	140.0	3,400
Mule Creek State Prison (MCSP)	4,003	3,284	121.9	4,105
North Kern State Prison (NKSP)	3,866	2,694	143.5	4,011
Pelican Bay State Prison (PBSP)	2,677	2,380	112.5	3,361
Pleasant Valley State Prison (PVSP)	3,169	2,308	137.3	3,433
RJ Donovan Correctional Facility (RJD)	3,873	2,992	129.4	4,038
California State Prison, Sacramento (SAC)	2,417	1,828	132.2	2,545
California Substance Abuse Treatment Facility (SATF)	5,278	3,424	154.1	5,111
Sierra Conservation Center (SCC)	4,334	3,836	113.0	4,570
California State Prison, Solano (SOL)	4,179	2,610	160.1	3,882
San Quentin State Prison (SQ)	3,988	3,082	129.4	3,984
Salinas Valley State Prison (SVSP)	2,930	2,452	119.5	3,509
Valley State Prison (VSP)	3,024	1,980	152.7	2,954
Wasco State Prison (WSP)	4,359	2,984	146.1	4,447
Male Total	112,052	85,858	130.5	118,500
Female Institutions				
Central California Women's Facility (CCWF)	2,795	2,004	139.5	2,988
California Institution for Women (CIW)	1,650	1,398	118.0	1,877
Folsom State Prison (FOL)	389	403	96.5	530
Female Total	4,834	3,805	127.0	5,395
Institution Total	116,886	89,663	130.4	123,895

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 1, 2020

Monthly Report of Population
As of Midnight April 30, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,197	2,920	143.7	4,387
Calipatria State Prison (CAL)	2,935	2,308	127.2	3,451
California Correctional Center (CCC)	4,064	3,883	104.7	4,752
California Correctional Institution (CCI)	3,516	2,783	126.3	4,085
Centinela State Prison (CEN)	3,284	2,308	142.3	3,446
California Health Care Facility - Stockton (CHCF)	2,751	2,951	93.2	2,951
California Institution for Men (CIM)	3,357	2,976	112.8	4,350
California Men's Colony (CMC)	3,727	3,838	97.1	4,407
California Medical Facility (CMF)	2,396	2,361	101.5	2,861
California State Prison, Corcoran (COR)	3,719	3,116	119.4	4,476
California Rehabilitation Center (CRC)	3,341	2,491	134.1	3,084
Correctional Training Facility (CTF)	4,801	3,312	145.0	4,941
Chuckawalla Valley State Prison (CVSP)	2,324	1,738	133.7	2,578
Deuel Vocational Institution (DVI)	2,047	1,681	121.8	2,413
Folsom State Prison (FOL)	2,694	2,066	130.4	2,986
High Desert State Prison (HDSP)	3,286	2,324	141.4	3,461
Ironwood State Prison (ISP)	3,203	2,200	145.6	3,300
Kern Valley State Prison (KVSP)	3,534	2,448	144.4	3,622
California State Prison, Los Angeles County (LAC)	3,158	2,300	137.3	3,400
Mule Creek State Prison (MCSP)	3,948	3,284	120.2	4,207
North Kern State Prison (NKSP)	3,630	2,694	134.7	4,011
Pelican Bay State Prison (PBSP)	2,608	2,380	109.6	3,361
Pleasant Valley State Prison (PVSP)	3,062	2,308	132.7	3,535
RJ Donovan Correctional Facility (RJD)	3,806	2,992	127.2	4,038
California State Prison, Sacramento (SAC)	2,363	1,828	129.3	2,545
California Substance Abuse Treatment Facility (SATF)	4,844	3,424	141.5	5,111
Sierra Conservation Center (SCC)	4,012	3,836	104.6	4,570
California State Prison, Solano (SOL)	3,752	2,610	143.8	4,010
San Quentin State Prison (SQ)	3,776	3,082	122.5	3,984
Salinas Valley State Prison (SVSP)	2,877	2,452	117.3	3,509
Valley State Prison (VSP)	2,971	1,980	150.1	2,954
Wasco State Prison (WSP)	4,121	2,984	138.1	4,447
Male Total	108,104	85,858	125.9	119,233
Female Institutions				
Central California Women's Facility (CCWF)	2,640	2,004	131.7	2,988
California Institution for Women (CIW)	1,553	1,398	111.1	1,877
Folsom State Prison (FOL)	276	403	68.5	530
Female Total	4,469	3,805	117.5	5,395
Institution Total	112,573	89,663	125.6	124,628

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
June 1, 2020

Monthly Report of Population
As of Midnight May 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,158	2,920	142.4	4,499
Calipatria State Prison (CAL)	3,084	2,308	133.6	3,451
California Correctional Center (CCC)	4,006	3,883	103.2	4,752
California Correctional Institution (CCI)	3,655	2,783	131.3	4,085
Centinela State Prison (CEN)	3,343	2,308	144.8	3,446
California Health Care Facility - Stockton (CHCF)	2,724	2,951	92.3	2,951
California Institution for Men (CIM)	3,098	2,976	104.1	4,350
California Men's Colony (CMC)	3,711	3,838	96.7	4,407
California Medical Facility (CMF)	2,378	2,361	100.7	2,861
California State Prison, Corcoran (COR)	3,741	3,116	120.1	4,476
California Rehabilitation Center (CRC)	3,254	2,491	130.6	3,084
Correctional Training Facility (CTF)	4,817	3,312	145.4	4,941
Chuckawalla Valley State Prison (CVSP)	2,261	1,738	130.1	2,578
Deuel Vocational Institution (DVI)	1,898	1,681	112.9	2,413
Folsom State Prison (FOL)	2,819	2,066	136.4	2,986
High Desert State Prison (HDSP)	3,453	2,324	148.6	3,461
Ironwood State Prison (ISP)	3,251	2,200	147.8	3,300
Kern Valley State Prison (KVSP)	3,645	2,448	148.9	3,622
California State Prison, Los Angeles County (LAC)	3,149	2,300	136.9	3,400
Mule Creek State Prison (MCSP)	3,990	3,284	121.5	4,207
North Kern State Prison (NKSP)	2,892	2,694	107.3	4,011
Pelican Bay State Prison (PBSP)	2,578	2,380	108.3	3,361
Pleasant Valley State Prison (PVSP)	3,233	2,308	140.1	3,535
RJ Donovan Correctional Facility (RJD)	3,792	2,992	126.7	4,038
California State Prison, Sacramento (SAC)	2,346	1,828	128.3	2,545
California Substance Abuse Treatment Facility (SATF)	4,845	3,424	141.5	5,111
Sierra Conservation Center (SCC)	4,015	3,836	104.7	4,570
California State Prison, Solano (SOL)	3,720	2,610	142.5	4,010
San Quentin State Prison (SQ)	3,626	3,082	117.7	3,984
Salinas Valley State Prison (SVSP)	2,904	2,452	118.4	3,509
Valley State Prison (VSP)	3,025	1,980	152.8	2,954
Wasco State Prison (WSP)	3,273	2,984	109.7	4,447
Male Total	106,684	85,858	124.3	119,345
Female Institutions				
Central California Women's Facility (CCWF)	2,609	2,004	130.2	2,988
California Institution for Women (CIW)	1,518	1,398	108.6	1,877
Folsom State Prison (FOL)	261	403	64.8	530
Female Total	4,388	3,805	115.3	5,395
Institution Total	111,072	89,663	123.9	124,740

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
July 1, 2020

Monthly Report of Population
As of Midnight June 30, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	4,044	2,920	138.5	4,719
Calipatria State Prison (CAL)	3,113	2,308	134.9	3,451
California Correctional Center (CCC)	3,798	3,883	97.8	4,752
California Correctional Institution (CCI)	3,715	2,783	133.5	4,085
Centinela State Prison (CEN)	3,346	2,308	145.0	3,446
California Health Care Facility - Stockton (CHCF)	2,679	2,951	90.8	3,111
California Institution for Men (CIM)	2,956	2,976	99.3	4,350
California Men's Colony (CMC)	3,637	3,838	94.8	4,407
California Medical Facility (CMF)	2,354	2,361	99.7	2,861
California State Prison, Corcoran (COR)	3,572	3,116	114.6	4,476
California Rehabilitation Center (CRC)	3,096	2,491	124.3	3,262
Correctional Training Facility (CTF)	4,860	3,312	146.7	4,941
Chuckawalla Valley State Prison (CVSP)	2,213	1,738	127.3	2,578
Deuel Vocational Institution (DVI)	1,675	1,681	99.6	2,413
Folsom State Prison (FOL)	2,839	2,066	137.4	2,986
High Desert State Prison (HDSP)	3,572	2,324	153.7	3,461
Ironwood State Prison (ISP)	3,205	2,200	145.7	3,300
Kern Valley State Prison (KVSP)	3,700	2,448	151.1	3,622
California State Prison, Los Angeles County (LAC)	3,101	2,300	134.8	3,400
Mule Creek State Prison (MCSP)	3,992	3,284	121.6	4,207
North Kern State Prison (NKSP)	2,229	2,694	82.7	4,011
Pelican Bay State Prison (PBSP)	2,524	2,380	106.1	3,361
Pleasant Valley State Prison (PVSP)	3,200	2,308	138.6	3,535
RJ Donovan Correctional Facility (RJD)	3,804	2,992	127.1	4,038
California State Prison, Sacramento (SAC)	2,363	1,828	129.3	2,545
California Substance Abuse Treatment Facility (SATF)	4,836	3,424	141.2	5,111
Sierra Conservation Center (SCC)	4,028	3,836	105.0	4,570
California State Prison, Solano (SOL)	3,698	2,610	141.7	4,010
San Quentin State Prison (SQ)	3,462	3,082	112.3	4,044
Salinas Valley State Prison (SVSP)	2,896	2,452	118.1	3,509
Valley State Prison (VSP)	3,021	1,980	152.6	2,954
Wasco State Prison (WSP)	2,649	2,984	88.8	4,447
Male Total	104,177	85,858	121.3	119,963
Female Institutions				
Central California Women's Facility (CCWF)	2,519	2,004	125.7	2,988
California Institution for Women (CIW)	1,477	1,398	105.7	1,877
Folsom State Prison (FOL)	220	403	54.6	530
Female Total	4,216	3,805	110.8	5,395
Institution Total	108,393	89,663	120.9	125,358

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
August 1, 2020

Monthly Report of Population
As of Midnight July 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,824	2,920	131.0	4,719
Calipatria State Prison (CAL)	2,955	2,308	128.0	3,451
California Correctional Center (CCC)	3,275	3,883	84.3	4,752
California Correctional Institution (CCI)	3,445	2,783	123.8	4,115
Centinela State Prison (CEN)	3,237	2,308	140.3	3,446
California Health Care Facility - Stockton (CHCF)	2,575	2,951	87.3	3,111
California Institution for Men (CIM)	2,557	2,976	85.9	4,450
California Men's Colony (CMC)	3,486	3,838	90.8	4,407
California Medical Facility (CMF)	2,207	2,361	93.5	2,981
California State Prison, Corcoran (COR)	3,453	3,116	110.8	4,476
California Rehabilitation Center (CRC)	2,837	2,491	113.9	3,262
Correctional Training Facility (CTF)	4,630	3,312	139.8	4,941
Chuckawalla Valley State Prison (CVSP)	2,116	1,738	121.7	2,578
Deuel Vocational Institution (DVI)	1,517	1,681	90.2	2,413
Folsom State Prison (FOL)	2,499	2,066	121.0	3,026
High Desert State Prison (HDSP)	3,461	2,324	148.9	3,461
Ironwood State Prison (ISP)	3,058	2,200	139.0	3,300
Kern Valley State Prison (KVSP)	3,580	2,448	146.2	3,622
California State Prison, Los Angeles County (LAC)	3,068	2,300	133.4	3,400
Mule Creek State Prison (MCSP)	3,917	3,284	119.3	4,207
North Kern State Prison (NKSP)	1,799	2,694	66.8	4,011
Pelican Bay State Prison (PBSP)	2,432	2,380	102.2	3,361
Pleasant Valley State Prison (PVSP)	3,016	2,308	130.7	3,535
RJ Donovan Correctional Facility (RJD)	3,645	2,992	121.8	4,038
California State Prison, Sacramento (SAC)	2,316	1,828	126.7	2,545
California Substance Abuse Treatment Facility (SATF)	4,674	3,424	136.5	5,111
Sierra Conservation Center (SCC)	3,678	3,836	95.9	4,570
California State Prison, Solano (SOL)	3,575	2,610	137.0	4,010
San Quentin State Prison (SQ)	3,158	3,082	102.5	4,636
Salinas Valley State Prison (SVSP)	2,817	2,452	114.9	3,509
Valley State Prison (VSP)	2,919	1,980	147.4	2,954
Wasco State Prison (WSP)	2,208	2,984	74.0	4,447
Male Total	97,934	85,858	114.1	120,845
Female Institutions				
Central California Women's Facility (CCWF)	2,155	2,004	107.5	2,988
California Institution for Women (CIW)	1,296	1,398	92.7	1,877
Folsom State Prison (FOL)	138	403	34.2	530
Female Total	3,589	3,805	94.3	5,395
Institution Total	101,523	89,663	113.2	126,240

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
September 1, 2020

Monthly Report of Population
As of Midnight August 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,727	2,920	127.6	4,719
Calipatria State Prison (CAL)	2,893	2,308	125.3	3,451
California Correctional Center (CCC)	2,899	3,883	74.7	4,752
California Correctional Institution (CCI)	3,313	2,783	119.0	4,175
Centinela State Prison (CEN)	3,137	2,308	135.9	3,446
California Health Care Facility - Stockton (CHCF)	2,530	2,951	85.7	3,211
California Institution for Men (CIM)	2,448	2,976	82.3	4,450
California Men's Colony (CMC)	3,316	3,838	86.4	4,687
California Medical Facility (CMF)	2,148	2,361	91.0	2,981
California State Prison, Corcoran (COR)	3,314	3,116	106.4	4,476
California Rehabilitation Center (CRC)	2,589	2,491	103.9	3,262
Correctional Training Facility (CTF)	4,441	3,312	134.1	4,997
Chuckawalla Valley State Prison (CVSP)	2,051	1,738	118.0	2,578
Deuel Vocational Institution (DVI)	1,504	1,681	89.5	2,413
Folsom State Prison (FOL)	2,408	2,066	116.6	3,282
High Desert State Prison (HDSP)	3,349	2,324	144.1	3,461
Ironwood State Prison (ISP)	2,940	2,200	133.6	3,300
Kern Valley State Prison (KVSP)	3,520	2,448	143.8	3,622
California State Prison, Los Angeles County (LAC)	3,016	2,300	131.1	3,424
Mule Creek State Prison (MCSP)	3,824	3,284	116.4	4,207
North Kern State Prison (NKSP)	1,639	2,694	60.8	4,011
Pelican Bay State Prison (PBSP)	2,380	2,380	100.0	3,361
Pleasant Valley State Prison (PVSP)	2,876	2,308	124.6	3,535
RJ Donovan Correctional Facility (RJD)	3,616	2,992	120.9	4,038
California State Prison, Sacramento (SAC)	2,250	1,828	123.1	2,545
California Substance Abuse Treatment Facility (SATF)	4,531	3,424	132.3	5,157
Sierra Conservation Center (SCC)	3,271	3,836	85.3	4,570
California State Prison, Solano (SOL)	3,429	2,610	131.4	4,010
San Quentin State Prison (SQ)	3,062	3,082	99.4	4,422
Salinas Valley State Prison (SVSP)	2,754	2,452	112.3	3,509
Valley State Prison (VSP)	2,813	1,980	142.1	2,954
Wasco State Prison (WSP)	1,922	2,984	64.4	4,447
Male Total	93,910	85,858	109.4	121,453
Female Institutions				
Central California Women's Facility (CCWF)	2,037	2,004	101.6	2,988
California Institution for Women (CIW)	1,212	1,398	86.7	1,877
Folsom State Prison (FOL)	107	403	26.6	530
Female Total	3,356	3,805	88.2	5,395
Institution Total	97,266	89,663	108.5	126,848

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 1, 2020

Monthly Report of Population
As of Midnight September 30, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,557	2,920	121.8	4,719
Calipatria State Prison (CAL)	2,898	2,308	125.6	3,451
California Correctional Center (CCC)	2,560	3,883	65.9	4,752
California Correctional Institution (CCI)	3,103	2,783	111.5	4,175
Centinela State Prison (CEN)	3,123	2,308	135.3	3,446
California Health Care Facility - Stockton (CHCF)	2,460	2,951	83.4	3,211
California Institution for Men (CIM)	2,295	2,976	77.1	4,450
California Men's Colony (CMC)	3,202	3,838	83.4	4,407
California Medical Facility (CMF)	2,077	2,361	88.0	2,981
California State Prison, Corcoran (COR)	3,234	3,116	103.8	4,476
California Rehabilitation Center (CRC)	2,370	2,491	95.1	3,262
Correctional Training Facility (CTF)	4,369	3,312	131.9	4,997
Chuckawalla Valley State Prison (CVSP)	1,925	1,738	110.8	2,578
Deuel Vocational Institution (DVI)	1,577	1,681	93.8	2,413
Folsom State Prison (FOL)	2,258	2,066	109.3	3,858
High Desert State Prison (HDSP)	3,352	2,324	144.2	3,461
Ironwood State Prison (ISP)	2,920	2,200	132.7	3,300
Kern Valley State Prison (KVSP)	3,515	2,448	143.6	3,622
California State Prison, Los Angeles County (LAC)	2,959	2,300	128.7	3,424
Mule Creek State Prison (MCSP)	3,785	3,284	115.3	4,207
North Kern State Prison (NKSP)	1,857	2,694	68.9	4,011
Pelican Bay State Prison (PBSP)	2,317	2,380	97.4	3,361
Pleasant Valley State Prison (PVSP)	2,841	2,308	123.1	3,535
RJ Donovan Correctional Facility (RJD)	3,566	2,992	119.2	4,038
California State Prison, Sacramento (SAC)	2,243	1,828	122.7	2,545
California Substance Abuse Treatment Facility (SATF)	4,442	3,424	129.7	5,157
Sierra Conservation Center (SCC)	3,024	3,836	78.8	4,570
California State Prison, Solano (SOL)	3,337	2,610	127.9	4,010
San Quentin State Prison (SQ)	2,930	3,082	95.1	4,491
Salinas Valley State Prison (SVSP)	2,759	2,452	112.5	3,509
Valley State Prison (VSP)	2,766	1,980	139.7	2,954
Wasco State Prison (WSP)	1,784	2,984	59.8	4,447
Male Total	91,405	85,858	106.5	121,818
Female Institutions				
Central California Women's Facility (CCWF)	1,957	2,004	97.7	3,068
California Institution for Women (CIW)	1,173	1,398	83.9	1,877
Folsom State Prison (FOL)	93	403	23.1	530
Female Total	3,223	3,805	84.7	5,475
Institution Total	94,628	89,663	105.5	127,293

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
November 1, 2020

Monthly Report of Population
As of Midnight October 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,473	2,920	118.9	4,719
Calipatria State Prison (CAL)	2,987	2,308	129.4	3,451
California Correctional Center (CCC)	2,409	3,883	62.0	4,752
California Correctional Institution (CCI)	3,000	2,783	107.8	4,175
Centinela State Prison (CEN)	3,141	2,308	136.1	3,446
California Health Care Facility - Stockton (CHCF)	2,441	2,951	82.7	3,051
California Institution for Men (CIM)	2,178	2,976	73.2	4,450
California Men's Colony (CMC)	3,118	3,838	81.2	4,407
California Medical Facility (CMF)	2,044	2,361	86.6	2,981
California State Prison, Corcoran (COR)	2,958	3,116	94.9	4,476
California Rehabilitation Center (CRC)	2,260	2,491	90.7	3,514
Correctional Training Facility (CTF)	4,390	3,312	132.5	4,997
Chuckawalla Valley State Prison (CVSP)	1,936	1,738	111.4	2,578
Deuel Vocational Institution (DVI)	1,476	1,681	87.8	2,413
Folsom State Prison (FOL)	2,189	2,066	106.0	3,078
High Desert State Prison (HDSP)	3,342	2,324	143.8	3,461
Ironwood State Prison (ISP)	2,892	2,200	131.5	3,300
Kern Valley State Prison (KVSP)	3,623	2,448	148.0	3,622
California State Prison, Los Angeles County (LAC)	2,805	2,300	122.0	3,424
Mule Creek State Prison (MCSP)	3,890	3,284	118.5	4,207
North Kern State Prison (NKSP)	2,192	2,694	81.4	4,011
Pelican Bay State Prison (PBSP)	2,290	2,380	96.2	3,361
Pleasant Valley State Prison (PVSP)	2,833	2,308	122.7	3,535
RJ Donovan Correctional Facility (RJD)	3,608	2,992	120.6	4,038
California State Prison, Sacramento (SAC)	2,246	1,828	122.9	2,545
California Substance Abuse Treatment Facility (SATF)	4,446	3,424	129.8	5,157
Sierra Conservation Center (SCC)	3,076	3,836	80.2	4,570
California State Prison, Solano (SOL)	3,299	2,610	126.4	4,010
San Quentin State Prison (SQ)	2,851	3,082	92.5	4,226
Salinas Valley State Prison (SVSP)	2,799	2,452	114.2	3,509
Valley State Prison (VSP)	2,763	1,980	139.5	3,034
Wasco State Prison (WSP)	2,095	2,984	70.2	4,447
Male Total	91,050	85,858	106.0	120,945
Female Institutions				
Central California Women's Facility (CCWF)	1,998	2,004	99.7	3,068
California Institution for Women (CIW)	1,135	1,398	81.2	1,877
Folsom State Prison (FOL)	87	403	21.6	530
Female Total	3,220	3,805	84.6	5,475
Institution Total	94,270	89,663	105.1	126,420

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
November 30, 2020

Monthly Report of Population
As of Midnight November 30, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,412	2,920	116.8	4,719
Calipatria State Prison (CAL)	2,963	2,308	128.4	3,451
California Correctional Center (CCC)	2,279	3,883	58.7	4,492
California Correctional Institution (CCI)	2,983	2,783	107.2	4,175
Centinela State Prison (CEN)	3,104	2,308	134.5	3,446
California Health Care Facility - Stockton (CHCF)	2,399	2,951	81.3	3,051
California Institution for Men (CIM)	2,072	2,976	69.6	4,450
California Men's Colony (CMC)	3,137	3,838	81.7	4,407
California Medical Facility (CMF)	2,046	2,361	86.7	2,981
California State Prison, Corcoran (COR)	2,970	3,116	95.3	4,476
California Rehabilitation Center (CRC)	2,149	2,491	86.3	3,434
Correctional Training Facility (CTF)	4,344	3,312	131.2	5,049
Chuckawalla Valley State Prison (CVSP)	1,885	1,738	108.5	2,578
Deuel Vocational Institution (DVI)	1,379	1,681	82.0	2,413
Folsom State Prison (FOL)	2,107	2,066	102.0	3,078
High Desert State Prison (HDSP)	3,338	2,324	143.6	3,461
Ironwood State Prison (ISP)	2,824	2,200	128.4	3,300
Kern Valley State Prison (KVSP)	3,643	2,448	148.8	3,622
California State Prison, Los Angeles County (LAC)	2,739	2,300	119.1	3,424
Mule Creek State Prison (MCSP)	3,914	3,284	119.2	4,207
North Kern State Prison (NKSP)	2,642	2,694	98.1	4,011
Pelican Bay State Prison (PBSP)	2,243	2,380	94.2	3,361
Pleasant Valley State Prison (PVSP)	2,795	2,308	121.1	3,535
RJ Donovan Correctional Facility (RJD)	3,605	2,992	120.5	4,038
California State Prison, Sacramento (SAC)	2,249	1,828	123.0	2,545
California Substance Abuse Treatment Facility (SATF)	4,377	3,424	127.8	5,657
Sierra Conservation Center (SCC)	3,095	3,836	80.7	4,570
California State Prison, Solano (SOL)	3,230	2,610	123.8	4,056
San Quentin State Prison (SQ)	2,734	3,082	88.7	4,226
Salinas Valley State Prison (SVSP)	2,819	2,452	115.0	3,509
Valley State Prison (VSP)	2,779	1,980	140.4	3,034
Wasco State Prison (WSP)	2,672	2,984	89.5	4,447
Male Total	90,927	85,858	105.9	121,203
Female Institutions				
Central California Women's Facility (CCWF)	2,048	2,004	102.2	3,068
California Institution for Women (CIW)	1,092	1,398	78.1	1,877
Folsom State Prison (FOL)	79	403	19.6	530
Female Total	3,219	3,805	84.6	5,475
Institution Total	94,146	89,663	105.0	126,678

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
January 1, 2021

Monthly Report of Population
As of Midnight December 31, 2020

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,333	2,920	114.1	4,719
Calipatria State Prison (CAL)	2,926	2,308	126.8	3,451
California Correctional Center (CCC)	2,138	3,883	55.1	4,392
California Correctional Institution (CCI)	2,914	2,783	104.7	4,175
Centinela State Prison (CEN)	3,068	2,308	132.9	3,446
California Health Care Facility - Stockton (CHCF)	2,359	2,951	79.9	3,051
California Institution for Men (CIM)	2,026	2,976	68.1	4,450
California Men's Colony (CMC)	3,076	3,838	80.1	4,407
California Medical Facility (CMF)	2,008	2,361	85.0	3,021
California State Prison, Corcoran (COR)	2,918	3,116	93.6	4,476
California Rehabilitation Center (CRC)	2,064	2,491	82.9	3,434
Correctional Training Facility (CTF)	4,241	3,312	128.0	5,311
Chuckawalla Valley State Prison (CVSP)	1,852	1,738	106.6	2,578
Deuel Vocational Institution (DVI)	1,332	1,681	79.2	2,413
Folsom State Prison (FOL)	2,060	2,066	99.7	3,078
High Desert State Prison (HDSP)	3,302	2,324	142.1	3,461
Ironwood State Prison (ISP)	2,773	2,200	126.0	3,300
Kern Valley State Prison (KVSP)	3,617	2,448	147.8	3,622
California State Prison, Los Angeles County (LAC)	2,704	2,300	117.6	3,424
Mule Creek State Prison (MCSP)	3,859	3,284	117.5	4,455
North Kern State Prison (NKSP)	2,522	2,694	93.6	4,011
Pelican Bay State Prison (PBSP)	2,209	2,380	92.8	3,361
Pleasant Valley State Prison (PVSP)	2,753	2,308	119.3	3,535
RJ Donovan Correctional Facility (RJD)	3,561	2,992	119.0	4,182
California State Prison, Sacramento (SAC)	2,227	1,828	121.8	2,545
California Substance Abuse Treatment Facility (SATF)	4,315	3,424	126.0	5,202
Sierra Conservation Center (SCC)	2,938	3,836	76.6	4,250
California State Prison, Solano (SOL)	3,174	2,610	121.6	4,056
San Quentin State Prison (SQ)	2,659	3,082	86.3	4,226
Salinas Valley State Prison (SVSP)	2,802	2,452	114.3	3,509
Valley State Prison (VSP)	2,733	1,980	138.0	3,173
Wasco State Prison (WSP)	2,512	2,984	84.2	4,447
Male Total	88,975	85,858	103.6	121,161
Female Institutions				
Central California Women's Facility (CCWF)	1,999	2,004	99.8	3,068
California Institution for Women (CIW)	1,068	1,398	76.4	1,777
Folsom State Prison (FOL)	74	403	18.4	530
Female Total	3,141	3,805	82.5	5,375
Institution Total	92,116	89,663	102.7	126,536

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
February 1, 2021

Monthly Report of Population
As of Midnight January 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,286	2,920	112.5	4,719
Calipatria State Prison (CAL)	2,916	2,308	126.3	3,451
California Correctional Center (CCC)	2,099	3,443	61.0	4,392
California Correctional Institution (CCI)	2,929	2,783	105.2	4,175
Central California Women's Facility (CCWF)	5	2,004	0.2	1,536
Centinela State Prison (CEN)	3,080	2,308	133.4	3,446
California Health Care Facility - Stockton (CHCF)	2,379	2,951	80.6	3,051
California Institution for Men (CIM)	1,956	2,976	65.7	4,450
California Men's Colony (CMC)	3,023	3,838	78.8	4,445
California Medical Facility (CMF)	1,963	2,361	83.1	3,021
California State Prison, Corcoran (COR)	2,917	3,116	93.6	4,476
California Rehabilitation Center (CRC)	1,976	2,491	79.3	3,274
Correctional Training Facility (CTF)	4,200	3,312	126.8	5,311
Chuckawalla Valley State Prison (CVSP)	1,855	1,738	106.7	2,578
Deuel Vocational Institution (DVI)	1,258	1,681	74.8	2,413
Folsom State Prison (FOL)	2,011	2,066	97.3	3,078
High Desert State Prison (HDSP)	3,295	2,324	141.8	3,461
Ironwood State Prison (ISP)	2,741	2,200	124.6	3,300
Kern Valley State Prison (KVSP)	3,629	2,448	148.2	3,622
California State Prison, Los Angeles County (LAC)	2,680	2,300	116.5	3,424
Mule Creek State Prison (MCSP)	3,850	3,284	117.2	4,455
North Kern State Prison (NKSP)	2,306	2,694	85.6	4,011
Pelican Bay State Prison (PBSP)	2,191	2,380	92.1	3,361
Pleasant Valley State Prison (PVSP)	2,743	2,308	118.8	3,535
RJ Donovan Correctional Facility (RJD)	3,514	2,992	117.4	4,182
California State Prison, Sacramento (SAC)	2,233	1,828	122.2	2,545
California Substance Abuse Treatment Facility (SATF)	4,321	3,424	126.2	5,202
Sierra Conservation Center (SCC)	2,865	3,486	82.2	4,250
California State Prison, Solano (SOL)	3,165	2,610	121.3	4,056
San Quentin State Prison (SQ)	2,614	3,082	84.8	4,157
Salinas Valley State Prison (SVSP)	2,885	2,452	117.7	3,509
Valley State Prison (VSP)	2,661	1,980	134.4	3,069
Wasco State Prison (WSP)	2,345	2,984	78.6	4,447
Male Total	87,891	85,068	103.3	122,402
Female Institutions				
Central California Women's Facility (CCWF)	1,991	2,004	99.4	3,068
California Institution for Women (CIW)	1,042	1,298	80.3	1,777
California Medical Facility (CMF)	2	2,361	0.1	2,562
Folsom State Prison (FOL)	65	403	16.1	530
High Desert State Prison (HDSP)	1	2,324	0.0	750
Mule Creek State Prison (MCSP)	1	3,284	0.0	800
California Substance Abuse Treatment Facility (SATF)	2	3,424	0.1	837
Female Total	3,104	3,705	83.8	10,324
Institution Total	90,995	88,773	102.5	132,726

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 1, 2021

Monthly Report of Population
As of Midnight February 28, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,232	2,920	110.7	4,719
Calipatria State Prison (CAL)	2,938	2,308	127.3	3,451
California Correctional Center (CCC)	2,093	3,443	60.8	4,392
California Correctional Institution (CCI)	2,912	2,783	104.6	4,175
Central California Women's Facility (CCWF)	4	2,004	0.2	1,420
Centinela State Prison (CEN)	3,056	2,308	132.4	3,446
California Health Care Facility - Stockton (CHCF)	2,435	2,951	82.5	3,051
California Institution for Men (CIM)	1,905	2,976	64.0	4,450
California Men's Colony (CMC)	3,004	3,838	78.3	4,445
California Medical Facility (CMF)	1,916	2,361	81.2	2,921
California State Prison, Corcoran (COR)	2,962	3,116	95.1	4,476
California Rehabilitation Center (CRC)	1,881	2,491	75.5	3,274
Correctional Training Facility (CTF)	4,260	3,312	128.6	5,103
Chuckawalla Valley State Prison (CVSP)	1,862	1,738	107.1	2,578
Deuel Vocational Institution (DVI)	1,159	1,681	68.9	2,181
Folsom State Prison (FOL)	1,963	2,066	95.0	3,078
High Desert State Prison (HDSP)	3,290	2,324	141.6	3,461
Ironwood State Prison (ISP)	2,702	2,200	122.8	3,300
Kern Valley State Prison (KVSP)	3,630	2,448	148.3	3,622
California State Prison, Los Angeles County (LAC)	2,663	2,300	115.8	3,424
Mule Creek State Prison (MCSP)	3,861	3,284	117.6	4,255
North Kern State Prison (NKSP)	2,596	2,694	96.4	4,011
Pelican Bay State Prison (PBSP)	2,182	2,380	91.7	3,361
Pleasant Valley State Prison (PVSP)	2,695	2,308	116.8	3,535
RJ Donovan Correctional Facility (RJD)	3,502	2,992	117.0	4,182
California State Prison, Sacramento (SAC)	2,233	1,828	122.2	2,545
California Substance Abuse Treatment Facility (SATF)	4,444	3,424	129.8	5,202
Sierra Conservation Center (SCC)	2,926	3,486	83.9	4,056
California State Prison, Solano (SOL)	3,135	2,610	120.1	4,056
San Quentin State Prison (SQ)	2,530	3,082	82.1	4,157
Salinas Valley State Prison (SVSP)	2,976	2,452	121.4	3,509
Valley State Prison (VSP)	2,753	1,980	139.0	3,034
Wasco State Prison (WSP)	2,480	2,984	83.1	4,447
Male Total	88,180	85,068	103.7	121,317
Female Institutions				
Central California Women's Facility (CCWF)	2,037	2,004	101.6	3,068
California Institution for Women (CIW)	1,007	1,298	77.6	1,777
Folsom State Prison (FOL)	54	403	13.4	530
California State Prison, Los Angeles County (LAC)	1	2,300	0.0	725
Female Total	3,099	3,705	83.6	6,100
Institution Total	91,279	88,773	102.8	127,417

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
April 1, 2021

Monthly Report of Population
As of Midnight March 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,134	2,920	107.3	4,719
Calipatria State Prison (CAL)	2,965	2,308	128.5	3,451
California Correctional Center (CCC)	2,090	3,443	60.7	4,392
California Correctional Institution (CCI)	2,898	2,783	104.1	4,175
Central California Women's Facility (CCWF)	3	2,004	0.1	1,420
Centinela State Prison (CEN)	3,056	2,308	132.4	3,446
California Health Care Facility - Stockton (CHCF)	2,447	2,951	82.9	3,051
California Institution for Men (CIM)	1,858	2,976	62.4	4,450
California Men's Colony (CMC)	2,980	3,838	77.6	4,445
California Medical Facility (CMF)	1,924	2,361	81.5	2,921
California State Prison, Corcoran (COR)	3,011	3,116	96.6	4,476
California Rehabilitation Center (CRC)	1,813	2,491	72.8	3,274
Correctional Training Facility (CTF)	4,341	3,312	131.1	4,929
Chuckawalla Valley State Prison (CVSP)	1,914	1,738	110.1	2,578
Deuel Vocational Institution (DVI)	925	1,681	55.0	2,181
Folsom State Prison (FOL)	1,929	2,066	93.4	3,078
High Desert State Prison (HDSP)	3,293	2,324	141.7	3,461
Ironwood State Prison (ISP)	2,643	2,200	120.1	3,300
Kern Valley State Prison (KVSP)	3,637	2,448	148.6	3,622
California State Prison, Los Angeles County (LAC)	2,665	2,300	115.9	3,424
Mule Creek State Prison (MCSP)	3,886	3,284	118.3	4,255
North Kern State Prison (NKSP)	2,957	2,694	109.8	4,011
Pelican Bay State Prison (PBSP)	2,154	2,380	90.5	3,361
Pleasant Valley State Prison (PVSP)	2,680	2,308	116.1	3,535
RJ Donovan Correctional Facility (RJD)	3,463	2,992	115.7	4,182
California State Prison, Sacramento (SAC)	2,232	1,828	122.1	2,545
California Substance Abuse Treatment Facility (SATF)	4,511	3,424	131.7	5,202
Sierra Conservation Center (SCC)	2,915	3,486	83.6	4,250
California State Prison, Solano (SOL)	3,090	2,610	118.4	4,056
San Quentin State Prison (SQ)	2,460	3,082	79.8	4,157
Salinas Valley State Prison (SVSP)	3,038	2,452	123.9	3,509
Valley State Prison (VSP)	2,761	1,980	139.4	3,034
Wasco State Prison (WSP)	3,026	2,984	101.4	4,447
Male Total	88,699	85,068	104.3	121,337
Female Institutions				
Central California Women's Facility (CCWF)	2,169	2,004	108.2	3,068
California Institution for Women (CIW)	990	1,298	76.3	1,777
Folsom State Prison (FOL)	45	403	11.2	530
Female Total	3,204	3,705	86.5	5,375
Institution Total	91,903	88,773	103.5	126,712

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 1, 2021

Monthly Report of Population
As of Midnight April 30, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,119	2,920	106.8	4,719
Calipatria State Prison (CAL)	2,935	2,308	127.2	3,451
California Correctional Center (CCC)	2,181	3,443	63.3	4,392
California Correctional Institution (CCI)	2,957	2,783	106.3	4,175
Central California Women's Facility (CCWF)	7	2,004	0.3	1,420
Centinela State Prison (CEN)	3,037	2,308	131.6	3,446
California Health Care Facility - Stockton (CHCF)	2,455	2,951	83.2	3,051
California Institution for Men (CIM)	1,947	2,976	65.4	4,350
California Men's Colony (CMC)	3,006	3,838	78.3	4,407
California Medical Facility (CMF)	1,963	2,361	83.1	2,921
California State Prison, Corcoran (COR)	3,079	3,116	98.8	4,476
California Rehabilitation Center (CRC)	1,896	2,491	76.1	3,274
Correctional Training Facility (CTF)	4,552	3,312	137.4	4,929
Chuckawalla Valley State Prison (CVSP)	1,911	1,738	110.0	2,578
Deuel Vocational Institution (DVI)	561	1,681	33.4	2,181
Folsom State Prison (FOL)	1,950	2,066	94.4	3,078
High Desert State Prison (HDSP)	3,303	2,324	142.1	3,461
Ironwood State Prison (ISP)	2,634	2,200	119.7	3,300
Kern Valley State Prison (KVSP)	3,584	2,448	146.4	3,622
California State Prison, Los Angeles County (LAC)	2,721	2,300	118.3	3,424
Mule Creek State Prison (MCSP)	3,896	3,284	118.6	4,255
North Kern State Prison (NKSP)	3,061	2,694	113.6	4,011
Pelican Bay State Prison (PBSP)	2,135	2,380	89.7	3,361
Pleasant Valley State Prison (PVSP)	2,742	2,308	118.8	3,535
RJ Donovan Correctional Facility (RJD)	3,403	2,992	113.7	4,182
California State Prison, Sacramento (SAC)	2,217	1,828	121.3	2,545
California Substance Abuse Treatment Facility (SATF)	4,653	3,424	135.9	5,202
Sierra Conservation Center (SCC)	2,883	3,486	82.7	4,250
California State Prison, Solano (SOL)	3,220	2,610	123.4	4,056
San Quentin State Prison (SQ)	2,387	3,082	77.4	4,157
Salinas Valley State Prison (SVSP)	3,048	2,452	124.3	3,509
Valley State Prison (VSP)	2,884	1,980	145.7	3,034
Wasco State Prison (WSP)	2,980	2,984	99.9	4,447
Male Total	89,307	85,068	105.0	121,199
Female Institutions				
Central California Women's Facility (CCWF)	2,351	2,004	117.3	3,068
California Institution for Women (CIW)	973	1,298	75.0	1,777
Folsom State Prison (FOL)	54	403	13.4	530
Female Total	3,378	3,705	91.2	5,375
Institution Total	92,685	88,773	104.4	126,574

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
June 1, 2021

Monthly Report of Population
As of Midnight May 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,167	2,920	108.5	4,719
Calipatria State Prison (CAL)	2,939	2,308	127.3	3,451
California Correctional Center (CCC)	2,294	3,443	66.6	4,392
California Correctional Institution (CCI)	2,952	2,783	106.1	4,175
Central California Women's Facility (CCWF)	14	2,004	0.7	2,172
Centinela State Prison (CEN)	2,981	2,308	129.2	3,446
California Health Care Facility - Stockton (CHCF)	2,488	2,951	84.3	3,051
California Institution for Men (CIM)	2,090	2,976	70.2	4,350
California Men's Colony (CMC)	3,079	3,838	80.2	4,407
California Medical Facility (CMF)	2,007	2,361	85.0	2,921
California State Prison, Corcoran (COR)	3,136	3,116	100.6	4,476
California Rehabilitation Center (CRC)	2,032	2,491	81.6	3,274
Correctional Training Facility (CTF)	4,629	3,312	139.8	4,929
Chuckawalla Valley State Prison (CVSP)	1,982	1,738	114.0	2,579
Deuel Vocational Institution (DVI)	433	1,681	25.8	2,181
Folsom State Prison (FOL)	2,006	2,066	97.1	3,078
High Desert State Prison (HDSP)	3,262	2,324	140.4	3,461
Ironwood State Prison (ISP)	2,589	2,200	117.7	3,300
Kern Valley State Prison (KVSP)	3,497	2,448	142.9	3,622
California State Prison, Los Angeles County (LAC)	2,753	2,300	119.7	3,424
Mule Creek State Prison (MCSP)	3,911	3,284	119.1	4,255
North Kern State Prison (NKSP)	3,414	2,694	126.7	4,011
Pelican Bay State Prison (PBSP)	2,091	2,380	87.9	3,361
Pleasant Valley State Prison (PVSP)	2,670	2,308	115.7	3,535
RJ Donovan Correctional Facility (RJD)	3,366	2,992	112.5	4,182
California State Prison, Sacramento (SAC)	2,197	1,828	120.2	2,545
California Substance Abuse Treatment Facility (SATF)	4,790	3,424	139.9	5,202
Sierra Conservation Center (SCC)	3,019	3,486	86.6	4,250
California State Prison, Solano (SOL)	3,257	2,610	124.8	4,056
San Quentin State Prison (SQ)	2,419	3,082	78.5	4,157
Salinas Valley State Prison (SVSP)	3,021	2,452	123.2	3,509
Valley State Prison (VSP)	2,946	1,980	148.8	3,034
Wasco State Prison (WSP)	3,153	2,984	105.7	4,447
Male Total	90,584	85,068	106.5	121,952
Female Institutions				
Central California Women's Facility (CCWF)	2,389	2,004	119.2	3,068
California Institution for Women (CIW)	983	1,298	75.7	1,777
Folsom State Prison (FOL)	147	403	36.5	530
Female Total	3,519	3,705	95.0	5,375
Institution Total	94,103	88,773	106.0	127,327

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
June 30, 2021

Weekly Report of Population
As of Midnight June 30, 2021

Weekly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,376	2,920	115.6	4,719
Calipatria State Prison (CAL)	2,915	2,308	126.3	3,451
California Correctional Center (CCC)	2,373	3,443	68.9	4,392
California Correctional Institution (CCI)	2,985	2,783	107.3	4,175
Central California Women's Facility (CCWF)	15	2,004	0.7	2,172
Centinela State Prison (CEN)	2,787	2,308	120.8	3,446
California Health Care Facility - Stockton (CHCF)	2,482	2,951	84.1	2,951
California Institution for Men (CIM)	2,312	2,976	77.7	4,350
California Institution for Women (CIW)	6	1,298	0.5	1,494
California Men's Colony (CMC)	3,067	3,838	79.9	4,407
California Medical Facility (CMF)	1,987	2,361	84.2	2,921
California State Prison, Corcoran (COR)	3,259	3,116	104.6	4,476
California Rehabilitation Center (CRC)	2,240	2,491	89.9	3,274
Correctional Training Facility (CTF)	4,715	3,312	142.4	4,929
Chuckawalla Valley State Prison (CVSP)	2,136	1,738	122.9	2,579
Deuel Vocational Institution (DVI)	190	1,681	11.3	2,181
Folsom State Prison (FOL)	2,184	2,066	105.7	3,148
High Desert State Prison (HDSP)	3,285	2,324	141.4	3,461
Ironwood State Prison (ISP)	2,569	2,200	116.8	3,300
Kern Valley State Prison (KVSP)	3,447	2,448	140.8	3,622
California State Prison, Los Angeles County (LAC)	2,729	2,300	118.7	3,424
Mule Creek State Prison (MCSP)	3,903	3,284	118.8	4,255
North Kern State Prison (NKSP)	3,412	2,694	126.7	4,011
Pelican Bay State Prison (PBSP)	2,112	2,380	88.7	3,361
Pleasant Valley State Prison (PVSP)	2,646	2,308	114.6	3,535
RJ Donovan Correctional Facility (RJD)	3,329	2,992	111.3	4,182
California State Prison, Sacramento (SAC)	2,135	1,828	116.8	2,545
California Substance Abuse Treatment Facility (SATF)	4,969	3,424	145.1	5,202
Sierra Conservation Center (SCC)	3,200	3,486	91.8	4,250
California State Prison, Solano (SOL)	3,231	2,610	123.8	4,056
San Quentin State Prison (SQ)	2,483	3,082	80.6	4,092
Salinas Valley State Prison (SVSP)	3,009	2,452	122.7	3,509
Valley State Prison (VSP)	2,938	1,980	148.4	3,034
Wasco State Prison (WSP)	3,275	2,984	109.8	4,447
Male Total	91,701	85,068	107.8	123,351
Female Institutions				
Central California Women's Facility (CCWF)	2,399	2,004	119.7	3,068
California Institution for Women (CIW)	990	1,298	76.3	1,777
Folsom State Prison (FOL)	214	403	53.1	530
Female Total	3,603	3,705	97.2	5,375
Institution Total	95,304	88,773	107.4	128,726

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
July 31, 2021

Monthly Report of Population
As of Midnight July 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,396	2,909	116.7	4,387
Calipatria State Prison (CAL)	2,907	2,308	126.0	3,451
California Correctional Center (CCC)	2,238	3,377	66.3	3,427
California Correctional Institution (CCI)	2,842	2,739	103.8	4,145
Central California Women's Facility (CCWF)	14	1,990	0.7	2,940
Centinela State Prison (CEN)	2,868	2,308	124.3	3,446
California Health Care Facility - Stockton (CHCF)	2,437	2,953	82.5	2,951
California Institution for Men (CIM)	2,392	2,736	87.4	4,226
California Institution for Women (CIW)	7	1,281	0.5	1,494
California Men's Colony (CMC)	3,020	3,816	79.1	4,407
California Medical Facility (CMF)	2,008	2,318	86.6	2,921
California State Prison, Corcoran (COR)	3,241	3,115	104.0	4,476
California Rehabilitation Center (CRC)	2,394	2,380	100.6	3,174
Correctional Training Facility (CTF)	4,645	3,300	140.8	4,929
Chuckawalla Valley State Prison (CVSP)	2,182	1,738	125.5	2,579
Folsom State Prison (FOL)	2,265	2,065	109.7	3,148
High Desert State Prison (HDSP)	3,222	2,324	138.6	3,461
Ironwood State Prison (ISP)	2,435	2,200	110.7	3,300
Kern Valley State Prison (KVSP)	3,426	2,448	140.0	3,622
California State Prison, Los Angeles County (LAC)	2,696	2,300	117.2	3,400
Mule Creek State Prison (MCSP)	3,878	3,284	118.1	4,155
North Kern State Prison (NKSP)	3,708	2,694	137.6	4,011
Pelican Bay State Prison (PBSP)	2,127	2,380	89.4	3,361
Pleasant Valley State Prison (PVSP)	2,646	2,308	114.6	3,433
RJ Donovan Correctional Facility (RJD)	3,300	2,992	110.3	4,182
California State Prison, Sacramento (SAC)	2,077	1,828	113.6	2,545
California Substance Abuse Treatment Facility (SATF)	5,058	3,424	147.7	5,111
Sierra Conservation Center (SCC)	3,314	3,404	97.4	4,250
California State Prison, Solano (SOL)	3,261	2,594	125.7	4,056
San Quentin State Prison (SQ)	2,549	3,084	82.7	3,984
Salinas Valley State Prison (SVSP)	3,006	2,452	122.6	3,509
Valley State Prison (VSP)	2,956	1,961	150.7	2,954
Wasco State Prison (WSP)	3,717	2,984	124.6	4,447
Male Total	92,232	84,404	109.3	119,882
Female Institutions				
Central California Women's Facility (CCWF)	2,351	1,990	118.1	3,068
California Institution for Women (CIW)	982	1,281	76.7	1,777
Folsom State Prison (FOL)	244	403	60.5	530
Female Total	3,577	3,674	97.4	5,375
Institution Total	95,809	84,404	113.5	125,257

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
September 1, 2021

Monthly Report of Population
As of Midnight August 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,550	2,909	122.0	4,387
Calipatria State Prison (CAL)	2,870	2,308	124.4	3,451
California Correctional Center (CCC)	2,097	3,377	62.1	3,487
California Correctional Institution (CCI)	2,786	2,739	101.7	4,145
Central California Women's Facility (CCWF)	14	1,990	0.7	2,940
Centinela State Prison (CEN)	2,939	2,308	127.3	3,446
California Health Care Facility - Stockton (CHCF)	2,417	2,953	81.8	2,951
California Institution for Men (CIM)	2,484	2,736	90.8	4,226
California Institution for Women (CIW)	5	1,281	0.4	1,494
California Men's Colony (CMC)	3,089	3,816	80.9	4,407
California Medical Facility (CMF)	2,018	2,318	87.1	2,921
California State Prison, Corcoran (COR)	3,380	3,115	108.5	4,476
California Rehabilitation Center (CRC)	2,532	2,380	106.4	3,174
Correctional Training Facility (CTF)	4,539	3,300	137.5	4,929
Chuckawalla Valley State Prison (CVSP)	2,274	1,738	130.8	2,579
Folsom State Prison (FOL)	2,440	2,065	118.2	3,148
High Desert State Prison (HDSP)	3,233	2,324	139.1	3,461
Ironwood State Prison (ISP)	2,363	2,200	107.4	3,300
Kern Valley State Prison (KVSP)	3,438	2,448	140.4	3,622
California State Prison, Los Angeles County (LAC)	2,705	2,300	117.6	3,400
Mule Creek State Prison (MCSP)	3,843	3,284	117.0	4,155
North Kern State Prison (NKSP)	3,651	2,694	135.5	4,011
Pelican Bay State Prison (PBSP)	2,121	2,380	89.1	3,361
Pleasant Valley State Prison (PVSP)	2,705	2,308	117.2	3,433
RJ Donovan Correctional Facility (RJD)	3,288	2,992	109.9	4,182
California State Prison, Sacramento (SAC)	2,077	1,828	113.6	2,545
California Substance Abuse Treatment Facility (SATF)	5,030	3,424	146.9	5,111
Sierra Conservation Center (SCC)	3,293	3,404	96.7	4,250
California State Prison, Solano (SOL)	3,298	2,594	127.1	4,056
San Quentin State Prison (SQ)	2,665	3,084	86.4	3,984
Salinas Valley State Prison (SVSP)	2,997	2,452	122.2	3,509
Valley State Prison (VSP)	2,980	1,961	152.0	2,954
Wasco State Prison (WSP)	3,490	2,984	117.0	4,447
Male Total	92,611	84,404	109.7	119,942
Female Institutions				
Central California Women's Facility (CCWF)	2,379	1,990	119.5	3,068
California Institution for Women (CIW)	970	1,281	75.7	1,777
Folsom State Prison (FOL)	234	403	58.1	530
Female Total	3,583	3,674	97.5	5,375
Institution Total	96,194	84,404	114.0	125,317

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 1, 2021

Monthly Report of Population
As of Midnight September 30, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,609	2,909	124.1	4,387
Calipatria State Prison (CAL)	2,841	2,308	123.1	3,451
California Correctional Center (CCC)	1,974	3,377	58.5	3,487
California Correctional Institution (CCI)	2,694	2,739	98.4	3,299
Central California Women's Facility (CCWF)	15	1,990	0.8	2,940
Centinela State Prison (CEN)	2,865	2,308	124.1	3,446
California Health Care Facility - Stockton (CHCF)	2,357	2,953	79.8	2,951
California Institution for Men (CIM)	2,538	2,736	92.8	4,076
California Institution for Women (CIW)	6	1,281	0.5	1,494
California Men's Colony (CMC)	3,065	3,816	80.3	4,407
California Medical Facility (CMF)	2,000	2,318	86.3	2,888
California State Prison, Corcoran (COR)	3,433	3,115	110.2	4,476
California Rehabilitation Center (CRC)	2,670	2,380	112.2	3,174
Correctional Training Facility (CTF)	4,439	3,300	134.5	4,125
Chuckawalla Valley State Prison (CVSP)	2,343	1,738	134.8	2,579
Folsom State Prison (FOL)	2,513	2,065	121.7	3,078
High Desert State Prison (HDSP)	3,208	2,324	138.0	3,461
Ironwood State Prison (ISP)	2,279	2,200	103.6	3,300
Kern Valley State Prison (KVSP)	3,414	2,448	139.5	3,622
California State Prison, Los Angeles County (LAC)	2,748	2,300	119.5	3,400
Mule Creek State Prison (MCSP)	3,743	3,284	114.0	4,155
North Kern State Prison (NKSP)	3,788	2,694	140.6	4,011
Pelican Bay State Prison (PBSP)	2,087	2,380	87.7	3,361
Pleasant Valley State Prison (PVSP)	2,653	2,308	114.9	3,433
RJ Donovan Correctional Facility (RJD)	3,256	2,992	108.8	4,086
California State Prison, Sacramento (SAC)	2,013	1,828	110.1	2,545
California Substance Abuse Treatment Facility (SATF)	5,007	3,424	146.2	5,111
Sierra Conservation Center (SCC)	3,283	3,404	96.4	4,250
California State Prison, Solano (SOL)	3,239	2,594	124.9	3,992
San Quentin State Prison (SQ)	2,807	3,084	91.0	3,984
Salinas Valley State Prison (SVSP)	2,978	2,452	121.5	3,509
Valley State Prison (VSP)	2,972	1,961	151.6	2,954
Wasco State Prison (WSP)	3,572	2,984	119.7	4,447
Male Total	92,409	82,723	111.7	117,879
Female Institutions				
Central California Women's Facility (CCWF)	2,328	1,990	117.0	3,068
California Institution for Women (CIW)	988	1,281	77.1	1,777
Folsom State Prison (FOL)	225	403	55.8	530
Female Total	3,541	3,674	96.4	5,375
Institution Total	95,950	86,397	111.1	123,254

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
November 1, 2021

Monthly Report of Population
As of Midnight October 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Male Institutions				
Avenal State Prison (ASP)	3,665	2,909	126.0	4,387
Calipatria State Prison (CAL)	2,912	2,308	126.2	3,451
California Correctional Center (CCC)	1,843	3,377	54.6	3,487
California Correctional Institution (CCI)	2,654	2,172	122.2	3,299
Central California Women's Facility (CCWF)	15	1,990	0.8	2,940
Centinela State Prison (CEN)	2,864	2,308	124.1	3,446
California Health Care Facility - Stockton (CHCF)	2,261	2,953	76.6	2,951
California Institution for Men (CIM)	2,620	2,736	95.8	4,226
California Institution for Women (CIW)	6	1,281	0.5	1,494
California Men's Colony (CMC)	3,049	3,816	79.9	4,407
California Medical Facility (CMF)	1,999	2,318	86.2	2,888
California State Prison, Corcoran (COR)	3,492	3,115	112.1	4,476
California Rehabilitation Center (CRC)	2,786	2,380	117.1	3,174
Correctional Training Facility (CTF)	4,363	2,800	155.8	4,269
Chuckawalla Valley State Prison (CVSP)	2,418	1,738	139.1	2,579
Folsom State Prison (FOL)	2,585	2,065	125.2	3,078
High Desert State Prison (HDSP)	3,193	2,324	137.4	3,461
Ironwood State Prison (ISP)	2,241	2,200	101.9	3,300
Kern Valley State Prison (KVSP)	3,410	2,448	139.3	3,622
California State Prison, Los Angeles County (LAC)	2,755	2,300	119.8	3,400
Mule Creek State Prison (MCSP)	3,757	3,284	114.4	4,155
North Kern State Prison (NKSP)	3,586	2,694	133.1	4,011
Pelican Bay State Prison (PBSP)	2,044	2,380	85.9	3,361
Pleasant Valley State Prison (PVSP)	2,631	2,308	114.0	3,433
RJ Donovan Correctional Facility (RJD)	3,264	2,992	109.1	4,182
California State Prison, Sacramento (SAC)	2,005	1,828	109.7	2,545
California Substance Abuse Treatment Facility (SATF)	5,015	3,424	146.5	5,111
Sierra Conservation Center (SCC)	3,275	3,404	96.2	4,250
California State Prison, Solano (SOL)	3,295	2,594	127.0	3,992
San Quentin State Prison (SQ)	2,950	3,084	95.7	3,984
Salinas Valley State Prison (SVSP)	2,944	2,452	120.1	3,509
Valley State Prison (VSP)	2,975	1,961	151.7	2,954
Wasco State Prison (WSP)	3,842	2,984	128.8	4,447
Male Total	92,714	81,656	113.5	118,269
Female Institutions				
Central California Women's Facility (CCWF)	2,245	1,990	112.8	3,068
California Institution for Women (CIW)	1,026	1,281	80.1	1,777
Folsom State Prison (FOL)	268	403	66.5	530
Female Total	3,539	3,674	96.3	5,375
Institution Total	96,253	85,330	112.8	123,644

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
December 1, 2021

Monthly Report of Population
As of Midnight November 30, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	3,759	2,909	129.2	4,387
Calipatria State Prison (CAL)	2,918	2,308	126.4	3,451
California Correctional Center (CCC)	1,735	3,377	51.4	3,487
California Correctional Institution (CCI)	2,677	2,172	123.3	3,299
Central California Women's Facility (CCWF)	2,227	1,990	111.9	3,068
Centinela State Prison (CEN)	2,851	2,308	123.5	3,446
California Health Care Facility - Stockton (CHCF)	2,205	2,953	74.7	2,951
California Institution for Men (CIM)	2,688	2,736	98.2	4,226
California Institution for Women (CIW)	1,034	1,281	80.7	1,687
California Men's Colony (CMC)	3,170	3,816	83.1	4,407
California Medical Facility (CMF)	1,990	2,318	85.8	2,888
California State Prison, Corcoran (COR)	3,625	3,115	116.4	4,476
California Rehabilitation Center (CRC)	2,769	2,380	116.3	3,174
Correctional Training Facility (CTF)	4,308	2,800	153.9	4,269
Chuckawalla Valley State Prison (CVSP)	2,494	1,738	143.5	2,279
Folsom State Prison (FOL)	2,637	2,065	127.7	3,078
Folsom Women’s Facility (FWF)	240	403	59.6	530
High Desert State Prison (HDSP)	2,949	2,324	126.9	3,461
Ironwood State Prison (ISP)	2,227	2,200	101.2	3,300
Kern Valley State Prison (KVSP)	3,385	2,448	138.3	3,526
California State Prison, Los Angeles County (LAC)	2,732	2,300	118.8	3,400
Mule Creek State Prison (MCSP)	3,762	3,284	114.6	4,155
North Kern State Prison (NKSP)	3,636	2,694	135.0	4,011
Pelican Bay State Prison (PBSP)	2,024	2,380	85.0	2,881
Pleasant Valley State Prison (PVSP)	2,626	2,308	113.8	3,433
RJ Donovan Correctional Facility (RJD)	3,328	2,992	111.2	3,894
California State Prison, Sacramento (SAC)	1,991	1,828	108.9	2,545
California Substance Abuse Treatment Facility (SATF)	5,005	3,424	146.2	5,111
Sierra Conservation Center (SCC)	3,231	3,404	94.9	4,250
California State Prison, Solano (SOL)	3,310	2,594	127.6	3,842
San Quentin State Prison (SQ)	3,055	3,084	99.1	3,671
Salinas Valley State Prison (SVSP)	2,982	2,452	121.6	3,509
Valley State Prison (VSP)	2,987	1,961	152.3	2,954
Wasco State Prison (WSP)	3,792	2,984	127.1	4,447
Institution Total	96,349	85,330	112.9	117,493

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
January 1, 2022

Monthly Report of Population
As of Midnight December 31, 2021

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	3,840	2,909	132.0	4,387
Calipatria State Prison (CAL)	2,883	2,308	124.9	3,451
California Correctional Center (CCC)	1,663	3,377	49.2	3,367
California Correctional Institution (CCI)	3,073	2,172	141.5	3,299
Central California Women's Facility (CCWF)	2,278	1,990	114.5	3,068
Centinela State Prison (CEN)	2,832	2,308	122.7	3,446
California Health Care Facility - Stockton (CHCF)	2,221	2,953	75.2	2,951
California Institution for Men (CIM)	2,718	2,736	99.3	4,226
California Institution for Women (CIW)	1,034	1,281	80.7	1,777
California Men's Colony (CMC)	3,244	3,816	85.0	4,407
California Medical Facility (CMF)	2,033	2,318	87.7	5,267
California State Prison, Corcoran (COR)	3,615	3,115	116.1	4,476
California Rehabilitation Center (CRC)	2,690	2,380	113.0	3,174
Correctional Training Facility (CTF)	4,242	2,800	151.5	4,269
Chuckawalla Valley State Prison (CVSP)	2,509	1,738	144.4	2,579
Folsom State Prison (FOL)	2,702	2,065	130.8	3,078
Folsom Women’s Facility (FWF)	224	403	55.6	530
High Desert State Prison (HDSP)	2,317	2,324	99.7	2,711
Ironwood State Prison (ISP)	2,246	2,200	102.1	3,300
Kern Valley State Prison (KVSP)	3,363	2,448	137.4	3,622
California State Prison, Los Angeles County (LAC)	2,771	2,300	120.5	3,400
Mule Creek State Prison (MCSP)	3,823	3,284	116.4	4,155
North Kern State Prison (NKSP)	3,743	2,694	138.9	4,011
Pelican Bay State Prison (PBSP)	1,985	2,380	83.4	3,361
Pleasant Valley State Prison (PVSP)	2,602	2,308	112.7	3,433
RJ Donovan Correctional Facility (RJD)	3,371	2,992	112.7	4,182
California State Prison, Sacramento (SAC)	1,908	1,828	104.4	2,577
California Substance Abuse Treatment Facility (SATF)	4,958	3,424	144.8	5,111
Sierra Conservation Center (SCC)	3,184	3,404	93.5	4,250
California State Prison, Solano (SOL)	3,313	2,594	127.7	3,992
San Quentin State Prison (SQ)	3,142	3,084	101.9	3,984
Salinas Valley State Prison (SVSP)	3,003	2,452	122.5	3,509
Valley State Prison (VSP)	2,963	1,961	151.1	2,942
Wasco State Prison (WSP)	3,979	2,984	133.3	4,447
Institution Total	96,472	85,330	113.1	120,739

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
January 31, 2022

Monthly Report of Population
As of Midnight January 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	3,731	2,909	128.3	4,493
Calipatria State Prison (CAL)	2,799	2,308	121.3	3,451
California Correctional Center (CCC)	1,495	3,377	44.3	4,072
California Correctional Institution (CCI)	3,043	2,172	140.1	3,389
Central California Women's Facility (CCWF)	2,214	1,990	111.3	3,068
Centinela State Prison (CEN)	2,746	2,308	119.0	3,446
California Health Care Facility - Stockton (CHCF)	2,182	2,953	73.9	2,951
California Institution for Men (CIM)	2,554	2,736	93.3	4,226
California Institution for Women (CIW)	995	1,281	77.7	1,777
California Men's Colony (CMC)	3,215	3,816	84.3	4,407
California Medical Facility (CMF)	1,976	2,318	85.2	2,888
California State Prison, Corcoran (COR)	3,498	3,115	112.3	4,476
California Rehabilitation Center (CRC)	2,517	2,380	105.8	3,174
Correctional Training Facility (CTF)	4,166	2,800	148.8	4,323
Chuckawalla Valley State Prison (CVSP)	2,455	1,738	141.3	2,804
Folsom State Prison (FOL)	2,665	2,065	129.1	3,078
Folsom Women’s Facility (FWF)	199	403	49.4	530
High Desert State Prison (HDSP)	2,233	2,324	96.1	2,711
Ironwood State Prison (ISP)	2,147	2,200	97.6	3,300
Kern Valley State Prison (KVSP)	3,306	2,448	135.0	3,622
California State Prison, Los Angeles County (LAC)	2,753	2,300	119.7	3,400
Mule Creek State Prison (MCSP)	3,767	3,284	114.7	4,255
North Kern State Prison (NKSP)	3,794	2,694	140.8	4,011
Pelican Bay State Prison (PBSP)	1,932	2,380	81.2	3,361
Pleasant Valley State Prison (PVSP)	2,525	2,308	109.4	3,433
RJ Donovan Correctional Facility (RJD)	3,353	2,992	112.1	4,234
California State Prison, Sacramento (SAC)	1,825	1,828	99.8	2,577
California Substance Abuse Treatment Facility (SATF)	4,859	3,424	141.9	5,227
Sierra Conservation Center (SCC)	3,014	3,404	88.5	4,250
California State Prison, Solano (SOL)	3,248	2,594	125.2	4,092
San Quentin State Prison (SQ)	3,066	3,084	99.4	4,161
Salinas Valley State Prison (SVSP)	2,969	2,452	121.1	3,509
Valley State Prison (VSP)	2,902	1,961	148.0	2,942
Wasco State Prison (WSP)	3,627	2,984	121.5	4,447
Institution Total	93,770	85,330	109.9	120,085

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 1, 2022

Monthly Report of Population
As of Midnight February 28, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	3,742	2,909	128.6	4,493
Calipatria State Prison (CAL)	2,719	2,308	117.8	3,451
California Correctional Center (CCC)	1,630	3,377	48.3	3,487
California Correctional Institution (CCI)	3,126	2,172	143.9	3,389
Central California Women's Facility (CCWF)	2,120	1,990	106.5	3,068
Centinela State Prison (CEN)	2,863	2,308	124.0	3,446
California Health Care Facility - Stockton (CHCF)	2,140	2,953	72.5	2,951
California Institution for Men (CIM)	2,523	2,736	92.2	4,226
California Institution for Women (CIW)	1,006	1,281	78.5	1,777
California Men's Colony (CMC)	3,198	3,816	83.8	4,407
California Medical Facility (CMF)	1,918	2,318	82.7	2,888
California State Prison, Corcoran (COR)	3,444	3,115	110.6	4,476
California Rehabilitation Center (CRC)	2,384	2,380	100.2	3,174
Correctional Training Facility (CTF)	4,081	2,800	145.8	4,323
Chuckawalla Valley State Prison (CVSP)	2,402	1,738	138.2	2,804
Folsom State Prison (FOL)	2,682	2,065	129.9	3,078
Folsom Women’s Facility (FWF)	189	403	46.9	530
High Desert State Prison (HDSP)	2,225	2,324	95.7	2,711
Ironwood State Prison (ISP)	2,077	2,200	94.4	3,300
Kern Valley State Prison (KVSP)	3,328	2,448	135.9	3,622
California State Prison, Los Angeles County (LAC)	2,739	2,300	119.1	3,400
Mule Creek State Prison (MCSP)	3,760	3,284	114.5	4,255
North Kern State Prison (NKSP)	3,515	2,694	130.5	4,011
Pelican Bay State Prison (PBSP)	1,916	2,380	80.5	3,361
Pleasant Valley State Prison (PVSP)	2,519	2,308	109.1	3,433
RJ Donovan Correctional Facility (RJD)	3,331	2,992	111.3	4,234
California State Prison, Sacramento (SAC)	1,786	1,828	97.7	2,577
California Substance Abuse Treatment Facility (SATF)	4,791	3,424	139.9	5,227
Sierra Conservation Center (SCC)	2,950	3,404	86.7	4,250
California State Prison, Solano (SOL)	3,192	2,594	123.1	4,092
San Quentin State Prison (SQ)	3,046	3,084	98.8	4,161
Salinas Valley State Prison (SVSP)	2,958	2,452	120.6	3,509
Valley State Prison (VSP)	2,908	1,961	148.3	2,942
Wasco State Prison (WSP)	3,181	2,984	106.6	4,447
Institution Total	92,389	85,330	108.3	119,500

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
April 1, 2022

Monthly Report of Population
As of Midnight March 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	3,831	2,909	131.7	4,492
Calipatria State Prison (CAL)	2,737	2,308	118.6	3,451
California Correctional Center (CCC)	1,649	3,377	48.8	3,487
California Correctional Institution (CCI)	3,121	2,172	143.7	3,389
Central California Women's Facility (CCWF)	2,241	1,990	112.6	3,068
Centinela State Prison (CEN)	2,952	2,308	127.9	3,446
California Health Care Facility - Stockton (CHCF)	2,189	2,953	74.1	2,951
California Institution for Men (CIM)	2,544	2,736	93.0	4,226
California Institution for Women (CIW)	990	1,281	77.3	1,777
California Men's Colony (CMC)	3,197	3,816	83.8	4,407
California Medical Facility (CMF)	1,910	2,318	82.4	2,888
California State Prison, Corcoran (COR)	3,424	3,115	109.9	4,476
California Rehabilitation Center (CRC)	2,297	2,380	96.5	3,174
Correctional Training Facility (CTF)	4,039	2,800	144.3	4,308
Chuckawalla Valley State Prison (CVSP)	2,400	1,738	138.1	2,804
Folsom State Prison (FOL)	2,743	2,065	132.8	3,078
Folsom Women’s Facility (FWF)	182	403	45.2	530
High Desert State Prison (HDSP)	2,253	2,324	96.9	2,711
Ironwood State Prison (ISP)	2,062	2,200	93.7	3,300
Kern Valley State Prison (KVSP)	3,252	2,448	132.8	3,622
California State Prison, Los Angeles County (LAC)	2,743	2,300	119.3	3,400
Mule Creek State Prison (MCSP)	3,805	3,284	115.9	4,255
North Kern State Prison (NKSP)	3,719	2,694	138.0	4,011
Pelican Bay State Prison (PBSP)	1,852	2,380	77.8	3,361
Pleasant Valley State Prison (PVSP)	2,635	2,308	114.2	3,433
RJ Donovan Correctional Facility (RJD)	3,370	2,992	112.6	4,234
California State Prison, Sacramento (SAC)	1,743	1,828	95.4	2,577
California Substance Abuse Treatment Facility (SATF)	4,731	3,424	138.2	5,227
Sierra Conservation Center (SCC)	2,903	3,404	85.3	4,250
California State Prison, Solano (SOL)	3,212	2,594	123.8	4,092
San Quentin State Prison (SQ)	3,040	3,084	98.6	4,161
Salinas Valley State Prison (SVSP)	2,859	2,452	116.6	3,509
Valley State Prison (VSP)	2,941	1,961	150.0	2,942
Wasco State Prison (WSP)	3,280	2,984	109.9	4,447
Institution Total	92,846	85,330	108.8	119,484

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 1, 2022

Monthly Report of Population
As of Midnight April 30, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	3,907	2,909	134.3	4,387
Calipatria State Prison (CAL)	2,657	2,308	115.1	3,451
California Correctional Center (CCC)	1,752	3,377	51.9	3,427
California Correctional Institution (CCI)	3,118	2,172	143.6	3,299
Central California Women's Facility (CCWF)	2,204	1,990	110.8	3,068
Centinela State Prison (CEN)	2,903	2,308	125.8	3,446
California Health Care Facility - Stockton (CHCF)	2,182	2,953	73.9	2,951
California Institution for Men (CIM)	2,672	2,736	97.7	4,226
California Institution for Women (CIW)	1,002	1,281	78.2	1,777
California Men's Colony (CMC)	3,314	3,816	86.8	4,407
California Medical Facility (CMF)	1,950	2,318	84.1	2,888
California State Prison, Corcoran (COR)	3,419	3,115	109.8	4,476
California Rehabilitation Center (CRC)	2,308	2,380	97.0	3,162
Correctional Training Facility (CTF)	3,983	2,800	142.3	4,138
Chuckawalla Valley State Prison (CVSP)	2,348	1,738	135.1	2,598
Folsom State Prison (FOL)	2,731	2,065	132.3	3,078
Folsom Women’s Facility (FWF)	216	403	53.6	530
High Desert State Prison (HDSP)	2,363	2,324	101.7	2,711
Ironwood State Prison (ISP)	1,992	2,200	90.5	3,300
Kern Valley State Prison (KVSP)	3,195	2,448	130.5	3,622
California State Prison, Los Angeles County (LAC)	2,640	2,300	114.8	3,275
Mule Creek State Prison (MCSP)	3,842	3,284	117.0	4,105
North Kern State Prison (NKSP)	4,075	2,694	151.3	4,011
Pelican Bay State Prison (PBSP)	1,817	2,380	76.3	3,361
Pleasant Valley State Prison (PVSP)	2,560	2,308	110.9	3,433
RJ Donovan Correctional Facility (RJD)	3,340	2,992	111.6	4,086
California State Prison, Sacramento (SAC)	1,915	1,828	104.8	2,577
California Substance Abuse Treatment Facility (SATF)	4,443	3,424	129.8	5,111
Sierra Conservation Center (SCC)	2,659	3,404	78.1	4,250
California State Prison, Solano (SOL)	3,243	2,594	125.0	3,882
San Quentin State Prison (SQ)	3,158	3,084	102.4	3,984
Salinas Valley State Prison (SVSP)	2,862	2,452	116.7	3,509
Valley State Prison (VSP)	2,947	1,961	150.3	2,942
Wasco State Prison (WSP)	3,677	2,984	123.2	4,447
Institution Total	93,394	85,330	109.5	117,915

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
June 1, 2022

Monthly Report of Population
As of Midnight May 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,030	2,909	138.5	4,387
Calipatria State Prison (CAL)	2,667	2,308	115.6	3,451
California Correctional Center (CCC)	2,057	3,377	60.9	3,487
California Correctional Institution (CCI)	3,033	2,172	139.6	3,299
Central California Women's Facility (CCWF)	2,166	1,990	108.8	3,068
Centinela State Prison (CEN)	2,925	2,308	126.7	3,446
California Health Care Facility - Stockton (CHCF)	2,212	2,953	74.9	2,951
California Institution for Men (CIM)	2,956	2,736	108.0	4,226
California Institution for Women (CIW)	995	1,281	77.7	1,777
California Men's Colony (CMC)	3,416	3,816	89.5	4,407
California Medical Facility (CMF)	1,923	2,318	83.0	2,888
California State Prison, Corcoran (COR)	3,440	3,115	110.4	4,476
California Rehabilitation Center (CRC)	2,252	2,380	94.6	3,162
Correctional Training Facility (CTF)	4,036	2,800	144.1	4,205
Chuckawalla Valley State Prison (CVSP)	2,298	1,738	132.2	2,598
Folsom State Prison (FOL)	2,779	2,065	134.6	3,078
Folsom Women’s Facility (FWF)	272	403	67.5	530
High Desert State Prison (HDSP)	2,168	2,324	93.3	2,411
Ironwood State Prison (ISP)	2,051	2,200	93.2	3,300
Kern Valley State Prison (KVSP)	3,080	2,448	125.8	3,622
California State Prison, Los Angeles County (LAC)	2,592	2,300	112.7	2,975
Mule Creek State Prison (MCSP)	3,816	3,284	116.2	4,155
North Kern State Prison (NKSP)	4,181	2,694	155.2	4,011
Pelican Bay State Prison (PBSP)	1,723	2,380	72.4	3,375
Pleasant Valley State Prison (PVSP)	2,589	2,308	112.2	3,433
RJ Donovan Correctional Facility (RJD)	3,214	2,992	107.4	4,086
California State Prison, Sacramento (SAC)	1,979	1,828	108.3	2,577
California Substance Abuse Treatment Facility (SATF)	4,435	3,424	129.5	5,111
Sierra Conservation Center (SCC)	2,600	3,404	76.4	4,250
California State Prison, Solano (SOL)	3,280	2,594	126.4	3,882
San Quentin State Prison (SQ)	3,222	3,084	104.5	3,984
Salinas Valley State Prison (SVSP)	2,868	2,452	117.0	3,209
Valley State Prison (VSP)	2,965	1,961	151.2	2,942
Wasco State Prison (WSP)	3,711	2,984	124.4	4,447
Institution Total	93,931	85,330	110.1	117,206

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
July 1, 2022

Monthly Report of Population
As of Midnight June 30, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,072	2,909	140.0	4,387
Calipatria State Prison (CAL)	2,623	2,308	113.6	3,451
California Correctional Center (CCC)	2,285	3,377	67.7	3,487
California Correctional Institution (CCI)	3,012	2,172	138.7	3,299
Central California Women's Facility (CCWF)	2,097	1,990	105.4	3,068
Centinela State Prison (CEN)	2,932	2,308	127.0	3,446
California Health Care Facility - Stockton (CHCF)	2,206	2,953	74.7	2,951
California Institution for Men (CIM)	3,034	2,736	110.9	4,226
California Institution for Women (CIW)	950	1,281	74.2	1,777
California Men's Colony (CMC)	3,466	3,816	90.8	4,407
California Medical Facility (CMF)	1,921	2,318	82.9	2,888
California State Prison, Corcoran (COR)	3,427	3,115	110.0	4,476
California Rehabilitation Center (CRC)	2,289	2,380	96.2	3,162
Correctional Training Facility (CTF)	4,132	2,800	147.6	4,205
Chuckawalla Valley State Prison (CVSP)	2,230	1,738	128.3	2,598
Folsom State Prison (FOL)	2,739	2,065	132.6	3,078
Folsom Women’s Facility (FWF)	274	403	68.0	530
High Desert State Prison (HDSP)	1,931	2,324	83.1	2,411
Ironwood State Prison (ISP)	2,341	2,200	106.4	3,300
Kern Valley State Prison (KVSP)	2,973	2,448	121.4	3,497
California State Prison, Los Angeles County (LAC)	2,328	2,300	101.2	2,975
Mule Creek State Prison (MCSP)	3,827	3,284	116.5	4,205
North Kern State Prison (NKSP)	4,134	2,694	153.5	4,011
Pelican Bay State Prison (PBSP)	1,670	2,380	70.2	3,375
Pleasant Valley State Prison (PVSP)	2,695	2,308	116.8	3,433
RJ Donovan Correctional Facility (RJD)	3,092	2,992	103.3	4,186
California State Prison, Sacramento (SAC)	2,067	1,828	113.1	2,577
California Substance Abuse Treatment Facility (SATF)	4,542	3,424	132.7	5,111
Sierra Conservation Center (SCC)	2,603	3,404	76.5	4,250
California State Prison, Solano (SOL)	3,334	2,594	128.5	3,992
San Quentin State Prison (SQ)	3,273	3,084	106.1	3,984
Salinas Valley State Prison (SVSP)	2,912	2,452	118.8	3,209
Valley State Prison (VSP)	3,015	1,961	153.7	2,942
Wasco State Prison (WSP)	3,579	2,984	119.9	4,447
Institution Total	94,005	85,330	110.2	117,341

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
August 1, 2022

Monthly Report of Population
As of Midnight July 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,062	2,909	139.6	4,387
Calipatria State Prison (CAL)	2,543	2,308	110.2	3,451
California Correctional Center (CCC)	2,308	3,377	68.3	3,487
California Correctional Institution (CCI)	2,962	2,172	136.4	3,299
Central California Women's Facility (CCWF)	2,178	1,990	109.4	3,068
Centinela State Prison (CEN)	2,906	2,308	125.9	3,446
California Health Care Facility - Stockton (CHCF)	2,228	2,953	75.4	2,951
California Institution for Men (CIM)	3,135	2,736	114.6	4,076
California Institution for Women (CIW)	940	1,281	73.4	1,777
California Men's Colony (CMC)	3,414	3,816	89.5	4,407
California Medical Facility (CMF)	1,887	2,318	81.4	2,888
California State Prison, Corcoran (COR)	3,440	3,115	110.4	4,476
California Rehabilitation Center (CRC)	2,322	2,380	97.6	3,162
Correctional Training Facility (CTF)	4,076	2,800	145.6	4,205
Chuckawalla Valley State Prison (CVSP)	2,176	1,738	125.2	2,598
Folsom State Prison (FOL)	2,664	2,065	129.0	3,078
Folsom Women’s Facility (FWF)	243	403	60.3	530
High Desert State Prison (HDSP)	1,823	2,324	78.4	2,411
Ironwood State Prison (ISP)	2,464	2,200	112.0	3,300
Kern Valley State Prison (KVSP)	2,907	2,448	118.8	3,497
California State Prison, Los Angeles County (LAC)	2,322	2,300	101.0	2,975
Mule Creek State Prison (MCSP)	3,785	3,284	115.3	4,205
North Kern State Prison (NKSP)	4,100	2,694	152.2	4,011
Pelican Bay State Prison (PBSP)	1,654	2,380	69.5	3,375
Pleasant Valley State Prison (PVSP)	2,688	2,308	116.5	3,433
RJ Donovan Correctional Facility (RJD)	3,074	2,992	102.7	4,234
California State Prison, Sacramento (SAC)	2,031	1,828	111.1	2,577
California Substance Abuse Treatment Facility (SATF)	4,603	3,424	134.4	5,111
Sierra Conservation Center (SCC)	2,528	3,404	74.3	4,250
California State Prison, Solano (SOL)	3,255	2,594	125.5	3,992
San Quentin State Prison (SQ)	3,239	3,084	105.0	4,033
Salinas Valley State Prison (SVSP)	2,941	2,452	119.9	3,209
Valley State Prison (VSP)	3,014	1,961	153.7	2,942
Wasco State Prison (WSP)	3,667	2,984	122.9	4,447
Institution Total	93,579	85,330	109.7	117,288

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
September 1, 2022

Monthly Report of Population
As of Midnight August 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,082	2,909	140.3	4,387
Calipatria State Prison (CAL)	2,550	2,308	110.5	3,451
California Correctional Center (CCC)	2,341	3,377	69.3	3,475
California Correctional Institution (CCI)	2,918	2,172	134.3	3,255
Central California Women's Facility (CCWF)	2,211	1,990	111.1	3,067
Centinela State Prison (CEN)	2,941	2,308	127.4	3,446
California Health Care Facility - Stockton (CHCF)	2,278	2,953	77.1	2,953
California Institution for Men (CIM)	3,230	2,736	118.1	3,773
California Institution for Women (CIW)	907	1,281	70.8	1,777
California Men's Colony (CMC)	3,392	3,816	88.9	4,412
California Medical Facility (CMF)	1,880	2,318	81.1	2,810
California State Prison, Corcoran (COR)	3,396	3,115	109.0	4,501
California Rehabilitation Center (CRC)	2,450	2,380	102.9	3,501
Correctional Training Facility (CTF)	4,014	2,800	143.4	4,049
Chuckawalla Valley State Prison (CVSP)	2,163	1,738	124.5	2,617
Folsom State Prison (FOL)	2,571	2,065	124.5	3,019
Folsom Women’s Facility (FWF)	204	403	50.6	530
High Desert State Prison (HDSP)	1,779	2,324	76.5	2,385
Ironwood State Prison (ISP)	2,561	2,200	116.4	3,300
Kern Valley State Prison (KVSP)	2,817	2,448	115.1	3,497
California State Prison, Los Angeles County (LAC)	2,345	2,300	102.0	3,100
Mule Creek State Prison (MCSP)	3,767	3,284	114.7	4,205
North Kern State Prison (NKSP)	3,850	2,694	142.9	4,011
Pelican Bay State Prison (PBSP)	1,664	2,380	69.9	3,151
Pleasant Valley State Prison (PVSP)	2,738	2,308	118.6	3,433
RJ Donovan Correctional Facility (RJD)	3,002	2,992	100.3	4,234
California State Prison, Sacramento (SAC)	2,032	1,828	111.2	2,547
California Substance Abuse Treatment Facility (SATF)	4,671	3,424	136.4	5,111
Sierra Conservation Center (SCC)	2,666	3,404	78.3	4,236
California State Prison, Solano (SOL)	3,265	2,594	125.9	3,992
San Quentin State Prison (SQ)	3,191	3,084	103.5	3,997
Salinas Valley State Prison (SVSP)	2,964	2,452	120.9	3,209
Valley State Prison (VSP)	3,052	1,961	155.6	3,022
Wasco State Prison (WSP)	3,446	2,984	115.5	4,447
Institution Total	93,338	85,330	109.4	116,900

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 1, 2022

Monthly Report of Population
As of Midnight September 30, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,140	2,909	142.3	4,387
Calipatria State Prison (CAL)	2,554	2,308	110.7	3,451
California Correctional Center (CCC)	2,224	3,377	65.9	3,415
California Correctional Institution (CCI)	2,917	2,172	134.3	3,255
Central California Women's Facility (CCWF)	2,209	1,990	111.0	2,987
Centinela State Prison (CEN)	3,089	2,308	133.8	3,446
California Health Care Facility - Stockton (CHCF)	2,291	2,953	77.6	2,953
California Institution for Men (CIM)	3,300	2,736	120.6	3,773
California Institution for Women (CIW)	892	1,281	69.6	1,777
California Men's Colony (CMC)	3,360	3,816	88.1	4,480
California Medical Facility (CMF)	1,885	2,318	81.3	2,810
California State Prison, Corcoran (COR)	3,380	3,115	108.5	4,502
California Rehabilitation Center (CRC)	2,632	2,380	110.6	3,501
Correctional Training Facility (CTF)	3,984	2,800	142.3	3,993
Chuckawalla Valley State Prison (CVSP)	2,113	1,738	121.6	2,617
Folsom State Prison (FOL)	2,564	2,065	124.2	3,021
Folsom Women’s Facility (FWF)	182	403	45.2	530
High Desert State Prison (HDSP)	1,725	2,324	74.2	2,411
Ironwood State Prison (ISP)	2,591	2,200	117.8	3,275
Kern Valley State Prison (KVSP)	2,617	2,448	106.9	3,497
California State Prison, Los Angeles County (LAC)	2,354	2,300	102.3	3,100
Mule Creek State Prison (MCSP)	3,773	3,284	114.9	4,105
North Kern State Prison (NKSP)	3,873	2,694	143.8	4,011
Pelican Bay State Prison (PBSP)	1,737	2,380	73.0	3,151
Pleasant Valley State Prison (PVSP)	2,747	2,308	119.0	3,433
RJ Donovan Correctional Facility (RJD)	3,015	2,992	100.8	4,038
California State Prison, Sacramento (SAC)	1,942	1,828	106.2	2,259
California Substance Abuse Treatment Facility (SATF)	4,725	3,424	138.0	5,111
Sierra Conservation Center (SCC)	2,771	3,404	81.4	4,236
California State Prison, Solano (SOL)	3,314	2,594	127.8	3,882
San Quentin State Prison (SQ)	3,154	3,084	102.3	3,997
Salinas Valley State Prison (SVSP)	2,943	2,452	120.0	3,209
Valley State Prison (VSP)	3,025	1,961	154.3	2,942
Wasco State Prison (WSP)	3,158	2,984	105.8	4,447
Institution Total	93,180	85,330	109.2	116,002

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
November 1, 2022

Monthly Report of Population
As of Midnight October 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,080	2,909	140.3	4,359
Calipatria State Prison (CAL)	2,534	2,308	109.8	3,433
California Correctional Center (CCC)	38	3,377	1.1	298
California Correctional Institution (CCI)	2,848	2,172	131.1	3,239
Central California Women's Facility (CCWF)	2,140	1,990	107.5	2,949
Centinela State Prison (CEN)	3,032	2,308	131.4	3,433
California Health Care Facility - Stockton (CHCF)	2,311	2,953	78.3	2,953
California Institution for Men (CIM)	3,157	2,736	115.4	3,695
California Institution for Women (CIW)	923	1,281	72.1	1,743
California Men's Colony (CMC)	3,285	3,816	86.1	4,430
California Medical Facility (CMF)	1,898	2,318	81.9	2,760
California State Prison, Corcoran (COR)	3,286	3,115	105.5	4,502
California Rehabilitation Center (CRC)	2,637	2,380	110.8	3,491
Correctional Training Facility (CTF)	3,936	2,800	140.6	3,981
Chuckawalla Valley State Prison (CVSP)	2,078	1,738	119.6	2,603
Folsom State Prison (FOL)	2,510	2,065	121.5	3,021
Folsom Women’s Facility (FWF)	182	403	45.2	530
High Desert State Prison (HDSP)	2,340	2,324	100.7	3,161
Ironwood State Prison (ISP)	2,630	2,200	119.5	3,275
Kern Valley State Prison (KVSP)	2,541	2,448	103.8	3,497
California State Prison, Los Angeles County (LAC)	2,377	2,300	103.3	3,100
Mule Creek State Prison (MCSP)	3,791	3,284	115.4	4,105
North Kern State Prison (NKSP)	4,121	2,694	153.0	4,011
Pelican Bay State Prison (PBSP)	1,759	2,380	73.9	3,151
Pleasant Valley State Prison (PVSP)	2,695	2,308	116.8	3,433
RJ Donovan Correctional Facility (RJD)	3,022	2,992	101.0	4,038
California State Prison, Sacramento (SAC)	1,917	1,828	104.9	2,259
California Substance Abuse Treatment Facility (SATF)	4,698	3,424	137.2	5,111
Sierra Conservation Center (SCC)	3,796	3,404	111.5	5,726
California State Prison, Solano (SOL)	3,329	2,594	128.3	3,866
San Quentin State Prison (SQ)	3,256	3,084	105.6	3,985
Salinas Valley State Prison (SVSP)	2,947	2,452	120.2	3,209
Valley State Prison (VSP)	2,990	1,961	152.5	2,931
Wasco State Prison (WSP)	3,711	2,984	124.4	4,447
Institution Total	92,795	85,330	108.7	114,725

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
December 1, 2022

Monthly Report of Population
As of Midnight November 30, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,355	2,909	149.7	4,359
Calipatria State Prison (CAL)	2,505	2,308	108.5	3,433
California Correctional Institution (CCI)	2,762	2,172	127.2	3,239
Central California Women's Facility (CCWF)	2,130	1,990	107.0	2,949
Centinela State Prison (CEN)	2,962	2,308	128.3	3,433
California Health Care Facility - Stockton (CHCF)	2,331	2,953	78.9	2,953
California Institution for Men (CIM)	2,979	2,736	108.9	3,695
California Institution for Women (CIW)	934	1,281	72.9	1,743
California Men's Colony (CMC)	3,180	3,816	83.3	4,430
California Medical Facility (CMF)	1,889	2,318	81.5	2,760
California State Prison, Corcoran (COR)	3,229	3,115	103.7	4,502
California Rehabilitation Center (CRC)	3,024	2,380	127.1	3,491
Correctional Training Facility (CTF)	3,867	2,800	138.1	4,161
Chuckawalla Valley State Prison (CVSP)	2,041	1,738	117.4	2,603
Folsom State Prison (FOL)	2,486	2,065	120.4	3,021
Folsom Women’s Facility (FWF)	213	403	52.9	530
High Desert State Prison (HDSP)	2,291	2,324	98.6	3,474
Ironwood State Prison (ISP)	2,578	2,200	117.2	3,275
Kern Valley State Prison (KVSP)	2,465	2,448	100.7	3,497
California State Prison, Los Angeles County (LAC)	2,421	2,300	105.3	3,100
Mule Creek State Prison (MCSP)	3,801	3,284	115.7	4,105
North Kern State Prison (NKSP)	4,071	2,694	151.1	4,011
Pelican Bay State Prison (PBSP)	1,790	2,380	75.2	3,151
Pleasant Valley State Prison (PVSP)	2,627	2,308	113.8	3,433
RJ Donovan Correctional Facility (RJD)	3,008	2,992	100.5	4,038
California State Prison, Sacramento (SAC)	1,883	1,828	103.0	2,259
California Substance Abuse Treatment Facility (SATF)	4,707	3,424	137.5	5,111
Sierra Conservation Center (SCC)	3,886	3,404	114.2	5,704
California State Prison, Solano (SOL)	3,314	2,594	127.8	3,866
San Quentin State Prison (SQ)	3,274	3,084	106.2	3,985
Salinas Valley State Prison (SVSP)	2,968	2,452	121.0	3,209
Valley State Prison (VSP)	2,936	1,961	149.7	2,931
Wasco State Prison (WSP)	3,713	2,984	124.4	4,447
Institution Total	92,620	85,330	108.5	114,898

Design capacity for California Correctional Center will be included until the June 2023 closure date.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
January 1, 2023

Monthly Report of Population
As of Midnight December 31, 2022

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,025	2,909	138.4	4,359
Calipatria State Prison (CAL)	2,531	2,308	109.7	3,433
California Correctional Institution (CCI)	2,681	2,172	123.4	3,239
Central California Women's Facility (CCWF)	2,253	1,990	113.2	2,949
Centinela State Prison (CEN)	2,877	2,308	124.7	3,433
California Health Care Facility - Stockton (CHCF)	2,373	2,953	80.4	2,953
California Institution for Men (CIM)	3,007	2,736	109.9	3,695
California Institution for Women (CIW)	928	1,281	72.4	1,743
California Men's Colony (CMC)	3,232	3,816	84.7	4,430
California Medical Facility (CMF)	1,880	2,318	81.1	2,760
California State Prison, Corcoran (COR)	3,348	3,115	107.5	4,502
California Rehabilitation Center (CRC)	2,809	2,380	118.0	3,491
Correctional Training Facility (CTF)	3,860	2,800	137.9	4,125
Chuckawalla Valley State Prison (CVSP)	2,090	1,738	120.3	2,603
Folsom State Prison (FOL)	2,404	2,065	116.4	3,021
Folsom Women’s Facility (FWF)	81	403	20.1	530
High Desert State Prison (HDSP)	2,362	2,324	101.6	3,474
Ironwood State Prison (ISP)	2,568	2,200	116.7	3,275
Kern Valley State Prison (KVSP)	2,418	2,448	98.8	3,497
California State Prison, Los Angeles County (LAC)	2,472	2,300	107.5	3,100
Mule Creek State Prison (MCSP)	3,810	3,284	116.0	4,105
North Kern State Prison (NKSP)	4,304	2,694	159.8	4,011
Pelican Bay State Prison (PBSP)	1,744	2,380	73.3	3,151
Pleasant Valley State Prison (PVSP)	2,578	2,308	111.7	3,433
RJ Donovan Correctional Facility (RJD)	2,975	2,992	99.4	4,038
California State Prison, Sacramento (SAC)	1,735	1,828	94.9	2,259
California Substance Abuse Treatment Facility (SATF)	4,684	3,424	136.8	5,111
Sierra Conservation Center (SCC)	4,213	3,404	123.8	5,704
California State Prison, Solano (SOL)	3,296	2,594	127.1	3,866
San Quentin State Prison (SQ)	3,295	3,084	106.8	3,985
Salinas Valley State Prison (SVSP)	2,969	2,452	121.1	3,209
Valley State Prison (VSP)	2,922	1,961	149.0	2,931
Wasco State Prison (WSP)	3,882	2,984	130.1	4,447
Institution Total	92,606	85,330	108.5	114,862

Design capacity for California Correctional Center will be included until the June 2023 closure date.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
February 1, 2023

Monthly Report of Population
As of Midnight January 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,062	2,909	139.6	4,359
Calipatria State Prison (CAL)	2,500	2,308	108.3	3,433
California Correctional Institution (CCI)	2,611	2,172	120.2	3,239
Central California Women's Facility (CCWF)	2,279	1,990	114.5	2,949
Centinela State Prison (CEN)	2,773	2,308	120.1	3,433
California Health Care Facility - Stockton (CHCF)	2,401	2,953	81.3	2,953
California Institution for Men (CIM)	2,867	2,736	104.8	3,695
California Institution for Women (CIW)	983	1,281	76.7	1,743
California Men's Colony (CMC)	3,254	3,816	85.3	4,430
California Medical Facility (CMF)	1,910	2,318	82.4	2,760
California State Prison, Corcoran (COR)	3,443	3,115	110.5	4,502
California Rehabilitation Center (CRC)	3,029	2,380	127.3	3,491
Correctional Training Facility (CTF)	3,927	2,800	140.3	4,125
Chuckawalla Valley State Prison (CVSP)	1,731	1,738	99.6	2,603
Folsom State Prison (FOL)	2,513	2,065	121.7	3,021
High Desert State Prison (HDSP)	2,083	2,324	89.6	3,474
Ironwood State Prison (ISP)	2,601	2,200	118.2	3,275
Kern Valley State Prison (KVSP)	2,431	2,448	99.3	3,497
California State Prison, Los Angeles County (LAC)	2,503	2,300	108.8	3,100
Mule Creek State Prison (MCSP)	3,824	3,284	116.4	4,105
North Kern State Prison (NKSP)	4,380	2,694	162.6	4,011
Pelican Bay State Prison (PBSP)	1,711	2,380	71.9	3,151
Pleasant Valley State Prison (PVSP)	2,562	2,308	111.0	3,433
RJ Donovan Correctional Facility (RJD)	2,920	2,992	97.6	4,038
California State Prison, Sacramento (SAC)	1,585	1,828	86.7	2,259
California Substance Abuse Treatment Facility (SATF)	4,650	3,424	135.8	5,111
Sierra Conservation Center (SCC)	4,461	3,404	131.1	5,804
California State Prison, Solano (SOL)	3,326	2,594	128.2	3,866
San Quentin State Prison (SQ)	3,542	3,084	114.9	3,985
Salinas Valley State Prison (SVSP)	2,934	2,452	119.7	3,209
Valley State Prison (VSP)	2,973	1,961	151.6	2,931
Wasco State Prison (WSP)	3,698	2,984	123.9	4,447
Institution Total	92,467	85,330	108.4	114,432

Design capacity for California Correctional Center will be included until the June 2023 closure date.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 1, 2023

Monthly Report of Population
As of Midnight February 28, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,195	2,909	144.2	4,359
Calipatria State Prison (CAL)	2,453	2,308	106.3	3,433
California Correctional Institution (CCI)	2,533	2,172	116.6	3,239
Central California Women's Facility (CCWF)	2,334	1,990	117.3	2,949
Centinela State Prison (CEN)	2,664	2,308	115.4	3,433
California Health Care Facility - Stockton (CHCF)	2,429	2,953	82.3	2,953
California Institution for Men (CIM)	2,718	2,736	99.3	3,695
California Institution for Women (CIW)	970	1,281	75.7	1,743
California Men's Colony (CMC)	3,359	3,816	88.0	4,430
California Medical Facility (CMF)	1,905	2,318	82.2	2,760
California State Prison, Corcoran (COR)	3,423	3,115	109.9	4,502
California Rehabilitation Center (CRC)	2,920	2,380	122.7	3,491
Correctional Training Facility (CTF)	3,955	2,800	141.3	4,125
Chuckawalla Valley State Prison (CVSP)	1,834	1,738	105.5	2,603
Folsom State Prison (FOL)	2,657	2,065	128.7	3,021
High Desert State Prison (HDSP)	1,981	2,324	85.2	3,474
Ironwood State Prison (ISP)	2,620	2,200	119.1	3,275
Kern Valley State Prison (KVSP)	2,420	2,448	98.9	3,497
California State Prison, Los Angeles County (LAC)	2,513	2,300	109.3	3,100
Mule Creek State Prison (MCSP)	3,850	3,284	117.2	4,105
North Kern State Prison (NKSP)	4,205	2,694	156.1	4,011
Pelican Bay State Prison (PBSP)	1,686	2,380	70.8	3,151
Pleasant Valley State Prison (PVSP)	2,514	2,308	108.9	3,433
RJ Donovan Correctional Facility (RJD)	2,936	2,992	98.1	4,038
California State Prison, Sacramento (SAC)	1,535	1,828	84.0	2,259
California Substance Abuse Treatment Facility (SATF)	4,638	3,424	135.5	5,111
Sierra Conservation Center (SCC)	4,431	3,404	130.2	5,804
California State Prison, Solano (SOL)	3,323	2,594	128.1	3,866
San Quentin State Prison (SQ)	3,743	3,084	121.4	3,985
Salinas Valley State Prison (SVSP)	2,958	2,452	120.6	3,209
Valley State Prison (VSP)	2,987	1,961	152.3	2,931
Wasco State Prison (WSP)	3,750	2,984	125.7	4,447
Institution Total	92,439	85,330	108.3	114,432

Design capacity for California Correctional Center will be included until the June 2023 closure date.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 31, 2023

Monthly Report of Population
As of Midnight March 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,364	2,909	150.0	4,359
Calipatria State Prison (CAL)	2,503	2,308	108.4	3,433
California Correctional Institution (CCI)	2,347	2,172	108.1	3,239
Central California Women's Facility (CCWF)	2,316	1,990	116.4	2,949
Centinela State Prison (CEN)	2,553	2,308	110.6	3,433
California Health Care Facility - Stockton (CHCF)	2,477	2,953	83.9	2,953
California Institution for Men (CIM)	2,364	2,736	86.4	3,695
California Institution for Women (CIW)	965	1,281	75.3	1,743
California Men's Colony (CMC)	3,316	3,816	86.9	4,430
California Medical Facility (CMF)	1,919	2,318	82.8	2,760
California State Prison, Corcoran (COR)	3,406	3,115	109.3	4,502
California Rehabilitation Center (CRC)	2,931	2,380	123.2	3,491
Correctional Training Facility (CTF)	3,995	2,800	142.7	4,125
Chuckawalla Valley State Prison (CVSP)	1,858	1,738	106.9	2,603
Folsom State Prison (FOL)	2,837	2,065	137.4	3,021
High Desert State Prison (HDSP)	2,317	2,324	99.7	3,474
Ironwood State Prison (ISP)	2,695	2,200	122.5	3,275
Kern Valley State Prison (KVSP)	2,525	2,448	103.1	3,497
California State Prison, Los Angeles County (LAC)	2,568	2,300	111.7	3,100
Mule Creek State Prison (MCSP)	3,835	3,284	116.8	4,105
North Kern State Prison (NKSP)	4,221	2,694	156.7	4,011
Pelican Bay State Prison (PBSP)	1,643	2,380	69.0	3,151
Pleasant Valley State Prison (PVSP)	2,638	2,308	114.3	3,433
RJ Donovan Correctional Facility (RJD)	2,903	2,992	97.0	4,038
California State Prison, Sacramento (SAC)	1,460	1,828	79.9	2,259
California Substance Abuse Treatment Facility (SATF)	4,692	3,424	137.0	5,111
Sierra Conservation Center (SCC)	4,182	3,404	122.9	5,804
California State Prison, Solano (SOL)	3,299	2,594	127.2	3,866
San Quentin State Prison (SQ)	4,024	3,084	130.5	3,985
Salinas Valley State Prison (SVSP)	2,895	2,452	118.1	3,209
Valley State Prison (VSP)	2,963	1,961	151.1	2,931
Wasco State Prison (WSP)	3,742	2,984	125.4	4,447
Institution Total	92,753	85,330	108.7	114,432

Design capacity for California Correctional Center will be included until the June 2023 closure date.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 1, 2023

Monthly Report of Population
As of Midnight April 30, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,494	2,909	154.5	4,359
Calipatria State Prison (CAL)	2,488	2,308	107.8	3,433
California Correctional Institution (CCI)	2,149	2,172	98.9	3,239
Central California Women's Facility (CCWF)	2,342	1,990	117.7	2,952
Centinela State Prison (CEN)	2,539	2,308	110.0	3,433
California Health Care Facility - Stockton (CHCF)	2,407	2,953	81.5	2,953
California Institution for Men (CIM)	2,223	1,604	138.6	2,225
California Institution for Women (CIW)	949	1,281	74.1	1,743
California Men's Colony (CMC)	3,237	3,816	84.8	4,430
California Medical Facility (CMF)	1,926	2,318	83.1	2,777
California State Prison, Corcoran (COR)	3,346	3,115	107.4	4,503
California Rehabilitation Center (CRC)	2,916	1,822	160.0	2,654
Correctional Training Facility (CTF)	4,070	2,800	145.4	4,125
Chuckawalla Valley State Prison (CVSP)	1,926	1,738	110.8	2,603
Folsom State Prison (FOL)	2,955	2,065	143.1	3,021
High Desert State Prison (HDSP)	2,529	2,324	108.8	3,474
Ironwood State Prison (ISP)	2,987	2,200	135.8	3,275
Kern Valley State Prison (KVSP)	2,616	2,448	106.9	3,497
California State Prison, Los Angeles County (LAC)	2,569	2,300	111.7	3,100
Mule Creek State Prison (MCSP)	3,851	3,284	117.3	4,105
North Kern State Prison (NKSP)	4,270	2,694	158.5	4,011
Pelican Bay State Prison (PBSP)	1,599	2,380	67.2	3,151
Pleasant Valley State Prison (PVSP)	2,800	2,308	121.3	3,433
RJ Donovan Correctional Facility (RJD)	2,904	2,992	97.1	4,038
California State Prison, Sacramento (SAC)	1,468	1,828	80.3	2,259
California Substance Abuse Treatment Facility (SATF)	4,608	3,424	134.6	5,111
Sierra Conservation Center (SCC)	4,003	3,404	117.6	5,804
California State Prison, Solano (SOL)	3,321	2,594	128.0	3,866
San Quentin State Prison (SQ)	4,034	3,084	130.8	3,985
Salinas Valley State Prison (SVSP)	2,901	2,452	118.3	3,209
Valley State Prison (VSP)	3,017	1,961	153.9	2,931
Wasco State Prison (WSP)	3,804	2,984	127.5	4,447
Institution Total	93,248	84,927	109.8	112,146

Design capacity for California Correctional Center will be included until the June 2023 closure date.

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 31, 2023

Monthly Report of Population
As of Midnight May 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,612	2,909	158.5	4,359
Calipatria State Prison (CAL)	2,494	2,308	108.1	3,433
California Correctional Institution (CCI)	1,900	2,172	87.5	3,239
Central California Women's Facility (CCWF)	2,355	1,990	118.3	2,952
Centinela State Prison (CEN)	2,589	2,308	112.2	3,433
California Health Care Facility - Stockton (CHCF)	2,360	2,953	79.9	2,953
California Institution for Men (CIM)	2,196	1,604	136.9	2,225
California Institution for Women (CIW)	983	1,281	76.7	1,743
California Men's Colony (CMC)	3,161	3,816	82.8	4,430
California Medical Facility (CMF)	1,975	2,318	85.2	2,777
California State Prison, Corcoran (COR)	3,284	3,115	105.4	4,503
California Rehabilitation Center (CRC)	3,026	1,822	166.1	2,654
Correctional Training Facility (CTF)	4,265	2,800	152.3	4,125
Chuckawalla Valley State Prison (CVSP)	2,094	1,738	120.5	2,603
Folsom State Prison (FOL)	3,023	2,065	146.4	3,021
High Desert State Prison (HDSP)	2,518	2,324	108.3	3,474
Ironwood State Prison (ISP)	3,180	2,200	144.5	3,275
Kern Valley State Prison (KVSP)	2,694	2,448	110.0	3,497
California State Prison, Los Angeles County (LAC)	2,557	2,300	111.2	3,100
Mule Creek State Prison (MCSP)	3,846	3,284	117.1	4,105
North Kern State Prison (NKSP)	4,153	2,694	154.2	4,011
Pelican Bay State Prison (PBSP)	1,602	2,380	67.3	3,153
Pleasant Valley State Prison (PVSP)	2,940	2,308	127.4	3,433
RJ Donovan Correctional Facility (RJD)	2,938	2,992	98.2	4,038
California State Prison, Sacramento (SAC)	1,513	1,828	82.8	2,259
California Substance Abuse Treatment Facility (SATF)	4,535	3,424	132.4	5,111
Sierra Conservation Center (SCC)	3,956	3,404	116.2	5,804
California State Prison, Solano (SOL)	3,438	2,594	132.5	3,866
San Quentin State Prison (SQ)	3,897	3,084	126.4	3,985
Salinas Valley State Prison (SVSP)	2,900	2,452	118.3	3,225
Valley State Prison (VSP)	3,044	1,961	155.2	2,931
Wasco State Prison (WSP)	3,951	2,984	132.4	4,447
Institution Total	93,979	84,927	110.7	112,164

Design capacity for California Correctional Center will be included until the June 2023 closure date.

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
July 1, 2023

Monthly Report of Population
As of Midnight June 30, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,660	2,909	160.2	4,359
Calipatria State Prison (CAL)	2,633	2,308	114.1	3,433
California Correctional Institution (CCI)	1,628	1,508	108.0	2,243
Central California Women's Facility (CCWF)	2,395	1,990	120.4	2,952
Centinela State Prison (CEN)	2,765	2,308	119.8	3,433
California Health Care Facility - Stockton (CHCF)	2,334	2,953	79.0	2,953
California Institution for Men (CIM)	2,258	1,604	140.8	2,225
California Institution for Women (CIW)	973	1,281	76.0	1,743
California Men's Colony (CMC)	2,910	3,816	76.3	4,430
California Medical Facility (CMF)	2,082	2,318	89.8	2,777
California State Prison, Corcoran (COR)	3,334	3,115	107.0	4,503
California Rehabilitation Center (CRC)	3,146	1,822	172.7	2,654
Correctional Training Facility (CTF)	4,248	2,800	151.7	4,125
Chuckawalla Valley State Prison (CVSP)	2,215	1,738	127.4	2,603
Folsom State Prison (FOL)	2,958	2,065	143.2	3,021
High Desert State Prison (HDSP)	2,460	2,337	105.3	3,474
Ironwood State Prison (ISP)	3,196	2,200	145.3	3,275
Kern Valley State Prison (KVSP)	2,727	2,448	111.4	3,497
California State Prison, Los Angeles County (LAC)	2,588	2,300	112.5	3,100
Mule Creek State Prison (MCSP)	3,879	3,284	118.1	4,105
North Kern State Prison (NKSP)	3,771	2,694	140.0	4,011
Pelican Bay State Prison (PBSP)	1,599	2,380	67.2	3,153
Pleasant Valley State Prison (PVSP)	3,110	2,308	134.7	3,433
RJ Donovan Correctional Facility (RJD)	2,956	2,992	98.8	4,038
California State Prison, Sacramento (SAC)	1,717	1,828	93.9	2,259
California Substance Abuse Treatment Facility (SATF)	4,513	3,424	131.8	5,111
Sierra Conservation Center (SCC)	3,920	4,872	80.5	5,804
California State Prison, Solano (SOL)	3,575	2,594	137.8	3,866
San Quentin State Prison (SQ)	3,812	3,084	123.6	3,985
Salinas Valley State Prison (SVSP)	2,894	2,452	118.0	3,225
Valley State Prison (VSP)	3,174	1,961	161.9	2,931
Wasco State Prison (WSP)	3,651	2,984	122.4	4,447
Institution Total	94,081	80,677	116.6	111,168

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
August 1, 2023

Monthly Report of Population
As of Midnight July 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,636	2,909	159.4	4,359
Calipatria State Prison (CAL)	2,705	2,308	117.2	3,433
California Correctional Institution (CCI)	1,627	1,508	107.9	2,243
Central California Women's Facility (CCWF)	2,384	1,990	119.8	2,952
Centinela State Prison (CEN)	2,779	2,308	120.4	3,433
California Health Care Facility - Stockton (CHCF)	2,340	2,953	79.2	2,953
California Institution for Men (CIM)	2,295	1,604	143.1	2,225
California Institution for Women (CIW)	972	1,281	75.9	1,743
California Men's Colony (CMC)	2,691	3,816	70.5	3,755
California Medical Facility (CMF)	2,164	2,318	93.4	2,760
California State Prison, Corcoran (COR)	3,448	3,115	110.7	4,503
California Rehabilitation Center (CRC)	2,946	1,822	161.7	2,654
Correctional Training Facility (CTF)	4,249	2,800	151.8	4,125
Chuckawalla Valley State Prison (CVSP)	2,173	1,738	125.0	2,603
Folsom State Prison (FOL)	2,876	2,065	139.3	3,021
High Desert State Prison (HDSP)	2,413	2,337	103.3	3,474
Ironwood State Prison (ISP)	3,101	2,200	141.0	3,275
Kern Valley State Prison (KVSP)	2,796	2,448	114.2	3,622
California State Prison, Los Angeles County (LAC)	2,631	2,300	114.4	3,400
Mule Creek State Prison (MCSP)	3,837	3,284	116.8	4,105
North Kern State Prison (NKSP)	3,859	2,694	143.2	4,011
Pelican Bay State Prison (PBSP)	1,581	2,380	66.4	3,153
Pleasant Valley State Prison (PVSP)	3,087	2,308	133.8	3,433
RJ Donovan Correctional Facility (RJD)	3,028	2,992	101.2	4,038
California State Prison, Sacramento (SAC)	1,735	1,828	94.9	2,547
California Substance Abuse Treatment Facility (SATF)	4,547	3,424	132.8	5,111
Sierra Conservation Center (SCC)	4,066	4,972	81.8	5,804
California State Prison, Solano (SOL)	3,653	2,594	140.8	3,866
San Quentin State Prison (SQ)	3,728	3,084	120.9	3,985
Salinas Valley State Prison (SVSP)	2,832	2,452	115.5	3,525
Valley State Prison (VSP)	3,310	1,961	168.8	2,931
Wasco State Prison (WSP)	3,526	2,984	118.2	4,447
Institution Total	94,015	80,777	116.4	111,489

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
September 1, 2023

Monthly Report of Population
As of Midnight August 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,668	2,909	160.5	4,359
Calipatria State Prison (CAL)	2,721	2,308	117.9	3,433
California Correctional Institution (CCI)	1,657	1,508	109.9	2,243
Central California Women's Facility (CCWF)	2,431	1,990	122.2	2,952
Centinela State Prison (CEN)	2,795	2,308	121.1	3,433
California Health Care Facility - Stockton (CHCF)	2,334	2,953	79.0	2,953
California Institution for Men (CIM)	2,354	1,604	146.8	2,225
California Institution for Women (CIW)	968	1,281	75.6	1,743
California Men's Colony (CMC)	2,323	3,816	60.9	3,755
California Medical Facility (CMF)	2,204	2,318	95.1	2,760
California State Prison, Corcoran (COR)	3,525	3,115	113.2	4,503
California Rehabilitation Center (CRC)	2,841	1,822	155.9	2,654
Correctional Training Facility (CTF)	4,283	2,800	153.0	4,125
Chuckawalla Valley State Prison (CVSP)	2,132	1,738	122.7	2,603
Folsom State Prison (FOL)	2,901	2,065	140.5	3,021
High Desert State Prison (HDSP)	2,535	2,337	108.5	3,474
Ironwood State Prison (ISP)	3,094	2,200	140.6	3,275
Kern Valley State Prison (KVSP)	2,816	2,448	115.0	3,622
California State Prison, Los Angeles County (LAC)	2,601	2,300	113.1	3,400
Mule Creek State Prison (MCSP)	3,828	3,284	116.6	4,105
North Kern State Prison (NKSP)	3,576	2,694	132.7	4,011
Pelican Bay State Prison (PBSP)	1,530	2,380	64.3	3,153
Pleasant Valley State Prison (PVSP)	3,010	2,308	130.4	3,433
RJ Donovan Correctional Facility (RJD)	3,194	2,992	106.8	4,038
California State Prison, Sacramento (SAC)	1,803	1,828	98.6	2,547
California Substance Abuse Treatment Facility (SATF)	4,678	3,424	136.6	5,111
Sierra Conservation Center (SCC)	4,370	4,972	87.9	5,804
California State Prison, Solano (SOL)	3,649	2,594	140.7	3,866
San Quentin State Prison (SQ)	3,639	3,084	118.0	3,985
Salinas Valley State Prison (SVSP)	2,772	2,452	113.1	3,525
Valley State Prison (VSP)	3,364	1,961	171.5	2,931
Wasco State Prison (WSP)	3,332	2,984	111.7	4,447
Institution Total	93,928	80,777	116.3	111,489

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 1, 2023

Monthly Report of Population
As of Midnight September 30, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,609	2,909	158.4	4,359
Calipatria State Prison (CAL)	2,670	2,308	115.7	3,433
California Correctional Institution (CCI)	1,698	1,508	112.6	2,243
Central California Women's Facility (CCWF)	2,443	1,990	122.8	2,952
Centinela State Prison (CEN)	2,803	2,308	121.4	3,433
California Health Care Facility - Stockton (CHCF)	2,300	2,953	77.9	2,953
California Institution for Men (CIM)	2,366	1,604	147.5	2,225
California Institution for Women (CIW)	993	1,281	77.5	1,743
California Men's Colony (CMC)	2,135	3,816	55.9	3,755
California Medical Facility (CMF)	2,220	2,318	95.8	2,760
California State Prison, Corcoran (COR)	3,491	3,115	112.1	4,503
California Rehabilitation Center (CRC)	2,869	1,822	157.5	2,654
Correctional Training Facility (CTF)	4,310	2,800	153.9	4,125
Chuckawalla Valley State Prison (CVSP)	2,067	1,738	118.9	2,603
Folsom State Prison (FOL)	2,895	2,065	140.2	3,021
High Desert State Prison (HDSP)	2,475	2,337	105.9	3,474
Ironwood State Prison (ISP)	3,112	2,200	141.5	3,275
Kern Valley State Prison (KVSP)	2,848	2,448	116.3	3,622
California State Prison, Los Angeles County (LAC)	2,611	2,300	113.5	3,400
Mule Creek State Prison (MCSP)	3,820	3,284	116.3	4,105
North Kern State Prison (NKSP)	3,718	2,694	138.0	4,011
Pelican Bay State Prison (PBSP)	1,544	2,380	64.9	3,153
Pleasant Valley State Prison (PVSP)	2,817	2,308	122.1	3,433
RJ Donovan Correctional Facility (RJD)	3,270	2,992	109.3	4,038
California State Prison, Sacramento (SAC)	1,863	1,828	101.9	2,547
California Substance Abuse Treatment Facility (SATF)	4,757	3,424	138.9	5,111
Sierra Conservation Center (SCC)	4,360	4,972	87.7	5,804
California State Prison, Solano (SOL)	3,670	2,594	141.5	3,866
San Quentin State Prison (SQ)	3,576	3,084	116.0	3,985
Salinas Valley State Prison (SVSP)	2,738	2,452	111.7	3,525
Valley State Prison (VSP)	3,332	1,961	169.9	2,931
Wasco State Prison (WSP)	3,378	2,984	113.2	4,447
Institution Total	93,758	80,777	116.1	111,489

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
November 1, 2023

Monthly Report of Population
As of Midnight October 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,592	2,909	157.9	4,359
Calipatria State Prison (CAL)	2,706	2,308	117.2	3,433
California Correctional Institution (CCI)	1,715	1,508	113.7	2,243
Central California Women's Facility (CCWF)	2,290	1,990	115.1	2,952
Centinela State Prison (CEN)	2,802	2,308	121.4	3,433
California Health Care Facility - Stockton (CHCF)	2,258	2,953	76.5	2,953
California Institution for Men (CIM)	2,371	1,604	147.8	2,225
California Institution for Women (CIW)	1,149	1,281	89.7	1,743
California Men's Colony (CMC)	2,065	3,816	54.1	2,642
California Medical Facility (CMF)	2,218	2,318	95.7	2,760
California State Prison, Corcoran (COR)	3,505	3,115	112.5	4,503
California Rehabilitation Center (CRC)	2,919	1,822	160.2	2,654
Correctional Training Facility (CTF)	4,293	2,800	153.3	4,125
Chuckawalla Valley State Prison (CVSP)	2,021	1,738	116.3	2,603
Folsom State Prison (FOL)	2,869	2,065	138.9	3,021
High Desert State Prison (HDSP)	2,387	2,337	102.1	3,474
Ironwood State Prison (ISP)	3,051	2,200	138.7	3,275
Kern Valley State Prison (KVSP)	2,871	2,448	117.3	3,622
California State Prison, Los Angeles County (LAC)	2,679	2,300	116.5	3,400
Mule Creek State Prison (MCSP)	3,803	3,284	115.8	4,105
North Kern State Prison (NKSP)	3,799	2,694	141.0	4,011
Pelican Bay State Prison (PBSP)	1,576	2,380	66.2	3,153
Pleasant Valley State Prison (PVSP)	2,660	2,308	115.3	3,433
RJ Donovan Correctional Facility (RJD)	3,291	2,992	110.0	4,038
California State Prison, Sacramento (SAC)	1,841	1,828	100.7	2,547
California Substance Abuse Treatment Facility (SATF)	4,821	3,424	140.8	5,111
Sierra Conservation Center (SCC)	4,265	4,972	85.8	5,804
California State Prison, Solano (SOL)	3,718	2,594	143.3	3,866
San Quentin State Prison (SQ)	3,488	3,084	113.1	3,985
Salinas Valley State Prison (SVSP)	2,687	2,452	109.6	3,525
Valley State Prison (VSP)	3,247	1,961	165.6	2,931
Wasco State Prison (WSP)	3,620	2,984	121.3	4,447
Institution Total	93,577	80,777	115.8	110,376

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
December 1, 2023

Monthly Report of Population
As of Midnight November 30, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,608	2,909	158.4	4,359
Calipatria State Prison (CAL)	2,799	2,308	121.3	3,433
California Correctional Institution (CCI)	1,718	1,508	113.9	2,243
Central California Women's Facility (CCWF)	2,217	1,990	111.4	2,952
Centinela State Prison (CEN)	2,740	2,308	118.7	3,433
California Health Care Facility - Stockton (CHCF)	2,240	2,953	75.9	2,953
California Institution for Men (CIM)	2,367	1,604	147.6	2,225
California Institution for Women (CIW)	1,191	1,281	93.0	1,743
California Men's Colony (CMC)	2,048	2,613	78.4	2,642
California Medical Facility (CMF)	2,188	2,318	94.4	2,760
California State Prison, Corcoran (COR)	3,479	3,115	111.7	4,503
California Rehabilitation Center (CRC)	2,989	1,822	164.1	2,654
Correctional Training Facility (CTF)	4,211	2,800	150.4	4,125
Chuckawalla Valley State Prison (CVSP)	1,965	1,738	113.1	2,603
Folsom State Prison (FOL)	2,826	2,065	136.9	3,021
High Desert State Prison (HDSP)	2,296	2,337	98.2	3,474
Ironwood State Prison (ISP)	3,119	2,200	141.8	3,275
Kern Valley State Prison (KVSP)	2,867	2,448	117.1	3,622
California State Prison, Los Angeles County (LAC)	2,790	2,300	121.3	3,400
Mule Creek State Prison (MCSP)	3,796	3,284	115.6	4,105
North Kern State Prison (NKSP)	3,930	2,694	145.9	4,011
Pelican Bay State Prison (PBSP)	1,534	2,380	64.5	3,153
Pleasant Valley State Prison (PVSP)	2,565	2,308	111.1	3,433
RJ Donovan Correctional Facility (RJD)	3,278	2,992	109.6	4,038
California State Prison, Sacramento (SAC)	1,818	1,828	99.5	2,547
California Substance Abuse Treatment Facility (SATF)	4,856	3,424	141.8	5,111
Sierra Conservation Center (SCC)	4,162	4,972	83.7	5,804
California State Prison, Solano (SOL)	3,750	2,594	144.6	3,866
San Quentin State Prison (SQ)	3,479	3,084	112.8	3,985
Salinas Valley State Prison (SVSP)	2,661	2,452	108.5	3,525
Valley State Prison (VSP)	3,228	1,961	164.6	2,931
Wasco State Prison (WSP)	3,656	2,984	122.5	4,447
Institution Total	93,371	79,574	117.3	110,376

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

As of November 4, 2023, the design capacity decreased an additional 1,203 beds due to the deactivation of beds at California Men's Colony.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
January 1, 2024

Monthly Report of Population
As of Midnight December 31, 2023

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,634	2,909	159.3	4,359
Calipatria State Prison (CAL)	2,741	2,308	118.8	3,433
California Correctional Institution (CCI)	1,750	1,508	116.0	2,243
Central California Women's Facility (CCWF)	2,196	1,990	110.4	2,952
Centinela State Prison (CEN)	2,692	2,308	116.6	3,433
California Health Care Facility - Stockton (CHCF)	2,258	2,953	76.5	2,953
California Institution for Men (CIM)	2,303	1,604	143.6	2,225
California Institution for Women (CIW)	1,190	1,281	92.9	1,743
California Men's Colony (CMC)	2,116	2,613	81.0	2,642
California Medical Facility (CMF)	2,193	2,318	94.6	2,760
California State Prison, Corcoran (COR)	3,463	3,115	111.2	4,503
California Rehabilitation Center (CRC)	3,018	1,822	165.6	2,654
Correctional Training Facility (CTF)	4,130	2,800	147.5	4,125
Chuckawalla Valley State Prison (CVSP)	1,803	1,738	103.7	2,603
Folsom State Prison (FOL)	2,785	2,065	134.9	3,021
High Desert State Prison (HDSP)	2,242	2,337	95.9	3,474
Ironwood State Prison (ISP)	3,051	2,200	138.7	3,275
Kern Valley State Prison (KVSP)	2,914	2,448	119.0	3,622
California State Prison, Los Angeles County (LAC)	2,808	2,300	122.1	3,400
Mule Creek State Prison (MCSP)	3,827	3,284	116.5	4,105
North Kern State Prison (NKSP)	4,016	2,694	149.1	4,011
Pelican Bay State Prison (PBSP)	1,524	1,804	84.5	2,445
Pleasant Valley State Prison (PVSP)	2,499	2,308	108.3	3,433
RJ Donovan Correctional Facility (RJD)	3,297	2,992	110.2	4,038
California State Prison, Sacramento (SAC)	1,795	1,828	98.2	2,557
California Substance Abuse Treatment Facility (SATF)	4,755	3,424	138.9	5,111
Sierra Conservation Center (SCC)	4,028	4,972	81.0	5,804
California State Prison, Solano (SOL)	3,788	2,594	146.0	3,866
San Quentin State Prison (SQ)	3,486	3,084	113.0	3,985
Salinas Valley State Prison (SVSP)	2,623	2,452	107.0	3,525
Valley State Prison (VSP)	3,198	1,961	163.1	2,931
Wasco State Prison (WSP)	3,774	2,984	126.5	4,447
Institution Total	92,897	78,998	117.6	109,678

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

As of November 4, 2023, the design capacity decreased an additional 1,203 beds due to the deactivation of beds at California Men's Colony.

As of December 3, 2023, the design capaciy decreased an additional 576 beds due to the closure of Facility C at Pelican Bay State Prison.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
February 1, 2024

Monthly Report of Population
As of Midnight January 31, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,717	2,909	162.2	4,359
Calipatria State Prison (CAL)	2,654	2,308	115.0	3,433
California Correctional Institution (CCI)	1,784	1,508	118.3	2,243
Central California Women's Facility (CCWF)	2,183	1,990	109.7	2,952
Centinela State Prison (CEN)	2,894	2,308	125.4	3,433
California Health Care Facility - Stockton (CHCF)	2,238	2,953	75.8	2,953
California Institution for Men (CIM)	2,194	1,604	136.8	2,225
California Institution for Women (CIW)	1,185	1,281	92.5	1,743
California Men's Colony (CMC)	2,249	2,613	86.1	2,642
California Medical Facility (CMF)	2,177	2,318	93.9	2,635
California State Prison, Corcoran (COR)	3,452	3,115	110.8	4,503
California Rehabilitation Center (CRC)	3,128	1,822	171.7	2,654
Correctional Training Facility (CTF)	4,122	2,800	147.2	4,125
Chuckawalla Valley State Prison (CVSP)	1,756	1,738	101.0	2,603
Folsom State Prison (FOL)	2,765	2,065	133.9	3,021
High Desert State Prison (HDSP)	2,246	2,337	96.1	3,474
Ironwood State Prison (ISP)	2,532	2,200	115.1	3,275
Kern Valley State Prison (KVSP)	2,928	2,448	119.6	3,622
California State Prison, Los Angeles County (LAC)	2,894	2,300	125.8	3,400
Mule Creek State Prison (MCSP)	3,935	3,284	119.8	4,105
North Kern State Prison (NKSP)	3,772	2,694	140.0	4,011
Pelican Bay State Prison (PBSP)	1,433	1,804	79.4	2,445
Pleasant Valley State Prison (PVSP)	2,707	2,308	117.3	3,433
RJ Donovan Correctional Facility (RJD)	3,299	2,992	110.3	4,038
California State Prison, Sacramento (SAC)	1,835	1,828	100.4	2,557
California Substance Abuse Treatment Facility (SATF)	4,417	3,424	129.0	5,111
Sierra Conservation Center (SCC)	3,940	4,972	79.2	5,804
California State Prison, Solano (SOL)	3,895	2,594	150.2	3,866
San Quentin State Prison (SQ)	3,551	3,084	115.1	3,985
Salinas Valley State Prison (SVSP)	2,628	2,452	107.2	3,525
Valley State Prison (VSP)	3,147	1,961	160.5	2,931
Wasco State Prison (WSP)	3,774	2,984	126.5	4,447
Institution Total	92,431	78,998	117.0	109,553

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

As of November 4, 2023, the design capacity decreased an additional 1,203 beds due to the deactivation of beds at California Men's Colony.

As of December 3, 2023, the design capaciy decreased an additional 576 beds due to the closure of Facility C at Pelican Bay State Prison.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
March 1, 2024

Monthly Report of Population
As of Midnight February 29, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,862	2,909	167.1	4,359
Calipatria State Prison (CAL)	2,591	2,308	112.3	3,433
California Correctional Institution (CCI)	1,774	1,508	117.6	2,243
Central California Women's Facility (CCWF)	2,223	1,990	111.7	2,946
Centinela State Prison (CEN)	2,945	2,308	127.6	3,433
California Health Care Facility - Stockton (CHCF)	2,211	2,953	74.9	2,953
California Institution for Men (CIM)	2,181	1,604	136.0	2,225
California Institution for Women (CIW)	1,171	1,281	91.4	1,743
California Men's Colony (CMC)	2,320	2,613	88.8	2,642
California Medical Facility (CMF)	2,186	2,318	94.3	2,760
California State Prison, Corcoran (COR)	3,442	3,115	110.5	4,503
California Rehabilitation Center (CRC)	3,190	1,822	175.1	2,654
Correctional Training Facility (CTF)	4,086	2,800	145.9	4,125
Chuckawalla Valley State Prison (CVSP)	1,499	1,738	86.2	2,018
Folsom State Prison (FOL)	2,710	2,065	131.2	3,021
High Desert State Prison (HDSP)	2,387	2,337	102.1	3,474
Ironwood State Prison (ISP)	2,600	2,200	118.2	3,275
Kern Valley State Prison (KVSP)	2,994	2,448	122.3	3,622
California State Prison, Los Angeles County (LAC)	3,017	2,300	131.2	3,400
Mule Creek State Prison (MCSP)	3,931	3,284	119.7	4,105
North Kern State Prison (NKSP)	3,485	2,694	129.4	4,011
Pelican Bay State Prison (PBSP)	1,545	1,804	85.6	2,445
Pleasant Valley State Prison (PVSP)	2,717	2,308	117.7	3,433
RJ Donovan Correctional Facility (RJD)	3,301	2,992	110.3	4,038
California State Prison, Sacramento (SAC)	1,865	1,828	102.0	2,557
California Substance Abuse Treatment Facility (SATF)	4,216	3,424	123.1	5,111
Sierra Conservation Center (SCC)	3,984	4,972	80.1	5,804
California State Prison, Solano (SOL)	3,948	2,594	152.2	3,866
San Quentin State Prison (SQ)	3,556	3,084	115.3	3,935
Salinas Valley State Prison (SVSP)	2,625	2,452	107.1	3,525
Valley State Prison (VSP)	3,093	1,961	157.7	2,931
Wasco State Prison (WSP)	3,613	2,984	121.1	4,447
Institution Total	92,268	78,998	116.8	109,037

As of April 7, 2023, the design capacity has officially been reduced by 403 beds due to the closure of Folsom Women's Facility on January 13, 2023.

As of April 15, 2023, the design capacity decreased an additional 1,690 beds due to the closure of Facility A at CRC and the deactivation of 1,132 of 1,142 beds in Facility D at CIM.

As of June 15, 2023, the design capacity decreased an additional 664 beds due to the closure of Facility D at California Correctional Institution.

As of June 30, 2023, the design capacity decreased an additional 1,896 beds. California Correction Center has officially closed its 1,909 facility beds and deactivated 1,468 fire camp beds for a total of 3,377 beds. Sierra Conservation Center reactivated the 1,468 fire camp beds. High Desert State Prison activated 13 firehouse beds.

The design capacity increased by 100 beds when the Pine Grove Youth Conservation Camp was moved under Sierra Conservation Center.

As of November 4, 2023, the design capacity decreased an additional 1,203 beds due to the deactivation of beds at California Men's Colony.

As of December 3, 2023, the design capaciy decreased an additional 576 beds due to the closure of Facility C at Pelican Bay State Prison.

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
April 1, 2024

Monthly Report of Population
As of Midnight March 31, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,796	2,909	164.9	4,359
Calipatria State Prison (CAL)	2,839	2,308	123.0	3,433
California Correctional Institution (CCI)	1,751	1,508	116.1	2,227
Central California Women's Facility (CCWF)	2,247	1,986	113.1	2,946
Centinela State Prison (CEN)	3,074	2,308	133.2	3,433
California Health Care Facility - Stockton (CHCF)	2,209	2,953	74.8	2,953
California Institution for Men (CIM)	2,201	1,604	137.2	2,225
California Institution for Women (CIW)	1,150	1,281	89.8	1,743
California Men's Colony (CMC)	2,356	2,613	90.2	2,642
California Medical Facility (CMF)	2,158	2,319	93.1	2,760
California State Prison, Corcoran (COR)	2,599	3,114	83.5	4,503
California Rehabilitation Center (CRC)	3,091	1,822	169.6	2,654
Correctional Training Facility (CTF)	4,044	2,800	144.4	4,125
Chuckawalla Valley State Prison (CVSP)	1,136	1,738	65.4	1,433
Folsom State Prison (FOL)	2,662	2,065	128.9	3,021
High Desert State Prison (HDSP)	2,622	2,337	112.2	3,442
Ironwood State Prison (ISP)	2,932	2,200	133.3	3,275
Kern Valley State Prison (KVSP)	3,133	2,448	128.0	3,574
California State Prison, Los Angeles County (LAC)	3,149	2,300	136.9	3,400
Mule Creek State Prison (MCSP)	3,948	3,284	120.2	4,105
North Kern State Prison (NKSP)	3,291	2,694	122.2	4,011
Pelican Bay State Prison (PBSP)	1,677	1,804	93.0	2,429
Pleasant Valley State Prison (PVSP)	2,657	2,308	115.1	3,433
RJ Donovan Correctional Facility (RJD)	3,356	2,992	112.2	4,038
California State Prison, Sacramento (SAC)	1,862	1,828	101.9	2,493
California Substance Abuse Treatment Facility (SATF)	4,338	3,424	126.7	5,111
Sierra Conservation Center (SCC)	3,966	4,972	79.8	5,804
California State Prison, Solano (SOL)	3,932	2,594	151.6	3,866
San Quentin State Prison (SQ)	3,523	3,084	114.2	3,985
Salinas Valley State Prison (SVSP)	2,611	2,452	106.5	3,509
Valley State Prison (VSP)	3,040	1,961	155.0	2,931
Wasco State Prison (WSP)	3,622	2,984	121.4	4,447
Institution Total	91,972	78,994	116.4	108,310

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
May 1, 2024

Monthly Report of Population
As of Midnight April 30, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,744	2,909	163.1	4,359
Calipatria State Prison (CAL)	2,788	2,308	120.8	3,433
California Correctional Institution (CCI)	1,702	1,508	112.9	2,227
Central California Women's Facility (CCWF)	2,215	1,986	111.5	2,946
Centinela State Prison (CEN)	3,131	2,308	135.7	3,433
California Health Care Facility - Stockton (CHCF)	2,180	2,953	73.8	2,953
California Institution for Men (CIM)	2,220	1,604	138.4	2,225
California Institution for Women (CIW)	1,174	1,281	91.6	1,743
California Men's Colony (CMC)	2,311	2,613	88.4	2,642
California Medical Facility (CMF)	2,101	2,319	90.6	2,761
California State Prison, Corcoran (COR)	2,492	3,114	80.0	4,502
California Rehabilitation Center (CRC)	2,986	1,822	163.9	2,654
Correctional Training Facility (CTF)	3,963	2,800	141.5	4,125
Chuckawalla Valley State Prison (CVSP)	749	1,738	43.1	2,603
Folsom State Prison (FOL)	2,599	2,065	125.9	3,021
High Desert State Prison (HDSP)	2,636	2,337	112.8	3,442
Ironwood State Prison (ISP)	3,283	2,200	149.2	3,275
Kern Valley State Prison (KVSP)	3,196	2,448	130.6	3,574
California State Prison, Los Angeles County (LAC)	3,212	2,300	139.7	3,400
Mule Creek State Prison (MCSP)	3,958	3,284	120.5	4,105
North Kern State Prison (NKSP)	3,248	2,694	120.6	4,011
Pelican Bay State Prison (PBSP)	1,848	1,804	102.4	2,429
Pleasant Valley State Prison (PVSP)	2,607	2,308	113.0	3,433
RJ Donovan Correctional Facility (RJD)	3,357	2,992	112.2	4,038
California State Prison, Sacramento (SAC)	1,869	1,828	102.2	2,493
California Substance Abuse Treatment Facility (SATF)	4,469	3,424	130.5	5,111
Sierra Conservation Center (SCC)	3,962	4,972	79.7	5,804
California State Prison, Solano (SOL)	3,910	2,594	150.7	3,866
San Quentin State Prison (SQ)	3,486	3,084	113.0	3,985
Salinas Valley State Prison (SVSP)	2,558	2,452	104.3	3,509
Valley State Prison (VSP)	2,999	1,961	152.9	2,931
Wasco State Prison (WSP)	3,795	2,984	127.2	4,447
Institution Total	91,748	78,994	116.1	109,480

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
June 1, 2024

Monthly Report of Population
As of Midnight May 31, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,710	2,909	161.9	4,359
Calipatria State Prison (CAL)	2,842	2,308	123.1	3,433
California Correctional Institution (CCI)	1,679	1,508	111.3	2,227
Central California Women's Facility (CCWF)	2,244	1,986	113.0	2,946
Centinela State Prison (CEN)	3,075	2,308	133.2	3,433
California Health Care Facility - Stockton (CHCF)	2,152	2,953	72.9	2,953
California Institution for Men (CIM)	2,217	1,604	138.2	2,225
California Institution for Women (CIW)	1,125	1,281	87.8	1,743
California Men's Colony (CMC)	2,258	2,613	86.4	2,642
California Medical Facility (CMF)	2,069	2,319	89.2	2,761
California State Prison, Corcoran (COR)	2,549	3,114	81.9	4,502
California Rehabilitation Center (CRC)	2,900	1,822	159.2	2,654
Correctional Training Facility (CTF)	3,986	2,800	142.4	4,125
Chuckawalla Valley State Prison (CVSP)	489	1,738	28.1	2,603
Folsom State Prison (FOL)	2,577	2,065	124.8	3,021
High Desert State Prison (HDSP)	2,563	2,337	109.7	3,442
Ironwood State Prison (ISP)	3,186	2,200	144.8	3,275
Kern Valley State Prison (KVSP)	3,339	2,448	136.4	3,574
California State Prison, Los Angeles County (LAC)	3,205	2,300	139.3	3,400
Mule Creek State Prison (MCSP)	3,978	3,284	121.1	4,105
North Kern State Prison (NKSP)	3,378	2,694	125.4	4,011
Pelican Bay State Prison (PBSP)	1,973	1,804	109.4	2,429
Pleasant Valley State Prison (PVSP)	2,474	2,308	107.2	3,433
RJ Donovan Correctional Facility (RJD)	3,373	2,992	112.7	4,038
California State Prison, Sacramento (SAC)	1,868	1,828	102.2	2,493
California Substance Abuse Treatment Facility (SATF)	4,722	3,424	137.9	5,111
Sierra Conservation Center (SCC)	4,041	4,972	81.3	5,804
California State Prison, Solano (SOL)	3,943	2,594	152.0	3,866
San Quentin State Prison (SQ)	3,333	3,084	108.1	3,985
Salinas Valley State Prison (SVSP)	2,548	2,452	103.9	3,509
Valley State Prison (VSP)	3,047	1,961	155.4	2,931
Wasco State Prison (WSP)	3,824	2,984	128.2	4,447
Institution Total	91,667	78,994	116.0	109,480

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
July 1, 2024

Monthly Report of Population
As of Midnight June 30, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,654	2,909	160.0	4,359
Calipatria State Prison (CAL)	2,900	2,308	125.6	3,433
California Correctional Institution (CCI)	1,658	1,508	109.9	2,227
Central California Women's Facility (CCWF)	2,214	1,986	111.5	2,946
Centinela State Prison (CEN)	3,006	2,308	130.2	3,433
California Health Care Facility - Stockton (CHCF)	2,173	2,953	73.6	2,953
California Institution for Men (CIM)	2,244	1,604	139.9	2,225
California Institution for Women (CIW)	1,167	1,281	91.1	1,743
California Men's Colony (CMC)	2,194	2,613	84.0	2,642
California Medical Facility (CMF)	2,052	2,319	88.5	2,761
California State Prison, Corcoran (COR)	2,510	3,114	80.6	4,502
California Rehabilitation Center (CRC)	2,775	1,822	152.3	2,654
Correctional Training Facility (CTF)	3,934	2,800	140.5	4,125
Chuckawalla Valley State Prison (CVSP)	273	1,738	15.7	2,603
Folsom State Prison (FOL)	2,610	2,065	126.4	3,021
High Desert State Prison (HDSP)	2,548	2,337	109.0	3,442
Ironwood State Prison (ISP)	3,147	2,200	143.0	3,285
Kern Valley State Prison (KVSP)	3,269	2,448	133.5	3,574
California State Prison, Los Angeles County (LAC)	3,199	2,300	139.1	3,400
Mule Creek State Prison (MCSP)	3,967	3,284	120.8	4,105
North Kern State Prison (NKSP)	3,321	2,694	123.3	4,011
Pelican Bay State Prison (PBSP)	2,183	1,804	121.0	2,429
Pleasant Valley State Prison (PVSP)	2,395	2,308	103.8	3,433
RJ Donovan Correctional Facility (RJD)	3,345	2,992	111.8	4,038
California State Prison, Sacramento (SAC)	1,868	1,828	102.2	2,493
California Substance Abuse Treatment Facility (SATF)	4,971	3,424	145.2	5,111
Sierra Conservation Center (SCC)	4,019	4,972	80.8	5,804
California State Prison, Solano (SOL)	4,000	2,594	154.2	3,866
San Quentin Rehabilitation Center (SQ)	3,361	3,084	109.0	3,985
Salinas Valley State Prison (SVSP)	2,527	2,452	103.1	3,509
Valley State Prison (VSP)	3,145	1,961	160.4	2,931
Wasco State Prison (WSP)	3,701	2,984	124.0	4,447
Institution Total	91,330	78,994	115.6	109,490

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
August 1, 2024

Monthly Report of Population
As of Midnight July 31, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,560	2,909	156.8	3,759
Calipatria State Prison (CAL)	2,894	2,308	125.4	3,433
California Correctional Institution (CCI)	1,710	1,508	113.4	2,227
Central California Women's Facility (CCWF)	2,106	1,986	106.0	2,946
Centinela State Prison (CEN)	3,061	2,308	132.6	3,433
California Health Care Facility - Stockton (CHCF)	2,172	2,953	73.6	2,953
California Institution for Men (CIM)	2,250	1,604	140.3	2,225
California Institution for Women (CIW)	1,258	1,281	98.2	1,743
California Men's Colony (CMC)	2,120	2,613	81.1	2,642
California Medical Facility (CMF)	2,044	2,319	88.1	2,657
California State Prison, Corcoran (COR)	2,493	3,114	80.1	3,164
California Rehabilitation Center (CRC)	2,782	1,822	152.7	2,579
Correctional Training Facility (CTF)	3,965	2,800	141.6	4,125
Folsom State Prison (FOL)	2,731	2,065	132.3	3,021
High Desert State Prison (HDSP)	2,556	2,337	109.4	3,442
Ironwood State Prison (ISP)	3,049	2,200	138.6	3,285
Kern Valley State Prison (KVSP)	3,220	2,448	131.5	3,136
California State Prison, Los Angeles County (LAC)	3,227	2,300	140.3	3,250
Mule Creek State Prison (MCSP)	3,970	3,284	120.9	3,811
North Kern State Prison (NKSP)	3,119	2,694	115.8	4,011
Pelican Bay State Prison (PBSP)	2,251	1,804	124.8	2,425
Pleasant Valley State Prison (PVSP)	2,364	2,308	102.4	3,433
RJ Donovan Correctional Facility (RJD)	3,096	2,992	103.5	3,750
California State Prison, Sacramento (SAC)	1,929	1,828	105.5	2,265
California Substance Abuse Treatment Facility (SATF)	5,486	3,424	160.2	5,111
Sierra Conservation Center (SCC)	4,048	4,972	81.4	5,804
California State Prison, Solano (SOL)	4,086	2,594	157.5	3,866
San Quentin Rehabilitation Center (SQ)	3,295	3,084	106.8	3,935
Salinas Valley State Prison (SVSP)	2,481	2,452	101.2	2,471
Valley State Prison (VSP)	3,213	1,961	163.8	2,931
Wasco State Prison (WSP)	3,457	2,984	115.9	4,447
Institution Total	90,993	78,994	115.2	102,280

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
September 1, 2024

Monthly Report of Population
As of Midnight August 31, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,431	2,909	152.3	3,759
Calipatria State Prison (CAL)	2,792	2,308	121.0	3,433
California Correctional Institution (CCI)	1,709	1,508	113.3	2,227
Central California Women's Facility (CCWF)	2,092	1,986	105.3	2,946
Centinela State Prison (CEN)	3,101	2,308	134.4	3,433
California Health Care Facility - Stockton (CHCF)	2,135	2,953	72.3	2,953
California Institution for Men (CIM)	2,233	1,604	139.2	2,225
California Institution for Women (CIW)	1,286	1,281	100.4	1,743
California Men's Colony (CMC)	2,087	2,613	79.9	2,642
California Medical Facility (CMF)	2,017	2,319	87.0	2,657
California State Prison, Corcoran (COR)	2,496	3,114	80.2	3,164
California Rehabilitation Center (CRC)	2,792	1,822	153.2	2,579
Correctional Training Facility (CTF)	4,028	2,800	143.9	4,125
Folsom State Prison (FOL)	2,797	2,065	135.4	3,021
High Desert State Prison (HDSP)	2,718	2,337	116.3	3,442
Ironwood State Prison (ISP)	2,954	2,200	134.3	3,285
Kern Valley State Prison (KVSP)	3,163	2,448	129.2	3,136
California State Prison, Los Angeles County (LAC)	3,221	2,300	140.0	3,250
Mule Creek State Prison (MCSP)	4,015	3,284	122.3	3,811
North Kern State Prison (NKSP)	3,139	2,694	116.5	4,011
Pelican Bay State Prison (PBSP)	2,211	1,804	122.6	2,425
Pleasant Valley State Prison (PVSP)	2,598	2,308	112.6	3,433
RJ Donovan Correctional Facility (RJD)	2,932	2,992	98.0	3,750
California State Prison, Sacramento (SAC)	2,032	1,828	111.2	2,265
California Substance Abuse Treatment Facility (SATF)	5,460	3,424	159.5	5,111
Sierra Conservation Center (SCC)	3,965	4,972	79.7	5,804
California State Prison, Solano (SOL)	4,044	2,594	155.9	3,866
San Quentin Rehabilitation Center (SQ)	3,221	3,084	104.4	3,935
Salinas Valley State Prison (SVSP)	2,509	2,452	102.3	2,471
Valley State Prison (VSP)	3,264	1,961	166.4	2,931
Wasco State Prison (WSP)	3,314	2,984	111.1	4,447
Institution Total	90,756	78,994	114.9	102,280

California Department of Corrections and Rehabilitation
Division of Correctional Policy Research and Internal Oversight
Office of Research
October 1, 2024

Monthly Report of Population
As of Midnight September 30, 2024

Monthly Institution Population Detail

Institutions	Felon/ Other	Design Capacity	Percent Occupied	Staffed Capacity
Avenal State Prison (ASP)	4,230	2,509	168.6	3,759
Calipatria State Prison (CAL)	2,613	2,308	113.2	3,433
California Correctional Institution (CCI)	1,594	1,508	105.7	2,227
Central California Women's Facility (CCWF)	2,107	1,986	106.1	2,946
Centinela State Prison (CEN)	3,084	2,308	133.6	3,433
California Health Care Facility - Stockton (CHCF)	2,120	2,953	71.8	2,953
California Institution for Men (CIM)	2,283	1,524	149.8	2,225
California Institution for Women (CIW)	1,249	1,281	97.5	1,743
California Men's Colony (CMC)	2,044	2,613	78.2	2,642
California Medical Facility (CMF)	1,992	2,229	89.4	2,657
California State Prison, Corcoran (COR)	2,477	2,222	111.5	3,164
California Rehabilitation Center (CRC)	2,804	1,722	162.8	2,579
Correctional Training Facility (CTF)	4,168	2,800	148.9	4,125
Folsom State Prison (FOL)	2,784	2,065	134.8	3,021
High Desert State Prison (HDSP)	2,840	2,337	121.5	3,442
Ironwood State Prison (ISP)	2,948	2,200	134.0	3,283
Kern Valley State Prison (KVSP)	3,138	2,156	145.5	3,136
California State Prison, Los Angeles County (LAC)	3,270	2,200	148.6	3,250
Mule Creek State Prison (MCSP)	3,992	3,088	129.3	3,811
North Kern State Prison (NKSP)	3,104	2,694	115.2	4,011
Pelican Bay State Prison (PBSP)	2,195	1,804	121.7	2,441
Pleasant Valley State Prison (PVSP)	2,871	2,308	124.4	3,433
RJ Donovan Correctional Facility (RJD)	2,863	2,800	102.3	3,750
California State Prison, Sacramento (SAC)	2,147	1,508	142.4	2,265
California Substance Abuse Treatment Facility (SATF)	5,471	3,424	159.8	5,111
Sierra Conservation Center (SCC)	4,004	4,972	80.5	5,904
California State Prison, Solano (SOL)	4,004	2,594	154.4	3,866
San Quentin Rehabilitation Center (SQ)	3,152	3,084	102.2	3,935
Salinas Valley State Prison (SVSP)	2,519	1,760	143.1	2,471
Valley State Prison (VSP)	3,308	1,961	168.7	2,931
Wasco State Prison (WSP)	3,444	2,984	115.4	4,447
Institution Total	90,819	75,640	120.1	102,394

Exhibit B

Cal Fire Training Academy Documentation of Facilities Capacity

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
P.O. Box 944246
SACRAMENTO, CA 94244-2460
(916) 653-7772
Website: www.fire.ca.gov

November 20, 2024

REF: Ione Training Center Bed Count

The CAL FIRE Ione Training Center is located in the City of Ione, in Amador County at 4501 State Highway 104, Ione, CA 95640. The Ione Training Center had two dormitories, (Dormitory 1 and Dormitory 2) and 5 modular buildings utilized for sleeping. Combined, the Ione Training Center has a maximum bed capacity of 238 beds.

Dormitory 1 – 91 beds
Dormitory 2 – 85 beds
Modular Sleeping Buildings - 62 beds

Sincerely,

Nicole Gissell
Assistant Chief
CAL FIRE Training Center

Exhibit C

Summary of Water Year 2020 to Water Year 2024

Infiltration and Inflow Analysis Per Water Year (WY)
MCSP Sewer System Contributors

Month	WY 2020											
	Total Average Influent Flow (Mgal/d)	MCIC Average Influent Flow (Mgal/d)	Estimated MCSP + PYCF + CFTA Influent Flow (Mgal/d)	Monthly Rainfall Total (in.)	Estimated MCIC I&I (Mgal/d)	Estimated MCSP + PYCF + CFTA I&I (Mgal/d)	MCSP Population	MCIC Population	Assumed CFTA Population	Estimated Total MCSP + CFTA Population	MCSP gpid	MCIC gpid
October	0.50	0.12	0.38	0.00	0.00	0.00	2540	1511	120	2660	143	79
November	0.52	0.11	0.41	0.68	0.01	0.00	2520	1507	120	2640	155	74
December	0.57	0.11	0.45	5.14	0.01	0.03	2465	1524	120	2585	175	75
January	0.48	0.11	0.37	1.82	0.01	0.00	2464	1543	120	2584	141	74
February	0.48	0.12	0.37	0.01	0.01	0.00	2460	1543	120	2580	142	75
March	0.52	0.12	0.40	0.00	0.00	0.00	2698	1305	120	2818	141	94
April	0.52	0.13	0.39	2.67	0.02	0.00	2661	1287	120	2781	139	100
May[1]	N/A	N/A	N/A	0.00	-	-	2689	1301	120	2809	-	-
June	0.55	0.13	0.42	0.00	0.00	0.00	2690	1302	120	2810	149	99
July	0.54	0.13	0.41	0.00	0.00	0.00	2640	1277	120	2760	149	100
August[2]	0.49	0.06	0.43	0.00	0.00	0.00	2577	1247	120	2697	160	48
September	0.50	0.13	0.37	0.00	0.00	0.00	2551	1234	120	2671	138	106
Total	5.66	1.28	4.39	10.32	0.06	0.03	-	-	-	-	-	-
Dry Weather Average / ADWF	0.53	0.11	0.42	-	-	-	2636	1275	120	2756	153	83
Yearly Average / AAF	0.51	0.12	0.40	0.86	0.01	0.00	2580	1382	120	2700	-	-

[1]Flow data not available for May

[2]MCIC flows not provided from August 11 to 25

Infiltration and Inflow Analysis Per Water Year (WY)
MCSP Sewer System Contributors

Month	WY 2021											
	Total Average Influent Flow (Mgal/d)	MCIC Average Influent Flow (Mgal/d)	Estimated MCSP + PYCF + CFTA Influent Flow (Mgal/d)	Monthly Rainfall Total (in.)	Estimated MCIC I&I (Mgal/d)	Estimated MCSP + PYCF + CFTA I&I (Mgal/d)	MCSP Population	MCIC Population	Assumed CFTA Population	Estimated Total MCSP + CFTA Population	MCSP gpid	MCIC gpid
October	0.50	0.13	0.37	0.00	0.00	0.00	2622	1268	120	2742	135	105
November	0.49	0.12	0.37	9.98	0.00	0.00	2638	1276	120	2758	133	94
December	0.51	0.12	0.39	1.35	0.00	0.02	2601	1258	120	2721	143	92
January	0.53	0.13	0.40	6.07	0.00	0.04	2595	1255	120	2715	148	103
February	0.52	0.13	0.40	2.06	0.00	0.03	2602	1259	120	2722	146	99
March	0.52	0.14	0.38	2.34	0.00	0.01	2619	1267	120	2739	139	111
April	0.52	0.14	0.37	0.00	0.00	0.00	2626	1270	120	2746	136	113
May	0.52	0.15	0.37	0.00	0.00	0.00	2636	1275	120	2756	136	114
June	0.51	0.14	0.37	0.00	0.00	0.00	2630	1273	120	2750	133	112
July	0.52	0.14	0.37	0.00	0.00	0.00	2613	1265	120	2733	136	114
August	0.51	0.15	0.36	0.00	0.00	0.00	2590	1253	120	2710	134	116
September	0.50	0.14	0.36	0.06	0.00	0.00	2523	1220	120	2643	135	115
Total	6.14	1.62	4.51	21.86	0.00	0.11	-	-	-	-	-	-
Dry Weather Average / ADWF	0.51	0.14	0.37	-	-	-	2611	1264	120	2731	134	114
Yearly Average / AAF	0.51	0.14	0.38	1.82	0.00	0.01	2608	1260	120	2728	-	-

Month	WY 2022											
	Total Average Influent Flow (Mgal/d)	MCIC Average Influent Flow (Mgal/d)	Estimated MCSP + PYCF + CFTA Influent Flow (Mgal/d)	Monthly Rainfall Total (in.)	Estimated MCIC I&I (Mgal/d)	Estimated MCSP + PYCF + CFTA I&I (Mgal/d)	MCSP Population	MCIC Population	Assumed CFTA Population	Estimated Total MCSP + CFTA Population	MCSP gpid	MCIC gpid
October	0.51	0.14	0.37	0.00	0.00	0.00	2532	1225	120	2652	140	114
November	0.48	0.13	0.35	0.00	0.00	0.00	2535	1227	120	2655	132	107
December	0.57	0.13	0.44	6.61	0.00	0.12	2576	1247	120	2696	163	106
January	0.50	0.12	0.38	0.08	0.00	0.06	2539	1228	120	2659	142	101
February	0.48	0.13	0.35	0.00	0.00	0.00	2534	1226	120	2654	130	108
March	0.48	0.13	0.35	1.24	0.00	0.03	2564	1241	120	2684	130	105
April	0.50	0.13	0.37	2.17	0.00	0.05	2589	1253	120	2709	136	107
May	0.50	0.13	0.37	0.00	0.00	0.00	2572	1244	120	2692	138	107
June[2]	0.50	0.13	0.37	0.00	0.00	0.00	2579	1248	120	2699	138	105
July[2]	0.51	0.13	0.38	0.00	0.00	0.00	2551	1234	120	2671	142	109
August[1,2]	N/A	0.14	0.21	0.09	0.00	0.00	2539	1228	120	2659	80	110
September[1,2]	N/A	0.13	-	0.21	0.00	-	2543	1230	120	2663	-	110
Total	5.05	1.32	3.72	10.31	0.00	0.25	-	-	-	-	-	-
Dry Weather Average / ADWF	0.46	0.13	0.32	-	-	-	2556	1237	120	2676	120	108
Yearly Average / AAF	0.50	0.13	0.37	1.01	0.00	0.02	2554	1235	120	2674	-	-

[1]Influent flow readings unavailable due to faulty check valve at WWTP headworks

[2]CalFire flows unavailable due to inoperable flow meter

Infiltration and Inflow Analysis Per Water Year (WY)
MCSP Sewer System Contributors

Month	WY 2023											
	Total Average Influent Flow (Mgal/d)	MCIC Average Influent Flow (Mgal/d)	Estimated MCSP + PYCF + CFTA Influent Flow (Mgal/d)	Monthly Rainfall Total (in.)	Estimated MCIC I&I (Mgal/d)	Estimated MCSP + PYCF + CFTA I&I (Mgal/d)	MCSP Population	MCIC Population	Assumed CFTA Population	Estimated total MCSP + CFTA Population	MCSP gpid	MCIC gpid
October[1,2]	N/A	0.13	N/A	0.00	N/A	N/A	2555	1236	120	2675	N/A	107
November[1,2]	N/A	0.12	N/A	1.89	N/A	N/A	2562	1239	120	2682	N/A	100
December[1,2]	N/A	0.13	N/A	9.42	N/A	N/A	2568	1242	120	2688	N/A	103
January[1,2]	N/A	0.13	N/A	9.73	N/A	N/A	2577	1247	120	2697	N/A	102
February[2]	0.51	0.13	0.38	2.19	0.00	0.00	2595	1255	120	2715	139	105
March[2]	0.58	0.13	0.46	6.27	0.00	0.08	2585	1250	120	2705	168	102
April	0.49	0.13	0.36	0.26	0.00	0.00	2595	1256	120	2715	132	105
May[3]	0.50	0.10	0.40	0.46	0.00	0.02	2592	1254	120	2712	147	83
June	0.52	0.14	0.38	0.03	0.00	0.01	2614	1265	120	2734	139	107
July	0.51	0.13	0.38	0.00	0.00	0.00	2586	1251	120	2706	140	107
August	0.50	0.13	0.36	0.00	0.00	0.00	2580	1248	120	2700	134	108
September	0.49	0.13	0.36	0.43	0.00	0.00	2574	1246	120	2694	133	107
Total	4.10	1.54	3.07	30.68	0.00	0.12	-	-	-	-	-	-
Dry Weather Average / ADWF	0.51	0.13	0.37	-	-	-	2593	1255	120	2713	138	107
Yearly Average / AAF	0.51	0.13	0.38	2.56	0.00	0.01	2582	1249	120	2702	-	-

[1]Influent flow readings unavailable due to faulty check valve at WWTP headworks

[2]CalFire flows unavailable due to inoperable flow meter

[3]MCIC flows unavailable due to SCADA malfunction at lift station from May 25 to May 31

Infiltration and Inflow Analysis Per Water Year (WY)
MCSP Sewer System Contributors

Month	WY 2024												
	Total Average Influent Flow (Mgal/d)	MCIC Average Influent Flow (Mgal/d)	Estimated MCSP + PYCF + CFTA Influent Flow (Mgal/d)	Estimated MCSP + PYCF + CFTA Influent Flow W/O Leakage (Mgal/d)	Monthly Rainfall Total (in.)	Estimated MCIC I&I (Mgal/d)	Estimated MCSP + PYCF + CFTA I&I (Mgal/d)	MCSP Population	MCIC Population	Assumed CFTA Population	Estimated total MCSP + CFTA Population	MCSP gpid	MCIC gpid
October	0.49	0.13	0.36	0.36	0.00	0.00	0.00	2563	1240	120	2683	133	108
November	0.48	0.13	0.35	0.35	1.06	0.00	0.00	2558	1238	120	2678	132	104
December	0.49	0.13	0.36	0.36	2.11	0.00	0.00	2579	1248	120	2699	134	103
January[1,2]	0.54	0.13	0.41	0.41	3.86	0.00	0.04	2652	1283	120	2772	148	105
February[1,2]	0.59	0.14	0.46	0.42	4.49	0.00	0.04	2649	1282	120	2769	150	106
March[1,2]	0.57	0.13	0.43	0.39	3.19	0.00	0.02	2661	1287	120	2781	140	104
April[1,2]	0.56	0.14	0.42	0.38	1.73	0.00	0.01	2667	1291	120	2787	136	110
May[1,2]	0.54	0.14	0.41	0.37	0.75	0.00	0.00	2681	1297	120	2801	130	106
June[1,2]	0.56	0.14	0.42	0.38	0.00	0.00	0.00	2673	1294	120	2793	135	110
July[1,2]	0.55	0.14	0.41	0.37	0.00	0.00	0.00	2675	1295	120	2795	133	106
August[1,2]	0.55	0.14	0.41	0.37	0.00	0.00	0.00	2706	1309	120	2826	131	105
September[1,2]	0.55	0.14	0.41	0.37	0.00	0.00	0.00	2690	1302	120	2810	130	106
Total	6.49	1.63	4.86	4.52	17.19	0.00	0.10	-	-	-	-	-	-
Dry Weather Average / ADWF	0.55	0.14	0.42	0.37	-	-	-	2685	1299	120	2805	133	107
Yearly Average / AAF	0.54	0.14	0.40	0.38	1.43	0.00	0.01	2646	1279	120	2766	-	-

[1]Substantial water leak detected at PYCF, values adjusted to account for expected influent flows without leakage

[2]CalFire flows unavailable due to inoperable flow meter

Exhibit D

Water Balance Scenarios

MULE CREEK STATE PRISON **Scenario 1** FILE: 2518-0050

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE UNDER AVG YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.54
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL	
CLIMATOLOGICAL DESIGN BASIS	Avg. Year Cond.
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
ZONE 12 WET REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	53.4	3.72	1.80	0.93	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING GRASSES		0.85	0.74	0.93	1.18	0.65	0.65	0.84	1.00	1.01	1.00	1.02	0.99
CROP COEFFICIENT (Kc), TREES (OAKS)		0.69	0.48	0.93	1.18	0.39	0.30	0.43	0.86	0.94	0.93	0.95	0.92
WEIGHTED Kc CROP COEFFICIENT FOR MCSP SITE		0.82	0.68	0.93	1.18	0.60	0.58	0.76	0.97	1.00	0.99	1.01	0.97
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.54	0.54	0.58	0.57	0.56	0.57	0.55	0.54	0.54	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Avg. Year Cond. (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
Avg. Year Cond. DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***201***	***16.7***	***16.2***	***18.0***	***17.7***	***15.8***	***17.7***	***16.6***	***16.8***	***16.2***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	1.75	4.20	4.20	4.20	2.91	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		16.7	18.1	33.3	48.7	62.8	79.2	92.7	103.2	96.1	79.2	59.5	43.3
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.31	0.33	0.29	0.24
EFFLUENT IRRIGATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		13.02	18.13	33.27	48.74	62.84	79.17	92.74	99.68	86.73	68.92	50.38	36.14
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.24	0.00	0.00	0.00	0.00	0.00	0.09	0.47	0.62	0.66	0.59	0.48
EFFLUENT IRRIGATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	1.93	15.27	31.04	47.04	61.47	76.14	86.40	79.87	62.51	42.80	27.20
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		5.71	16.20	18.00	17.70	15.80	17.70	14.02	-1.17	-11.74	-14.07	-10.58	-5.33
UNADJUSTED STORAGE VOLUME (MG)		5.71	18.13	33.27	48.74	62.84	79.17	90.16	85.23	68.13	48.43	32.22	21.87
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.3	6.7	8.3	10.0	11.6	13.3	14.6	14.0	12.1	10.0	8.2	7.1
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	18	0.68	0.27	0.29	0.22	0.82	1.63	2.48	3.14	2.89	2.53	1.81	1.30
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	11	0.14	0.53	1.29	1.75	2.36	1.83	1.85	1.01	0.39	0.12	0.03	0.04
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		1.93	15.27	31.04	47.04	61.47	76.14	86.40	79.87	62.51	42.80	27.20	17.49
								MAXIMUM STORAGE REQUIRED (MG)					86.4
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	195
INFLOW AND INFILTRATION	5
PRECIPITATION INTO WWTP AND RESERVOIR	13
TOTAL INFLOW	**213**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	18
PERCOLATION	38
ON-SITE LAND DISPOSAL	139
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**195**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-18
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	69

MULE CREEK STATE PRISON **Scenario 1** FILE

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.54
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.56	0.55	0.55	0.69	0.68	0.57	0.57	0.56	0.56	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***210***	***17.4***	***16.6***	***17.1***	***21.4***	***19.2***	***17.7***	***17.2***	***17.5***	***16.7***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		17.4	22.7	37.6	58.2	77.7	97.2	114.1	130.8	141.1	134.6	116.6	99.6
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		14.79	22.72	37.60	58.20	77.73	97.23	114.09	130.79	137.53	125.27	107.63	93.45
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	6.12	20.50	36.80	58.53	79.53	96.89	113.29	124.38	117.94	99.94	83.46
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		9.60	16.60	17.10	21.40	19.20	17.70	17.20	14.29	-0.72	-11.32	-10.24	-2.17
UNADJUSTED STORAGE VOLUME (MG)		9.60	22.72	37.60	58.20	77.73	97.23	114.09	127.58	123.66	106.62	89.70	81.29
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.7	7.2	8.8	11.1	13.2	15.3	17.2	18.6	18.2	16.4	14.5	13.6
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	18	0.54	0.20	0.24	0.10	0.25	0.97	1.61	2.22	3.49	3.74	3.07	2.01
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	0.25	0.98	2.37	3.26	4.46	3.48	3.57	2.04	0.82	0.26	0.06	0.09
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		6.12	20.50	36.80	58.53	79.53	96.89	113.29	124.38	117.94	99.94	83.46	76.27
								MAXIMUM STORAGE REQUIRED (MG)					124.4
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	195
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	24
TOTAL INFLOW	**233**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	18
PERCOLATION	38
ON-SITE LAND DISPOSAL	102
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**158**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-75
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	31

MULE CREEK STATE PRISON **Scenario 1** FILE

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE UNDER AVG YEAR FOLLOWING 1 IN 100 YEAR HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS

STARTING AVERAGE FLOW (MGD)	0.54

IRRIGATION AREA CHARACTERISTICS

POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS

CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**

EXISTING WWTP PROCESS AREAS

OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS

CLIMATOLOGICAL DESIGN BASIS	Avg. Year Cond.
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING GRASSES		0.85	0.74	0.93	1.18	0.65	0.65	0.84	1.00	1.01	1.00	1.02	0.99
CROP COEFFICIENT (Kc), TREES (OAKS)		0.69	0.48	0.93	1.18	0.39	0.30	0.43	0.86	0.94	0.93	0.95	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.82	0.68	0.93	1.18	0.60	0.58	0.76	0.97	1.00	0.99	1.01	0.97
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.54	0.54	0.58	0.57	0.56	0.57	0.55	0.54	0.54	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Avg. Year Cond. (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
Avg. Year Cond. DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***201***	***16.7***	***16.2***	***18.0***	***17.7***	***15.8***	***17.7***	***16.6***	***16.8***	***16.2***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	1.75	4.20	4.20	4.20	2.91	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		93.0	93.6	108.6	124.1	138.4	154.7	167.7	177.2	168.6	150.1	128.7	111.0
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.31	0.33	0.29	0.24
EFFLUENT IRRIGATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		89.29	93.56	108.55	124.06	138.39	154.69	167.72	173.73	159.30	139.84	119.56	103.87
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.24	0.00	0.00	0.00	0.00	0.00	0.09	0.47	0.62	0.66	0.59	0.48
EFFLUENT IRRIGATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		76.27	77.36	90.55	106.36	122.59	136.99	151.12	160.44	152.44	133.43	111.98	94.93
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		5.71	16.20	18.00	17.70	15.80	17.70	14.02	-1.17	-11.74	-14.07	-10.58	-5.33
UNADJUSTED STORAGE VOLUME (MG)		81.97	93.56	108.55	124.06	138.39	154.69	165.13	159.27	140.70	119.35	101.40	89.60
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		13.7	14.9	16.6	18.3	19.8	21.6	22.8	22.1	20.1	17.7	15.8	14.5
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	30	1.55	0.55	0.55	0.38	1.35	2.55	3.78	4.82	4.61	4.29	3.27	2.47
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	14	0.17	0.67	1.59	2.14	2.87	2.21	2.22	1.21	0.47	0.15	0.03	0.05
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		77.36	90.55	106.36	122.59	136.99	151.12	160.44	152.44	133.43	111.98	94.93	84.05
								MAXIMUM STORAGE REQUIRED (MG)					160.4
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	195	EVAPORATION	30	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-8
INFLOW AND INFILTRATION	5	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	15	ON-SITE LAND DISPOSAL	139	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	0	TOTAL UNUSED STORAGE CAPACITY (MG)	-5
TOTAL INFLOW	**215**	**TOTAL OUTFLOW**	**207**		

MULE CREEK STATE PRISON **Scenario 1** FILE

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAs

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.54
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.56	0.55	0.55	0.69	0.68	0.57	0.57	0.56	0.56	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***210***	***17.4***	***16.6***	***17.1***	***21.4***	***19.2***	***17.7***	***17.2***	***17.5***	***16.7***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		17.4	20.7	35.6	56.2	75.7	95.2	112.0	128.7	137.8	126.1	101.2	77.7
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		14.79	20.71	35.60	56.19	75.70	95.18	112.03	128.74	134.26	116.76	92.23	71.56
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	4.11	18.50	34.79	56.50	77.48	94.83	111.24	121.11	109.43	84.53	61.57
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		7.59	16.60	17.10	21.40	19.20	17.70	17.20	13.04	-6.12	-18.57	-17.21	-6.89
UNADJUSTED STORAGE VOLUME (MG)		7.59	20.71	35.60	56.19	75.70	95.18	112.03	124.29	114.99	90.86	67.33	54.67
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.5	6.9	8.6	10.8	13.0	15.1	16.9	18.3	17.3	14.6	12.1	10.7
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	17	0.52	0.20	0.23	0.10	0.25	0.96	1.59	2.18	3.32	3.37	2.59	1.61
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	21	0.25	0.98	2.35	3.24	4.43	3.46	3.55	2.03	0.80	0.25	0.05	0.09
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		4.11	18.50	34.79	56.50	77.48	94.83	111.24	121.11	109.43	84.53	61.57	50.04
								MAXIMUM STORAGE REQUIRED (MG)					121.1
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	195
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	24
TOTAL INFLOW	**233**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	17
PERCOLATION	38
ON-SITE LAND DISPOSAL	129
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**184**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-49
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	34

MULE CREEK STATE PRISON **Scenario 1** FILE

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAs + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.54
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.56	0.55	0.55	0.69	0.68	0.57	0.57	0.56	0.56	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***210***	***17.4***	***16.6***	***17.1***	***21.4***	***19.2***	***17.7***	***17.2***	***17.5***	***16.7***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		17.4	22.7	33.7	54.0	73.0	90.7	107.5	124.3	130.6	114.3	82.1	39.3
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		14.79	22.72	33.70	53.98	72.97	90.70	107.54	124.25	127.07	104.98	73.14	33.17
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	6.12	16.60	32.58	53.77	73.00	90.34	106.75	113.92	97.65	65.44	23.18
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		9.60	12.70	16.80	20.90	17.50	17.70	17.20	10.29	-10.92	-26.32	-37.34	-22.07
UNADJUSTED STORAGE VOLUME (MG)		9.60	18.82	33.40	53.48	71.27	90.70	107.54	117.05	102.99	71.33	28.10	1.11
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.7	6.7	8.3	10.5	12.5	14.6	16.5	17.5	16.0	12.5	7.8	4.8
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	14	0.54	0.19	0.23	0.10	0.24	0.93	1.54	2.09	3.08	2.92	1.75	0.81
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	21	0.25	0.97	2.34	3.22	4.38	3.42	3.51	1.99	0.78	0.24	0.05	0.07
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		6.12	16.60	32.58	53.77	73.00	90.34	106.75	113.92	97.65	65.44	23.18	0.00
								MAXIMUM STORAGE REQUIRED (MG)					113.9
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	195	EVAPORATION	14	TOTAL UNUSED DISPOSAL CAPACITY (MG)	4
INFLOW AND INFILTRATION	14	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	24	ON-SITE LAND DISPOSAL	102	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	83	TOTAL UNUSED STORAGE CAPACITY (MG)	41
TOTAL INFLOW	**233**	**TOTAL OUTFLOW**	**237**		

MULE CREEK STATE PRISON **Scenario 1** FILE

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE AVERAGE YEAR FOLLOWING 1 IN 100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAS + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS

STARTING AVERAGE FLOW (MGD)	0.54

IRRIGATION AREA CHARACTERISTICS

POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS

CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**

EXISTING WWTP PROCESS AREAS

OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS

CLIMATOLOGICAL DESIGN BASIS	Average
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.06	0.97	0.64	0.43	0.77	0.76	0.61	0.84	0.94	1.01	0.86
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.88	0.96	0.59	0.41	0.60	0.66	0.61	0.82	0.85	0.95	0.79
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.82	0.68	0.93	1.18	0.60	0.58	0.76	0.97	1.00	0.99	1.01	0.97
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.54	0.54	0.58	0.57	0.56	0.57	0.55	0.54	0.54	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Average (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
Average DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***201***	***16.7***	***16.2***	***18.0***	***17.7***	***15.8***	***17.7***	***16.6***	***16.8***	***16.2***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	1.75	4.20	4.20	4.20	2.91	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		16.7	18.2	29.5	44.8	58.6	73.5	87.4	98.1	87.3	60.7	26.8	16.1
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.31	0.33	0.29	0.24
EFFLUENT IRRIGATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		13.02	18.15	29.47	44.81	58.61	73.53	87.35	94.57	77.91	50.38	17.67	8.94
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	90	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	17.67	8.94
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.24	0.00	0.00	0.00	0.00	0.00	0.09	0.47	0.62	0.66	0.57	0.30
EFFLUENT IRRIGATION RATE (IN/MONTH)	21	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.15	2.10
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	1.95	11.47	27.11	42.81	55.83	70.75	81.29	71.05	43.97	10.09	0.00
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		5.71	12.30	17.70	17.20	14.10	17.70	14.02	-5.17	-21.94	-29.07	-37.19	-19.90
UNADJUSTED STORAGE VOLUME (MG)		5.71	14.25	29.17	44.31	56.91	73.53	84.77	76.11	49.11	14.89	-27.10	-19.90
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.3	6.2	7.9	9.5	10.9	12.7	14.0	13.0	10.1	6.3	0.0	0.0
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	13	0.68	0.25	0.28	0.21	0.77	1.56	2.39	2.93	2.44	1.70	0.00	0.00
PERCOLATION LOSS FROM STORAGE (MG)	32	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	0.00	0.00
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	11	0.14	0.53	1.27	1.73	2.32	1.80	1.83	0.99	0.37	0.11	0.02	0.03
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		1.95	11.47	27.11	42.81	55.83	70.75	81.29	71.05	43.97	10.09	0.00	0.00

MAXIMUM STORAGE REQUIRED (MG)	81.3
TOTAL AVAILABLE STORAGE (MG)	155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	195
INFLOW AND INFILTRATION	5
PRECIPITATION INTO WWTP AND RESERVOIR	13
TOTAL INFLOW	**213**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	13
PERCOLATION	32
ON-SITE LAND DISPOSAL	133
DISCHARGE TO COWRP	83
TOTAL OUTFLOW	**261**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	48
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	74

MULE CREEK STATE PRISON **Scenario 1** FILE

RECENT AVERAGE OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAS + TRI-PARTY AGREEMENT DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.54
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.56	0.55	0.55	0.69	0.68	0.57	0.57	0.56	0.56	0.54	0.54	0.54

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	195	16.6	16.1	16.6	16.6	15.0	16.6	16.1	16.6	16.1	16.6	16.6	16.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***210***	***17.4***	***16.6***	***17.1***	***21.4***	***19.2***	***17.7***	***17.2***	***17.5***	***16.7***	***16.7***	***16.7***	***16.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		17.4	21.0	34.1	52.9	70.6	88.3	103.3	102.8	96.2	73.5	40.1	16.1
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		14.79	20.97	34.09	52.91	70.62	88.27	103.34	102.80	92.61	64.18	31.05	9.99
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	69	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	9.99
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.33
EFFLUENT IRRIGATION RATE (IN/MONTH)	16	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.34
DESIGN DISCHARGE TO COWRP													
EFFLUENT AVAILABLE TO SEND TO COWRP (MG)		14.8	21.0	34.1	52.9	70.6	88.3	103.3	102.8	92.6	64.2	31.1	10.0
AVERAGE COWRP DISCHARGE (MGD)		0.06	0.06	0.06	0.06	0.06	0.06	0.58	0.56	0.58	0.56	0.56	0.33
MONTHLY DISCHARGE TO COWRP (MG)	107	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	10.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	4.37	16.99	31.51	51.42	70.57	86.14	85.30	79.45	56.85	23.36	0.00
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		7.85	14.84	15.34	19.64	17.44	15.94	-0.07	-2.98	-17.99	-28.59	-27.51	-9.99
UNADJUSTED STORAGE VOLUME (MG)		7.85	19.21	32.34	51.16	68.86	86.51	86.07	82.33	61.46	28.26	-4.15	-9.99
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.5	6.8	8.2	10.3	12.2	14.2	14.1	13.7	11.4	7.8	0.0	0.0
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	9	0.53	0.19	0.22	0.10	0.24	0.90	1.34	1.67	2.26	1.91	0.00	0.00
PERCOLATION LOSS FROM STORAGE (MG)	32	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	0.00	0.00
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	21	0.25	0.97	2.33	3.20	4.35	3.38	3.32	1.82	0.69	0.21	0.04	0.06
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		4.37	16.99	31.51	51.42	70.57	86.14	85.30	79.45	56.85	23.36	0.00	0.00
								MAXIMUM STORAGE REQUIRED (MG)					86.1
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	195
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	23
TOTAL INFLOW	**232**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	9
PERCOLATION	32
ON-SITE LAND DISPOSAL	99
DISCHARGE TO COWRP	107
TOTAL OUTFLOW	**247**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	15
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	69

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER AVG YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	Avg. Year Cond.
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
ZONE 12 WET REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	53.4	3.72	1.80	0.93	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING GRASSES		0.85	0.74	0.93	1.18	0.65	0.65	0.84	1.00	1.01	1.00	1.02	0.99
CROP COEFFICIENT (Kc), TREES (OAKS)		0.69	0.48	0.93	1.18	0.39	0.30	0.43	0.86	0.94	0.93	0.95	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.82	0.68	0.93	1.18	0.60	0.58	0.76	0.97	1.00	0.99	1.01	0.97
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.024	0.036	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.026	0.036	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.74	0.74	0.79	0.77	0.77	0.78	0.76	0.75	0.74	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Avg. Year Cond. (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
Avg. Year Cond. DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.74	1.13	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***276***	***23.0***	***22.3***	***24.4***	***24.0***	***21.5***	***24.1***	***22.7***	***23.2***	***22.3***	***23.0***	***23.0***	***22.3***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	1.75	4.20	4.20	4.20	2.91	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.0	30.5	52.0	73.8	93.6	116.4	135.8	152.1	150.1	138.3	123.4	112.1
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.31	0.33	0.29	0.24
EFFLUENT IRRIGATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		19.32	30.46	51.98	73.76	93.63	116.35	135.75	148.56	140.73	128.00	114.31	104.92
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.24	0.00	0.00	0.00	0.00	0.00	0.09	0.47	0.62	0.66	0.59	0.48
EFFLUENT IRRIGATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	8.16	27.58	49.76	72.13	92.25	113.05	128.88	127.77	115.28	100.43	89.79
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		12.01	22.30	24.40	24.00	21.50	24.10	20.12	5.23	-5.64	-7.77	-4.28	0.87
UNADJUSTED STORAGE VOLUME (MG)		12.01	30.46	51.98	73.76	93.63	116.35	133.17	134.11	122.13	107.51	96.15	90.66
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.0	8.0	10.4	12.8	14.9	17.4	19.3	19.4	18.1	16.5	15.2	14.6
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	26	0.75	0.31	0.36	0.28	1.03	2.08	3.23	4.25	4.17	4.00	3.16	2.49
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	12	0.14	0.56	1.36	1.88	2.57	2.02	2.06	1.15	0.45	0.14	0.03	0.05
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		8.16	27.58	49.76	72.13	92.25	113.05	128.88	127.77	115.28	100.43	89.79	85.09
								MAXIMUM STORAGE REQUIRED (MG)					128.9
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	270
INFLOW AND INFILTRATION	5
PRECIPITATION INTO WWTP AND RESERVOIR	14
TOTAL INFLOW	**289**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	26
PERCOLATION	38
ON-SITE LAND DISPOSAL	139
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**203**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-86
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	26

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.76	0.76	0.76	0.89	0.89	0.77	0.78	0.77	0.76	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***285***	***23.7***	***22.7***	***23.5***	***27.8***	***24.9***	***24.0***	***23.3***	***23.9***	***22.8***	***23.0***	***23.0***	***22.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.7	35.0	56.2	83.0	108.0	133.6	156.3	179.0	194.8	193.6	180.5	168.2
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.09	35.03	56.19	82.97	108.01	133.61	156.27	178.97	191.25	184.25	171.54	162.10
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	12.33	32.69	55.17	83.11	109.61	132.97	155.07	172.00	170.62	157.55	146.00
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		15.90	22.70	23.50	27.80	24.90	24.00	23.30	20.69	5.38	-5.02	-3.94	3.93
UNADJUSTED STORAGE VOLUME (MG)		15.90	35.03	56.19	82.97	108.01	133.61	156.27	175.76	177.37	165.60	153.61	149.94
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.4	8.5	10.8	13.8	16.5	19.3	21.8	23.9	24.1	22.8	21.5	21.1
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	25	0.60	0.23	0.29	0.12	0.31	1.21	2.01	2.81	4.55	5.12	4.44	3.03
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	24	0.25	1.02	2.50	3.50	4.83	3.81	3.94	2.28	0.92	0.30	0.07	0.11
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		12.33	32.69	55.17	83.11	109.61	132.97	155.07	172.00	170.62	157.55	146.00	143.89
								MAXIMUM STORAGE REQUIRED (MG)					172.0
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	270	EVAPORATION	25	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-145
INFLOW AND INFILTRATION	14	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	26	ON-SITE LAND DISPOSAL	102	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	0	TOTAL UNUSED STORAGE CAPACITY (MG)	-17
TOTAL INFLOW	**310**	**TOTAL OUTFLOW**	**165**		

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE AVERAGE YEAR FOLLOWING 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	Average
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.06	0.97	0.64	0.43	0.77	0.76	0.61	0.84	0.94	1.01	0.86
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.88	0.96	0.59	0.41	0.60	0.66	0.61	0.82	0.85	0.95	0.79
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.02	0.97	0.63	0.43	0.74	0.74	0.61	0.84	0.92	1.00	0.85
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.74	0.74	0.79	0.77	0.77	0.77	0.76	0.75	0.74	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Average (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
Average DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***276***	***23.0***	***22.3***	***24.4***	***24.0***	***21.6***	***24.1***	***22.7***	***23.2***	***22.3***	***23.0***	***23.0***	***22.3***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	1.45	4.20	4.20	4.20	3.02	0.09	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		166.9	171.8	192.5	214.5	235.1	258.1	276.7	291.7	297.3	287.1	270.6	256.4
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.31	0.29	0.21
EFFLUENT IRRIGATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	83	7.98	0.42	0.00	0.00	0.00	0.00	2.30	7.51	15.33	19.14	18.04	12.35
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		162.88	171.59	192.48	214.51	235.13	258.09	276.67	291.73	289.72	277.53	261.57	250.17
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	83	7.98	0.42	0.00	0.00	0.00	0.00	2.30	7.51	15.33	19.14	18.04	12.35
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.26	0.01	0.00	0.00	0.00	0.00	0.08	0.24	0.51	0.62	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		143.89	149.50	168.08	190.51	213.53	233.99	253.97	268.53	275.01	264.14	247.63	234.07
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		11.01	21.67	24.40	24.00	21.60	24.10	20.40	15.69	-0.61	-5.74	-4.10	3.75
UNADJUSTED STORAGE VOLUME (MG)		154.90	171.17	192.48	214.51	235.13	258.09	274.37	284.22	274.40	258.39	243.53	237.82
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		21.6	23.4	25.8	28.2	30.4	32.9	34.7	35.8	34.7	33.0	31.3	30.7
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	51	2.39	0.83	0.83	0.58	2.02	3.82	5.67	7.65	7.79	7.75	6.28	5.04
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	17	0.20	0.80	1.93	2.61	3.52	2.72	2.75	1.55	0.62	0.20	0.04	0.07
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		149.50	168.08	190.51	213.53	233.99	253.97	268.53	275.01	264.14	247.63	234.07	229.73

MAXIMUM STORAGE REQUIRED (MG)	275.0
TOTAL AVAILABLE STORAGE (MG)	155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	270
INFLOW AND INFILTRATION	5
PRECIPITATION INTO WWTP AND RESERVOIR	18
TOTAL INFLOW	**293**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	51
PERCOLATION	38
ON-SITE LAND DISPOSAL	120
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**209**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-84
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	-120

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAs

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 _ New AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.76	0.76	0.76	0.89	0.89	0.77	0.78	0.77	0.76	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***285***	***23.7***	***22.7***	***23.5***	***27.8***	***24.9***	***24.0***	***23.3***	***23.9***	***22.8***	***23.0***	***23.0***	***22.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.7	33.0	54.2	81.0	106.0	131.6	154.2	176.9	191.5	185.1	165.1	146.3
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.09	33.03	54.19	80.96	105.98	131.56	154.22	176.92	187.98	175.74	156.14	140.20
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	10.33	30.69	53.16	81.08	107.56	130.92	153.02	168.72	162.11	142.14	124.11
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		13.89	22.70	23.50	27.80	24.90	24.00	23.30	19.44	-0.02	-12.27	-10.91	-0.79
UNADJUSTED STORAGE VOLUME (MG)		13.89	33.03	54.19	80.96	105.98	131.56	154.22	172.46	168.70	149.84	131.24	123.32
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.2	8.3	10.6	13.5	16.3	19.1	21.6	23.6	23.2	21.1	19.0	18.2
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	23	0.58	0.23	0.28	0.12	0.31	1.20	1.99	2.77	4.38	4.75	3.96	2.63
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	23	0.25	1.01	2.49	3.48	4.80	3.79	3.92	2.26	0.91	0.29	0.06	0.11
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		10.33	30.69	53.16	81.08	107.56	130.92	153.02	168.72	162.11	142.14	124.11	117.66
								MAXIMUM STORAGE REQUIRED (MG)					168.7
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	270	EVAPORATION	23	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-120
INFLOW AND INFILTRATION	14	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	26	ON-SITE LAND DISPOSAL	129	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	0	TOTAL UNUSED STORAGE CAPACITY (MG)	-14
TOTAL INFLOW	**310**	**TOTAL OUTFLOW**	**190**		

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAs + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.76	0.76	0.76	0.89	0.89	0.77	0.78	0.77	0.76	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***285***	***23.7***	***22.7***	***23.5***	***27.8***	***24.9***	***24.0***	***23.3***	***23.9***	***22.8***	***23.0***	***23.0***	***22.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.7	35.0	52.3	78.8	103.3	127.1	149.7	172.4	184.3	173.3	146.1	107.9
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.09	35.03	52.29	78.75	103.25	127.08	149.73	172.43	180.79	163.96	137.05	101.82
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	12.33	28.79	50.95	78.35	103.08	126.43	148.53	161.53	150.32	123.05	85.72
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		15.90	18.80	23.20	27.30	23.20	24.00	23.30	16.69	-4.82	-20.02	-31.04	-15.97
UNADJUSTED STORAGE VOLUME (MG)		15.90	31.13	51.99	78.25	101.55	127.08	149.73	165.22	156.71	130.31	92.01	69.76
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.4	8.1	10.4	13.2	15.8	18.6	21.1	22.8	21.8	18.9	14.8	12.3
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	21	0.60	0.22	0.27	0.12	0.30	1.17	1.95	2.68	4.14	4.30	3.12	1.83
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	23	0.25	1.01	2.47	3.45	4.75	3.75	3.88	2.23	0.88	0.28	0.06	0.09
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		12.33	28.79	50.95	78.35	103.08	126.43	148.53	161.53	150.32	123.05	85.72	64.89
								MAXIMUM STORAGE REQUIRED (MG)					161.5
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	270
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	26
TOTAL INFLOW	**310**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	21
PERCOLATION	38
ON-SITE LAND DISPOSAL	102
DISCHARGE TO COWRP	83
TOTAL OUTFLOW	**244**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-66
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	-7

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAs + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.76	0.76	0.76	0.89	0.89	0.77	0.78	0.77	0.76	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***285***	***23.7***	***22.7***	***23.5***	***27.8***	***24.9***	***24.0***	***23.3***	***23.9***	***22.8***	***23.0***	***23.0***	***22.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.7	33.0	50.3	76.7	101.2	125.0	147.7	170.4	181.1	164.8	130.7	86.0
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.09	33.03	50.29	76.74	101.22	125.03	147.67	170.38	177.51	155.44	121.65	79.92
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	10.33	26.79	48.94	76.32	101.03	124.37	146.48	158.26	141.81	107.65	63.83
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		13.89	18.80	23.20	27.30	23.20	24.00	23.30	15.44	-10.22	-27.27	-38.01	-20.69
UNADJUSTED STORAGE VOLUME (MG)		13.89	29.13	49.99	76.24	99.52	125.03	147.67	161.93	148.04	114.54	69.64	43.14
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.2	7.9	10.2	13.0	15.6	18.4	20.8	22.4	20.9	17.2	12.3	9.4
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	19	0.58	0.22	0.27	0.12	0.30	1.15	1.93	2.64	3.97	3.93	2.64	1.44
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	23	0.25	1.00	2.46	3.43	4.72	3.73	3.86	2.21	0.86	0.27	0.05	0.08
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		10.33	26.79	48.94	76.32	101.03	124.37	146.48	158.26	141.81	107.65	63.83	38.66
								MAXIMUM STORAGE REQUIRED (MG)					158.3
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	270
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	25
TOTAL INFLOW	**309**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	19
PERCOLATION	38
ON-SITE LAND DISPOSAL	129
DISCHARGE TO COWRP	83
TOTAL OUTFLOW	**269**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-40
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	-3

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE AVERAGE YEAR FOLLOWING 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAS + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	Average
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.06	0.97	0.64	0.43	0.77	0.76	0.61	0.84	0.94	1.01	0.86
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.88	0.96	0.59	0.41	0.60	0.66	0.61	0.82	0.85	0.95	0.79
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.02	0.97	0.63	0.43	0.74	0.74	0.61	0.84	0.92	1.00	0.85
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.74	0.74	0.79	0.77	0.77	0.77	0.76	0.75	0.74	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Average (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
Average DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***276***	***23.0***	***22.3***	***24.4***	***24.0***	***21.6***	***24.1***	***22.7***	***23.2***	***22.3***	***23.0***	***23.0***	***22.3***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	1.45	4.20	4.20	4.20	3.02	0.09	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		61.7	64.7	81.5	103.2	122.9	144.2	163.6	179.2	180.3	157.0	121.8	77.2
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.31	0.29	0.21
EFFLUENT IRRIGATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	115	11.09	0.58	0.00	0.00	0.00	0.00	3.19	10.42	21.28	26.57	25.05	17.15
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		57.65	64.45	81.50	103.16	122.94	144.24	163.65	179.23	172.69	147.36	112.71	71.05
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	115	11.09	0.58	0.00	0.00	0.00	0.00	3.19	10.42	21.28	26.57	25.05	17.15
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.36	0.02	0.00	0.00	0.00	0.00	0.11	0.34	0.71	0.86	0.81	0.57
EFFLUENT IRRIGATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		38.66	42.36	57.10	79.16	101.34	120.14	140.95	156.03	157.98	133.97	98.77	54.95
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		7.90	17.60	24.10	23.50	19.90	24.10	19.51	8.78	-16.77	-28.18	-38.21	-20.95
UNADJUSTED STORAGE VOLUME (MG)		46.56	59.97	81.20	102.66	121.24	144.24	160.45	164.81	141.21	105.79	60.56	34.00
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		9.8	11.2	13.6	15.9	18.0	20.5	22.2	22.7	20.1	16.3	11.3	8.4
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	27	1.15	0.42	0.46	0.34	1.22	2.43	3.70	4.94	4.63	3.95	2.41	1.51
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	13	0.15	0.61	1.48	2.03	2.76	2.16	2.20	1.23	0.47	0.14	0.03	0.05
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		42.36	57.10	79.16	101.34	120.14	140.95	156.03	157.98	133.97	98.77	54.95	29.41
								MAXIMUM STORAGE REQUIRED (MG)					158.0
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	270	EVAPORATION	27	TOTAL UNUSED DISPOSAL CAPACITY (MG)	10
INFLOW AND INFILTRATION	5	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	15	ON-SITE LAND DISPOSAL	152	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	83	TOTAL UNUSED STORAGE CAPACITY (MG)	-3
TOTAL INFLOW	**290**	**TOTAL OUTFLOW**	**300**		

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAS + TRI-PARTY AGREEMENT DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.76	0.76	0.76	0.89	0.89	0.77	0.78	0.77	0.76	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***285***	***23.7***	***22.7***	***23.5***	***27.8***	***24.9***	***24.0***	***23.3***	***23.9***	***22.8***	***23.0***	***23.0***	***22.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.7	33.3	52.9	78.2	101.8	126.0	147.3	153.1	152.2	134.9	106.3	78.7
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.09	33.32	52.85	78.16	101.78	126.05	147.31	153.14	148.68	125.56	97.33	72.58
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
EFFLUENT AVAILABLE TO SEND TO COWRP (MG)		21.1	33.3	52.9	78.2	101.8	126.0	147.3	153.1	148.7	125.6	97.3	72.6
AVERAGE COWRP DISCHARGE (MGD)		0.06	0.06	0.06	0.06	0.06	0.06	0.58	0.56	0.58	0.56	0.56	0.58
MONTHLY DISCHARGE TO COWRP (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	10.62	29.35	50.36	76.88	102.05	124.01	129.24	129.42	111.92	83.34	56.48
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		14.15	20.94	21.74	26.04	23.14	22.24	6.03	3.42	-11.89	-22.29	-21.21	-13.34
UNADJUSTED STORAGE VOLUME (MG)		14.15	31.56	51.09	76.40	100.02	124.29	130.05	132.66	117.53	89.64	62.13	43.15
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.2	8.1	10.3	13.0	15.6	18.3	18.9	19.2	17.5	14.5	11.5	9.4
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	17	0.58	0.23	0.27	0.12	0.30	1.15	1.76	2.28	3.37	3.34	2.47	1.44
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	23	0.25	1.01	2.46	3.43	4.73	3.72	3.71	2.07	0.80	0.25	0.05	0.08
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		10.62	29.35	50.36	76.88	102.05	124.01	129.24	129.42	111.92	83.34	56.48	38.68
								MAXIMUM STORAGE REQUIRED (MG)					129.4
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	270
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	25
TOTAL INFLOW	**309**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	17
PERCOLATION	38
ON-SITE LAND DISPOSAL	102
DISCHARGE TO COWRP	114
TOTAL OUTFLOW	**271**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-38
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	26

MULE CREEK STATE PRISON **Scenario 2** FILE

CURRENT PERMIT ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAS + TRI-PARTY AGREEMENT DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.74
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.76	0.76	0.76	0.89	0.89	0.77	0.78	0.77	0.76	0.74	0.74	0.74

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	270	22.9	22.2	22.9	22.9	20.7	22.9	22.2	22.9	22.2	22.9	22.9	22.2
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***285***	***23.7***	***22.7***	***23.5***	***27.8***	***24.9***	***24.0***	***23.3***	***23.9***	***22.8***	***23.0***	***23.0***	***22.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		23.7	31.3	50.9	76.1	99.8	124.0	145.3	151.1	148.9	126.4	90.9	56.8
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.09	31.32	50.85	76.15	99.75	124.00	145.26	151.09	145.40	117.04	81.93	50.68
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
EFFLUENT AVAILABLE TO SEND TO COWRP (MG)		21.1	31.3	50.9	76.1	99.8	124.0	145.3	151.1	145.4	117.0	81.9	50.7
AVERAGE TYPICAL COWRP DISCHARGE (MGD)		0.06	0.06	0.06	0.06	0.06	0.06	0.58	0.56	0.58	0.56	0.56	0.58
MONTHLY DISCHARGE TO COWRP (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	8.62	27.35	48.35	74.85	100.00	121.96	127.19	126.15	103.41	67.93	34.59
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		12.13	20.94	21.74	26.04	23.14	22.24	6.03	2.18	-17.28	-29.53	-28.17	-18.06
UNADJUSTED STORAGE VOLUME (MG)		12.13	29.56	49.09	74.39	97.99	122.24	127.99	129.36	108.86	73.88	39.76	16.53
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.0	7.9	10.1	12.8	15.4	18.1	18.7	18.8	16.6	12.8	9.0	6.5
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	16	0.56	0.22	0.27	0.12	0.29	1.14	1.74	2.24	3.20	2.98	2.00	1.04
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	0.25	1.00	2.45	3.42	4.71	3.70	3.69	2.05	0.79	0.24	0.05	0.08
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		8.62	27.35	48.35	74.85	100.00	121.96	127.19	126.15	103.41	67.93	34.59	12.45

MAXIMUM STORAGE REQUIRED (MG)	127.2
TOTAL AVAILABLE STORAGE (MG)	155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	270
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	25
TOTAL INFLOW	**309**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	16
PERCOLATION	38
ON-SITE LAND DISPOSAL	129
DISCHARGE TO COWRP	114
TOTAL OUTFLOW	**297**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-12
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	28

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER AVG YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS

STARTING AVERAGE FLOW (MGD)	0.67

IRRIGATION AREA CHARACTERISTICS

POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS

CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**

EXISTING WWTP PROCESS AREAS

OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS

CLIMATOLOGICAL DESIGN BASIS	Avg. Year Cond.
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
ZONE 12 WET REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	53.4	3.72	1.80	0.93	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING GRASSES		0.85	0.74	0.93	1.18	0.65	0.65	0.84	1.00	1.01	1.00	1.02	0.99
CROP COEFFICIENT (Kc), TREES (OAKS)		0.69	0.48	0.93	1.18	0.39	0.30	0.43	0.86	0.94	0.93	0.95	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.82	0.68	0.93	1.18	0.60	0.58	0.76	0.97	1.00	0.99	1.01	0.97
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.024	0.036	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.026	0.036	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.67	0.67	0.72	0.70	0.70	0.71	0.69	0.68	0.67	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Avg. Year Cond. (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
Avg. Year Cond. DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	51	3.16	0.86	1.06	0.86	1.42	2.40	4.41	7.38	7.97	8.24	7.15	5.67
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.74	1.13	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***250***	***20.8***	***20.2***	***22.2***	***21.9***	***19.5***	***21.9***	***20.6***	***21.0***	***20.2***	***20.8***	***20.8***	***20.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	1.75	4.20	4.20	4.20	2.91	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		20.8	26.2	45.5	65.2	83.0	103.6	121.0	135.3	131.5	117.9	101.4	88.4
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	43	3.68	0.00	0.00	0.00	0.00	0.00	0.00	3.52	9.34	10.29	9.12	7.16
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.31	0.33	0.29	0.24
EFFLUENT IRRIGATION RATE (IN/MONTH)	37	3.15	0.00	0.00	0.00	0.00	0.00	0.00	3.01	8.00	8.81	7.81	6.14
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.26	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
POTENTIAL Avg. Year Cond. EFFLUENT APPLICATION VOLUME (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		17.12	26.19	45.51	65.18	83.03	103.56	120.95	131.74	122.15	107.64	92.25	81.23
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	96	7.32	0.00	0.00	0.00	0.00	0.00	2.58	14.45	18.60	20.49	18.16	14.27
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.24	0.00	0.00	0.00	0.00	0.00	0.09	0.47	0.62	0.66	0.59	0.48
EFFLUENT IRRIGATION RATE (IN/MONTH)	22	1.72	0.00	0.00	0.00	0.00	0.00	0.61	3.39	4.36	4.81	4.26	3.35
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	5.99	23.31	43.28	63.53	81.66	100.35	114.26	111.29	97.12	80.56	68.19
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		9.81	20.20	22.20	21.90	19.50	21.90	18.02	3.03	-7.74	-9.97	-6.48	-1.23
UNADJUSTED STORAGE VOLUME (MG)		9.81	26.19	45.51	65.18	83.03	103.56	118.37	117.29	103.55	87.15	74.09	66.96
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.8	7.5	9.7	11.8	13.8	16.0	17.6	17.5	16.0	14.2	12.8	12.0
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	23	0.72	0.30	0.33	0.26	0.96	1.93	2.97	3.87	3.73	3.49	2.69	2.08
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	12	0.14	0.55	1.34	1.84	2.50	1.95	1.99	1.10	0.43	0.14	0.03	0.05
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		5.99	23.31	43.28	63.53	81.66	100.35	114.26	111.29	97.12	80.56	68.19	61.80
								MAXIMUM STORAGE REQUIRED (MG)					114.3
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	245	EVAPORATION	23	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-63
INFLOW AND INFILTRATION	5	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	13	ON-SITE LAND DISPOSAL	139	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	0	TOTAL UNUSED STORAGE CAPACITY (MG)	41
TOTAL INFLOW	**263**	**TOTAL OUTFLOW**	**200**		

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.69	0.69	0.69	0.82	0.82	0.70	0.71	0.70	0.69	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***259***	***21.6***	***20.6***	***21.3***	***25.6***	***23.0***	***21.9***	***21.2***	***21.7***	***20.7***	***20.8***	***20.8***	***20.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.6	30.8	49.8	74.4	97.4	120.8	141.3	161.9	175.7	172.7	157.9	143.9
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		18.99	30.85	49.80	74.36	97.42	120.81	141.34	161.85	172.16	163.30	148.86	137.80
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	10.25	28.50	48.76	74.42	98.91	120.14	140.15	155.00	151.87	137.07	123.81
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		13.80	20.60	21.30	25.60	23.00	21.90	21.20	18.49	3.28	-7.22	-6.14	1.83
UNADJUSTED STORAGE VOLUME (MG)		13.80	30.85	49.80	74.36	97.42	120.81	141.34	158.65	158.28	144.65	130.93	125.64
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.2	8.1	10.1	12.8	15.3	17.9	20.2	22.0	22.0	20.5	19.0	18.4
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	22	0.58	0.22	0.27	0.12	0.29	1.13	1.87	2.60	4.17	4.63	3.95	2.67
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	23	0.25	1.01	2.45	3.41	4.70	3.69	3.81	2.19	0.89	0.29	0.06	0.11
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		10.25	28.50	48.76	74.42	98.91	120.14	140.15	155.00	151.87	137.07	123.81	119.96
								MAXIMUM STORAGE REQUIRED (MG)					155.0
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	245	EVAPORATION	22	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-122
INFLOW AND INFILTRATION	14	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	25	ON-SITE LAND DISPOSAL	102	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	0	TOTAL UNUSED STORAGE CAPACITY (MG)	0
TOTAL INFLOW	**284**	**TOTAL OUTFLOW**	**162**		

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE AVERAGE YEAR FOLLOWING 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, NO OFF-SITE DISCHARGES

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	Average
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.06	0.97	0.64	0.43	0.77	0.76	0.61	0.84	0.94	1.01	0.86
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.88	0.96	0.59	0.41	0.60	0.66	0.61	0.82	0.85	0.95	0.79
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.02	0.97	0.63	0.43	0.74	0.74	0.61	0.84	0.92	1.00	0.85
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.67	0.67	0.72	0.70	0.70	0.70	0.69	0.68	0.67	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Average (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
Average DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***250***	***20.8***	***20.2***	***22.2***	***21.9***	***19.6***	***21.9***	***20.6***	***21.0***	***20.2***	***20.8***	***20.8***	***20.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	1.45	4.20	4.20	4.20	3.02	0.09	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		140.8	143.9	162.4	182.3	200.8	221.6	238.3	251.7	256.0	244.5	226.9	211.4
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.31	0.29	0.21
EFFLUENT IRRIGATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	83	7.98	0.42	0.00	0.00	0.00	0.00	2.30	7.51	15.33	19.14	18.04	12.35
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		136.75	143.65	162.39	182.31	200.83	221.60	238.34	251.68	248.37	234.92	217.80	205.22
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	83	7.98	0.42	0.00	0.00	0.00	0.00	2.30	7.51	15.33	19.14	18.04	12.35
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.26	0.01	0.00	0.00	0.00	0.00	0.08	0.24	0.51	0.62	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		119.96	123.66	140.19	160.41	181.23	199.70	217.74	230.68	235.76	223.73	206.06	191.22
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		8.81	19.57	22.20	21.90	19.60	21.90	18.30	13.49	-2.71	-7.94	-6.30	1.65
UNADJUSTED STORAGE VOLUME (MG)		128.77	143.23	162.39	182.31	200.83	221.60	236.04	244.17	233.05	215.78	199.76	192.87
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		18.8	20.4	22.5	24.6	26.7	28.9	30.5	31.4	30.2	28.3	26.6	25.8
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	44	2.09	0.73	0.73	0.51	1.78	3.38	5.01	6.74	6.81	6.69	5.35	4.26
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	16	0.19	0.75	1.81	2.45	3.29	2.54	2.57	1.44	0.57	0.18	0.04	0.07
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		123.66	140.19	160.41	181.23	199.70	217.74	230.68	235.76	223.73	206.06	191.22	185.56
								MAXIMUM STORAGE REQUIRED (MG)					235.8
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	245
INFLOW AND INFILTRATION	5
PRECIPITATION INTO WWTP AND RESERVOIR	17
TOTAL INFLOW	**267**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	44
PERCOLATION	38
ON-SITE LAND DISPOSAL	120
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**202**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-65
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	-81

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAs 1

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 _ New AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.69	0.69	0.69	0.82	0.82	0.70	0.71	0.70	0.69	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***259***	***21.6***	***20.6***	***21.3***	***25.6***	***23.0***	***21.9***	***21.2***	***21.7***	***20.7***	***20.8***	***20.8***	***20.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.6	28.8	47.8	72.3	95.4	118.8	139.3	159.8	172.4	164.2	142.5	122.0
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		18.99	28.85	47.80	72.35	95.40	118.76	139.29	159.80	168.88	154.79	133.46	115.91
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	8.25	26.50	46.75	72.40	96.86	118.09	138.10	151.73	143.35	121.67	101.92
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		11.79	20.60	21.30	25.60	23.00	21.90	21.20	17.24	-2.12	-14.47	-13.11	-2.89
UNADJUSTED STORAGE VOLUME (MG)		11.79	28.85	47.80	72.35	95.40	118.76	139.29	155.35	149.61	128.89	108.56	99.02
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.0	7.8	9.9	12.6	15.1	17.7	19.9	21.7	21.1	18.8	16.6	15.5
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	21	0.56	0.22	0.26	0.11	0.29	1.11	1.85	2.56	4.00	4.26	3.47	2.27
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	23	0.25	1.00	2.44	3.40	4.67	3.67	3.79	2.18	0.87	0.28	0.06	0.10
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		8.25	26.50	46.75	72.40	96.86	118.09	138.10	151.73	143.35	121.67	101.92	93.73
								MAXIMUM STORAGE REQUIRED (MG)					151.7
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	245
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	25
TOTAL INFLOW	**284**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	21
PERCOLATION	38
ON-SITE LAND DISPOSAL	129
DISCHARGE TO COWRP	0
TOTAL OUTFLOW	**188**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-96
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	3

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAs + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.69	0.69	0.69	0.82	0.82	0.70	0.71	0.70	0.69	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***259***	***21.6***	***20.6***	***21.3***	***25.6***	***23.0***	***21.9***	***21.2***	***21.7***	***20.7***	***20.8***	***20.8***	***20.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.6	30.8	45.9	70.1	92.7	114.3	134.8	155.3	165.2	152.4	123.4	83.6
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		18.99	30.85	45.90	70.14	92.66	114.28	134.80	155.32	161.70	143.01	114.37	77.52
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	10.25	24.60	44.54	69.66	92.38	113.60	133.62	144.54	131.57	102.58	63.53
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		13.80	16.70	21.00	25.10	21.30	21.90	21.20	14.49	-6.92	-22.22	-33.24	-18.07
UNADJUSTED STORAGE VOLUME (MG)		13.80	26.95	45.60	69.64	90.96	114.28	134.80	148.11	137.62	109.35	69.34	45.46
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.2	7.6	9.7	12.3	14.6	17.2	19.4	20.9	19.7	16.7	12.3	9.7
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	18	0.58	0.21	0.26	0.11	0.28	1.08	1.80	2.47	3.76	3.81	2.63	1.47
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	0.25	1.00	2.42	3.37	4.62	3.63	3.75	2.14	0.84	0.26	0.05	0.09
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		10.25	24.60	44.54	69.66	92.38	113.60	133.62	144.54	131.57	102.58	63.53	40.95
								MAXIMUM STORAGE REQUIRED (MG)					144.5
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	245	EVAPORATION	18	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-43
INFLOW AND INFILTRATION	14	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	25	ON-SITE LAND DISPOSAL	102	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	83	TOTAL UNUSED STORAGE CAPACITY (MG)	10
TOTAL INFLOW	**284**	**TOTAL OUTFLOW**	**241**		

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE AVERAGE YEAR FOLLOWING AVERAGE YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAS + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	Average
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	1.00
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 TYPICAL YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	56.2	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.06	0.97	0.64	0.43	0.77	0.76	0.61	0.84	0.94	1.01	0.86
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.88	0.96	0.59	0.41	0.60	0.66	0.61	0.82	0.85	0.95	0.79
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.02	0.97	0.63	0.43	0.74	0.74	0.61	0.84	0.92	1.00	0.85
MCIC FACILITY I/I VOLUME (MGD)		0.000	0.001	0.002	0.002	0.002	0.000	0.005	0.000	0.000	0.000	0.000	0.000
MCSP, PYCF, CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.043	0.032	0.026	0.035	0.011	0.006	0.001	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.000	0.001	0.045	0.034	0.028	0.035	0.016	0.006	0.001	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.67	0.67	0.72	0.70	0.70	0.70	0.69	0.68	0.67	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, Average (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
EFFECTIVE RAIN FOR PLANTS (IN)	20.7	0.29	1.11	2.56	3.32	4.29	3.18	3.12	1.73	0.70	0.23	0.05	0.09
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
Average DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	56	3.86	1.25	1.14	0.73	2.36	4.13	5.82	7.62	8.00	8.36	7.11	5.82
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	5	0.00	0.04	1.40	1.06	0.79	1.08	0.48	0.19	0.04	0.00	0.00	0.01
TOTAL INFLUENT FLOW VOLUME (MG)	***250***	***20.8***	***20.2***	***22.2***	***21.9***	***19.6***	***21.9***	***20.6***	***21.0***	***20.2***	***20.8***	***20.8***	***20.2***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	1.45	4.20	4.20	4.20	3.02	0.09	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		61.8	65.7	80.5	100.1	117.9	136.9	154.3	168.7	170.7	151.2	121.2	81.5
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	37	4.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	7.59	9.61	9.06	6.20
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.31	0.29	0.21
EFFLUENT IRRIGATION RATE (IN/MONTH)	31	3.43	0.18	0.00	0.00	0.00	0.00	0.00	0.00	6.50	8.23	7.76	5.31
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.00	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL Average EFFLUENT APPLICATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
POTENTIAL Average EFFLUENT APPLICATION VOLUME (MG)	83	7.98	0.42	0.00	0.00	0.00	0.00	2.30	7.51	15.33	19.14	18.04	12.35
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		57.74	65.51	80.52	100.08	117.85	136.95	154.31	168.69	163.12	141.63	112.17	75.28
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	83	7.98	0.42	0.00	0.00	0.00	0.00	2.30	7.51	15.33	19.14	18.04	12.35
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.26	0.01	0.00	0.00	0.00	0.00	0.08	0.24	0.51	0.62	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	19	1.87	0.10	0.00	0.00	0.00	0.00	0.54	1.76	3.60	4.49	4.23	2.90
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		40.95	45.52	58.32	78.18	98.25	115.05	133.71	147.69	150.51	130.44	100.43	61.28
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		8.81	15.67	21.90	21.40	17.90	21.90	18.30	9.49	-12.91	-22.94	-33.40	-18.25
UNADJUSTED STORAGE VOLUME (MG)		49.76	61.19	80.22	99.58	116.15	136.95	152.01	157.18	137.59	107.50	67.02	43.03
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		10.1	11.4	13.5	15.6	17.4	19.7	21.3	21.9	19.7	16.4	12.0	9.4
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	27	1.18	0.43	0.45	0.33	1.19	2.34	3.55	4.77	4.54	4.00	2.54	1.67
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	13	0.16	0.61	1.48	2.02	2.72	2.12	2.16	1.21	0.47	0.14	0.03	0.05
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	1	0.02	0.07	0.17	0.22	0.28	0.21	0.21	0.11	0.05	0.02	0.00	0.01
STORAGE AT END OF MONTH (MG)		45.52	58.32	78.18	98.25	115.05	133.71	147.69	150.51	130.44	100.43	61.28	38.29
								MAXIMUM STORAGE REQUIRED (MG)					150.5
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	245	EVAPORATION	27	TOTAL UNUSED DISPOSAL CAPACITY (MG)	3
INFLOW AND INFILTRATION	5	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	15	ON-SITE LAND DISPOSAL	120	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	83	TOTAL UNUSED STORAGE CAPACITY (MG)	4
TOTAL INFLOW	**265**	**TOTAL OUTFLOW**	**268**		

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAs + DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.69	0.69	0.69	0.82	0.82	0.70	0.71	0.70	0.69	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***259***	***21.6***	***20.6***	***21.3***	***25.6***	***23.0***	***21.9***	***21.2***	***21.7***	***20.7***	***20.8***	***20.8***	***20.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.6	28.8	43.9	68.1	90.6	112.2	132.7	153.3	162.0	143.9	108.0	61.7
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		18.99	28.85	43.90	68.12	90.63	112.23	132.74	153.26	158.42	134.49	98.97	55.63
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.13	0.01	0.02	0.06	0.00	0.00	0.13	0.34	0.48	0.87	0.66
MONTHLY DISCHARGE TO COWRP (MG)	83	0.0	3.9	0.3	0.5	1.7	0.0	0.0	4.0	10.2	15.0	27.1	19.9
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	8.25	22.60	42.52	67.63	90.33	111.54	131.56	141.27	123.06	87.17	41.64
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		11.79	16.70	21.00	25.10	21.30	21.90	21.20	13.24	-12.32	-29.47	-40.21	-22.79
UNADJUSTED STORAGE VOLUME (MG)		11.79	24.95	43.60	67.62	88.93	112.23	132.74	144.81	128.95	93.59	46.97	18.84
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.0	7.4	9.5	12.1	14.4	17.0	19.2	20.5	18.8	14.9	9.8	6.7
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	17	0.56	0.21	0.25	0.11	0.28	1.07	1.78	2.43	3.59	3.44	2.15	1.07
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	0.25	0.99	2.41	3.35	4.60	3.61	3.73	2.13	0.83	0.25	0.05	0.08
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		8.25	22.60	42.52	67.63	90.33	111.54	131.56	141.27	123.06	87.17	41.64	14.72
								MAXIMUM STORAGE REQUIRED (MG)					141.3
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)		ANNUAL OUTFLOWS (MG)		OVERALL BALANCE (MUST NOT BE NEGATIVE)	
WASTEWATER	245	EVAPORATION	17	TOTAL UNUSED DISPOSAL CAPACITY (MG)	-17
INFLOW AND INFILTRATION	14	PERCOLATION	38	UNUSED LAA CAPACITY (MG)	0
PRECIPITATION INTO WWTP AND RESERVOIR	25	ON-SITE LAND DISPOSAL	129	UNUSED COWRP CAPACITY (MG)	0
		DISCHARGE TO COWRP	83	TOTAL UNUSED STORAGE CAPACITY (MG)	14
TOTAL INFLOW	**284**	**TOTAL OUTFLOW**	**267**		

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXISTING LAAS + TRI-PARTY AGREEMENT DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.69	0.69	0.69	0.82	0.82	0.70	0.71	0.70	0.69	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***259***	***21.6***	***20.6***	***21.3***	***25.6***	***23.0***	***21.9***	***21.2***	***21.7***	***20.7***	***20.8***	***20.8***	***20.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.6	29.1	46.5	69.5	91.2	113.3	132.4	136.0	133.1	114.0	83.7	54.4
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		18.99	29.14	46.47	69.54	91.19	113.25	132.38	136.02	129.59	104.60	74.66	48.28
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	71	5.19	0.00	0.00	0.00	0.00	0.00	0.00	3.21	13.88	18.65	17.93	12.16
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.46	0.60	0.58	0.41
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
EFFLUENT AVAILABLE TO SEND TO COWRP (MG)		19.0	29.1	46.5	69.5	91.2	113.3	132.4	136.0	129.6	104.6	74.7	48.3
AVERAGE COWRP DISCHARGE (MGD)		0.06	0.06	0.06	0.06	0.06	0.06	0.58	0.56	0.58	0.56	0.56	0.58
MONTHLY DISCHARGE TO COWRP (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	8.54	25.17	43.94	68.19	91.35	111.18	114.32	112.43	93.17	62.86	34.29
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		12.05	18.84	19.54	23.84	21.24	20.14	3.93	1.22	-13.99	-24.49	-23.41	-15.44
UNADJUSTED STORAGE VOLUME (MG)		12.05	27.38	44.71	67.78	89.43	111.49	115.12	115.55	98.44	68.68	39.45	18.85
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		6.0	7.7	9.6	12.1	14.5	16.9	17.3	17.3	15.5	12.2	9.0	6.7
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	15	0.56	0.21	0.26	0.11	0.28	1.07	1.62	2.07	2.99	2.85	1.99	1.08
PERCOLATION LOSS FROM STORAGE (MG)	38	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	3.13
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	0.25	1.00	2.42	3.35	4.60	3.61	3.57	1.98	0.77	0.24	0.05	0.08
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		8.54	25.17	43.94	68.19	91.35	111.18	114.32	112.43	93.17	62.86	34.29	14.74
								MAXIMUM STORAGE REQUIRED (MG)					114.3
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	245
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	24
TOTAL INFLOW	**283**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	15
PERCOLATION	38
ON-SITE LAND DISPOSAL	102
DISCHARGE TO COWRP	114
TOTAL OUTFLOW	**269**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	-14
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	41

MULE CREEK STATE PRISON **Scenario 3** FILE

MAX POTENTIAL OCCUPANCY ADWF WATER BALANCE UNDER 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS, EXPANDED LAAS + TRI-PARTY AGREEMENT DISCHARGE TO COWRP

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.67
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**261**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**61**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.81
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
AVG PRECIP, AVG OF IONE & PARDEE (IN)	21.8	0.31	1.17	2.69	3.49	4.52	3.35	3.29	1.82	0.74	0.25	0.06	0.10
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.88	1.07	0.95	1.13	1.16	1.05	1.00	1.13	1.01	0.98	0.99	0.98
PRESTON YOUTH FACILITY I/I VOLUME (MGD)		0.011	0.014	0.016	0.067	0.097	0.029	0.023	0.001	0.000	0.000	0.000	0.000
MCIC FACILITY I/I VOLUME (MGD)		0.013	0.002	0.000	0.000	0.001	0.005	0.010	0.002	0.002	0.000	0.000	0.000
MCSP + CAL FIRE FACILITY I/I VOLUME (MGD)		0.000	0.000	0.000	0.087	0.051	0.000	0.003	0.025	0.018	0.000	0.000	0.000
TOTAL I/I VOLUME (MGD)		0.024	0.016	0.016	0.154	0.149	0.034	0.036	0.028	0.020	0.000	0.000	0.000
TOTAL INFLUENT FLOW RATE (MGD)		0.69	0.69	0.69	0.82	0.82	0.70	0.71	0.70	0.69	0.67	0.67	0.67

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		1.4%	5.4%	12.4%	16.0%	20.8%	15.4%	15.1%	8.4%	3.4%	1.1%	0.3%	0.4%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	39.4	0.56	2.12	4.87	6.32	8.17	6.05	5.95	3.29	1.33	0.44	0.10	0.17
EFFECTIVE RAIN FOR PLANTS (IN)	37.4	0.53	2.01	4.63	6.00	7.76	5.75	5.65	3.13	1.26	0.42	0.09	0.16
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	46	3.42	1.28	1.11	0.46	1.01	3.04	4.30	4.66	6.69	7.71	7.11	4.92
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	42	2.56	0.96	0.83	0.35	0.76	2.28	3.23	4.66	6.69	7.71	7.11	4.92
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
AVERAGE DRY WEATHER FLOW VOLUME (MG)	245	20.8	20.1	20.8	20.8	18.8	20.8	20.1	20.8	20.1	20.8	20.8	20.1
I/I FLOW VOLUME (MG)	14	0.74	0.48	0.50	4.77	4.17	1.05	1.08	0.87	0.60	0.00	0.00	0.00
TOTAL INFLUENT FLOW VOLUME (MG)	***259***	***21.6***	***20.6***	***21.3***	***25.6***	***23.0***	***21.9***	***21.2***	***21.7***	***20.7***	***20.8***	***20.8***	***20.1***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	1.05	4.20	4.20	4.20	4.20	4.20	2.67	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		21.6	27.1	44.5	67.5	89.2	111.2	130.3	134.0	129.9	105.5	68.3	32.5
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	31	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55	9.37	9.00	6.11
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.30	0.29	0.20
EFFLUENT IRRIGATION RATE (IN/MONTH)	26	2.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.04	8.02	7.71	5.23
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		218	218	218	218	218	218	218	218	218	218	218	218
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		18.99	27.14	44.46	67.53	89.16	111.20	130.33	133.97	126.31	96.09	59.25	26.39
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	99	7.21	0.00	0.00	0.00	0.00	0.00	0.00	4.46	19.27	25.90	24.90	16.89
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.64	0.84	0.80	0.56
EFFLUENT IRRIGATION RATE (IN/MONTH)	17	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3.26	4.38	4.21	2.85
DESIGN DISCHARGE TO COWRP													
EFFLUENT AVAILABLE TO SEND TO COWRP (MG)		19.0	27.1	44.5	67.5	89.2	111.2	130.3	134.0	126.3	96.1	59.3	26.4
AVERAGE COWRP DISCHARGE (MGD)		0.06	0.06	0.06	0.06	0.06	0.06	0.58	0.56	0.58	0.56	0.56	0.58
MONTHLY DISCHARGE TO COWRP (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		0.00	6.54	23.16	41.93	66.16	89.30	109.13	112.27	109.16	84.66	47.46	12.39
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		10.03	18.84	19.54	23.84	21.24	20.14	3.93	-0.02	-19.38	-31.73	-30.37	-20.16
UNADJUSTED STORAGE VOLUME (MG)		10.03	25.38	42.71	65.77	87.40	109.44	113.06	112.25	89.77	52.92	17.08	-7.77
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		5.8	7.5	9.4	11.9	14.2	16.7	17.1	17.0	14.5	10.5	6.5	0.0
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	13	0.55	0.21	0.25	0.11	0.27	1.05	1.60	2.03	2.82	2.49	1.51	0.00
PERCOLATION LOSS FROM STORAGE (MG)	35	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	3.23	0.00
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	0.25	0.99	2.40	3.33	4.58	3.59	3.56	1.97	0.75	0.23	0.05	0.06
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	2	0.04	0.13	0.31	0.40	0.51	0.38	0.37	0.21	0.08	0.03	0.01	0.01
STORAGE AT END OF MONTH (MG)		6.54	23.16	41.93	66.16	89.30	109.13	112.27	109.16	84.66	47.46	12.39	0.00
								MAXIMUM STORAGE REQUIRED (MG)					112.3
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER	245
INFLOW AND INFILTRATION	14
PRECIPITATION INTO WWTP AND RESERVOIR	24
TOTAL INFLOW	**283**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	13
PERCOLATION	35
ON-SITE LAND DISPOSAL	129
DISCHARGE TO COWRP	114
TOTAL OUTFLOW	**291**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	8
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	0
TOTAL UNUSED STORAGE CAPACITY (MG)	43

MULE CREEK STATE PRISON **Calibration** FILE

WATER YEAR 2017 WATER BALANCE CALIBRATION - 1-in-100 YEAR TYPE HYDROLOGIC CONDITIONS

2/13/2025

INPUT DATA, CONSTANT

SANITARY FLOW CHARACTERISTICS	
STARTING AVERAGE FLOW (MGD)	0.38
IRRIGATION AREA CHARACTERISTICS	
POST MCIC IRRIGATION AREA TOTAL (AC)	**200**
POST MCIC IRRIGATION FIELDS 1 -4 & 6 AREA (AC)	**157**
POST MCIC IRRIGATION FIELD 7 AREA (AC)	**43**
POST MCIC NEW AREA (AC)	**0**
POST MCIC NEW AREA W/I RESERVOIR (AC)	**0**
IRRIGATION FIELD 7 MAX APPLICATION EFFICIENCY	**1.10**
IRRIGATION FIELDS 1-4 & 6 MAX APPLICATION EFFICIENCY	**0.60**

EXISTING STORAGE RESERVOIRS	
CATCHMENT AREA (AC)	**27.0**
WATER SURFACE (AC)	**21.6**
BOTTOM SURFACE (AC)	**9.6**
STORAGE AVAILABLE (MG)	**155**
EFFECTIVE STORAGE PERCOLATION RATE (IN/DAY)	**0.40**
EXISTING WWTP PROCESS AREAS	
OXIDATION DITCH SURFACE AREA (AC)	**0.28**
COMBINED CLARIFIER SURFACE AREA (AC)	**0.18**
CHLORINE CONTACT BASIN SURFACE AREA (AC)	**0.7**
TOTAL TREATMENT PROCESS SURFACE AREA (AC)	**1.2**

CLIMATOLOGICAL FACTORS	
CLIMATOLOGICAL DESIGN BASIS	1-in-100 YEAR
DESIGN PRECIP/AVG PRECIP RATIO	1.00
OCT-APR EVAP/AVG EVAP RATIO	0.75
MAY-SEP EVAP/AVG EVAP RATIO	1.00
IRRIGATION AREA SOIL RUNOFF COEFFICIENT	0.05
STORAGE CATCHMENT SOIL RUNOFF COEFF	0.50
STORAGE CATCHMENT RESERVOIR RUNOFF COEFF	1.00

INPUT DATA, MONTHLY VARIABLE

MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
DAYS IN MONTH	365	31	30	31	31	28	31	30	31	30	31	31	30
AVERAGE DRY WEATHER FLOW (MGD)		0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
2017 PRECIP, MCSP WWTP (IN)	**41.2**	**5.98**	**3.08**	**3.48**	**8.34**	**8.34**	**8.34**	**3.18**	**0.25**	**0.19**	**0.00**	**0.00**	**0.00**
ZONE 14 WET YEAR REFERENCE EVAPOTRANSPIRATION (ETo) (IN)	45.6	3.86	1.19	1.17	0.41	0.87	2.90	4.30	4.13	6.63	7.87	7.21	5.01
WATER SURFACE EVAPORATION COEFFICIENT		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CROP COEFFICIENT (Kc), EXISTING MISC. GRASSES		0.92	1.11	0.95	1.15	1.17	1.10	1.03	1.13	1.02	1.00	1.00	1.00
CROP COEFFICIENT (Kc), TREES (OAKS)		0.75	0.92	0.94	1.05	1.10	0.85	0.89	1.13	0.98	0.90	0.94	0.92
WEIGHTED CROP COEFFICIENT FOR MCSP SITE		0.83	1.02	0.94	1.10	1.14	0.97	0.96	1.13	1.00	0.95	0.97	0.96
TOTAL INFLUENT FLOW RATE WY 2017 (MGD)		**0.35**	**0.36**	**0.39**	**0.53**	**0.53**	**0.54**	**0.42**	**0.41**	**0.40**	**0.37**	**0.38**	**0.37**
ESTIMATED 2017 WY I&I (MG)	**0.6**	**0.000**	**0.000**	**0.006**	**0.150**	**0.152**	**0.164**	**0.041**	**0.031**	**0.020**	**0.000**	**0.000**	**0.000**
1 IN 100 YEAR I&I AND ADWF (MG)		0.40	0.40	0.40	0.53	0.53	0.41	0.42	0.41	0.40	0.38	0.38	0.38

CALCULATIONS

CALCULATIONS / MONTH	ANNUAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
RAIN-RELATED CALCULATIONS													
PERCENT ANNUAL RAINFALL/MONTH (%)		14.5%	7.5%	8.5%	20.3%	20.3%	20.3%	7.7%	0.6%	0.5%	0.0%	0.0%	0.0%
ESTIMATED IONE RAIN, 1-in-100 YEAR (IN)	41.2	5.98	3.08	3.48	8.34	8.34	8.34	3.18	0.25	0.19	0.00	0.00	0.00
EFFECTIVE RAIN FOR PLANTS (IN)	39.1	5.68	2.93	3.31	7.92	7.92	7.92	3.02	0.24	0.18	0.00	0.00	0.00
EVAPORATION-RELATED CALCULATIONS													
EVAPOTRANSPIRATION POTENTIAL (IN) (ETc) (ETo * Weighted Kc)	44	3.22	1.21	1.11	0.45	0.99	2.82	4.12	4.67	6.63	7.48	6.98	4.80
1-in-100 YEAR DESIGN ET POTENTIAL (IN) (ETc * Seasonal Evaporation Ratio)	41	2.41	0.91	0.83	0.34	0.74	2.12	3.09	4.67	6.63	7.48	6.98	4.80
WWTP / STORAGE RESERVOIR EVAPORATION (IN) (ETo * Water Surface Coefficient)	42	2.90	0.89	0.88	0.31	0.65	2.18	3.23	4.13	6.63	7.87	7.21	5.01
SANITARY-RELATED CALCULATIONS													
WY 2017 ACTUAL TOTAL INFLUENT FLOW VOLUME, INCLUDES I&I (MG)	***153***	***10.8***	***10.9***	***12.0***	***16.4***	***14.9***	***16.9***	***12.6***	***12.7***	***12.0***	***11.4***	***11.7***	***11.0***
DESIGN DISCHARGE TO FIELD 7													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	3.27	4.20	4.20	4.20	4.20	4.20	4.13	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		43	43	43	43	43	43	43	43	43	43	43	43
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	7.09	8.23	7.68	5.27
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	8.28	9.61	8.96	6.16
MAX EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		30.8	40.9	51.2	66.1	82.6	101.4	115.2	125.3	89.8	39.3	13.4	11.0
AVAILABLE EFFLUENT APPLIED TO LAND (MG)	33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	8.28	9.61	8.96	6.16
ACTUAL EFFLUENT APPLIED TO LAA 7, WY 2017(MG)	**27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**6.00**	**5.85**	**4.85**	**5.75**	**4.20**
DIFFERENCE BETWEEN MODEL AND REPORTED (%)		0%	0%	0%	0%	0%	0%	0%	94%	-42%	-98%	-56%	-47%
AVERAGE EFFLUENT DISCHARGE RATE TO FIELD 7 (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.28	0.31	0.29	0.21
EFFLUENT IRRIGATION RATE (IN/MONTH)	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	7.09	8.23	7.68	5.27
DESIGN DISCHARGE TO FIELDS 1-4 & 6													
BEGINNING AVAILABLE RAIN WATER IN SOIL (IN)		0.00	0.28	0.28	0.28	0.28	0.28	0.28	0.21	0.00	0.00	0.00	0.00
LAND AREA UNDER IRRIGATION (AC)		157	157	157	157	157	157	157	157	157	157	157	157
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION RATE (IN/MONTH)	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53	3.87	4.49	4.19	2.88
POTENTIAL 1-in-100 YEAR EFFLUENT APPLICATION VOLUME (MG)	77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.80	16.50	19.13	17.85	12.26
REMAINING EFFLUENT VOLUME AVAILABLE FOR LAND (MG)		30.77	40.94	51.23	66.12	82.61	101.43	115.19	124.90	81.49	29.72	4.43	4.85
REMAINING AVAILABLE EFFLUENT APPLIED TO LAND (MG)	56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.80	16.50	19.13	4.43	4.85
ACTUAL EFFLUENT APPLIED TO LAA 1-4& 6, WY 2017(MG)	**62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.59**	**12.14**	**19.00**	**15.15**	**10.65**
DIFFERENCE BETWEEN MODEL AND REPORTED (%)		0%	0%	0%	0%	0%	0%	0%	-135%	-36%	-1%	71%	54%
AVERAGE EFFLUENT DISCHARGE RATE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.55	0.62	0.14	0.16
EFFLUENT IRRIGATION RATE (IN/MONTH)	13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53	3.87	4.49	1.04	1.14
DESIGN DISCHARGE TO COWRP													
AVERAGE COWRP DISCHARGE (MGD)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONTHLY DISCHARGE TO COWRP (MG)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HISTORICAL AVERAGE DISCHARGE TO COWRP (MG)	93.8	8.9	3.4	0.2	2.4	1.1	0.0	0.9	3.9	9.3	15.0	27.7	21.1
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (MG)	114	1.8	1.8	1.8	1.8	1.8	1.8	17.3	17.3	17.3	17.3	17.3	17.3
CDCR/ARSA AGREEMENT LIMITED PRESTON DISCHARGE (ACFT)	350	5.4	5.4	5.4	5.4	5.4	5.4	53.0	53.0	53.0	53.0	53.0	53.0
WY 2017 PRESTON DISCHARGE (MG)	**68**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**31.6**	**32.3**	**4.3**	**0.0**	**0.0**
DESIGN LOSSES AND GAINS FROM STORAGE													
STORAGE AT BEGINNING OF MONTH (MG)		**20.00**	30.03	39.27	49.70	67.71	84.57	102.57	112.56	77.78	27.95	1.68	0.00
EFFLUENT STORAGE VOLUME GAIN/LOSS (MG)		10.77	10.91	11.96	16.42	14.90	16.87	12.62	-30.03	-45.12	-21.63	-1.68	0.00
UNADJUSTED STORAGE VOLUME (MG)		30.77	40.94	51.23	66.12	82.61	101.43	115.19	82.53	32.67	6.31	0.00	0.00
APPROXIMATE EFFECTIVE RESERVOIR EVAP AREA (AC)		8.0	9.2	10.3	11.9	13.7	15.8	17.3	13.7	8.3	5.4	4.7	4.7
APPROXIMATE EFFECTIVE RESERVOIR PERC AREA (AC)		9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
APPROXIMATE AREA OF WWTP PROCESSES (AC)		1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
EVAPORATIVE LOSS FROM STORAGE (MG)	9	0.72	0.25	0.27	0.11	0.26	1.00	1.62	1.67	1.69	1.40	0.00	0.00
PERCOLATION LOSS FROM STORAGE (MG)	32	3.23	3.13	3.23	3.23	2.92	3.23	3.13	3.23	3.13	3.23	0.00	0.00
RUNOFF TO STORAGE FROM RAIN CATCHMENT AREA (MG)	22	2.85	1.51	1.76	4.41	4.61	4.84	1.91	0.14	0.09	0.00	0.00	0.00
PRECIP CAPTURED BY WWTP PROCESS AREAS (MG)	3	0.38	0.19	0.22	0.53	0.53	0.53	0.20	0.02	0.01	0.00	0.00	0.00
STORAGE AT END OF MONTH (MG)		30.03	39.27	49.70	67.71	84.57	102.57	112.56	77.78	27.95	1.68	0.00	0.00
ACTUAL STORAGE AT END OF MONTH WY 2017 AT ADWF 0.38 MGD (MG)		**31.00**	**46.00**	**70.40**	**111.30**	**104.30**	**104.00**	**84.00**	**50.90**	**13.20**	**0.00**	**0.00**	**14.20**
								MAXIMUM STORAGE REQUIRED (MG)					112.6
								TOTAL AVAILABLE STORAGE (MG)					155.0

SUMMARY

ANNUAL INFLOWS (MG)	
WASTEWATER AND I&I	153
PRECIPITATION INTO WWTP AND RESERVOIR	25
TOTAL INFLOW	**178**

ANNUAL OUTFLOWS (MG)	
EVAPORATION	9
PERCOLATION	32
ON-SITE LAND DISPOSAL	89
DISCHARGE TO PRESTON RESERVOIR	68
TOTAL OUTFLOW	**198**

OVERALL BALANCE (MUST NOT BE NEGATIVE)	
TOTAL UNUSED DISPOSAL CAPACITY (MG)	20
UNUSED LAA CAPACITY (MG)	0
UNUSED COWRP CAPACITY (MG)	68
TOTAL UNUSED STORAGE CAPACITY (MG)	42

Technical Memorandum

HydroScience
Strategic Water Solutions

Sacramento • Berkeley • San Jose

To: Tom DuBois, ARSA General Manager

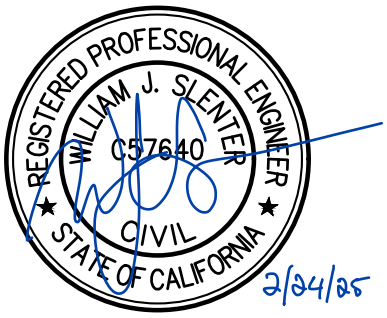
From: Hydroscience Engineers, Inc.

Prepared By: Steven Whittlesey, PE

Reviewed By: Bill Slenter, PE

Subject: Revised ARSA Water Balance Update

Date: February 24, 2025



This Technical Memorandum (TM) provides the water balance that has been updated in response to the February 3, 2025, Central Valley Regional Water Quality Control Board (Water Board) Review of the Site-Specific Water Balance for the Amador Regional Sanitation Agency (ARSA) disposal system in joint operation with the Castle Oaks Water Reclamation Facility (COWRF) and the Castle Oaks Golf Course (COGC) which receive secondary disinfected effluent from the Sutter Creek Wastewater Treatment Plant (WWTP). This TM is organized into the following sections:

- Background Information
- WWTP Flow & Population Data
- Climatological Data
- Storage Facilities Characterization
- Disposal Facilities Characterization
- Water Balance Results

Background Information

The ARSA, City of Ione (City), and Portlock International Ltd. (Portlock) are all permittees under the State Water Resources Control Board (SWRCB) Water Reclamation Requirement Order 93-240 (WRRs). The WRRs permit the ARSA system, the COWRF, and the COGC land application areas (LAAs). ARSA operates the storage and disposal facilities downstream of the Sutter Creek WWTP, however the City operates the COWRF and Portlock operates the COGC.

ARSA's system includes conveyance infrastructure, three storage reservoirs and two LAAs. The system receives secondary disinfected effluent from the Sutter Creek WWTP and disposes of it on the Bower's Ranch and Hoskin's Ranch LAAs. Storage is provided in the ARSA system by the Henderson Reservoir, Preston Forebay and Preston Reservoir. Remaining effluent that is not disposed in the ARSA system is conveyed to the COWRF to receive tertiary treatment before it is disposed at the COGC. ARSA also owns a diversion from Sutter Creek that may divert surface water to meet irrigation demands when inadequate volume of Sutter Creek WWTP effluent is available. The Sutter Creek diversion is in need of repair and ARSA continues to seek cost effective bids for the work expected to occur in 2025 at the earliest.

Under a 2007 contractual agreement with the City, the California Department of Corrections and Rehabilitation (CDCR) Mule Creek State Prison (MCSP) has sent effluent to the COWRF either through Preston Reservoir or directly via an interconnection pipe. The discharge from MCSP to the COWRF is not described in the WRRs and is an agreement between ARSA, the City, and the CDCR. This agreement is the Parties' effort to manage the system to the maximum benefit possible. The flow diagram of the interconnected system is illustrated in Figure 1.

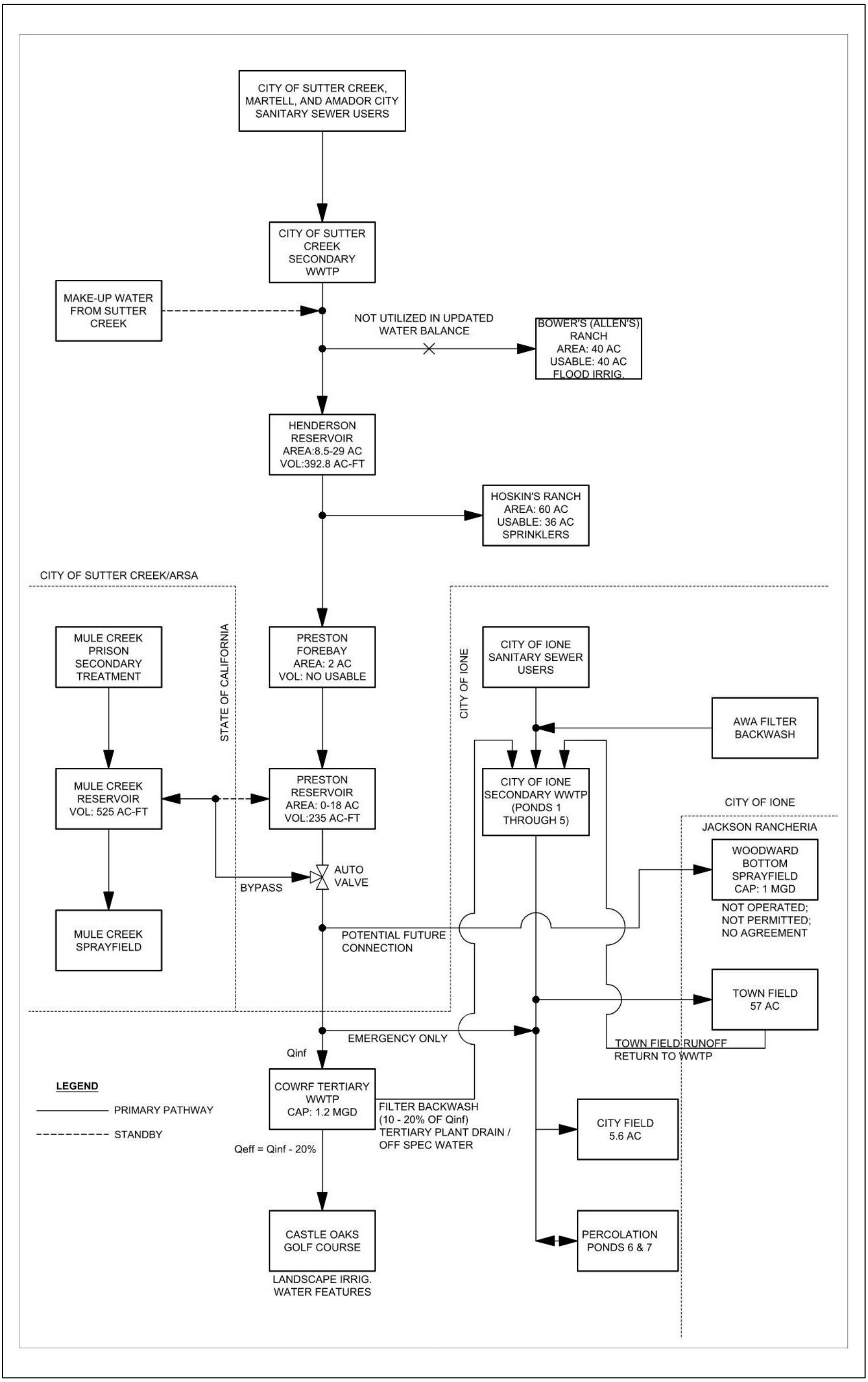


Figure 1: ARSA Storage and Disposal System Flow Diagram

On August 14, 2024, the SWRCB issued a Water Code Section 13267 Order to requiring ARSA, MCSP, and the City to verify their abilities and capacities to adequately convey, treat, and dispose of the wastewater generated by their own respective collection systems without impacting beneficial uses. ARSA, the City, and Portlock submitted the water balance by December 13, 2024, in accordance with the Water Code Section 13267 Order.

On February 3, 2025, the SWRCB issued a comment letter to ARSA, the City, and Portlock International requiring revisions to the water balance. This updated TM incorporates updates made in response to the February 3, 2025 review letter. The comments and their corresponding updated sections of this TM are summarized in Table 1 below.

Table 1: Summary of Revisions Pursuant to SWRCB Review Letter from February 3, 2025

Required Action Items	Revised TM Section
A. Rainfall Data – Redistribute to reflect average-year rainfall patterns.	Current Flow Conditions Climatological Data
B. City of Sutter Creek Inflow & Infiltration – Provide additional supporting information or exclude	Future Projected Flows & Population
C. City of Ione Title 22 Engineering Report – Provide additional supporting information	Attachment D
D. Castle Oaks Golf Course Overflow of Lake I – Cease overflow discharge and update water balance accordingly	Attachment D
E. Operational Decisions not in WDRs – Exclude assumptions such as unpermitted discharge to surface water	Disposal Facilities Characterization – Bower's Ranch
F. Submit Spreadsheets and Data	Attachment F & Excel Spreadsheet

WWTP Flow & Population Data

This section documents the existing wastewater flows to the Sutter Creek WWTP, and wastewater flows over the next 5 years based on population growth as required by the Water Code Section 13267 Order item 1.A. Daily flow data from January 2017 through September 2024 for the Sutter Creek WWTP and monthly status reports from January 2016 through July 2024 for ARSA facilities were provided by Sutter Creek and ARSA Staff. Population data was sourced from the California Department of Finance. Population and flow data is included as Attachment A for reference.

Current Flow Conditions

An analysis of the daily flow data indicates the Average Dry Weather Flow (ADWF) (average of flows from July through September) from 2017 through 2024 was typically 0.31 MGD.

Table 2: Sutter Creek WWTP ADWFs from 2017 Through 2024

Year	ADWF (MGD
2017	0.291
2018	0.305
2019	0.342
2020	0.269
2021	0.326
2022	0.327
2023	0.328
2024	0.318
Average	**0.313**

Throughout the months of December through April, Sutter Creek WWTP effluent flows can increase from infiltration and inflow (I/I) due to significant rainfall events. Precipitation data from the National Oceanic and Atmospheric Administration Sutter Hill CDF station was collected and compared to the Sutter Creek WWTP flow data. Data shown in Figure 2 indicates that once surface soils become saturated from initial rainfall, I/I increases significantly during subsequent rainfall events further into the periods of December through April.

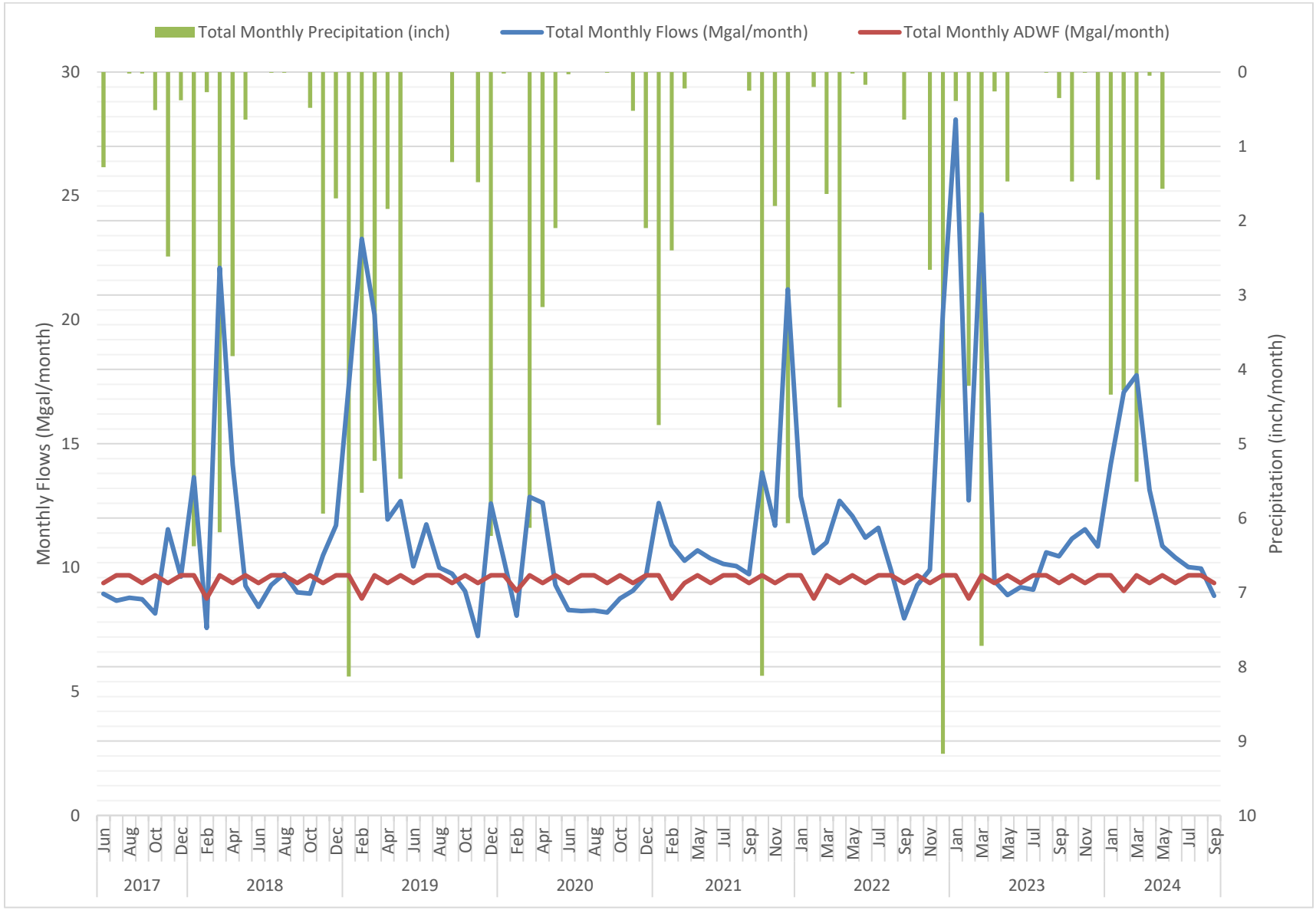


Figure 2: Sutter Creek WWTP Effluent Flows and Rainfall

To benchmark the Sutter Creek WWTP I/I, the historical wet years of 2016/17 and 2022/23 were compared to the estimated 1-in-100 Return Period (RP100) total wastewater flows. In 2016/17 water year (WY) there were 14.2 inches of precipitation from October through December before 15.1 inches of precipitation occurred in January when the peak flow of 94.8 Ac-ft also occurred. In the 2022/23 WY, there were 11.8 inches of precipitation in October through December and only 0.39" in Jan and the peak flow for the month of Jan resulted in 86.2 Ac-ft/month.

Due to the estimation of the I/I being a function of monthly precipitation, the first calibration step is adjustment of the monthly distribution of RP100 precipitation to match the 2016/17 WY rainfall patterns as described in the Climatological Data section. The climatological adjustment results in the I/I decreasing for November, March and May because the rainfall distribution for 2016/17 WY was much lower for those months. The calibrated I/I is also higher in October, December, January and April than compared to the average year because of their higher adjusted rainfall distribution.

Next, to bring the modeled RP100 flows within range of the 2016/17 and 2022/23 flows, a 25% increase in I/I from December through April was applied. This results in a January modeled peak flow of 87.4 Ac-ft which is within 8% of the 2016/17 WY peak flow. Due to the high variance and potential errors in estimating the precipitation vs I/I data, this 25% multiplier during the wet months can be considered a calibration of the modeled RP100 flows to be consistent with historical data.

As mentioned by Action Item A of the February 3, 2025, SWRCB review letter, the rainfall for January/February 2017 was much heavier than typical distribution and it may be more representative to distribute the rainfall and flow more evenly over the wet season. To evaluate the effects of rainfall distribution, RP100 rainfall and effluent flows will also be distributed based on average-year distribution and include the 25% I/I increase factor for December through April. The uncalibrated and calibrated RP100 flows and their comparative 2016/17 and 2022/23 Sutter Creek WWTP effluent flows are illustrated in Figure 3 for reference.

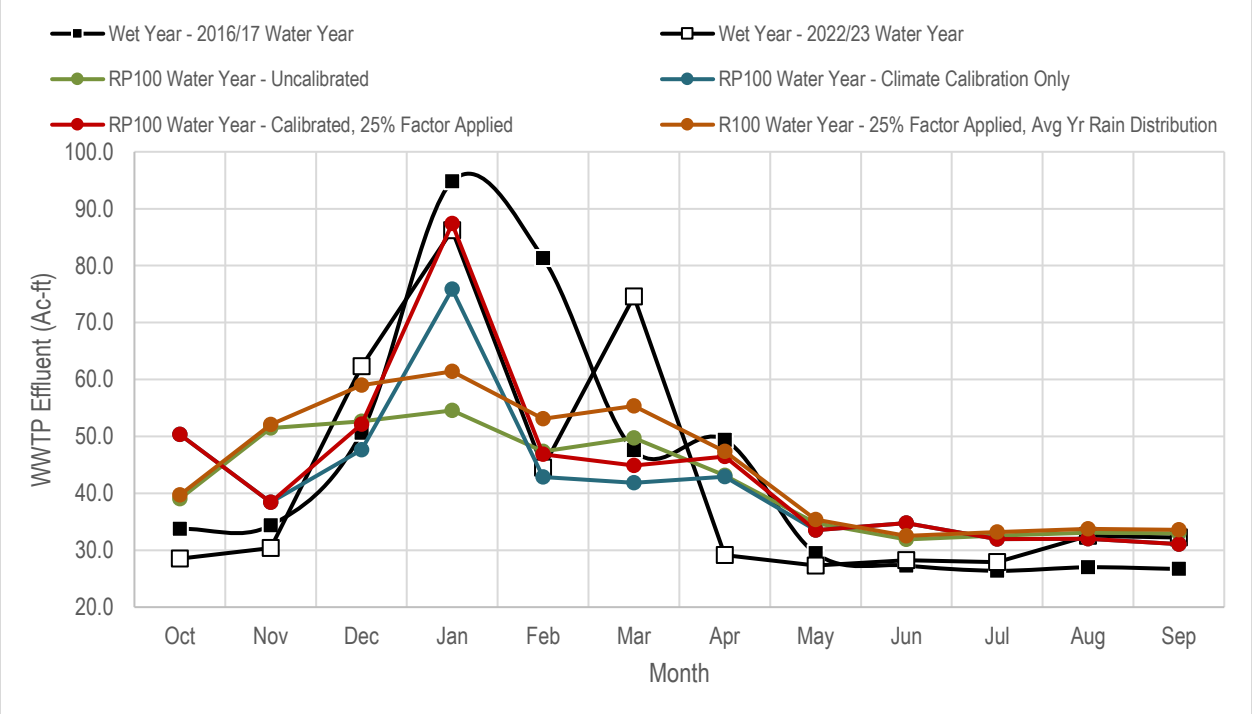


Figure 3: Calibration of Sutter Creek WWTP I/I for RP100 Conditions

Future Projected Flows & Population

In recent years the City of Sutter Creek has taken steps to reduce the I/I from the Sutter Creek WWTP collection system which included sealing of manholes within and adjacent to creek beds. Future I/I reduction efforts are expected to continue to be taken by the City of Sutter Creek, as documented in the Draft 2023 Sutter Creek WWTP I/I Analysis Update Technical Memorandum from Carollo Engineers provided as Attachment B for reference. This analysis involved flow monitoring of the collection system and modeling of the effects of I/I mitigation efforts on peak hour influent flows to the WWTP.

I/I mitigation efforts considered included manhole rehabilitation, sewer main rehabilitation or replacement and lateral rehabilitation that were recommended for sewer shed areas that have the highest I/I rates per foot of sewer pipe, which are 18% of the collection system by length. The Carollo Draft Technical Memorandum estimated the I/I reduction projects in the targeted 18% of the collection system may result in the peak hour influent flow to be reduced between 30% to 65%. However, the results of I/I reduction projects may have a more modest effect upon the peak month flows because, unlike during a peak hour event, over a peak month there may be enough time for infiltration to occur at a low rate that may still result an increased monthly influent volume.

In the prior water balance evaluation a peak month flow reduction of 5.4% was estimated for future flows, however the flow reduction has been removed due to the uncertainty of the effectiveness of the I/I reduction projects. To justify reducing the anticipated future flows (in future technical reports/analyses), the City may provide additional supporting information for the I/I reduction projects. The City may also complete additional flow monitoring after implementing the I/I reduction projects to substantiate effects on WWTP flows.

Population data provided by ARSA is sourced from the California Department of Finance population projections, which estimates in the next five years, by 2029, the population of Amador County will increase 2.17 percent.[1] The population of Sutter Creek, Martell, and Amador City are expected to increase proportionally to the projected Amador County population growth rate. The projected increases in population and flow are summarized in Table 3. ADWFs in 2029 are anticipated to reach 0.319 MGD, which is the basis of ADWF for Future Water Balance Results.

Table 3: Future Sutter Creek WWTP Flow Projections Based on Population Growth and I/I Reduction Projects

Year	ADWF (MGD)	Model Peak Month Flow (MGD)
2024	0.313	2.819
2029	0.319	2.687
Total Change	**+2.17%**	**-4.7%**

[1] CA Department of Finance Population Projections P-2A, November 2024: Projections | Department of Finance

Climatological Data

This section discusses the climatological data sources and their characteristics that were used for uncalibrated and calibrated water balance calculations. Statistical depth-duration-frequency data for the RP100 frequency at 1-Year duration are referenced from the California Department of Water Resources, Ione station (station number B00 4283 00).[2] Precipitation for the RP100 WY totals 41.11 inches based on the Ione station. Monthly precipitation patterns and totals are based on the Western Regional Climate Center Comparative Tables for Ione.[3] Average-year precipitation totals approximately 21.41 inches annually, resulting in a RP100 to average-year ratio of 1.92.

During initial water balance calculations, it became apparent that precipitation patterns during RP100 WYs did not follow the same trend as the monthly precipitation distribution during average years. The most recent historical data of a WY similar to the RP100 is the 2016/17 WY which saw 105% of the RP100 total precipitation (43.37 inches) with 15.1 inches occurring in January 2017 alone. To better fit the historically significant 2016/17 data, the RP100 precipitation pattern was adjusted to fit the monthly pattern of the 2016/17 WY, but with reduced amounts to match the statistical RP100 precipitation of 41.11 inches. The adjusted data is illustrated in Figure 4. The adjustment of the distribution of monthly precipitation for the RP100 WY is a calibration element, as mentioned in the Water Balance Results section.

A water balance using RP100 total precipitation distributed based on the average year ("Uncalibrated RP100") has also been included in the discussion of the Water Balance Results to address Required Action Item A from the SWRCB review letter.

[2] Ione Rainfall Depth Duration Frequency Table, California Department of Water Resources, November 2024: DDF Ione CA
[3] Western Regional Climate Center Precipitation Comparative Tables, November 2024: WRCC: Precipitation Comparative Table (dri.edu)

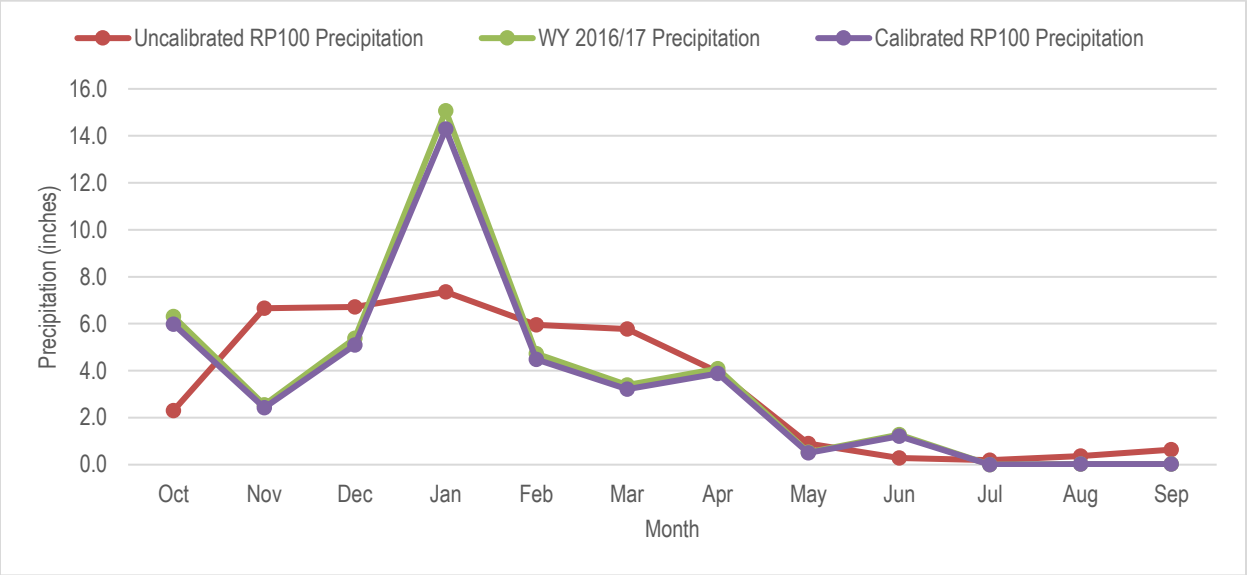


Figure 4: Calibration of RP100 Monthly Precipitation Patterns to Match 2016/17 Water Year

Pan evaporation data stations within the project vicinity are limited, therefore the Camp Pardee station was the closest selected station from the Western Regional Climate Center Pan Evaporation Comparative Tables (located within approximately 9 miles from Ione and 10 miles from Sutter Creek).[4] Pan evaporation from the Camp Pardee station totaled 57.88 inches per year, and a typical pan coefficient of 0.75 was applied to the monthly pan evaporation data to estimate the effective lake evaporation from Henderson and Preston Reservoirs and the Preston Forebay. Additionally, a weather correction factor reduction of 25% was applied to the months of November through March during the RP100 WY to account for reduction in evaporation during a wet year wet season.

Reference evapotranspiration (Eto) data were acquired from the California Irrigation Management Information System (CIMIS) for the Shenandoah station 81, which is within 6.5 miles of Sutter Creek, and 9.5 miles of Ione and located within the Sierra Foothills, CIMIS Zone 13. The Shenandoah station reported an annual Eto total of 49.4 inches. Crop coefficients (Kc) consistent with pasture grasses for CIMIS Zone 13 were applied to the reference Eto of CIMIS station 81 to calculate crop evapotranspiration (Etc) rates at the LAAs.[5] Wet year Kc values were used to calculate the RP100 WY Etc, and typical year Kc values were used to calculate average year Etc values. The difference between the monthly rainfall depth and the Etc resulted in the agronomic crop irrigation demand values. Rainfall efficiency is conservatively estimated at 100%, meaning all precipitation over the LAAs reaches the ground surface and is not evaporated to atmosphere. Finally, the irrigation efficiency is estimated at 85% which approximates a highly efficient irrigation system minimizing potential for overestimation of irrigation demands.

[4] Western Regional Climate Center Pan Evaporation Comparative Tables, November 2024: WRCC: Pan Evap Comparative Table (dri.edu)
[5] California Crop and Soil Evapotranspiration, ITRC Report 03-001, January 2003, www.itrc.org/reports/pdf/californiacrop.pdf

A summary of the climatological data used for the uncalibrated and calibrated water balance calculations is provided in Table 4: Estimated Climatological Parameters for Water Balance Calculations.

Table 4: Estimated Climatological Parameters for Water Balance Calculations

Climatological Parameters	Units	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	WY Total
Precipitation – Avg. Year	Inch	1.20	3.47	3.50	3.83	3.10	3.01	2.06	0.47	0.15	0.10	0.19	0.33	21.41
Precipitation – Uncalibrated RP100	Inch	2.30	6.66	6.72	7.35	5.95	5.78	3.96	0.90	0.29	0.19	0.36	0.63	41.11
Precipitation - Calibrated RP100	Inch	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02	41.11
Effective Lake Evap. – Avg. Year	Inch	2.83	1.05	0.54	0.54	0.84	1.74	3.14	5.28	7.07	8.38	7.13	4.88	43.41
Effective Lake Evap. – RP100	Inch	2.83	0.79	0.41	0.41	0.63	1.31	3.14	5.28	7.07	8.38	7.13	4.88	42.23
Reverence Evapotranspiration – CIMIS Station 81	Inch	3.60	1.75	1.21	1.19	1.83	3.10	4.42	5.67	6.88	7.56	7.02	5.17	49.40
Pasture Grass Agronomic Application – Avg. Year	Ft/Ac	0.05	0.00	0.00	0.00	0.00	0.00	0.09	0.46	0.63	0.69	0.64	0.41	2.96
Pasture Grass Agronomic Application – Uncalibrated RP100	Ft/Ac	0.09	0.00	0.00	0.00	0.00	0.00	0.06	0.54	0.69	0.72	0.65	0.45	3.21
Pasture Grass Agronomic Application – Calibrated RP100	Ft/Ac	0.00	0.00	0.00	0.00	0.00	0.17	0.07	0.58	0.60	0.74	0.69	0.51	3.36

Storage Facilities Characterization

This section describes the Henderson Reservoir, Preston Forebay and the Preston Reservoir, which are the ARSA system's effluent storage facilities as illustrated in the Figure 1 flow diagram. Detailed information including topographical survey data from November 7, 2008, for Henderson Reservoir, the stage-storage curve data (for Henderson and Preston Reservoirs) and dam embankment data sheets for the reservoirs are provided in Attachment C.

Henderson Reservoir

Henderson Reservoir is reported to have a variable usable storage volume with a minimum 2 feet of freeboard from spillway ranging from 27.5 ac-ft to 392.8 ac-ft, and surface area (8.5 ac to 29 ac) based on the reservoir being at a minimum pool (approximately 5 ft stage) at the end of the dry season and at a maximum at the end of the wet season. The reservoir is described as providing seasonal storage but never to be empty. Therefore, an initial volume in any scenario was assumed to be 27.5 ac-ft and the goal of the water balance is to reach 27.5 ac-ft at the end of the dry season.

Percolation and evaporation rates are functions of the water surface area of the reservoirs; however the percolation rates are uncertain and have not been recently studied. Reservoir surface area was back-calculated from the month-to-month accumulated storage volume in the reservoir and then multiplied by the evaporation or percolation rate. The reservoir also accumulates precipitation throughout the entire acreage of 29 acres. Sutter Creek is diverted around the reservoir but a catchment area of 4.3 acres is assumed to add runoff to the reservoir with a very conservative runoff coefficient of 1.

Since Henderson Reservoir is the first reservoir in the system, the operational strategy taken in the water balance is to retain as much effluent and precipitation runoff in the reservoir throughout the wet season until full, at which point effluent would be sent from Henderson to Preston Reservoir.

Preston Forebay

The disposal capacity of the Preston Forebay is calculated as if it were only a pass-through system as the water flows through the reservoir and it maintains a constant water surface elevation and surface area. The percolation rate is reportedly zero leaving only evaporation as a means of disposal. The surface area is 2 acres with no discernible runoff catchment area.

Preston Reservoir

Preston Reservoir is reported to have a variable usable storage volume with a minimum 2 feet of freeboard from spillway ranging from 0 ac-ft to 235 ac-ft, and surface area (0 ac to 18 ac) based on the reservoir often being empty at the end of the dry season. Therefore, the initial volume in water balance scenarios was assumed to be 0 ac-ft and the goal of the water balance is to reach 0 ac-ft storage at the end of the dry season.

Similar to the Henderson Reservoir calculations, percolation and evaporation rates are a function of the water surface area of the reservoir, however the percolation rates are assumed to be negligible due to a lack of percolation studies. Reservoir surface area was back-calculated from the month-to-month accumulated storage volume in the reservoir and then multiplied by the evaporation rate. The reservoir also accumulates precipitation throughout the entire acreage of 18 acres. Preston Reservoir also has a catchment area of 14 acres that adds runoff to the reservoir with a very conservative runoff coefficient of 1.

Since Preston Reservoir is the final reservoir in the system, the operational strategy taken in the water balance is to receive any excess effluent and precipitation runoff from upstream components when Henderson Reservoir does not have available storage capacity. As a result, Preston Reservoir quickly receives large effluent volumes later in the wet season but does not reach its maximum capacity in any evaluated scenario.

Disposal Facilities Characterization

This section describes the Bower's Ranch, Hoskin's Ranch and the COGC, which are the ARSA system's effluent disposal facilities as illustrated in the Figure 1 flow diagram. Disposal capacity of each site is evaluated based on the Climatological Data section. Although Noble Ranch is described, it is not currently in use as a LAA.

Bower's Ranch

ARSA has a 40 acre land application (flood irrigation) disposal easement upon Bower's Ranch. The disposal facility was recently expanded from 60% constructed (24 acres) to fully utilizing the 40 acre site. As Bower's Ranch is the first LAA in the ARSA system, it is often fully utilized to take almost all of the Sutter Creek WWTP effluent for the months of June through October. Due to the site topography, any tailwater from the site is received by Henderson Reservoir and there is little to no risk of tailwater migrating to other properties. The site primarily consists of pasture grass that is used for cattle grazing.

As identified by Required Action Item E from the SWRCB review letter dated February 3, 2025, the water balance must include only facilities operated in compliance with WDRs and applicable regulations. Due to various compliance issues that the SWRCB asserts to exist with the current operation of Bower's Ranch, it has been removed from utilization in the water balance.

Hoskin's Ranch

ARSA has a 60 ac LAA at Hoskin's Ranch that is used for spray land application. The disposal facility was recently expanded from only 40% constructed (24 acres) to 60% constructed (36 acres). This LAA is primarily used for pasture grasses and for grazing cattle. Application rates are carefully monitored by ARSA Staff to prevent any overspray and to maintain but not exceed agronomic application rates.

Noble Ranch

Sutter Creek has an existing land application disposal easement for this site for 1,300 ac-ft/yr. This facility is not yet constructed nor is the site in use. Therefore, this site was not characterized or evaluated for water balance calculations.

Castle Oaks Golf Course

Disinfected secondary effluent from the ARSA system is exported from Preston Reservoir to the COWRF for tertiary treatment and subsequent water recycling at the COGC. The COGC includes a total irrigable acreage of 130 acres and contains nine lakes with only one lake (Lake I) totaling 3.1 acres that is typically filled with recycled water during the irrigation season. Demands to be met by ARSA's effluent include both the COGC irrigation demands and backwash flows at the COWRF which are necessary to maintain the COWRF system operation. The operation of the COWRF is detailed in Attachment D. COWRF influent flows total approximately 423.4 Ac-ft during

the RP100 WY and 481.7 Ac-ft during the average year. The capacity evaluation of the COWRF and COGC was completed by West Yost Engineers, and their 2024 COGC Recycled Water Demands Technical Memorandum is included as Attachment E for further reference. Additionally, a cover letter has been prepared by West Yost in response to the SWRCB's February 3, 2025, review letter and is included in Attachment D.

Water Balance Results

This section discusses water balance calculations that were completed for uncalibrated current flow conditions, calibrated current flow conditions, and calibrated future flow conditions. All water balance calculations consist of evaluation of system operations during a RP100 WY followed by an average year WY.

As discussed in the WWTP Flow & Population Data section, calibration of the flow data included increasing the I/I volume by 25% from December through April to be consistent with 2016/17 and 2022/23 WY flow data. Calibration of precipitation in the Climatological Data involved adjusting the monthly distribution of RP100 annual precipitation based on 2016/17 WY precipitation data. Another set of scenarios were also evaluated with RP100 annual precipitation distributed over more average-year conditions rather than the 2016/17 WY. The calibrations result in increased effluent reservoir storage volumes and increased flow I/I flow volumes. Calibrated future flow conditions account for the same I/I and climate calibrations and 2.17% population growth. As discussed in the Future Projected Flows & Population section, no I/I flow reduction has been included although the City of Sutter Creek will continue to pursue the I/I reduction projects and may provide additional information in the future to more precisely evaluate the flow effects.

The strategy of the water balance calculations incorporates the following logic:

1) Fully meet all irrigation demands at the LAAs (Hoskin's Ranch, and COGC) utilizing Sutter Creek WWTP effluent to the maximum agronomic rate for each given month.

2) Any shortfall of irrigation demands (which is also an excess of LAA disposal capacity) would be made up by water supplies other than the Sutter Creek WWTP effluent. It is assumed water supplying unmet irrigation demands are conveyed through the ARSA system, and are accounted for in monthly inflows and storage volumes. These are figurative estimates for water balance calculation purposes, and no specific water supply is identified to meet these demands.

3) Henderson Reservoir is assumed to maintain a minimum dead pool of 27.5 Ac-ft at 5 ft stage, whereas Preston Reservoir is allowed to reach 0 Ac-ft storage (empty).

4) Any excess of Sutter Creek WWTP effluent or precipitation / runoff not used to meet irrigation demands is stored in Henderson Reservoir first and then, once it reaches full capacity of 392.8 Ac-ft at 2 ft freeboard, any excess volume is sent to Preston Reservoir. Runoff and precipitation within Henderson Reservoir or its catchment area is retained in it. All other runoff and precipitation in the system in excess of monthly irrigation demand is retained in Preston Reservoir. The resulting final storage volumes for the month are then carried over as the beginning storage volume for the following month.

Water balance calculations completed for all scenarios indicate the ARSA system in combination with the COWRF and COGC can adequately contain and dispose of all Sutter Creek WWTP effluent, precipitation, and runoff for the RP100 WY without violation of storage capacity or agronomic application rates. When RP100 WY rainfall occurs on an average year distribution, the disposal capacity is decreased by approximately 0.4 Ac-ft during the irrigation season due to higher precipitation during the irrigation season which decreases the agronomic irrigation demands. However, the maximum storage required during the WY is decreased by 5.9 Ac-ft if the RP100 rainfall is distributed like an average WY.

Unlike the previous December 2024 water balance calculation, these results indicate there is only 12.5 to 13.0 Ac-ft of surplus disposal capacity (unmet irrigation demands) in the disposal system. Capacity for additional flows from other dischargers appears to be limited based on these results.

These water balance calculations do not include discharges from MCSP nor any future flows from City of Ione arising from approved housing developments exceeding existing secondary plant capacity. The remaining capacity of the COGC to accommodate flows from either of these sources is limited. The MCSP would need to utilize their sprayfields as a component of their disposal strategy, and City of Ione would need to develop additional disposal areas to address city growth. The COWRF accepting discharges from both MCSP and the City of Ione in the future is likely infeasible without large-scale expansion of the COWRF, and expansion of the COGC or development of additional LAAs.

The overall water balance results for each scenario are summarized in Table 5. Detailed water balance calculations are provided in Attachment F for further reference.

Table 5: Summary of Water Balance Calculation Results

Row Number	Row Calculations	Parameters	Water Balance Scenario Results									
			Scenario 1		Scenario 2a		Scenario 2b		Scenario 3a		Scenario 3b	
			Uncalibrated Current Flows		Calibrated Current Flows Avg-WY Rain Distribution		Calibrated Current Flows 2016/17-WY Rain Distribution		Calibrated Future Flows Avg-WY Rain Distribution		Calibrated Future Flows 2016/17-WY Rain Distribution	
		Climate Conditions	RP100 (Year 1)	Avg Year (Year 2)	RP100 (Year 1)	Avg Year (Year 2)	RP100 (Year 1)	Avg Year (Year 2)	RP100 (Year 1)	Avg Year (Year 2)	RP100 (Year 1)	Avg Year (Year 2)
Inflow Results												
A	--	WWTP Effluent (Ac-ft)	503.2	442.7	528.9	457.4	529.8	457.4	536.5	465.0	537.4	465.0
B	--	Precipitation and Runoff (Ac-ft)	230.6	120.1	230.6	120.1	230.6	120.1	230.6	120.1	230.6	120.1
Storage Facilities Results												
C	--	Henderson Reservoir Max Storage Volume (Ac-ft)	392.8	283.6	392.8	296.1	392.8	296.1	392.8	300.4	392.8	300.4
D	--	Preston Reservoir Max Storage Volume (Ac-ft)	139.9	135.1	165.0	141.0	170.9	140.5	169.3	147.3	175.2	154.4
E	--	Henderson Reservoir Evaporation (Ac-ft)	73.1	57.4	73.2	59.3	73.6	59.3	73.5	60.2	73.8	60.2
F	--	Preston Forebay Evaporation (Ac-ft)	6.6	6.4	6.6	7.2	6.6	7.2	6.6	7.2	6.6	7.2
G	--	Preston Reservoir Evaporation (Ac-ft)	40.2	36.8	44.3	43.3	45.4	43.2	45.0	45.0	46.1	46.9
Disposal Results												
H	--	Bower's Ranch Irrigation Demands (Ac-ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I	--	Hoskin's Ranch Irrigation Demands (Ac-ft)	115.5	106.7	115.5	106.7	115.5	106.7	115.5	106.7	115.5	106.7
J	--	COWRF & COGC Irrigation Demands (Ac-ft)	423.4	481.7	423.4	481.7	423.4	481.7	423.4	481.7	423.4	481.7
K	--	Unmet Irrigation Demands (Ac-ft)	0.0	51.1	0.0	24.2	0.0	24.7	0.0	12.5	0.0	13.0
Overall Calculation Results												
L	(A+B)	Total Inflows Excluding Unmet Irrigation Demands (Ac-ft)	733.9	562.8	759.5	577.5	760.4	577.5	767.1	585.1	768.0	585.1
M	(A+B+K)	Total Inflows Including Unmet Irrigation Demands (Ac-ft)	733.9	613.9	759.5	601.8	760.4	602.2	767.1	597.7	768.0	598.1
N	(E+F+G+ I+J)	Total Outflows (Ac-ft)	658.8	689.0	663.1	698.2	664.5	698.1	664.0	700.8	665.4	700.7
O	(N – L), or K	Unmet Irrigation Demands (Ac-ft)	0.0	51.1	0.0	24.2	0.0	24.7	0.0	12.5	0.0	13.0
P	(C+D), or as shown (1)	Maximum Storage Volume Required (Ac-ft)	532.7	402.6	557.8	437.1	563.7	436.6	562.1	447.7	568.0	447.2
Q	(627.8 Ac-ft – P)	Unutilized Storage Capacity at Peak Storage (Ac-ft)	95.1	223.2	70.0	190.7	64.1	191.2	65.7	180.1	59.8	180.6

(1) The peak month storage volumes for Henderson and Preston Reservoirs may be in different months than the overall system's peak storage month, resulting in minor discrepancies of 2.4 to 2.9 Ac-ft between Row N values and (D+E) calculations. Where discrepancies occur, Row N displays overall peak storage month volumes from water balance calculations.

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT A

Amador Regional Sanitation Agency
2024 Individual Water Balance Update

Sutter Creek WWTP Population and Flow Data

THIS PAGE INTENTIONALLY LEFT BLANK

CA Department of Finance
Population Projection by County

Report P-2A: Total Estimated and Projected Population for California and Counties: July 1, 2020 to 2070

		Estimates				Projections						
FIPS	**Geography**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
6000	CALIFORNIA	39,541,722	39,246,702	39,146,273	39,109,070	39,119,734	39,155,670	39,243,572	39,340,965	39,451,269	39,568,558	39,694,960
6001	ALAMEDA	1,680,487	1,657,465	1,649,975	1,656,037	1,654,334	1,654,555	1,660,187	1,666,430	1,673,310	1,680,926	1,689,225
6003	ALPINE	1,202	1,180	1,175	1,165	1,163	1,163	1,165	1,170	1,174	1,172	1,176
6005	AMADOR	40,440	40,262	40,105	40,122	**40,198**	40,298	40,429	40,615	40,828	**41,070**	41,327

ARSA Facilities Monthly Status Reports - Provided by ARSA Staff

Date	Month	Sutter Creek WWTP (mg)	Sutter Creek WWTP (ac ft)	Bowers Irrigation (mg)	Bowers Volume irrigated (ac ft)	Henderson Freeboard	Volume in Henderson (af)	Capacity Remaining in Henderson (af)	Henderson Outflow (mg)	Henderson outflow (ac ft)	Hoskins Irrigation (mg)	Hoskins Volume irrigated (ac ft)	Mule Creek Inflow (mg)	Mule Creek Inflow (ac ft)	Preston Freeboard	Volume in Preston (af)	Capacity Remaining in Preston (ac ft)	Outflow to Ione (mg)	Outflow to Ione (ac ft)	TOTAL Ac Ft of Effluent in the system	TOTAL Remaining Capacity for Winter (ac ft)	TOTAL USED FOR IRRIGATION (ac ft)
2016																						
1/31/2016	Jan	19.0	58.3	0.0	0.0	12'1"	155.8	237.2	12.4	38.1	0.0	0.0	0.0	0.0	11'4"	94.7	140.3	3.9	12.0	250.47	377.5	12.0
2/29/2016	Feb	10.7	32.8	0.0	0.0	10'9"	180.9	212.1	17.8	54.6	0.0	0.0	0.0	0.0	8'7"	128.4	106.6	4.0	12.3	309.27	318.7	12.3
3/31/2016	Mar	17.7	54.3	0.0	0.0	8'7"	225.7	167.3	15.1	46.3	0.0	0.0	0.0	0.0	5'7"	171.0	64.0	3.4	10.4	396.64	231.4	10.4
4/30/2016	Apr	10.7	32.8	0.0	0.0	8'5"	229.3	163.7	13.7	42.0	0.0	0.0	0.0	0.0	5'7"	171.0	64.0	9.1	27.9	400.29	227.7	27.9
5/31/2016	May	9.3	28.5	0.0	0.0	9'9"	201.0	192.0	23.0	70.6	0.0	0.0	0.0	0.0	7'7"	141.9	93.1	27.3	83.8	342.85	285.2	83.8
6/30/2016	Jun	8.3	25.5	2.9	8.9	14'4"	117.6	275.4	32.2	98.8	2.2	6.8	0.0	0.0	9'8"	114.5	120.5	36.0	110.5	232.06	395.9	126.1
7/31/2016	Jul	9.0	27.6	9.0	27.6	20'1"	43.8	349.2	25.4	77.9	5.3	16.3	35.9	110.2	7'6"	143.1	91.9	40.9	125.5	186.84	441.2	169.4
8/31/2016	Aug	9.2	28.2	9.2	28.2	22'3"	24.9	368.1	8.7	26.7	3.2	9.8	32.9	101.0	8'3"	132.8	102.2	44.1	135.3	157.68	470.3	173.4
9/30/2016	Sep	8.3	25.5	6.3	19.3	25'8"	5.0	388.0	10.8	33.1	2.2	6.8	10.3	31.6	13'2"	75.1	159.9	37.5	115.1	80.06	547.9	141.2
10/31/2016	Oct	11.0	33.8	2.5	7.7	23'2"	18.4	374.6	5.9	18.1	0.0	0.0	4.0	12.3	14'4"	63.8	171.2	6.4	19.6	82.18	545.8	27.3
11/30/2016	Nov	11.2	34.4	0.0	0.0	20'8"	38.2	354.8	5.3	16.3	0	0.0	0.0	0.0	14'2"	65.4	169.6	0.0	0.0	103.6	524.4	0.0
12/31/2016	Dec	16.5	50.6	0.0	0.0	16'8"	83.5	309.5	10.4	31.9	0.0	0.0	0.0	0.0	11'6"	92.8	142.2	0.0	0.0	176.32	451.7	0.0
Total:		**140.9**	**432.4**	**29.9**	**91.8**				**180.7**	**554.5**	**12.9**	**39.6**	**83.1**	**255.0**				**212.6**	**652.4**			**783.8**
2017																						
1/31/2017	Jan	30.9	94.8	0.0	0.0	9'3"	211.4	181.6	10.7	32.8	0.0	0.0	0.0	0.0	6'8"	154.9	80.1	245.8	0.0	366.25	261.8	0.0
2/28/2017	Feb	26.5	81.3	0.0	0.0	4'1"	334.2	58.8	10.2	31.3	0.0	0.0	0.0	0.0	4'4"	190.6	44.4	136.3	0.0	524.72	103.3	0.0
3/31/2017	Mar	15.5	47.6	0.0	0.0	1'5"	408.4	43.6	14.1	43.3	0.0	0.0	0.0	0.0	1'5"	240.4	29.6	90.8	4.7	648.74	73.3	4.7
4/30/2017	Apr	16.1	49.4	0.0	0.0	1'6"	405.9	46.1	34.9	107.1	0.0	0.0	0.0	0.0	1'8"	235.9	34.1	104.6	18.2	641.82	80.2	18.2
5/31/2017	May	9.6	29.5	0.0	0.0	3'7"	347.5	45.5	38.0	116.6	2.7	8.3	0.0	0.0	1'2"	244.9	25.1	77.0	83.9	592.42	70.6	92.2
6/30/2017	Jun	8.9	27.3	8.0	24.6	6'7"	271.3	121.7	36.0	110.5	8.8	27.0	0.0	0.0	3'2"	209.8	25.2	77.3	111.2	481.07	146.9	162.8
7/31/2017	Jul	8.6	26.4	8.7	26.7	11'	176.1	216.9	35.0	107.4	10.7	32.8	0.0	0.0	6'11"	151.3	83.7	256.9	128.3	327.34	300.7	187.8
8/31/2017	Aug	8.8	27.0	8.7	26.7	13'9"	127.0	266.0	20.6	63.2	8.6	26.4	0.0	0.0	7'6"	143.1	91.9	282.0	37.3	270.02	358.0	90.4
9/30/2017	Sep	8.7	26.7	8.7	26.7	16'2"	90.3	302.7	18.3	56.2	11.9	36.5	0.0	0.0	6'10	152.5	82.5	253.2	0.0	242.81	385.2	63.2
10/31/2017	Oct	8.0	24.6	8.1	24.9	17'4"	74.8	318.2	13.8	42.4	9.4	28.8	0.0	0.0	9'7"	115.5	119.5	366.7	52.6	190.33	437.7	106.3
11/30/2017	Nov	11.5	35.3	0.9	2.8	14'10"	121.6	271.4	9.7	29.8	7.4	22.7	0.0	0.0	11'1"	97.5	137.5	422.0	83.5	219.1	408.9	109.0
12/31/2017	Dec	9.5	29.2	0.0	0.0	12'9"	143.9	249.1		0.0	6.3	19.3	0.0	0.0	10'6"	104.4	130.6	400.8	0.0	248.26	379.7	19.3
Total:		**162.6**	**499.0**	**43.1**	**132.3**				**241.3**	**740.5**	**65.8**	**201.9**	**0.0**	**0.0**				**2713.5**	**519.7**			**853.9**
2018																						
1/31/2018	Jan	13.6	41.7	0	0.0	9'7"	206.1	186.9	8.4	25.8	0	0.0	0	0.0	8'8"	128.4	106.6	0.0	0.0	334.5	293.5	0.0
2/28/2018	Feb	8.7	26.7	0	0.0	7'10"	240.4	152.6	5.1	15.7	0	0.0	0	0.0	8'3"	133.9	101.1	0.0	0.0	374.3	253.7	0.0
3/31/2018	Mar	22.1	67.8	0	0.0	4'1"	332.9	60.1	8.00	24.6	0	0.0	0	0.0	5'11"	164.1	70.9	0.0	0.0	497	131.0	0.0
4/30/2018	Apr	14.1	43.3	0	0.0	3'9"	342.6	50.4	23.8	73.0	6.0	18.4	0	0.0	3'3"	200.9	34.1	1.2	3.7	543.5	84.5	22.1
5/31/2018	May	9.3	28.5	0	0.0	3'10"	340.6	52.4	16.9	51.9	9.9	30.4	0	0.0	8'2"	133.9	101.1	27.7	85.0	474.5	153.5	115.4
6/30/2018	Jun	8.4	25.8	5.3	16.3	5'8"	295.1	97.9	21.2	65.1	9.6	29.5	0	0.0	15'1"	59.6	175.4	37.7	115.7	354.7	273.3	161.4
7/31/2018	Jul	9.3	28.5	9.2	28.2	10'0"	193.7	199.3	35.4	108.6	9.5	29.2	0	0.0	22'0"	17.0	218.0	42.9	131.7	210.7	417.3	189.0
8/31/2018	Aug	9.7	29.8	9.7	29.8	11'7"	163.6	229.4	12	36.8	5.8	17.8	0	0.0	20'9"	22.0	213.0	0.0	0.0	185.6	442.4	47.6
9/30/2018	Sep	9	27.6	9	27.6	13'11"	123.9	269.1	16	49.1	10.7	32.8	0	0.0	19'3"	36.2	198.8	0.0	0.0	160.1	467.9	60.5
10/31/2018	Oct	8.9	27.3	8.9	27.3	15'2"	106.0	287.0	16.2	49.7	10.0	30.7	0	0.0	11'	45.6	189.4	0.0	0.0	151.6	476.4	58.0
11/30/2018	Nov	10.5	32.2	5.8	17.8	15'1"	107.2	285.8	14.9	45.7	5.6	17.2	0	0.0	14'10"	60.9	174.1	0.0	0.0	168.1	459.9	35.0
12/31/2018	Dec	11.7	35.9	0	0.0	13'6"	131.2	261.8	15.2	46.6	0	0.0	0	0.0	11'2"	94.9	140.1	0.0	0.0	226.1	401.9	0.0
Total:		**135.3**	**415.2**	**47.9**	**147.0**				**193.1**	**592.6**	**67.1**	**205.9**	**0.0**	**0.0**				**109.5**	**336.0**			**689.0**
2019																						
1/31/2019	Jan	17.4	53.4	0	0.0	10'5"	185.4	207.6	36.7	112.6	0	0.0	0	0.0	8'3"	132.8	102.2	0	0.0	318.2	309.8	0.0
2/28/2019	Feb	23.3	71.5	0	0.0	6'6"	271.9	121.1	4.8	14.7	0	0.0	0	0.0	6'6"	157.3	77.7	0	0.0	429.22	198.8	0.0
3/31/2019	Mar	20.2	62.0	0	0.0	3'6"	350.4	42.6	7.6	23.3	0	0.0	0	0.0	4'8"	185.2	49.8	0	0.0	535.64	92.4	0.0
4/30/2019	Apr	11.9	36.5	0	0.0	2'9"	271.4	121.6	15.8	48.5	4.2	12.9	0	0.0	3'2"	209.8	25.2	2	6.1	481.19	146.8	19.0
5/31/2019	May	12.7	39.0	0	0.0	3'6"	350.4	42.6	24.0	73.7	5.8	17.8	0	0.0	4'8"	185.2	49.8	20.9	64.1	535.64	92.4	81.9
6/30/2019	Jun	10	30.7	5.2	16.0	5'10"	288.5	104.5	26.5	81.3	12.3	37.7	0	0.0	7'3"	146.6	88.4	29	89.0	435.06	192.9	142.7
7/31/2019	Jul	7.6	23.3	9.9	30.4	8'11"	217.9	175.1	22.9	70.3	13.8	42.4	0	0.0	14'7"	61.5	173.5	40.6	124.6	279.44	348.6	197.3
8/31/2019	Aug	10	30.7	10	30.7	10'7"	184.2	208.8	13.4	41.1	11.8	36.2	0	0.0	17'2"	40.3	194.7	6.2	19.0	224.52	403.5	85.9
9/30/2019	Sep	9.6	29.5	9.4	28.8	12'6"	148.3	244.7	13.7	42.0	10.4	31.9	0	0.0	17'1"	40.9	194.1	0	0.0	189.23	438.8	60.8
10/31/2019	Oct	9	27.6	9	27.6	14'3"	119.6	273.4		0.0	12.2	37.4	0	0.0	16'5"	46.0	189.0	0	0.0	165.61	462.4	65.1
11/30/2019	Nov	7.2	22.1	5.1	15.7	14'1"	121.6	271.4	9.3	28.5	5.7	17.5	0	0.0	14'11"	58.5	176.5	0	0.0	180.14	447.9	33.1
12/31/2019	Dec	12.6	38.7	0	0.0	12'3"	152.2	240.8	0	0.0	0	0.0	0	0.0	13'2"	75.1	159.9	0	0.0	227.3	400.7	0.0
Total:		**151.5**	**464.9**	**48.6**	**149.1**				**174.7**	**536.1**	**76.2**	**233.8**	**0.0**	**0.0**				**98.7**	**302.9**			**685.9**

ARSA Facilities Monthly Status Reports - Provided by ARSA Staff

Date		Sutter Creek WWTP Flow (mg)	Sutter Creek WWTP (ac ft)	Bowers Irrigation (mg)	Bowers Volume irrigated (ac ft)	Henderson Freeboard	Volume in Henderson (af)	Capacity Remaining in Henderson	Henderson Outflow (mg)	Henderson outflow (ac ft)	Hoskins Irrigation (mg)	Hoskins Volume irrigated (ac ft)	Mule Creek Inflow (mg)	Mule Creek Inflow (ac ft)	Preston Freeboard	Volume in Preston (af)	Capacity Remaining in Preston (ac ft)	Outflow to Ione (mg)	Volume sent to Ione (ac ft)	TOTAL Ac Ft of Effluent in the system	TOTAL Remaining Capacity for Winter (ac ft)	TOTAL USED FOR IRRIGATIO N (ac ft)
2020																						
1/31/2020	Jan	10.3	31.6	0	0.0	11'2"	172.9	220.1	8.5	26.1	0	0.0	0	0.0	12'2"	85.5	149.5	0	0.0	258.4	369.6	0.0
2/29/2020.	Feb	8	24.6	0	0.0	10'7"	184.2	208.8	3.5	10.7	0	0.0	0	0.0	11'7"	91.9	143.1	0	0.0	276.08	351.9	0.0
3/31/2020	Mar	12.85	39.4	0	0.0	8'11"	214.9	178.1	7.4	22.7	0	0.0	0	0.0	10'1"	109.4	125.6	0	0.0	324.26	303.7	0.0
4/30/2020	Apr	12.61	38.7	0	0.0	7'8"	246.1	146.9	6.3	19.3	0	0.0	0	0.0	10'8"	102.4	132.6	8.84	27.1	348.5	279.5	27.1
5/31/2020	May	8.2	25.2	1.4	4.3	8'6"	227.5	165.5	4.2	12.9	7.5	23.0	0	0.0	13'11"	67.8	167.2	23.9	73.3	295.3	332.7	100.7
6/30/2020	Jun	8.3	25.5	8.3	25.5	11'6"	166.5	226.5	6.3	19.3	5.7	17.5	0	0.0	19'6"	25.1	209.9	28.9	88.7	191.6	436.4	131.7
7/31/2020	Jul	8.3	25.5	8.3	25.5	14'11"	108.5	284.5	19.2	58.9	3.9	12.0	0	0.0	15'10"	50.7	184.3	0	0.0	159.2	468.8	37.4
8/31/2020	Aug	8.3	25.5	8.3	25.5	17'11"	67.6	325.4	13.3	40.8	2.3	7.1	0	0.0	14'0"	67.0	168.0	0	0.0	134.56	493.4	32.5
9/30/2020	Sep	8.2	25.2	8.2	25.2	19'2"	53.3	339.7	8.4	25.8	2.3	7.1	14	43.0	13'0"	76.8	158.2	13.9	42.7	130.09	497.9	74.9
10/31/2020	Oct	8.8	27.0	8.8	27.0	21'2"	33.7	359.3	11.9	36.5	2.4	7.4	0	0.0	17'9"	36.2	198.8	23.4	71.8	69.86	558.1	106.2
11/30/2020	Nov	9.1	27.9	3.5	10.7	22'	26.8	366.2	7.62	23.4	2.3	7.1	0	0.0	18'8"	30.1	204.9	30.7	94.2	56.89	571.1	112.0
12/31/2020	Dec	9.9	30.4	0	0.0	21'0"	35.9	357.1	8.8	27.0	0	0.0	0	0.0	16'8"	44.1	190.9	0	0.0	79.97	548.0	0.0
Total:		**112.9**	**346.4**	**46.8**	**143.6**				**105.4**	**323.4**	**26.4**	**81.0**	**14.0**	**43.0**				**129.6**	**397.9**			**622.5**
2021																						
1/31/2021	Jan	12.6	38.7	0	0.0	17'6"	72.7	320.3	3.9	12.0	0	0.0	0	0.0	15'3"	55.6	179.4	0	0.0	128.3	499.7	0.0
2/28/2021	Feb	10.9	33.5	0	0.0	16'1"	91.5	301.5	2.6	8.0	0	0.0	0	0.0	14'9"	60.0	175.0	0	0.0	151.49	476.5	0.0
3/31/2021	Mar	11.9	36.5	0	0.0	13'1"	138.2	254.8	3.5	10.7	0	0.0	0	0.0	14'7"	61.5	173.5	0	0.0	199.65	428.4	0.0
4/30/2021	Apr	10.2	31.3	0	0.0	14'7"	113.7	279.3		0.0	0	0.0	0	0.0	16'11"	42.2	192.8	20.7	63.5	155.85	472.2	63.5
5/31/2021	May	10.7	32.8	6.6	20.3	19'10"	46.3	346.7	27.2	83.5	0	0.0	0	0.0	21'4"	15.7	219.3	36.2	111.1	61.97	566.0	131.3
6/30/2021	Jun	10.4	31.9	7.4	22.7	21'5"	31.6	361.4	8.7	26.7	0	0.0	0	0.0	20'10"	18.0	217.0	1.9	5.8	49.6	578.4	28.5
7/31/2021	Jul	10.2	31.3	7.1	21.8	22'1"	26.2	366.8	3.9	12.0	0.2	0.6	0	0.0	21'0'	17.2	217.8	0	0.0	43.39	584.6	22.4
8/31/2021	Aug	10.1	31.0	6.9	21.2	22'6"	23.0	370.0	5.6	17.2	2	6.1	0	0.0	21'6"	15.0	220.0	0	0.0	37.96	590.0	27.3
9/30/2021	Sep	9.7	29.8	5.2	16.0	23'8"	15.2	377.8	6.9	21.2	1.7	5.2	0	0.0	21'0"	17.2	217.8	0	0.0	32.38	595.6	21.2
10/31/2021	Oct	13.8	42.4	3.6	11.0	20'5"	40.6	352.4	5	15.3	0	0.0	0	0.0	19'1"	27.5	207.5	0	0.0	68.06	559.9	11.0
11/30/2021	Nov	11.7	35.9	0	0.0	18'11"	56.0	337.0	7.9	24.2	0	0.0	0	0.0	18'1"	33.9	201.1	0	0.0	89.89	538.1	0.0
12/31/2021	Dec	21.2	65.1	0	0.0	14'2"	120.2	272.8		0.0	0	0.0	0	0.0	14'8"	60.8	174.2	0	0.0	180.98	447.0	0.0
Total:		**143.4**	**440.1**	**36.8**	**112.9**				**75.2**	**230.8**	**3.9**	**12.0**	**0.0**	**0.0**				**58.8**	**180.5**			**305.4**
2022																						
1/31/2022	Jan	12.9	39.6	0	0.0	12'9"	142.9	250.1	6.2	19.0	0	0.0	0	0.0	13'9"	69.4	165.6	0	0.0	212.25	415.8	0.0
2/28/2022	Feb	10.6	32.5	0	0.0	12'0"	157.3	235.7	5.5	16.9	0	0.0	0	0.0	12'10"	78.5	156.5	0	0.0	235.79	392.2	0.0
3/31/2022	Mar	11	33.8	0	0.0	11'8"	163.4	229.6	2.7	8.3	0	0.0	0	0.0	12'1"	86.4	148.6	1.6	4.9	249.83	378.2	4.9
4/30/2022	Apr	12.7	39.0	0	0.0	11'3"	171.3	221.7	9.1	27.9	0	0.0	0	0	10'1"	109.4	125.6	0.1	0.3	280.62	347.4	0.3
5/31/2022	May	12.1	37.1	0	0.0	12'2"	154.3	238.7	11.7	35.9	0	0.0	0	0	9'0"	122.9	112.1	1.7	5.2	277.21	350.8	5.2
6/30/2022	Jun	11.2	34.4	10.1	31.0	14'3"	118.9	274.1	11.2	34.4	7.2	22.1	0	0	8'11"	124.0	111.0	5	15.3	242.9	385.1	68.4
7/31/2022	Jul	11.6	35.6	11.6	35.6	16'3"	89.2	303.8	9.4	28.8	8.1	24.9	0	0	9'3"	119.7	115.3	0	0.0	208.9	419.1	60.5
8/31/2022	Aug	9.8	30.1	9.8	30.1	18'1"	65.6	327.4	8.4	25.8	7.7	23.6	0	0	9'8"	114.5	120.5	0.5	1.5	180.1	447.9	55.2
9/30/2022	Sep	8.5	26.1	7.6	23.3	9'8"	48.9	344.1	8.6	26.4	6.5	19.9	0	0	9'9"	113.4	121.6	0.9	2.8	162.3	465.7	46.0
10/31/2022	Oct	9.3	28.5	9.3	28.5	22'0"	26.8	366.2	9.8	30.1	8.7	26.7	0	0	11'8"	91.0	144.0	4.5	13.8	117.8	510.2	69.0
11/30/2022	Nov	9.9	30.4	0	0.0	19'7"	48.8	344.2	3.3	10.1	0	0.0	0	0	15'2"	56.6	178.4	11.3	34.7	105.4	522.6	34.7
12/31/2022	Dec	20.3	62.3	0	0.0	13'10"	125.6	267.4	2.8	8.6	0	0.0	0	0	13'0"	76.8	158.2	0	0.0	202.41	425.6	0.0
Total:		**139.9**	**429.3**	**48.4**	**148.5**				**88.7**	**272.2**	**38.2**	**117.2**	**0.0**	**0.0**				**25.6**	**78.6**			**344.3**
2023																						
1/31/2023	Jan	28.1	86.2	0.0	0.0	7'6"	249.9	143.1	3.0	9.2	0.0	0.0	0.0	0.0	9'8"	114.5	120.5	0.0	0.0	364.4	263.6	0.0
2/28/2023	Feb	14.5	44.5	0.0	0.0	5'7"	295.7	97.3		0.0	0.0	0.0	0.0	0.0	9'4"	118.7	116.3	0.0	0.0	414.4	213.6	0.0
3/31/2023	Mar	24.3	74.6	0.0	0.0	3'9"	343.0	50.0	18.3	56.2	0.0	0.0	0.0	0.0	4'10"		235.0	0.0	0.0	343.0	285.0	0.0
4/30/2023	Apr	9.5	29.2	0.0	0.0	3'2"	358.8	34.2	8.2	25.2	6.3	19.3	0.0	0.0	5'0"	180.0	55.0	2.1	6.4	538.8	89.2	25.8
5/31/2023	May	8.9	27.3	0.0	0.0	3'8"	345.3	47.7	10.9	33.5	10.0	30.7	0.0	0.0	8'2"	133.9	101.1	18.8	57.7	479.2	148.8	88.4
6/30/2023	Jun	9.2	28.2	5.7	17.5	6'2"	281.3	111.7	21.5	66.0	9.7	29.8	0.0	0.0	11'1"	97.5	137.5	25.8	79.2	378.8	249.2	126.4
7/31/2023	Jul	9.1	27.9	9.1	27.9	11'4"	169.7	223.3	31.0	95.1	2.2	6.8	0.0	0.0	11'5"	93.8	141.2	29.5	90.5	263.5	364.5	125.2
8/31/2023	Aug	10.6	32.5	10.6	32.5	17'11"	67.6	325.4	29.6	90.8	4.9	15.0	0.0	0.0	13'6"	71.8	163.2	26.9	82.6	139.4	488.6	130.1
9/30/2023	Sep	10.5	32.2	10.5	32.2	20'0"	44.6	348.4	9.7	29.8	8.8	27.0	0.0	0.0	16'0"	49.3	185.7	5.3	16.3	93.9	534.1	75.5
10/31/2023	Oct	11.2	34.4	7.9	24.2	19'10"	46.3	346.7	5.4	16.6	3.2	9.8	0.0	0.0	16'2"	48.0	187.0	0.0	0.0	94.3	533.7	34.1
11/30/2023	Nov	10.3	31.6	0.0	0.0	18'7"	59.7	333.3	3.6	11.0	0.0	0.0	0.0	0.0	15'11"	50.0	185.0	0.0	0.0	109.7	518.3	0.0
12/31/2023	Dec	10.9	33.5	0.0	0.0	17'0"	79.1	313.9	5.2	16.0	0.0	0.0	0.0	0.0	15'1"	57.1	177.9	0.0	0.0	136.2	491.8	0.0
Total:		**157.1**	**482.1**	**43.8**	**134.4**				**146.4**	**449.3**	**45.1**	**138.4**	**0.0**	**0.0**				**108.4**	**332.7**			**605.5**

ARSA Facilities Monthly Status Reports - Provided by ARSA Staff

Date		Sutter Creek WWTP Flow (mg)	Sutter Creek WWTP (ac ft)	Bowers Irrigation (mg)	Bowers Volume irrigated (ac ft)	Henderson Freeboard	Volume in Henderson (af)	Capacity Remaining in Henderson	Henderson Outflow (mg)	Henderson outflow (ac ft)	Hoskins Irrigation (mg)	Hoskins Volume irrigated (ac ft)	Mule Creek Inflow (mg)	Mule Creek Inflow (ac ft)	Preston Freeboard	Volume in Preston (af)	Capacity Remaining in Preston (ac ft)	Outflow to Ione (mg)	Volume sent to Ione (ac ft)	TOTAL Ac Ft of Effluent in the system	TOTAL Remaining Capacity for Winter (ac ft)	TOTAL USED FOR IRRIGATIO N (ac ft)
2024																						
1/31/2024	Jan	14.2	43.6	0.0	0.0	14'3"	118.9	274.1		0.0	0.0	0.0	0.0	0.0	13'5"	71.8	163.2	0.0	0.0	190.7	437.3	0.0
2/29/2024	Feb	17.1	52.5	0.0	0.0	10'11"	177.7	215.3	4.4	13.5	0.0	0.0	0.0	0.0	11'9"	90.0	145.0	0.0	0.0	267.7	360.3	0.0
3/31/2024	Mar	17.8	54.6	0.0	0.0	8'5"	229.3	163.7	4.4	13.5	0.0	0.0	0.0	0.0	10'8"	102.4	132.6	0.0	0.0	331.7	296.3	0.0
4/30/2024	Apr	13.1	40.2	0.0	0.0	7'8"	246.1	146.9	3.0	9.2	0.0	0.0	0.0	0.0	9'7"	115.5	119.5	0.5	1.5	361.6	266.4	1.5
5/31/2024	May	10.9	33.5	0.0	0.0	9'0"	216.7	176.3	18.2	55.9	0.0	0.0	0.0	0.0	11'5"	93.8	141.2	18.9	58.0	310.5	317.5	58.0
6/30/2024	Jun	10.1	31.0	9.4	28.8	13'1"	138.2	254.8	24.6	75.5	1.7	5.2	0.0	0.0	15'7"	52.8	182.2	31.8	97.6	191.0	437.0	131.7
7/31/2024	Jul	10.0	30.7	10.0	30.7	19'11"	45.4	347.6	28.7	88.1	0.0	0.0	0.0	0.0	19'2"	27.0	208.0	31.8	97.6	72.4	555.6	128.3
8/31/2024	Aug				0.0			393.0		0.0		0.0	0.0	0.0			235.0		0.0	0.0	628.0	0.0
9/30/2024	Sep				0.0			393.0		0.0		0.0	0.0	0.0			235.0		0.0	0.0	628.0	0.0
10/31/2024	Oct				0.0			393.0		0.0		0.0	0.0	0.0			235.0		0.0	0.0	628.0	0.0
11/30/2024	Nov				0.0			393.0		0.0		0.0	0.0	0.0			235.0		0.0	0.0	628.0	0.0
12/31/2024	Dec				0.0			393.0		0.0		0.0	0.0	0.0			235.0		0.0	0.0	628.0	0.0
Total:		**93.2**	**286.0**	**19.4**	**59.5**				**83.3**	**255.6**	**1.7**	**5.2**	**0.0**	**0.0**				**83.0**	**254.7**			**319.5**

Date	Sutter Creek Effluent Flow (GPD)
6/1/2017	329,600
6/2/2017	315,000
6/3/2017	312,600
6/4/2017	292,400
6/5/2017	324,400
6/6/2017	297,400
6/7/2017	346,000
6/8/2017	311,400
6/9/2017	310,600
6/10/2017	284,600
6/11/2017	297,000
6/12/2017	296,000
6/13/2017	328,300
6/14/2017	301,700
6/15/2017	296,000
6/16/2017	293,000
6/17/2017	282,600
6/18/2017	269,400
6/19/2017	310,400
6/20/2017	304,200
6/21/2017	296,400
6/22/2017	311,600
6/23/2017	293,000
6/24/2017	260,000
6/25/2017	258,000
6/26/2017	314,200
6/27/2017	282,400
6/28/2017	289,600
6/29/2017	268,800
6/30/2017	267,600
7/1/2017	193,000
7/2/2017	353,800
7/3/2017	310,600
7/4/2017	242,800
7/5/2017	286,400
7/6/2017	295,600
7/7/2017	275,000
7/8/2017	232,400
7/9/2017	238,800
7/10/2017	280,200
7/11/2017	278,400
7/12/2017	262,000
7/13/2017	310,800
7/14/2017	338,000
7/15/2017	260,800
7/16/2017	256,200
7/17/2017	275,000
7/18/2017	283,200
7/19/2017	340,600
7/20/2017	293,400
7/21/2017	276,000
7/22/2017	265,200
7/23/2017	252,000
7/24/2017	307,300
7/25/2017	275,700
7/26/2017	276,800
7/27/2017	290,600
7/28/2017	291,400
7/29/2017	261,200
7/30/2017	260,600
7/31/2017	299,400
8/1/2017	290,000
8/2/2017	264,600
8/3/2017	293,400
8/4/2017	308,600
8/5/2017	257,200
8/6/2017	250,600
8/7/2017	348,800
8/8/2017	304,200
8/9/2017	
8/10/2017	
8/11/2017	266,000
8/12/2017	332,400
8/13/2017	346,000
8/14/2017	415,400
8/15/2017	416,200
8/16/2017	454,000
8/17/2017	315,000
8/18/2017	272,000

Date	Sutter Creek Effluent Flow (GPD)
8/19/2017	259,400
8/20/2017	254,200
8/21/2017	300,000
8/22/2017	255,600
8/23/2017	281,400
8/24/2017	271,400
8/25/2017	326,600
8/26/2017	271,000
8/27/2017	271,800
8/28/2017	296,000
8/29/2017	296,400
8/30/2017	289,200
8/31/2017	275,600
9/1/2017	303,600
9/2/2017	267,400
9/3/2017	249,800
9/4/2017	276,600
9/5/2017	248,800
9/6/2017	269,000
9/7/2017	300,200
9/8/2017	278,800
9/9/2017	279,000
9/10/2017	266,000
9/11/2017	307,200
9/12/2017	279,400
9/13/2017	300,400
9/14/2017	294,200
9/15/2017	288,600
9/16/2017	236,400
9/17/2017	235,200
9/18/2017	291,000
9/19/2017	279,200
9/20/2017	284,000
9/21/2017	268,200
9/22/2017	300,600
9/23/2017	313,000
9/24/2017	289,000
9/25/2017	314,000
9/26/2017	289,400
9/27/2017	304,600
9/28/2017	329,600
9/29/2017	482,000
9/30/2017	297,400
10/1/2017	280,000
10/2/2017	284,400
10/3/2017	261,800
10/4/2017	265,400
10/5/2017	304,600
10/6/2017	282,600
10/7/2017	315,500
10/8/2017	280,300
10/9/2017	276,400
10/10/2017	310,400
10/11/2017	273,600
10/12/2017	299,400
10/13/2017	268,600
10/14/2017	251,400
10/15/2017	274,000
10/16/2017	304,000
10/17/2017	267,800
10/18/2017	249,600
10/19/2017	263,600
10/20/2017	288,600
10/21/2017	233,600
10/22/2017	242,200
10/23/2017	17,600
10/24/2017	39,400
10/25/2017	226,000
10/26/2017	289,900
10/27/2017	239,500
10/28/2017	238,000
10/29/2017	243,800
10/30/2017	403,000
10/31/2017	377,000
11/1/2017	427,200
11/2/2017	442,800

Date	Sutter Creek Effluent Flow (GPD)
11/3/2017	390,600
11/4/2017	337,800
11/5/2017	321,400
11/6/2017	344,200
11/7/2017	360,400
11/8/2017	291,800
11/9/2017	319,000
11/10/2017	278,400
11/11/2017	226,800
11/12/2017	231,600
11/13/2017	265,600
11/14/2017	261,000
11/15/2017	437,600
11/16/2017	963,800
11/17/2017	476,000
11/18/2017	347,600
11/19/2017	278,000
11/20/2017	310,400
11/21/2017	309,000
11/22/2017	372,200
11/23/2017	304,000
11/24/2017	368,600
11/25/2017	354,600
11/26/2017	772,600
11/27/2017	642,200
11/28/2017	420,000
11/29/2017	341,400
11/30/2017	353,200
12/1/2017	319,000
12/2/2017	335,000
12/3/2017	335,200
12/4/2017	312,600
12/5/2017	344,400
12/6/2017	319,400
12/7/2017	370,600
12/8/2017	308,400
12/9/2017	297,600
12/10/2017	297,000
12/11/2017	306,800
12/12/2017	304,800
12/13/2017	320,200
12/14/2017	297,000
12/15/2017	287,800
12/16/2017	283,800
12/17/2017	280,200
12/18/2017	324,400
12/19/2017	347,000
12/20/2017	374,600
12/21/2017	322,800
12/22/2017	355,800
12/23/2017	288,400
12/24/2017	259,000
12/25/2017	244,000
12/26/2017	340,600
12/27/2017	325,400
12/28/2017	335,600
12/29/2017	284,800
12/30/2017	265,400
12/31/2017	252,400
1/1/2018	256,800
1/2/2018	321,600
1/3/2018	318,200
1/4/2018	301,000
1/5/2018	368,400
1/6/2018	400,000
1/7/2018	316,200
1/8/2018	1,023,000
1/9/2018	1,096,000
1/10/2018	630,800
1/11/2018	485,400
1/12/2018	455,400
1/13/2018	364,400
1/14/2018	348,200
1/15/2018	360,800
1/16/2018	360,400
1/17/2018	344,000

Date	Sutter Creek Effluent Flow (GPD)
1/18/2018	417,600
1/19/2018	442,600
1/20/2018	353,800
1/21/2018	336,800
1/22/2018	385,600
1/23/2018	353,000
1/24/2018	511,600
1/25/2018	567,600
1/26/2018	474,000
1/27/2018	413,600
1/28/2018	390,200
1/29/2018	364,400
1/30/2018	516,000
1/31/2018	370,800
2/1/2018	357,200
2/2/2018	328,600
2/3/2018	332,000
2/4/2018	302,200
2/5/2018	340,000
2/6/2018	332,800
2/7/2018	366,200
2/8/2018	322,400
2/9/2018	332,800
2/10/2018	299,800
2/11/2018	264,800
2/12/2018	282,800
2/13/2018	323,600
2/14/2018	269,000
2/15/2018	289,600
2/16/2018	277,200
2/17/2018	265,600
2/18/2018	249,400
2/19/2018	274,200
2/20/2018	275,800
2/21/2018	301,400
2/22/2018	306,000
2/23/2018	313,600
2/24/2018	283,800
2/25/2018	275,600
2/26/2018	
2/27/2018	
2/28/2018	
3/1/2018	734,400
3/2/2018	983,800
3/3/2018	872,600
3/4/2018	597,800
3/5/2018	499,000
3/6/2018	451,600
3/7/2018	404,400
3/8/2018	409,200
3/9/2018	356,800
3/10/2018	325,600
3/11/2018	352,200
3/12/2018	443,800
3/13/2018	1,304,400
3/14/2018	1,205,800
3/15/2018	1,243,200
3/16/2018	1,391,400
3/17/2018	934,600
3/18/2018	745,600
3/19/2018	700,600
3/20/2018	659,000
3/21/2018	1,046,000
3/22/2018	1,412,200
3/23/2018	931,400
3/24/2018	728,600
3/25/2018	656,200
3/26/2018	566,200
3/27/2018	476,600
3/28/2018	457,200
3/29/2018	427,200
3/30/2018	393,000
3/31/2018	391,800
4/1/2018	355,000

Date	Sutter Creek Effluent Flow (GPD)
4/2/2018	377,200
4/3/2018	384,200
4/4/2018	393,600
4/5/2018	448,600
4/6/2018	1,042,800
4/7/2018	1,126,600
4/8/2018	745,800
4/9/2018	640,600
4/10/2018	556,500
4/11/2018	503,300
4/12/2018	479,400
4/13/2018	451,000
4/14/2018	431,000
4/15/2018	420,400
4/16/2018	497,800
4/17/2018	466,000
4/18/2018	447,000
4/19/2018	418,400
4/20/2018	375,800
4/21/2018	362,000
4/22/2018	359,800
4/23/2018	409,800
4/24/2018	379,800
4/25/2018	364,000
4/26/2018	371,000
4/27/2018	350,200
4/28/2018	317,800
4/29/2018	309,000
4/30/2018	365,400
5/1/2018	353,400
5/2/2018	344,400
5/3/2018	337,600
5/4/2018	293,000
5/5/2018	272,400
5/6/2018	265,600
5/7/2018	313,000
5/8/2018	297,200
5/9/2018	181,000
5/10/2018	308,200
5/11/2018	291,000
5/12/2018	260,400
5/13/2018	316,200
5/14/2018	238,400
5/15/2018	284,200
5/16/2018	307,600
5/17/2018	291,600
5/18/2018	300,200
5/19/2018	286,800
5/20/2018	254,600
5/21/2018	323,800
5/22/2018	325,600
5/23/2018	311,200
5/24/2018	319,600
5/25/2018	330,200
5/26/2018	297,800
5/27/2018	294,600
5/28/2018	324,800
5/29/2018	310,200
5/30/2018	298,200
5/31/2018	342,183
6/1/2018	296,200
6/2/2018	273,800
6/3/2018	272,400
6/4/2018	287,600
6/5/2018	295,800
6/6/2018	296,600
6/7/2018	278,800
6/8/2018	288,400
6/9/2018	249,800
6/10/2018	266,400
6/11/2018	299,800
6/12/2018	314,800
6/13/2018	305,800
6/14/2018	324,800
6/15/2018	299,800
6/16/2018	283,400

Date	Sutter Creek Effluent Flow (GPD)
6/17/2018	241,400
6/18/2018	294,200
6/19/2018	313,600
6/20/2018	285,200
6/21/2018	275,000
6/22/2018	274,400
6/23/2018	234,600
6/24/2018	229,200
6/25/2018	282,600
6/26/2018	298,800
6/27/2018	190,000
6/28/2018	293,800
6/29/2018	317,400
6/30/2018	257,200
7/1/2018	267,200
7/2/2018	325,600
7/3/2018	321,400
7/4/2018	259,000
7/5/2018	319,200
7/6/2018	336,400
7/7/2018	262,000
7/8/2018	271,800
7/9/2018	273,400
7/10/2018	305,400
7/11/2018	302,200
7/12/2018	301,000
7/13/2018	305,400
7/14/2018	271,000
7/15/2018	276,800
7/16/2018	317,200
7/17/2018	328,800
7/18/2018	310,600
7/19/2018	311,200
7/20/2018	329,800
7/21/2018	272,400
7/22/2018	281,500
7/23/2018	300,500
7/24/2018	292,800
7/25/2018	290,600
7/26/2018	306,000
7/27/2018	345,800
7/28/2018	285,400
7/29/2018	288,200
7/30/2018	313,800
7/31/2018	322,600
8/1/2018	295,800
8/2/2018	314,200
8/3/2018	311,800
8/4/2018	281,800
8/5/2018	313,400
8/6/2018	328,600
8/7/2018	311,200
8/8/2018	337,800
8/9/2018	350,200
8/10/2018	318,200
8/11/2018	295,600
8/12/2018	322,400
8/13/2018	336,400
8/14/2018	331,000
8/15/2018	360,000
8/16/2018	297,400
8/17/2018	314,200
8/18/2018	294,600
8/19/2018	283,800
8/20/2018	342,800
8/21/2018	351,400
8/22/2018	364,800
8/23/2018	335,000
8/24/2018	298,600
8/25/2018	291,400
8/26/2018	277,000
8/27/2018	302,200
8/28/2018	275,400
8/29/2018	299,600

Date	Sutter Creek Effluent Flow (GPD)
8/30/2018	295,200
8/31/2018	317,600
9/1/2018	209,800
9/2/2018	244,200
9/3/2018	284,200
9/4/2018	316,600
9/5/2018	306,000
9/6/2018	334,000
9/7/2018	354,400
9/8/2018	294,000
9/9/2018	272,400
9/10/2018	321,600
9/11/2018	304,600
9/12/2018	303,400
9/13/2018	318,200
9/14/2018	263,200
9/15/2018	263,800
9/16/2018	280,600
9/17/2018	329,200
9/18/2018	246,800
9/19/2018	276,800
9/20/2018	274,800
9/21/2018	298,400
9/22/2018	246,000
9/23/2018	333,800
9/24/2018	355,800
9/25/2018	404,200
9/26/2018	355,000
9/27/2018	356,400
9/28/2018	331,000
9/29/2018	257,000
9/30/2018	268,000
10/1/2018	273,200
10/2/2018	258,000
10/3/2018	286,200
10/4/2018	322,200
10/5/2018	304,800
10/6/2018	256,000
10/7/2018	266,600
10/8/2018	337,600
10/9/2018	298,200
10/10/2018	266,000
10/11/2018	236,600
10/12/2018	270,200
10/13/2018	236,800
10/14/2018	232,200
10/15/2018	252,200
10/16/2018	299,800
10/17/2018	303,800
10/18/2018	305,000
10/19/2018	279,400
10/20/2018	258,800
10/21/2018	291,800
10/22/2018	330,400
10/23/2018	336,600
10/24/2018	316,600
10/25/2018	313,000
10/26/2018	305,600
10/27/2018	290,600
10/28/2018	293,600
10/29/2018	321,800
10/30/2018	300,200
10/31/2018	305,600
11/1/2018	303,800
11/2/2018	287,600
11/3/2018	287,400
11/4/2018	301,800
11/5/2018	296,400
11/6/2018	263,600
11/7/2018	305,000
11/8/2018	289,000
11/9/2018	299,000
11/10/2018	251,200
11/11/2018	255,200
11/12/2018	304,000
11/13/2018	253,600

Date	Sutter Creek Effluent Flow (GPD)
11/14/2018	302,400
11/15/2018	313,400
11/16/2018	278,800
11/17/2018	270,000
11/18/2018	269,600
11/19/2018	312,800
11/20/2018	310,400
11/21/2018	365,600
11/22/2018	386,400
11/23/2018	591,200
11/24/2018	453,600
11/25/2018	367,600
11/26/2018	338,800
11/27/2018	329,200
11/28/2018	470,200
11/29/2018	794,800
11/30/2018	647,600
12/1/2018	616,800
12/2/2018	480,000
12/3/2018	472,000
12/4/2018	407,400
12/5/2018	384,200
12/6/2018	373,600
12/7/2018	280,800
12/8/2018	270,200
12/9/2018	280,000
12/10/2018	298,600
12/11/2018	326,000
12/12/2018	299,000
12/13/2018	298,800
12/14/2018	298,200
12/15/2018	272,400
12/16/2018	338,000
12/17/2018	427,000
12/18/2018	375,600
12/19/2018	309,000
12/20/2018	327,400
12/21/2018	378,000
12/22/2018	352,800
12/23/2018	325,800
12/24/2018	673,600
12/25/2018	593,600
12/26/2018	457,000
12/27/2018	451,400
12/28/2018	370,000
12/29/2018	317,000
12/30/2018	313,400
12/31/2018	342,200
1/1/2019	277,000
1/2/2019	365,800
1/3/2019	342,800
1/4/2019	200,200
1/5/2019	470,800
1/6/2019	612,000
1/7/2019	647,800
1/8/2019	628,400
1/9/2019	821,200
1/10/2019	576,900
1/11/2019	532,100
1/12/2019	367,600
1/13/2019	348,600
1/14/2019	394,000
1/15/2019	582,600
1/16/2019	1,117,000
1/17/2019	1,489,200
1/18/2019	905,200
1/19/2019	621,200
1/20/2019	889,000
1/21/2019	707,200
1/22/2019	586,000
1/23/2019	514,800
1/24/2019	467,200
1/25/2019	449,600
1/26/2019	478,800
1/27/2019	398,200
1/28/2019	418,400

Date	Sutter Creek Effluent Flow (GPD)
1/29/2019	393,600
1/30/2019	370,200
1/31/2019	385,600
2/1/2019	387,000
2/2/2019	666,400
2/3/2019	1,032,600
2/4/2019	1,338,200
2/5/2019	988,600
2/6/2019	752,200
2/7/2019	646,400
2/8/2019	540,600
2/9/2019	966,000
2/10/2019	980,600
2/11/2019	694,200
2/12/2019	759,400
2/13/2019	1,284,600
2/14/2019	1,395,400
2/15/2019	1,479,400
2/16/2019	1,139,200
2/17/2019	1,157,600
2/18/2019	889,200
2/19/2019	830,200
2/20/2019	778,000
2/21/2019	596,200
2/22/2019	609,400
2/23/2019	487,000
2/24/2019	443,200
2/25/2019	419,000
2/26/2019	521,200
2/27/2019	771,000
2/28/2019	720,600
3/1/2019	642,000
3/2/2019	1,206,200
3/3/2019	1,674,000
3/4/2019	1,128,000
3/5/2019	966,200
3/6/2019	1,169,000
3/7/2019	1,258,600
3/8/2019	1,017,200
3/9/2019	703,800
3/10/2019	607,600
3/11/2019	559,000
3/12/2019	497,600
3/13/2019	487,600
3/14/2019	458,000
3/15/2019	408,000
3/16/2019	379,800
3/17/2019	369,000
3/18/2019	376,800
3/19/2019	431,600
3/20/2019	434,200
3/21/2019	405,800
3/22/2019	492,400
3/23/2019	742,000
3/24/2019	514,400
3/25/2019	481,600
3/26/2019	483,600
3/27/2019	531,400
3/28/2019	487,800
3/29/2019	491,200
3/30/2019	412,400
3/31/2019	397,400
4/1/2019	469,200
4/2/2019	657,400
4/3/2019	544,800
4/4/2019	494,200
4/5/2019	499,600
4/6/2019	462,600
4/7/2019	385,200
4/8/2019	400,600

Date	Sutter Creek Effluent Flow (GPD)
4/9/2019	381,600
4/10/2019	378,800
4/11/2019	379,400
4/12/2019	338,400
4/13/2019	302,800
4/14/2019	313,800
4/15/2019	376,200
4/16/2019	529,800
4/17/2019	445,600
4/18/2019	406,800
4/19/2019	424,200
4/20/2019	349,400
4/21/2019	353,000
4/22/2019	389,800
4/23/2019	366,200
4/24/2019	361,600
4/25/2019	370,000
4/26/2019	331,200
4/27/2019	304,400
4/28/2019	303,800
4/29/2019	327,200
4/30/2019	295,000
5/1/2019	318,600
5/2/2019	316,200
5/3/2019	288,200
5/4/2019	284,400
5/5/2019	293,200
5/6/2019	347,400
5/7/2019	356,800
5/8/2019	256,000
5/9/2019	302,200
5/10/2019	275,800
5/11/2019	270,200
5/12/2019	272,800
5/13/2019	344,600
5/14/2019	339,200
5/15/2019	420,200
5/16/2019	596,800
5/17/2019	441,600
5/18/2019	463,000
5/19/2019	739,000
5/20/2019	566,600
5/21/2019	687,800
5/22/2019	602,400
5/23/2019	546,400
5/24/2019	482,400
5/25/2019	413,600
5/26/2019	419,800
5/27/2019	410,600
5/28/2019	436,800
5/29/2019	416,800
5/30/2019	375,600
5/31/2019	398,600
6/1/2019	334,200
6/2/2019	349,600
6/3/2019	404,000
6/4/2019	411,800
6/5/2019	396,600
6/6/2019	404,800
6/7/2019	421,000
6/8/2019	367,600
6/9/2019	287,800
6/10/2019	339,800
6/11/2019	315,600
6/12/2019	344,800
6/13/2019	351,600
6/14/2019	353,800
6/15/2019	276,800
6/16/2019	292,200
6/17/2019	352,800

Date	Sutter Creek Effluent Flow (GPD)
6/18/2019	336,600
6/19/2019	363,400
6/20/2019	343,200
6/21/2019	352,400
6/22/2019	292,800
6/23/2019	294,800
6/24/2019	350,000
6/25/2019	329,600
6/26/2019	270,400
6/27/2019	271,600
6/28/2019	316,800
6/29/2019	259,400
6/30/2019	263,000
7/1/2019	323,800
7/2/2019	325,400
7/3/2019	327,800
7/4/2019	257,200
7/5/2019	325,400
7/6/2019	304,600
7/7/2019	271,200
7/8/2019	332,000
7/9/2019	348,400
7/10/2019	320,400
7/11/2019	322,200
7/12/2019	310,800
7/13/2019	268,200
7/14/2019	280,200
7/15/2019	330,600
7/16/2019	314,400
7/17/2019	330,200
7/18/2019	316,000
7/19/2019	314,000
7/20/2019	289,200
7/21/2019	275,600
7/22/2019	299,600
7/23/2019	449,600
7/24/2019	353,400
7/25/2019	420,000
7/26/2019	792,600
7/27/2019	1,661,600
7/28/2019	245,400
7/29/2019	303,800
7/30/2019	290,200
7/31/2019	441,600
8/1/2019	316,894
8/2/2019	347,800
8/3/2019	294,100
8/4/2019	306,256
8/5/2019	331,544
8/6/2019	338,231
8/7/2019	334,719
8/8/2019	334,744
8/9/2019	317,500
8/10/2019	291,093
8/11/2019	284,319
8/12/2019	348,694
8/13/2019	333,312
8/14/2019	313,575
8/15/2019	357,100
8/16/2019	312,713
8/17/2019	270,562
8/18/2019	299,213
8/19/2019	328,606
8/20/2019	324,094
8/21/2019	323,544
8/22/2019	348,787
8/23/2019	338,456
8/24/2019	296,269
8/25/2019	287,588
8/26/2019	336,987

Date	Sutter Creek Effluent Flow (GPD)
8/27/2019	326,088
8/28/2019	332,343
8/29/2019	361,444
8/30/2019	363,513
8/31/2019	303,081
9/1/2019	300,675
9/2/2019	320,369
9/3/2019	356,425
9/4/2019	324,681
9/5/2019	379,031
9/6/2019	327,956
9/7/2019	302,738
9/8/2019	311,125
9/9/2019	371,812
9/10/2019	339,725
9/11/2019	370,425
9/12/2019	324,888
9/13/2019	334,875
9/14/2019	299,744
9/15/2019	295,018
9/16/2019	378,163
9/17/2019	350,325
9/18/2019	353,050
9/19/2019	329,987
9/20/2019	308,100
9/21/2019	268,657
9/22/2019	268,425
9/23/2019	304,762
9/24/2019	323,081
9/25/2019	322,988
9/26/2019	322,275
9/27/2019	325,500
9/28/2019	296,056
9/29/2019	284,419
9/30/2019	361,569
10/1/2019	305,318
10/2/2019	325,925
10/3/2019	315,919
10/4/2019	322,756
10/5/2019	269,619
10/6/2019	289,581
10/7/2019	317,882
10/8/2019	337,718
10/9/2019	172,068
10/10/2019	243,851
10/11/2019	332,738
10/12/2019	281,721
10/13/2019	262,562
10/14/2019	317,314
10/15/2019	312,843
10/16/2019	325,946
10/17/2019	302,608
10/18/2019	281,119
10/19/2019	269,859
10/20/2019	278,593
10/21/2019	333,014
10/22/2019	339,241
10/23/2019	291,573
10/24/2019	315,899
10/25/2019	313,845
10/26/2019	244,313
10/27/2019	195,000
10/28/2019	220,800
10/29/2019	288,800
10/30/2019	289,800
10/31/2019	350,600
11/1/2019	221,400
11/2/2019	155,200
11/3/2019	177,600
11/4/2019	209,600

Date	Sutter Creek Effluent Flow (GPD)
11/5/2019	103,600
11/6/2019	146,000
11/7/2019	241,200
11/8/2019	134,600
11/9/2019	119,400
11/10/2019	182,800
11/11/2019	268,600
11/12/2019	258,600
11/13/2019	209,000
11/14/2019	280,400
11/15/2019	289,000
11/16/2019	237,000
11/17/2019	244,800
11/18/2019	305,000
11/19/2019	232,600
11/20/2019	188,000
11/21/2019	222,600
11/22/2019	237,000
11/23/2019	216,800
11/24/2019	239,200
11/25/2019	276,400
11/26/2019	366,000
11/27/2019	410,800
11/28/2019	368,800
11/29/2019	379,600
11/30/2019	319,400
12/1/2019	695,200
12/2/2019	556,400
12/3/2019	424,000
12/4/2019	674,200
12/5/2019	647,000
12/6/2019	553,800
12/7/2019	685,400
12/8/2019	627,000
12/9/2019	464,000
12/10/2019	388,600
12/11/2019	367,600
12/12/2019	387,400
12/13/2019	424,600
12/14/2019	421,200
12/15/2019	354,000
12/16/2019	348,600
12/17/2019	264,600
12/18/2019	304,000
12/19/2019	296,000
12/20/2019	327,200
12/21/2019	289,000
12/22/2019	330,000
12/23/2019	386,600
12/24/2019	307,200
12/25/2019	256,800
12/26/2019	319,800
12/27/2019	310,600
12/28/2019	258,800
12/29/2019	283,900
12/30/2019	309,100
12/31/2019	322,000
1/1/2020	261,400
1/2/2020	334,200
1/3/2020	309,600
1/4/2020	247,000
1/5/2020	269,200
1/6/2020	296,000
1/7/2020	300,800
1/8/2020	288,600
1/9/2020	373,600
1/10/2020	335,600
1/11/2020	337,000
1/12/2020	286,200
1/13/2020	342,400

Date	Sutter Creek Effluent Flow (GPD)
1/14/2020	334,800
1/15/2020	357,200
1/16/2020	466,800
1/17/2020	353,000
1/18/2020	300,400
1/19/2020	305,600
1/20/2020	340,200
1/21/2020	326,600
1/22/2020	354,600
1/23/2020	393,200
1/24/2020	303,600
1/25/2020	261,400
1/26/2020	382,800
1/27/2020	368,200
1/28/2020	346,800
1/29/2020	410,000
1/30/2020	398,400
1/31/2020	331,400
2/1/2020	208,000
2/2/2020	181,200
2/3/2020	238,200
2/4/2020	231,000
2/5/2020	245,200
2/6/2020	295,000
2/7/2020	297,000
2/8/2020	204,200
2/9/2020	179,800
2/10/2020	227,600
2/11/2020	294,600
2/12/2020	281,600
2/13/2020	280,400
2/14/2020	296,200
2/15/2020	227,000
2/16/2020	193,400
2/17/2020	269,400
2/18/2020	324,000
2/19/2020	303,400
2/20/2020	286,400
2/21/2020	297,800
2/22/2020	236,600
2/23/2020	223,800
2/24/2020	280,800
2/25/2020	286,800
2/26/2020	314,400
2/27/2020	306,200
2/28/2020	456,200
2/29/2020	594,400
3/1/2020	266,000
3/2/2020	282,200
3/3/2020	318,000
3/4/2020	229,000
3/5/2020	208,400
3/6/2020	208,200
3/7/2020	222,200
3/8/2020	201,600
3/9/2020	190,200
3/10/2020	173,000
3/11/2020	243,400
3/12/2020	201,000
3/13/2020	201,000
3/14/2020	489,200
3/15/2020	1,035,200
3/16/2020	1,767,400
3/17/2020	995,600
3/18/2020	725,000
3/19/2020	545,600
3/20/2020	501,400
3/21/2020	380,600
3/22/2020	341,100
3/23/2020	353,100

Date	Sutter Creek Effluent Flow (GPD)
3/24/2020	399,600
3/25/2020	411,200
3/26/2020	380,000
3/27/2020	339,800
3/28/2020	309,000
3/29/2020	310,800
3/30/2020	313,800
3/31/2020	308,200
4/1/2020	328,600
4/2/2020	309,400
4/3/2020	285,400
4/4/2020	366,800
4/5/2020	1,285,200
4/6/2020	1,192,200
4/7/2020	730,200
4/8/2020	615,800
4/9/2020	492,600
4/10/2020	436,000
4/11/2020	402,000
4/12/2020	351,400
4/13/2020	369,000
4/14/2020	373,800
4/15/2020	362,600
4/16/2020	376,400
4/17/2020	350,000
4/18/2020	299,800
4/19/2020	295,000
4/20/2020	314,600
4/21/2020	363,200
4/22/2020	142,800
4/23/2020	360,800
4/24/2020	421,200
4/25/2020	336,200
4/26/2020	271,200
4/27/2020	298,800
4/28/2020	317,600
4/29/2020	319,800
4/30/2020	244,600
5/1/2020	308,400
5/2/2020	186,200
5/3/2020	190,800
5/4/2020	269,800
5/5/2020	264,000
5/6/2020	295,400
5/7/2020	272,200
5/8/2020	300,200
5/9/2020	196,000
5/10/2020	181,200
5/11/2020	303,700
5/12/2020	258,700
5/13/2020	259,000
5/14/2020	286,000
5/15/2020	307,200
5/16/2020	276,400
5/17/2020	482,000
5/18/2020	568,400
5/19/2020	400,800
5/20/2020	358,000
5/21/2020	297,800
5/22/2020	315,200
5/23/2020	215,400
5/24/2020	232,800
5/25/2020	536,800
5/26/2020	313,800
5/27/2020	328,600
5/28/2020	281,225
5/29/2020	273,750
5/30/2020	244,375
5/31/2020	296,600
6/1/2020	275,926

Date	Sutter Creek Effluent Flow (GPD)
6/2/2020	283,875
6/3/2020	288,700
6/4/2020	257,844
6/5/2020	269,481
6/6/2020	252,138
6/7/2020	255,143
6/8/2020	279,525
6/9/2020	319,150
6/10/2020	346,282
6/11/2020	349,493
6/12/2020	277,100
6/13/2020	224,119
6/14/2020	233,694
6/15/2020	270,525
6/16/2020	290,887
6/17/2020	288,213
6/18/2020	267,006
6/19/2020	285,231
6/20/2020	234,675
6/21/2020	237,857
6/22/2020	294,843
6/23/2020	264,125
6/24/2020	272,688
6/25/2020	279,044
6/26/2020	271,718
6/27/2020	285,432
6/28/2020	255,162
6/29/2020	279,756
6/30/2020	305,013
7/1/2020	303,906
7/2/2020	295,369
7/3/2020	253,137
7/4/2020	242,244
7/5/2020	243,131
7/6/2020	296,675
7/7/2020	270,719
7/8/2020	307,300
7/9/2020	264,431
7/10/2020	282,819
7/11/2020	231,225
7/12/2020	235,994
7/13/2020	263,062
7/14/2020	262,188
7/15/2020	282,919
7/16/2020	276,762
7/17/2020	290,019
7/18/2020	239,025
7/19/2020	238,775
7/20/2020	287,419
7/21/2020	269,837
7/22/2020	286,063
7/23/2020	273,256
7/24/2020	268,450
7/25/2020	224,531
7/26/2020	219,900
7/27/2020	269,694
7/28/2020	271,019
7/29/2020	276,075
7/30/2020	283,112
7/31/2020	243,594
8/1/2020	230,856
8/2/2020	226,550
8/3/2020	267,894
8/4/2020	289,819
8/5/2020	279,743
8/6/2020	278,988
8/7/2020	276,481
8/8/2020	233,275
8/9/2020	230,250
8/10/2020	284,106

Date	Sutter Creek Effluent Flow (GPD)
8/11/2020	286,438
8/12/2020	298,706
8/13/2020	280,106
8/14/2020	269,150
8/15/2020	235,600
8/16/2020	242,194
8/17/2020	293,288
8/18/2020	274,731
8/19/2020	287,756
8/20/2020	267,800
8/21/2020	281,413
8/22/2020	243,206
8/23/2020	248,406
8/24/2020	299,638
8/25/2020	279,450
8/26/2020	248,300
8/27/2020	291,737
8/28/2020	271,082
8/29/2020	239,951
8/30/2020	253,157
8/31/2020	278,472
9/1/2020	282,828
9/2/2020	305,253
9/3/2020	288,473
9/4/2020	268,512
9/5/2020	237,345
9/6/2020	233,074
9/7/2020	262,933
9/8/2020	258,364
9/9/2020	284,871
9/10/2020	272,706
9/11/2020	278,049
9/12/2020	245,169
9/13/2020	243,672
9/14/2020	278,430
9/15/2020	284,736
9/16/2020	278,000
9/17/2020	293,689
9/18/2020	290,178
9/19/2020	253,719
9/20/2020	251,135
9/21/2020	280,676
9/22/2020	270,898
9/23/2020	291,187
9/24/2020	282,218
9/25/2020	282,218
9/26/2020	270,501
9/27/2020	255,724
9/28/2020	284,200
9/29/2020	292,003
9/30/2020	287,510
10/1/2020	267,834
10/2/2020	293,377
10/3/2020	260,220
10/4/2020	259,539
10/5/2020	313,763
10/6/2020	295,309
10/7/2020	292,223
10/8/2020	293,897
10/9/2020	313,689
10/10/2020	253,814
10/11/2020	250,657
10/12/2020	301,911
10/13/2020	284,219
10/14/2020	291,862
10/15/2020	314,592
10/16/2020	273,453
10/17/2020	255,828
10/18/2020	279,360
10/19/2020	296,243

Date	Sutter Creek Effluent Flow (GPD)
10/20/2020	284,813
10/21/2020	276,816
10/22/2020	273,359
10/23/2020	282,595
10/24/2020	252,864
10/25/2020	254,138
10/26/2020	295,106
10/27/2020	287,533
10/28/2020	294,847
10/29/2020	264,719
10/30/2020	314,751
10/31/2020	280,261
11/1/2020	274,027
11/2/2020	288,375
11/3/2020	292,317
11/4/2020	314,937
11/5/2020	274,844
11/6/2020	311,819
11/7/2020	267,570
11/8/2020	275,514
11/9/2020	315,828
11/10/2020	289,649
11/11/2020	348,509
11/12/2020	301,677
11/13/2020	316,301
11/14/2020	315,305
11/15/2020	248,126
11/16/2020	315,461
11/17/2020	400,499
11/18/2020	363,183
11/19/2020	352,203
11/20/2020	329,683
11/21/2020	267,070
11/22/2020	273,569
11/23/2020	296,704
11/24/2020	305,833
11/25/2020	318,445
11/26/2020	258,846
11/27/2020	298,103
11/28/2020	267,831
11/29/2020	276,827
11/30/2020	309,586
12/1/2020	290,509
12/2/2020	326,588
12/3/2020	297,709
12/4/2020	302,287
12/5/2020	268,266
12/6/2020	277,938
12/7/2020	311,359
12/8/2020	326,519
12/9/2020	331,662
12/10/2020	338,725
12/11/2020	345,331
12/12/2020	307,379
12/13/2020	382,590
12/14/2020	358,269
12/15/2020	319,150
12/16/2020	356,022
12/17/2020	374,312
12/18/2020	331,969
12/19/2020	296,250
12/20/2020	304,547
12/21/2020	333,037
12/22/2020	326,010
12/23/2020	346,231
12/24/2020	304,397
12/25/2020	273,734
12/26/2020	319,816
12/27/2020	297,800
12/28/2020	347,553

Date	Sutter Creek Effluent Flow (GPD)
12/29/2020	325,675
12/30/2020	340,431
12/31/2020	
1/1/2021	279,313
1/2/2021	292,900
1/3/2021	298,087
1/4/2021	366,316
1/5/2021	345,616
1/6/2021	331,493
1/7/2021	316,872
1/8/2021	347,813
1/9/2021	280,087
1/10/2021	291,472
1/11/2021	309,563
1/12/2021	347,518
1/13/2021	303,747
1/14/2021	324,031
1/15/2021	337,257
1/16/2021	294,359
1/17/2021	293,966
1/18/2021	342,437
1/19/2021	352,825
1/20/2021	295,385
1/21/2021	331,337
1/22/2021	351,828
1/23/2021	300,053
1/24/2021	377,778
1/25/2021	430,388
1/26/2021	414,559
1/27/2021	822,560
1/28/2021	1,414,122
1/29/2021	852,506
1/30/2021	519,659
1/31/2021	438,585
2/1/2021	439,775
2/2/2021	563,225
2/3/2021	453,168
2/4/2021	396,282
2/5/2021	386,634
2/6/2021	329,603
2/7/2021	333,075
2/8/2021	355,313
2/9/2021	345,437
2/10/2021	359,625
2/11/2021	482,263
2/12/2021	526,731
2/13/2021	438,431
2/14/2021	390,775
2/15/2021	515,769
2/16/2021	420,425
2/17/2021	387,050
2/18/2021	382,556
2/19/2021	385,513
2/20/2021	358,762
2/21/2021	335,063
2/22/2021	356,056
2/23/2021	343,281
2/24/2021	340,913
2/25/2021	328,400
2/26/2021	357,268
2/27/2021	301,350
2/28/2021	301,132
4/1/2021	334,987
4/2/2021	331,419
4/3/2021	313,606
4/4/2021	293,125
4/5/2021	372,182
4/6/2021	331,162
4/7/2021	336,813
4/8/2021	372,456

Date	Sutter Creek Effluent Flow (GPD)
4/9/2021	300,725
4/10/2021	290,637
4/11/2021	309,938
4/12/2021	356,075
4/13/2021	340,575
4/14/2021	395,031
4/15/2021	368,725
4/16/2021	365,669
4/17/2021	326,031
4/18/2021	335,638
4/19/2021	364,281
4/20/2021	343,088
4/21/2021	347,887
4/22/2021	345,650
4/23/2021	337,181
4/24/2021	307,250
4/25/2021	328,519
4/26/2021	375,500
4/27/2021	376,187
4/28/2021	349,275
4/29/2021	353,369
4/30/2021	373,581
5/1/2021	293,107
5/2/2021	335,143
5/3/2021	354,963
5/4/2021	355,581
5/5/2021	357,444
5/6/2021	410,531
5/7/2021	343,819
5/8/2021	328,969
5/9/2021	310,068
5/10/2021	387,657
5/11/2021	374,737
5/12/2021	375,150
5/13/2021	357,444
5/14/2021	370,081
5/15/2021	322,038
5/16/2021	327,493
5/17/2021	355,232
5/18/2021	355,412
5/19/2021	333,663
5/20/2021	345,825
5/21/2021	356,875
5/22/2021	299,381
5/23/2021	313,612
5/24/2021	347,744
5/25/2021	366,044
5/26/2021	372,175
5/27/2021	363,056
5/28/2021	363,944
5/29/2021	298,475
5/30/2021	304,131
5/31/2021	318,075
6/1/2021	351,063
6/2/2021	361,562
6/3/2021	344,575
6/4/2021	353,444
6/5/2021	310,831
6/6/2021	313,938
6/7/2021	375,737
6/8/2021	349,156
6/9/2021	354,863
6/10/2021	370,287
6/11/2021	336,738
6/12/2021	325,525
6/13/2021	308,956
6/14/2021	373,081
6/15/2021	383,625
6/16/2021	359,482
6/17/2021	370,050

Date	Sutter Creek Effluent Flow (GPD)
6/18/2021	341,418
6/19/2021	311,463
6/20/2021	312,152
6/21/2021	351,487
6/22/2021	348,915
6/23/2021	361,912
6/24/2021	365,716
6/25/2021	355,226
6/26/2021	304,982
6/27/2021	337,139
6/28/2021	355,487
6/29/2021	332,677
6/30/2021	346,808
7/1/2021	366,675
7/2/2021	349,132
7/3/2021	290,578
7/4/2021	280,508
7/5/2021	319,094
7/6/2021	350,209
7/7/2021	347,771
7/8/2021	375,469
7/9/2021	333,906
7/10/2021	285,509
7/11/2021	285,791
7/12/2021	339,873
7/13/2021	358,260
7/14/2021	346,276
7/15/2021	329,902
7/16/2021	338,827
7/17/2021	291,967
7/18/2021	294,703
7/19/2021	313,600
7/20/2021	362,271
7/21/2021	348,297
7/22/2021	331,852
7/23/2021	339,969
7/24/2021	295,907
7/25/2021	293,597
7/26/2021	341,681
7/27/2021	319,928
7/28/2021	346,766
7/29/2021	355,681
7/30/2021	318,806
7/31/2021	298,833
8/1/2021	301,740
8/2/2021	352,868
8/3/2021	338,704
8/4/2021	342,360
8/5/2021	321,581
8/6/2021	353,714
8/7/2021	304,658
8/8/2021	290,787
8/9/2021	342,657
8/10/2021	306,073
8/11/2021	366,997
8/12/2021	316,761
8/13/2021	360,258
8/14/2021	322,623
8/15/2021	303,580
8/16/2021	330,653
8/17/2021	326,306
8/18/2021	352,595
8/19/2021	330,844
8/20/2021	354,722
8/21/2021	303,719
8/22/2021	311,914
8/23/2021	324,441
8/24/2021	336,601
8/25/2021	329,938
8/26/2021	352,046

Date	Sutter Creek Effluent Flow (GPD)
8/27/2021	310,319
8/28/2021	271,333
8/29/2021	278,539
8/30/2021	294,292
8/31/2021	332,011
9/1/2021	321,174
9/2/2021	386,317
9/3/2021	340,084
9/4/2021	309,136
9/5/2021	290,694
9/6/2021	322,330
9/7/2021	333,232
9/8/2021	315,738
9/9/2021	315,206
9/10/2021	357,460
9/11/2021	286,506
9/12/2021	297,434
9/13/2021	314,063
9/14/2021	342,290
9/15/2021	325,647
9/16/2021	348,313
9/17/2021	315,186
9/18/2021	298,817
9/19/2021	289,381
9/20/2021	341,325
9/21/2021	331,781
9/22/2021	337,775
9/23/2021	352,069
9/24/2021	327,609
9/25/2021	304,235
9/26/2021	289,665
9/27/2021	354,413
9/28/2021	316,941
9/29/2021	341,828
9/30/2021	328,565
10/1/2021	329,547
10/2/2021	281,556
10/3/2021	298,847
10/4/2021	327,678
10/5/2021	360,454
10/6/2021	334,984
10/7/2021	370,084
10/8/2021	338,941
10/9/2021	306,412
10/10/2021	303,319
10/11/2021	327,603
10/12/2021	342,350
10/13/2021	328,785
10/14/2021	356,000
10/15/2021	327,653
10/16/2021	302,494
10/17/2021	335,737
10/18/2021	368,750
10/19/2021	348,122
10/20/2021	350,081
10/21/2021	380,769
10/22/2021	380,356
10/23/2021	354,678
10/24/2021	1,731,788
10/25/2021	1,480,584
10/26/2021	657,094
10/27/2021	558,809
10/28/2021	440,660
10/29/2021	441,797
10/30/2021	407,003
10/31/2021	373,781
11/1/2021	384,791
11/2/2021	410,665
11/3/2021	419,153
11/4/2021	363,603

Date	Sutter Creek Effluent Flow (GPD)
11/5/2021	325,991
11/6/2021	340,128
11/7/2021	336,219
11/8/2021	410,072
11/9/2021	575,972
11/10/2021	426,734
11/11/2021	423,175
11/12/2021	426,022
11/13/2021	375,734
11/14/2021	383,819
11/15/2021	422,750
11/16/2021	369,656
11/17/2021	406,957
11/18/2021	393,918
11/19/2021	398,819
11/20/2021	344,000
11/21/2021	360,200
11/22/2021	395,756
11/23/2021	398,000
11/24/2021	372,632
11/25/2021	332,575
11/26/2021	369,156
11/27/2021	357,519
11/28/2021	374,031
11/29/2021	384,231
11/30/2021	414,419
12/1/2021	428,287
12/2/2021	380,682
12/3/2021	385,881
12/4/2021	380,244
12/5/2021	365,518
12/6/2021	375,707
12/7/2021	407,237
12/8/2021	390,519
12/9/2021	502,362
12/10/2021	380,275
12/11/2021	352,257
12/12/2021	711,600
12/13/2021	1,276,425
12/14/2021	1,073,893
12/15/2021	824,369
12/16/2021	855,506
12/17/2021	604,663
12/18/2021	502,887
12/19/2021	471,282
12/20/2021	485,262
12/21/2021	441,494
12/22/2021	572,437
12/23/2021	1,376,307
12/24/2021	937,900
12/25/2021	1,110,175
12/26/2021	989,600
12/27/2021	1,566,568
12/28/2021	919,132
12/29/2021	898,475
12/30/2021	677,037
12/31/2021	583,794
1/1/2022	493,656
1/2/2022	465,925
1/3/2022	493,331
1/4/2022	478,807
1/5/2022	481,300
1/6/2022	466,056
1/7/2022	489,287
1/8/2022	425,194
1/9/2022	421,525
1/10/2022	449,363
1/11/2022	441,975
1/12/2022	418,343
1/13/2022	419,532

Date	Sutter Creek Effluent Flow (GPD)
1/14/2022	409,137
1/15/2022	388,450
1/16/2022	398,944
1/17/2022	431,831
1/18/2022	387,338
1/19/2022	410,393
1/20/2022	407,788
1/21/2022	385,519
1/22/2022	358,850
1/23/2022	353,250
1/24/2022	383,600
1/25/2022	386,037
1/26/2022	376,569
1/27/2022	404,219
1/28/2022	357,887
1/29/2022	345,069
1/30/2022	359,319
1/31/2022	381,456
2/1/2022	370,912
2/2/2022	386,488
2/3/2022	394,781
2/4/2022	368,188
2/5/2022	354,606
2/6/2022	514,081
2/7/2022	420,944
2/8/2022	440,106
2/9/2022	438,150
2/10/2022	376,506
2/11/2022	372,432
2/12/2022	351,631
2/13/2022	354,744
2/14/2022	416,537
2/15/2022	384,075
2/16/2022	371,456
2/17/2022	362,771
2/18/2022	359,552
2/19/2022	338,289
2/20/2022	349,258
2/21/2022	369,009
2/22/2022	362,382
2/23/2022	344,981
2/24/2022	372,675
2/25/2022	372,924
2/26/2022	336,096
2/27/2022	333,406
2/28/2022	371,913
3/1/2022	359,463
3/2/2022	363,627
3/3/2022	375,536
3/4/2022	379,576
3/5/2022	358,708
3/6/2022	354,003
3/7/2022	387,659
3/8/2022	363,116
3/9/2022	382,587
3/10/2022	361,466
3/11/2022	107,911
3/12/2022	268,566
3/13/2022	276,454
3/14/2022	320,623
3/15/2022	373,206
3/16/2022	379,536
3/17/2022	345,794
3/18/2022	367,818
3/19/2022	332,534
3/20/2022	346,611
3/21/2022	395,014
3/22/2022	376,457
3/23/2022	385,324
3/24/2022	394,829

Date	Sutter Creek Effluent Flow (GPD)
3/25/2022	404,906
3/26/2022	338,553
3/27/2022	358,991
3/28/2022	406,297
3/29/2022	385,162
3/30/2022	386,941
3/31/2022	387,570
4/1/2022	376,909
4/2/2022	353,132
4/3/2022	366,156
4/4/2022	395,156
4/5/2022	378,730
4/6/2022	388,825
4/7/2022	385,340
4/8/2022	375,060
4/9/2022	339,312
4/10/2022	352,500
4/11/2022	417,411
4/12/2022	391,230
4/13/2022	390,286
4/14/2022	477,253
4/15/2022	411,956
4/16/2022	522,683
4/17/2022	386,847
4/18/2022	414,356
4/19/2022	429,510
4/20/2022	436,942
4/21/2022	1,044,439
4/22/2022	291,487
4/23/2022	499,078
4/24/2022	463,902
4/25/2022	502,116
4/26/2022	466,175
4/27/2022	427,656
4/28/2022	423,709
4/29/2022	278,107
4/30/2022	305,768
5/1/2022	349,169
5/2/2022	346,794
5/3/2022	397,462
5/4/2022	398,419
5/5/2022	405,453
5/6/2022	407,956
5/7/2022	371,529
5/8/2022	365,334
5/9/2022	393,484
5/10/2022	394,850
5/11/2022	417,991
5/12/2022	418,812
5/13/2022	400,919
5/14/2022	376,813
5/15/2022	377,889
5/16/2022	409,436
5/17/2022	412,543
5/18/2022	410,954
5/19/2022	400,490
5/20/2022	375,816
5/21/2022	390,222
5/22/2022	372,575
5/23/2022	421,722
5/24/2022	407,084
5/25/2022	391,378
5/26/2022	395,588
5/27/2022	387,512
5/28/2022	364,266
5/29/2022	343,718
5/30/2022	358,444
5/31/2022	415,572
6/1/2022	391,506
6/2/2022	421,750

Date	Sutter Creek Effluent Flow (GPD)
6/3/2022	387,944
6/4/2022	376,828
6/5/2022	369,913
6/6/2022	413,197
6/7/2022	381,400
6/8/2022	393,437
6/9/2022	425,181
6/10/2022	321,085
6/11/2022	313,178
6/12/2022	344,140
6/13/2022	437,785
6/14/2022	373,159
6/15/2022	339,710
6/16/2022	381,390
6/17/2022	408,535
6/18/2022	342,743
6/19/2022	339,425
6/20/2022	405,247
6/21/2022	379,806
6/22/2022	368,888
6/23/2022	374,000
6/24/2022	372,869
6/25/2022	317,234
6/26/2022	324,934
6/27/2022	387,107
6/28/2022	375,025
6/29/2022	376,290
6/30/2022	366,657
7/1/2022	406,743
7/2/2022	323,085
7/3/2022	315,340
7/4/2022	346,357
7/5/2022	411,731
7/6/2022	408,787
7/7/2022	419,057
7/8/2022	370,093
7/9/2022	337,194
7/10/2022	352,888
7/11/2022	420,612
7/12/2022	382,988
7/13/2022	380,062
7/14/2022	389,150
7/15/2022	324,287
7/16/2022	364,788
7/17/2022	325,675
7/18/2022	400,081
7/19/2022	392,219
7/20/2022	383,806
7/21/2022	370,944
7/22/2022	392,106
7/23/2022	339,925
7/24/2022	354,019
7/25/2022	381,569
7/26/2022	417,456
7/27/2022	389,663
7/28/2022	399,575
7/29/2022	378,268
7/30/2022	356,519
7/31/2022	369,994
8/1/2022	403,181
8/2/2022	426,325
8/3/2022	368,156
8/4/2022	324,050
8/5/2022	349,005
8/6/2022	338,105
8/7/2022	347,596
8/8/2022	297,895
8/9/2022	304,456
8/10/2022	167,125
8/11/2022	390,944

Date	Sutter Creek Effluent Flow (GPD)
8/12/2022	351,310
8/13/2022	324,330
8/14/2022	343,763
8/15/2022	367,595
8/16/2022	430,865
8/17/2022	327,828
8/18/2022	324,980
8/19/2022	306,059
8/20/2022	262,434
8/21/2022	257,371
8/22/2022	268,292
8/23/2022	304,686
8/24/2022	297,028
8/25/2022	286,939
8/26/2022	305,556
8/27/2022	252,858
8/28/2022	268,216
8/29/2022	292,654
8/30/2022	298,215
8/31/2022	292,000
9/1/2022	296,299
9/2/2022	306,621
9/3/2022	235,865
9/4/2022	237,366
9/5/2022	260,255
9/6/2022	282,911
9/7/2022	277,756
9/8/2022	297,989
9/9/2022	309,174
9/10/2022	258,772
9/11/2022	274,229
9/12/2022	274,770
9/13/2022	297,913
9/14/2022	271,269
9/15/2022	322,007
9/16/2022	283,719
9/17/2022	271,362
9/18/2022	298,075
9/19/2022	315,002
9/20/2022	305,254
9/21/2022	288,111
9/22/2022	304,769
9/23/2022	284,827
9/24/2022	252,032
9/25/2022	278,408
9/26/2022	296,369
9/27/2022	290,591
9/28/2022	283,201
9/29/2022	
9/30/2022	
10/1/2022	266,252
10/2/2022	284,550
10/3/2022	317,787
10/4/2022	316,272
10/5/2022	321,424
10/6/2022	320,433
10/7/2022	308,322
10/8/2022	278,628
10/9/2022	281,053
10/10/2022	289,007
10/11/2022	293,530
10/12/2022	332,945
10/13/2022	294,405
10/14/2022	293,564
10/15/2022	281,669
10/16/2022	299,866
10/17/2022	313,506
10/18/2022	325,562
10/19/2022	309,321
10/20/2022	326,790

Date	Sutter Creek Effluent Flow (GPD)
10/21/2022	307,678
10/22/2022	274,571
10/23/2022	281,454
10/24/2022	307,600
10/25/2022	271,382
10/26/2022	310,317
10/27/2022	296,894
10/28/2022	320,256
10/29/2022	254,547
10/30/2022	290,251
10/31/2022	323,289
11/1/2022	335,830
11/2/2022	351,931
11/3/2022	318,169
11/4/2022	316,572
11/5/2022	319,862
11/6/2022	318,629
11/7/2022	364,009
11/8/2022	530,594
11/9/2022	361,781
11/10/2022	344,207
11/11/2022	331,418
11/12/2022	290,044
11/13/2022	294,750
11/14/2022	326,156
11/15/2022	330,103
11/16/2022	333,353
11/17/2022	321,716
11/18/2022	326,762
11/19/2022	292,322
11/20/2022	309,747
11/21/2022	348,847
11/22/2022	341,531
11/23/2022	352,169
11/24/2022	266,331
11/25/2022	293,181
11/26/2022	290,713
11/27/2022	301,537
11/28/2022	330,632
11/29/2022	334,762
11/30/2022	335,056
12/1/2022	574,341
12/2/2022	377,250
12/3/2022	1,015,050
12/4/2022	632,497
12/5/2022	526,737
12/6/2022	453,050
12/7/2022	371,647
12/8/2022	416,928
12/9/2022	379,544
12/10/2022	1,337,988
12/11/2022	1,337,787
12/12/2022	653,360
12/13/2022	681,731
12/14/2022	388,422
12/15/2022	415,093
12/16/2022	401,988
12/17/2022	374,609
12/18/2022	394,607
12/19/2022	387,831
12/20/2022	411,265
12/21/2022	386,663
12/22/2022	404,703
12/23/2022	385,075
12/24/2022	352,366
12/25/2022	317,753
12/26/2022	454,306
12/27/2022	1,370,588
12/28/2022	640,537
12/29/2022	727,638

Date	Sutter Creek Effluent Flow (GPD)
12/30/2022	2,057,212
12/31/2022	1,662,733
1/1/2023	1,166,036
1/2/2023	990,525
1/3/2023	913,794
1/4/2023	825,312
1/5/2023	1,407,831
1/6/2023	1,154,582
1/7/2023	1,025,135
1/8/2023	1,227,827
1/9/2023	1,509,094
1/10/2023	1,287,631
1/11/2023	941,500
1/12/2023	744,381
1/13/2023	1,466,875
1/14/2023	2,130,232
1/15/2023	1,521,593
1/16/2023	1,603,325
1/17/2023	1,024,725
1/18/2023	829,019
1/19/2023	664,556
1/20/2023	580,888
1/21/2023	562,018
1/22/2023	529,225
1/23/2023	455,244
1/24/2023	507,425
1/25/2023	507,425
1/26/2023	449,325
1/27/2023	434,188
1/28/2023	404,187
1/29/2023	392,613
1/30/2023	398,893
1/31/2023	428,682
2/1/2023	392,631
2/2/2023	420,625
2/3/2023	407,350
2/4/2023	431,712
2/5/2023	489,613
2/6/2023	448,556
2/7/2023	453,431
2/8/2023	411,482
2/9/2023	417,087
2/10/2023	405,281
2/11/2023	369,744
2/12/2023	372,350
2/13/2023	366,544
2/14/2023	378,131
2/15/2023	353,925
2/16/2023	362,438
2/17/2023	359,493
2/18/2023	335,663
2/19/2023	354,487
2/20/2023	394,750
2/21/2023	380,813
2/22/2023	348,656
2/23/2023	378,063
2/24/2023	779,656
2/25/2023	601,737
2/26/2023	914,332
2/27/2023	1,387,218
2/28/2023	
3/1/2023	1,004,413
3/2/2023	697,493
3/3/2023	612,105
3/4/2023	595,808
3/5/2023	862,405
3/6/2023	654,217
3/7/2023	612,267
3/8/2023	680,162
3/9/2023	1,272,686

Date	Sutter Creek Effluent Flow (GPD)
3/10/2023	1,636,981
3/11/2023	911,705
3/12/2023	852,385
3/13/2023	1,193,776
3/14/2023	1,581,664
3/15/2023	839,272
3/16/2023	676,145
3/17/2023	553,194
3/18/2023	514,082
3/19/2023	734,558
3/20/2023	684,725
3/21/2023	711,058
3/22/2023	760,066
3/23/2023	639,870
3/24/2023	579,913
3/25/2023	515,196
3/26/2023	509,883
3/27/2023	471,305
3/28/2023	855,556
3/29/2023	801,413
3/30/2023	685,729
3/31/2023	560,935
4/1/2023	435,400
4/2/2023	392,200
4/3/2023	368,800
4/4/2023	404,200
4/5/2023	376,200
4/6/2023	309,600
4/7/2023	326,400
4/8/2023	341,200
4/9/2023	273,000
4/10/2023	323,200
4/11/2023	338,600
4/12/2023	386,200
4/13/2023	298,400
4/14/2023	304,400
4/15/2023	253,600
4/16/2023	258,000
4/17/2023	294,400
4/18/2023	266,400
4/19/2023	287,400
4/20/2023	308,000
4/21/2023	272,400
4/22/2023	255,600
4/23/2023	280,400
4/24/2023	348,000
4/25/2023	299,800
4/26/2023	254,800
4/27/2023	299,200
4/28/2023	400,316
4/29/2023	239,800
4/30/2023	259,400
5/1/2023	254,600
5/2/2023	315,200
5/3/2023	289,400
5/4/2023	276,800
5/5/2023	303,000
5/6/2023	376,000
5/7/2023	293,000
5/8/2023	305,800
5/9/2023	308,400
5/10/2023	299,000
5/11/2023	292,800
5/12/2023	258,400
5/13/2023	215,200
5/14/2023	235,600
5/15/2023	286,800
5/16/2023	291,000
5/17/2023	285,400
5/18/2023	300,200

Date	Sutter Creek Effluent Flow (GPD)
5/19/2023	322,600
5/20/2023	297,000
5/21/2023	325,600
5/22/2023	286,800
5/23/2023	297,200
5/24/2023	329,400
5/25/2023	265,000
5/26/2023	261,400
5/27/2023	239,800
5/28/2023	231,800
5/29/2023	248,000
5/30/2023	264,000
5/31/2023	343,400
6/1/2023	325,200
6/2/2023	345,200
6/3/2023	325,800
6/4/2023	259,800
6/5/2023	278,600
6/6/2023	311,200
6/7/2023	318,800
6/8/2023	313,200
6/9/2023	354,400
6/10/2023	310,600
6/11/2023	315,400
6/12/2023	349,400
6/13/2023	304,000
6/14/2023	299,400
6/15/2023	348,400
6/16/2023	299,800
6/17/2023	266,600
6/18/2023	263,600
6/19/2023	304,400
6/20/2023	292,200
6/21/2023	313,000
6/22/2023	289,600
6/23/2023	309,200
6/24/2023	265,800
6/25/2023	281,200
6/26/2023	303,800
6/27/2023	324,600
6/28/2023	314,000
6/29/2023	321,000
6/30/2023	298,200
7/1/2023	241,400
7/2/2023	255,800
7/3/2023	288,200
7/4/2023	245,800
7/5/2023	307,200
7/6/2023	323,800
7/7/2023	319,200
7/8/2023	259,400
7/9/2023	270,200
7/10/2023	319,400
7/11/2023	300,400
7/12/2023	319,000
7/13/2023	310,400
7/14/2023	293,000
7/15/2023	276,800
7/16/2023	286,400
7/17/2023	327,800
7/18/2023	325,800
7/19/2023	300,400
7/20/2023	302,800
7/21/2023	318,000
7/22/2023	270,800
7/23/2023	289,200
7/24/2023	301,000
7/25/2023	306,400
7/26/2023	296,800
7/27/2023	308,400

Date	Sutter Creek Effluent Flow (GPD)
7/28/2023	303,000
7/29/2023	267,800
7/30/2023	273,200
7/31/2023	304,200
8/1/2023	290,800
8/2/2023	286,000
8/3/2023	296,000
8/4/2023	259,200
8/5/2023	286,200
8/6/2023	318,200
8/7/2023	336,000
8/8/2023	358,350
8/9/2023	385,425
8/10/2023	378,662
8/11/2023	353,788
8/12/2023	332,825
8/13/2023	338,800
8/14/2023	378,363
8/15/2023	378,363
8/16/2023	401,075
8/17/2023	355,650
8/18/2023	376,512
8/19/2023	320,800
8/20/2023	337,757
8/21/2023	362,168
8/22/2023	377,482
8/23/2023	354,637
8/24/2023	359,775
8/25/2023	326,881
8/26/2023	324,582
8/27/2023	329,843
8/28/2023	355,275
8/29/2023	345,082
8/30/2023	343,493
8/31/2023	369,644
9/1/2023	369,513
9/2/2023	326,625
9/3/2023	322,412
9/4/2023	350,219
9/5/2023	358,594
9/6/2023	384,312
9/7/2023	393,844
9/8/2023	373,031
9/9/2023	330,994
9/10/2023	324,681
9/11/2023	346,131
9/12/2023	410,394
9/13/2023	367,538
9/14/2023	395,925
9/15/2023	366,131
9/16/2023	329,431
9/17/2023	337,150
9/18/2023	375,000
9/19/2023	336,669
9/20/2023	354,794
9/21/2023	355,331
9/22/2023	364,544
9/23/2023	310,920
9/24/2023	313,092
9/25/2023	354,719
9/26/2023	152,456
9/27/2023	350,838
9/28/2023	362,006
9/29/2023	379,569
9/30/2023	357,618
10/1/2023	328,650
10/2/2023	371,857
10/3/2023	357,300
10/4/2023	331,900
10/5/2023	382,500

Date	Sutter Creek Effluent Flow (GPD)
10/6/2023	341,518
10/7/2023	339,182
10/8/2023	332,425
10/9/2023	366,537
10/10/2023	355,913
10/11/2023	340,081
10/12/2023	345,512
10/13/2023	406,375
10/14/2023	352,307
10/15/2023	339,981
10/16/2023	314,575
10/17/2023	350,287
10/18/2023	353,850
10/19/2023	353,007
10/20/2023	362,706
10/21/2023	328,937
10/22/2023	506,369
10/23/2023	392,419
10/24/2023	418,100
10/25/2023	396,216
10/26/2023	359,859
10/27/2023	368,548
10/28/2023	336,450
10/29/2023	325,877
10/30/2023	358,976
10/31/2023	350,410
11/1/2023	349,656
11/2/2023	386,860
11/3/2023	381,792
11/4/2023	342,374
11/5/2023	356,019
11/6/2023	392,784
11/7/2023	349,712
11/8/2023	340,591
11/9/2023	356,977
11/10/2023	345,601
11/11/2023	312,927
11/12/2023	978,804
11/13/2023	978,804
11/14/2023	346,300
11/15/2023	346,423
11/16/2023	366,622
11/17/2023	359,661
11/18/2023	379,770
11/19/2023	337,479
11/20/2023	323,533
11/21/2023	323,459
11/22/2023	353,200
11/23/2023	276,494
11/24/2023	349,589
11/25/2023	310,689
11/26/2023	310,469
11/27/2023	307,228
11/28/2023	340,780
11/29/2023	326,094
11/30/2023	311,853
12/1/2023	373,780
12/2/2023	312,299
12/3/2023	301,146
12/4/2023	313,904
12/5/2023	374,850
12/6/2023	330,667
12/7/2023	379,150
12/8/2023	318,986
12/9/2023	370,272
12/10/2023	300,353
12/11/2023	335,086
12/12/2023	307,483
12/13/2023	370,579
12/14/2023	400,929

Date	Sutter Creek Effluent Flow (GPD)
12/15/2023	385,392
12/16/2023	364,776
12/17/2023	304,889
12/18/2023	422,652
12/19/2023	421,495
12/20/2023	414,610
12/21/2023	350,150
12/22/2023	359,398
12/23/2023	325,638
12/24/2023	265,559
12/25/2023	234,094
12/26/2023	290,817
12/27/2023	307,976
12/28/2023	401,904
12/29/2023	387,304
12/30/2023	534,061
12/31/2023	295,246
1/1/2024	273,164
1/2/2024	483,243
1/3/2024	536,383
1/4/2024	415,064
1/5/2024	418,583
1/6/2024	392,136
1/7/2024	353,686
1/8/2024	343,916
1/9/2024	340,165
1/10/2024	364,006
1/11/2024	374,913
1/12/2024	356,625
1/13/2024	582,800
1/14/2024	483,900
1/15/2024	444,819
1/16/2024	570,618
1/17/2024	538,875
1/18/2024	478,391
1/19/2024	384,847
1/20/2024	535,591
1/21/2024	758,193
1/22/2024	818,591
1/23/2024	543,072
1/24/2024	566,200
1/25/2024	500,615
1/26/2024	420,860
1/27/2024	383,553
1/28/2024	387,366
1/29/2024	330,590
1/30/2024	354,338
1/31/2024	449,575
2/1/2024	734,827
2/2/2024	911,148
2/3/2024	662,887
2/4/2024	765,447
2/5/2024	797,644
2/6/2024	648,284
2/7/2024	818,903
2/8/2024	632,163
2/9/2024	597,144
2/10/2024	438,196
2/11/2024	418,891
2/12/2024	419,916
2/13/2024	404,978
2/14/2024	472,015
2/15/2024	458,629
2/16/2024	412,696
2/17/2024	489,907
2/18/2024	750,768
2/19/2024	858,460
2/20/2024	774,306
2/21/2024	708,300
2/22/2024	563,875

Date	Sutter Creek Effluent Flow (GPD)
2/23/2024	513,141
2/24/2024	453,909
2/25/2024	433,656
2/26/2024	448,275
2/27/2024	405,113
2/28/2024	396,119
2/29/2024	693,868
3/1/2024	1,520,063
3/2/2024	1,233,994
3/3/2024	1,156,906
3/4/2024	798,325
3/5/2024	664,225
3/6/2024	535,956
3/7/2024	500,600
3/8/2024	482,288
3/9/2024	447,937
3/10/2024	416,900
3/11/2024	430,063
3/12/2024	466,581
3/13/2024	409,294
3/14/2024	416,112
3/15/2024	390,319
3/16/2024	374,130
3/17/2024	387,676
3/18/2024	427,131
3/19/2024	414,757
3/20/2024	412,043
3/21/2024	394,913
3/22/2024	593,356
3/23/2024	667,988
3/24/2024	676,487
3/25/2024	540,838
3/26/2024	481,762
3/27/2024	488,575
3/28/2024	511,350
3/29/2024	578,200
3/30/2024	523,369
3/31/2024	420,000
4/1/2024	472,475
4/2/2024	473,312
4/3/2024	459,750
4/4/2024	640,463
4/5/2024	673,637
4/6/2024	492,794
4/7/2024	455,444
4/8/2024	129,200
4/9/2024	741,737
4/10/2024	420,132
4/11/2024	404,768
4/12/2024	407,069
4/13/2024	653,963
4/14/2024	501,925
4/15/2024	452,193
4/16/2024	428,200
4/17/2024	409,913
4/18/2024	395,044
4/19/2024	383,612
4/20/2024	354,000
4/21/2024	357,644
4/22/2024	382,481
4/23/2024	416,506
4/24/2024	406,569
4/25/2024	417,094
4/26/2024	369,919
4/27/2024	339,337
4/28/2024	331,156
4/29/2024	351,444
4/30/2024	409,563
5/1/2024	250,000
5/2/2024	204,400

Date	Sutter Creek Effluent Flow (GPD)
5/3/2024	247,600
5/4/2024	332,600
5/5/2024	256,400
5/6/2024	340,200
5/7/2024	464,400
5/8/2024	411,600
5/9/2024	379,000
5/10/2024	233,200
5/11/2024	279,400
5/12/2024	276,800
5/13/2024	235,200
5/14/2024	253,200
5/15/2024	292,400
5/16/2024	286,000
5/17/2024	240,000
5/18/2024	222,600
5/19/2024	271,000
5/20/2024	229,600
5/21/2024	295,800
5/22/2024	231,000
5/23/2024	1,371,400
5/24/2024	320,200
5/25/2024	275,200
5/26/2024	255,200
5/27/2024	340,000
5/28/2024	1,159,200
5/29/2024	222,200
5/30/2024	276,400
5/31/2024	420,000
6/1/2024	357,060
6/2/2024	329,509
6/3/2024	384,351
6/4/2024	388,477
6/5/2024	386,655
6/6/2024	372,454
6/7/2024	392,656
6/8/2024	329,524
6/9/2024	317,214
6/10/2024	353,788
6/11/2024	319,672
6/12/2024	358,449
6/13/2024	330,927
6/14/2024	281,070
6/15/2024	303,452
6/16/2024	285,869
6/17/2024	325,500
6/18/2024	321,651
6/19/2024	303,523
6/20/2024	368,003
6/21/2024	352,665
6/22/2024	295,968
6/23/2024	310,856
6/24/2024	354,438
6/25/2024	335,048
6/26/2024	329,302
6/27/2024	670,097
6/28/2024	297,337
6/29/2024	322,211
6/30/2024	329,786
7/1/2024	329,786
7/2/2024	339,692
7/3/2024	325,353
7/4/2024	323,780
7/5/2024	316,123
7/6/2024	293,202
7/7/2024	305,367
7/8/2024	318,019
7/9/2024	335,375
7/10/2024	374,305
7/11/2024	337,884

Date	Sutter Creek Effluent Flow (GPD)
7/12/2024	347,164
7/13/2024	294,373
7/14/2024	313,094
7/15/2024	323,982
7/16/2024	323,982
7/17/2024	332,486
7/18/2024	338,955
7/19/2024	345,831
7/20/2024	297,508
7/21/2024	306,319
7/22/2024	285,671
7/23/2024	313,341
7/24/2024	338,246
7/25/2024	319,393
7/26/2024	333,719
7/27/2024	297,572
7/28/2024	298,759
7/29/2024	322,761
7/30/2024	353,793
7/31/2024	335,279
8/1/2024	337,500
8/2/2024	320,636
8/3/2024	303,335
8/4/2024	296,478
8/5/2024	292,559
8/6/2024	338,372
8/7/2024	314,666
8/8/2024	303,796
8/9/2024	324,710
8/10/2024	344,862
8/11/2024	359,366
8/12/2024	344,050
8/13/2024	341,181
8/14/2024	350,203
8/15/2024	341,257
8/16/2024	294,968
8/17/2024	306,650
8/18/2024	323,035
8/19/2024	359,618
8/20/2024	362,507
8/21/2024	346,531
8/22/2024	332,459
8/23/2024	206,957
8/24/2024	248,371
8/25/2024	279,047
8/26/2024	325,313
8/27/2024	362,806
8/28/2024	382,816
8/29/2024	318,390
8/30/2024	311,982
8/31/2024	284,215
9/1/2024	283,072
9/2/2024	276,463
9/3/2024	349,118
9/4/2024	362,841
9/5/2024	327,491
9/6/2024	299,496
9/7/2024	266,019
9/8/2024	304,866
9/9/2024	317,990
9/10/2024	312,947
9/11/2024	283,641
9/12/2024	320,209
9/13/2024	291,066
9/14/2024	262,034
9/15/2024	286,750
9/16/2024	315,710
9/17/2024	306,706
9/18/2024	299,606
9/19/2024	307,391

Date	Sutter Creek Effluent Flow (GPD)
9/20/2024	310,740
9/21/2024	263,616
9/22/2024	262,938
9/23/2024	286,134
9/24/2024	312,700
9/25/2024	286,053
9/26/2024	284,784
9/27/2024	273,932
9/28/2024	252,803
9/29/2024	259,765
9/30/2024	294,210

ATTACHMENT B

Amador Regional Sanitation Agency
2024 Individual Water Balance Update

Draft 2023 Sutter Creek WWTP I/I Analysis Update
by Carollo Engineers

THIS PAGE INTENTIONALLY LEFT BLANK

PROJECT MEMORANDUM

CITY OF SUTTER CREEK

Wastewater Treatment Plant Upgrade Project

Project No.: 12029A60
Date: October 10, 2023
Prepared By: Michael Wetterau, PE
Reviewed By: Ryan Orgill, PE; Louis Lefebvre, PE; Christina Romano, PE
Subject: Infiltration and Inflow Analysis Update

Background and Purpose

As part of the 2020 to 2021 Project Report efforts, Carollo Engineers (Carollo) developed a simple model of the collection system to estimate wet weather flow (WWF) design criteria. This information was used to conceptually size project alternative facilities evaluated in the Project Report. A typical peak wet weather flow (PWWF) factor ranges from three to six times the average daily flow (ADF). By comparison the City of Sutter Creek's (City's) PWWF is approximately 16, an order of magnitude higher than typical.

The City has been implementing infiltration and inflow (I/I) mitigation projects with the goal of reducing I/I impacts on its wastewater system. In the winter of 2023, the City performed sewer flow monitoring to help determine the areas with the highest I/I flows to further focus I/I reduction efforts. Some of the most common sources of I/I are shown on Figure 1.

Carollo was asked to review the data collected and incorporate it into the wastewater treatment plant (WWTP) project rescoping efforts. This memorandum includes the following:

- Verification of existing WWF factors.
- Identification of potential priority zones within the existing wastewater collection system for potential future I/I reduction projects.
- Development of ranges of possible WWF reduction if I/I reduction projects are implemented.

These three items are important because they could affect the size and cost of the WWTP upgrade project, as well as optimize the value of any future I/I reduction efforts. WWF factors could be used to size pumping facilities, sewage screens and grinders (i.e., headworks facilities, equalization tanks and sewer pipes). With lower WWFs, these facilities could be smaller and less costly. Understanding the areas that could be prioritized for I/I mitigation projects will increase the value of resources spent on those projects while decreasing the amount of time to observe benefits (i.e., reduced WWFs). Furthermore, I/I mitigation projects have the potential to increase the service life of existing sewers without costly replacement. Lastly, understanding the range of WWF reduction the City could see by undertaking future I/I reduction projects sets the level of expected benefit. The analysis considered historical WWTP influent flow along with temporary flow monitoring data to determine the expected WWTP influent flow during a design storm event.

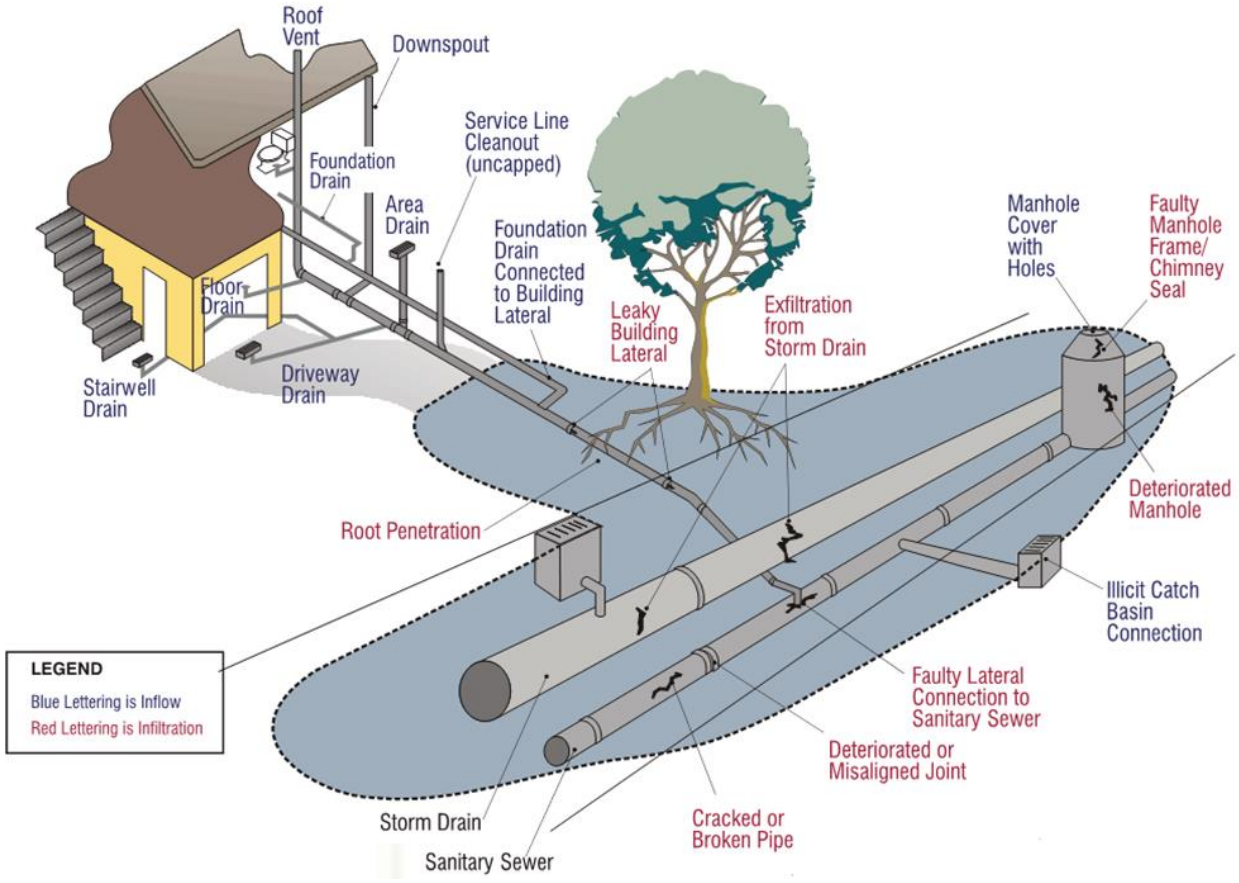


Figure 1 Typical Sources of I/I

Methods

Historical influent plant data was used to determine the dry weather flow (DWF) and WWF conditions during the monitoring period. A hydraulic model was developed using InfoSWMM[1] to model the influent flow at the WWTP for historical events. The hydraulic model's parameters were adjusted to match historical flow monitoring data.

For this project, DWF monitoring was determined based on historical plant data. Figure 2 shows the weekday and weekend hourly DWF multipliers for the entire system. A multiplier equal to 0.5 indicates at that hour of the day the flow is equal to one-half of the ADF.

[1] InfoSWMM is a fully dynamic, geospatial wastewater and stormwater modeling and management software application, which is built to run within the ESRI ArcGIS software platform. The hydraulic modeling engine for the InfoSWMM software package uses the Environmental Protection Agency's (EPA) Storm Water Management Model (SWMM), which is widely used throughout the world for planning, analysis, and design related to stormwater runoff, combined sewers, sanitary sewers, and other drainage systems. InfoSWMM routes flows through the model using the Dynamic Wave method, which solves the complete Saint Venant, one dimensional equations of fluid flow.

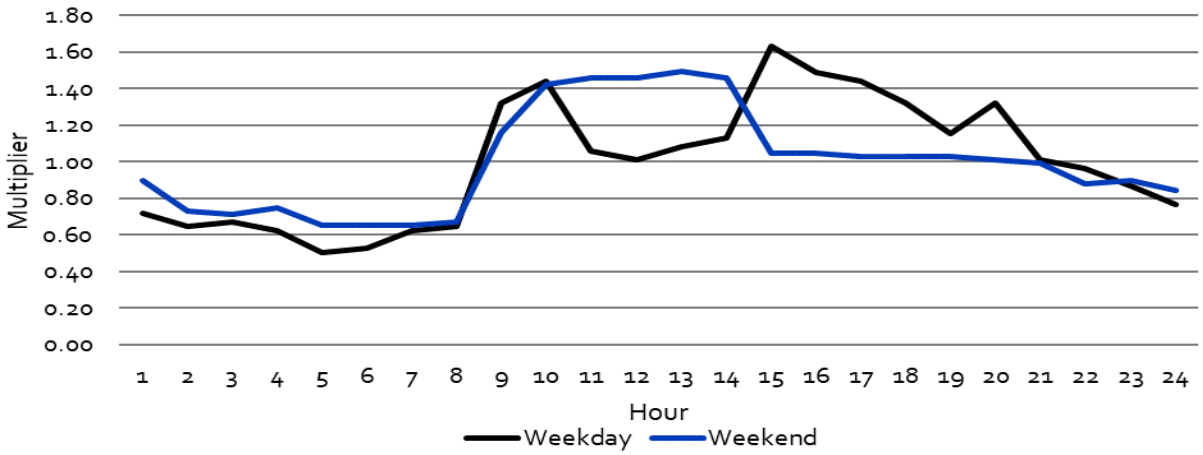


Figure 2 Weekday and Weekend DWF Hourly Multiplier

The WWF calibration consists of using actual influent WWTP flow data recorded during wet weather events, for which we have rainfall data, and adjusting model parameters so that the modeled flows match the actual flows. The model parameters are discussed later. The WWF calibration consisted of five periods with storm events. The amount of I/I is essentially the difference between the WWF and DWF components. The storm events were identified between the following dates:

- Period 1: January 2, 2017, through January 15, 2017.
- Period 2: February 5, 2017, through February 12, 2017.
- Period 3: March 12, 2018, through March 24, 2018.
- Period 4: March 1, 2019, through March 8, 2019.
- Period 5: March 9, 2023, through March 16, 2023.

The main step in the WWF calibration process includes creating a custom unit hydrograph for the City service area using the "RTK Method," which is widely used in collection system master planning. Using the RTK Method, the I/I unit hydrograph is the summation of three separate triangular hydrographs (short term, medium term, and long term), which are each defined by three parameters: R, T, and K. R represents the fraction of rainfall over the sewer basin that enters the collection system; T represents the time to peak of the hydrograph; K represents the ratio from time to peak to time of end of hydrograph. Therefore, there are a total of nine separate variables associated with a unit hydrograph. Figure 3 shows the shape of an example unit hydrograph. The WWF calibration sheets show figures comparing the measured data and model results for flow in response to rainfall. The WWF calibration sheets are included in Attachment A.

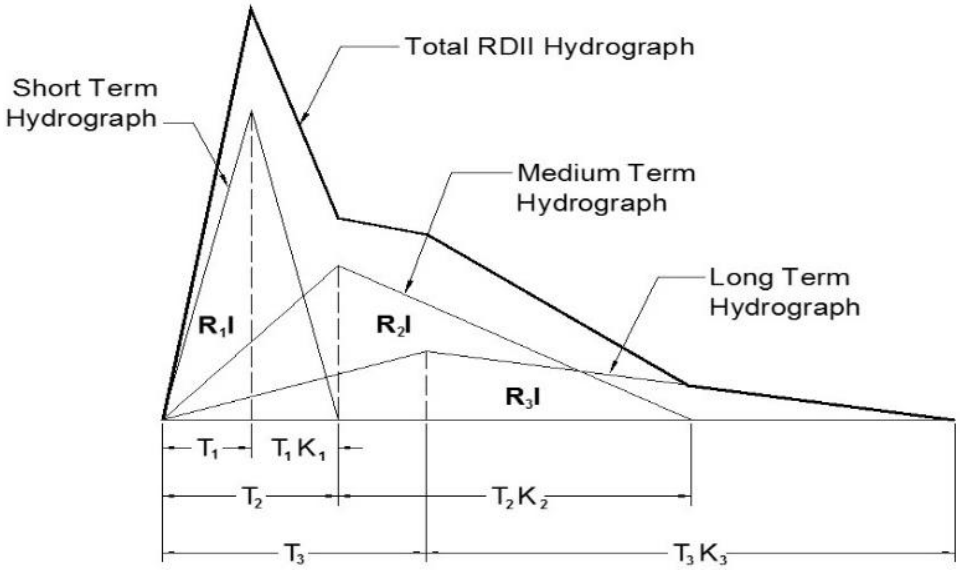


Figure 3 Example Rainfall Dependent Infiltration and Inflow (RDII) Unit Hydrograph

Design Storm

Design storms are rainfall events used to analyze the performance of a collection system under select wet weather events. The City's design storm was routed through the collection system model to determine PWWFs. The first step in the development of the design storm is to define its recurrence interval and rainfall duration. The recurrence interval is based on the probability that a given rainfall event will occur or be exceeded in any given year. For example, a "100-year storm" means there is a 1 in 100 chance that a storm as large as or larger than this event will occur at a specific location in any year.

Duration is the length of time in which the rainfall occurs. It is industry standard in California to use the 10-year, 24-hour design storm for analyzing wastewater collection system performance during PWWF conditions and for sizing some WWTP facilities (e.g., equalization tanks and pump stations). The 10-year, 24-hour design storm depth is 3.98 inches as document by National Oceanic and Atmospheric Administration (NOAA) Atlas 14.

Once the design storm recurrence interval, duration, and associated rainfall volume have been determined, the next step in defining the design storm is to distribute the total rainfall over the duration of the storm. The Natural Resources Conservation Service (NRCS) Type 1A rainfall distribution was used. Figure 4 shows the 10-year, 24-hour design storm.

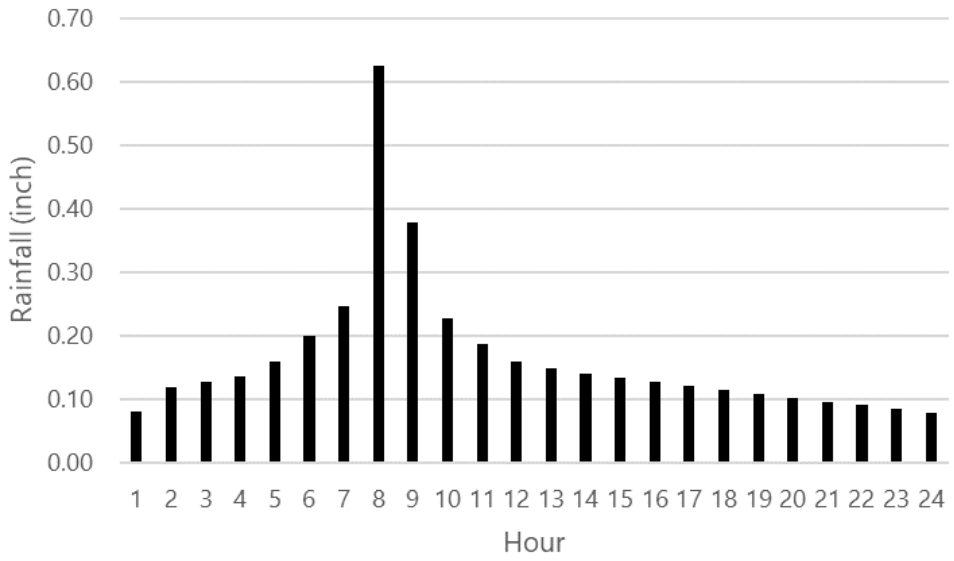


Figure 4 10-year 24-hour Design Storm Event

Hydraulic Evaluation

Following the DWF and WWF calibration of the model the design storm was applied to forecast sewer flow. The hydraulic analysis assumes all flow is conveyed to the WWTP and no flow is restricted or escapes the collection system. Figure 5 shows the peak influent flow based on the design storm at the WWTP. The model predicts that a peak hour WWF of 5.36 million gallons per day (mgd) could be observed if there were no restrictions in the collection system and if no wastewater escapes the collection system. Additionally, the model predicts that a peak day WWF of 3.16 mgd could be observed at the WWTP as a result of the 10-year, 24-hour design storm event.

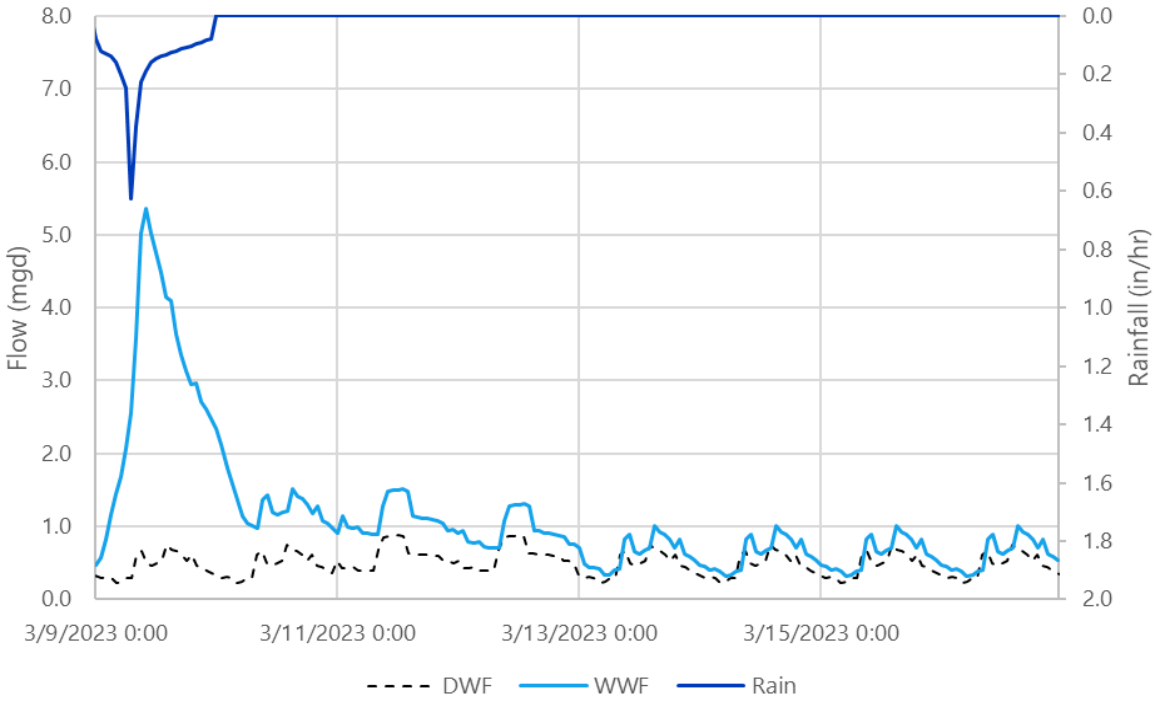


Figure 5 Modeled Influent PWWF - 10-year, 24-hour Design Storm

Temporary Flow Monitoring Program

The City completed a temporary flow monitoring program between March 8, 2023, and April 6, 2023. The flow monitoring program consisted of ten flow meters installed throughout the collection system in hopes of identifying areas in the collection system with high amounts of I/I. Table 1 summarizes the measured flow data.

Table 1 Temporary Flow Monitoring Data Summarized

Basin	Measured DWF (mgd)	Measured Peak Flow (mgd)	Peaking Factor	Pipe Length (feet)
1	0.04	0.17	4.1	0
2	0.23	1.97	8.5	18,670
3	0.07	0.16	2.3	8,010
4	0.07	0.21	3.1	7,000
5	0.01	0.13	17.9	2,960
6	0.01	0.12	9.6	3,470
7	0.18	0.76	4.1	14,480
8	0.07	0.33	5.0	4,300
9	0.08	0.46	5.5	7,020
10	0.02	0.10	5.4	10,900

Notes:
(1) Source: Flow monitoring program March 8, 2023, through April 6, 2023.

I/I Reduction

The adverse effects of I/I are that it increases both the flow volume and peak flow rate. If the City were to implement an I/I reduction program this may allow for reducing the size of some WWTP facilities (e.g., pump stations and equalization tanks). An efficient I/I reduction program will target rehabilitating the portions of the sewer collection system with the highest I/I rates. The City's sewer collection system was broken down into portions, referred to as basins (see Figure 6). I/I rates within the different basins were calculated per length of pipe in that basin. Basins 5, 6, 8, and 9 have the highest I/I rates per foot of sewer pipe and could be targeted for I/I reduction efforts. Collectively these basins account for approximately 18 percent of the total sewer collection system by length.

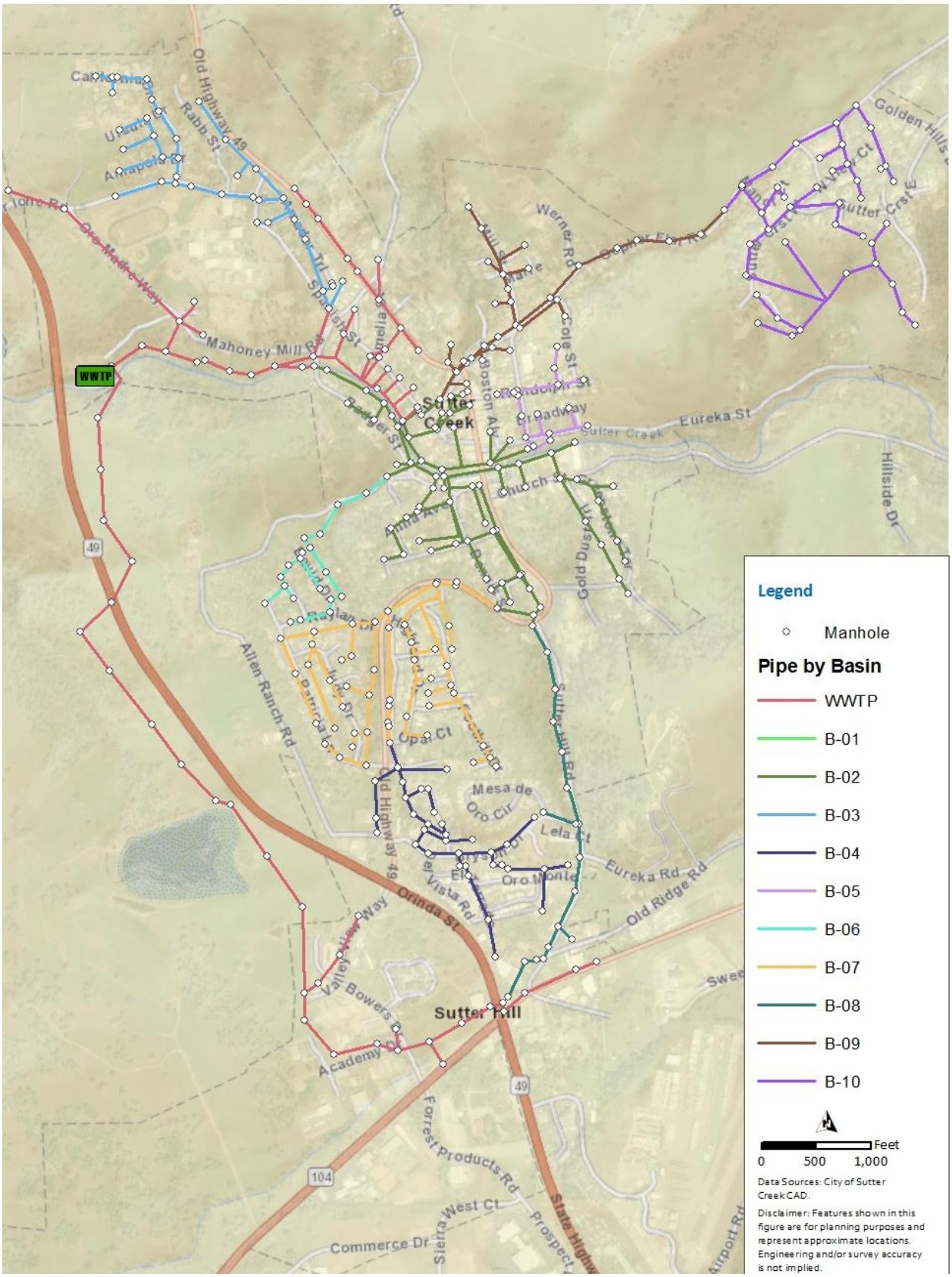


Figure 6 Meter Basins Map

There are a variety of I/I reduction techniques that can be used. I/I reduction projects can range from manhole rehabilitation to sewer main replacement/rehabilitation and lateral rehabilitation. Implementing an I/I reduction program is no guarantee that the desired I/I reduction will be achieved. However, there is a baseline benefit to rehabbing existing facilities because it would extend their life. For this analysis 30 percent and 65 percent I/I reduction in the selected basins was assumed to estimate the potential reduction in peak flows. Table 2 summarizes the potential reduction of peak influent flow at the WWTP for the range of I/I reduction assumed. Based on a review of historical literature and Carollo's experience in order to achieve an I/I reduction of 65 percent, the City may need to incorporate pipe, manhole, and service laterals rehabilitation.

Table 2 Peak Influent Flows

Scenario	Peak Influent Flow (mgd)
No Reduction	5.36
30% Reduction in Basins 5, 6, 8, and 9	4.74
65% Reduction in Basins 5, 6, 8, and 9	4.03

Conclusion

This memorandum verified existing WWFs, identified basins with highest I/I, and identified potential reductions in WWFs if I/I reduction projects are implemented in the priority basins. The planned WWTP upgrade project could expect a peak hour flow of 5.36 mgd and a peak day flow of 3.16 mgd as a result of the 10-year, 24-hour design storm.

Basins 5, 6, 8, and 9 could be prioritized for I/I reductions because I/I rates are highest in these basins. Approximately 18 percent of the total sewer collection system length is in these basins. If I/I is reduced in these basins between 30 percent and 65 percent a reduction in peak hour flow between 0.62 mgd and 1.33 mgd could be realized.

ATTACHMENT C

Amador Regional Sanitation Agency
2024 Individual Water Balance Update

ARSA Storage Reservoirs Supporting Documentation

THIS PAGE INTENTIONALLY LEFT BLANK

HENDERSON RESERVOIR AERIAL TOPOGRAPHIC SURVEY DATA
PROVIDED BY ARSA STAFF AND GARY GHIO



08-768 WARD ASSOCIATES
HENDERSON RESERVOIR
SCALE 1" = 100', 1' C.I.
FLOWN 11-7-08
BY: AMERICAN AERIAL MAPPING, INC.



SITE PLAN

LEGEND:

WATERSHED RUNOFF AREA, (4.3 ACRES)

0 300 600

Weber, Ghio & Associates, Inc.
Professional Engineers
394 East Saint Charles
P.O. Box 251
SAN ANDREAS, CALIFORNIA 95249

PROJECT NAME:

HENDERSON RESERVOIR RUNOFF AREA

PROJECT No.: 2457

Plot Aug 09, 2017 at 9:35am M:\Projects\ARSA\2457\Reservoirs\Runoff Areas.dwg



SITE PLAN

LEGEND:

WATERSHED RUNOFF AREA,
(14.0 ACRES)

N

0 300 600

Weber, Ghio & Associates, Inc.
Professional Engineers
394 East Saint Charles
P.O. Box 251
SAN ANDREAS, CALIFORNIA 95249

PROJECT NAME:

PRESTON RESERVOIR RUNOFF AREA

PROJECT No.: 2457

Plot Aug 09, 2017 at 8:58am M:\Projects\ARSA\2457\Reservoirs\Runoff Areas.dwg

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Safety of Dams

Dam Information Summary

Preston Dam, No. 2029.003, Area 6, Amador County

Amador Regional Sanitation Authority

Dam Dimensions

Dam Height, Ft	40.00
Crest Width, Ft	20.00
Dam Length, Ft	647.00
Crest Elevation, Ft	360.00
Volume, CY	86,519.00
Barrier Height, Ft	35.00
MPWS Elev., Ft	355.00
MPWS Capacity, AF	268.00
Parapet Code	None
Parapet Height, Ft	0.00
Total Freeboard, Ft	5.00
Oper. Freeboard, Ft	5.00

Certificate Information

Max Cert. Elev., Ft	355.00
Issue Date	10/6/1980

Reservoir

Name	Primary Reservoir
Duration	Year Round
Surface Area, Ac	17.00
Storage Capacities, AF	
at Cert Elev.	268.00
at Dam Crest	0.00
at SW Crest	0.00

Primary Spillway

Crest Elev, Ft	355.00
Type	(Unselected)
Gates	Ungated

Dam Information

Type	Earth
Status	Certified
Purpose(s)	STO
Use(s)	SEW, IRR

Location

Year Built	1949
Latitude	38.3698°
Longitude	-120.9398°
Stream	Tr Mule Creek
Tributary To	
US Public Land Survey System	
-¼, S24, T6N, R9E, MD B&M	
Quad Book	2C-37A3
Quad Map	IONE
National Forest	N.I.N.F.
NID Number	CA00012

Hazard Potential

Hazard Class	2B
Total Class Weight	14
Fed. Hazard Class	Significant

Jurisdiction

FERC Number	
Exempt Desc.	(Unselected)

Attributes

Inoperable	No
Receives Spillway Letter	No
Instrumentation	No

Hydrology

Estimate Date	8/18/1948
Est. Type	DWR
Drainage Area, Sq Mi	0.12
Mean Annual Precip, In	0.00
Peak Inflow, cfs	
Peak Outflow, cfs	
Max Stage, Ft	
Residual Freeboard, Ft	0.00

Seismic Parameters

Estimate Date	
Fault	
Max Magnitude	
Deterministic Level	
Peak Ground Acc., g	
Arias Intensity, m/s	
Shear Wave Vel., m/s	

Outlet Works

Type	
Drawdown Estimates, Days	
Short Term	
Long Term	

Restrictions

Restriction	None
Duration	
Restricted Elev., Ft	
Reason	
Start Date	

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Safety of Dams

Dam Information Summary

Preston Forebay Dam, No. 2029.002, Area 6, Amador County

Amador Regional Sanitation Authority

Dam Dimensions

Dam Height, Ft	40.00
Crest Width, Ft	0.00
Dam Length, Ft	176.00
Crest Elevation, Ft	624.00
Volume, CY	22,400.00
Barrier Height, Ft	36.00
MPWS Elev., Ft	620.00
MPWS Capacity, AF	30.00
Parapet Code	None
Parapet Height, Ft	0.00
Total Freeboard, Ft	4.00
Oper. Freeboard, Ft	4.00

Certificate Information

Max Cert. Elev., Ft	620.00
Issue Date	10/6/1980

Reservoir

Name	Primary Reservoir
Duration	Year Round
Surface Area, Ac	2.00
Storage Capacities, AF	
at Cert Elev.	30.00
at Dam Crest	0.00
at SW Crest	0.00

Primary Spillway

Crest Elev, Ft	620.00
Type	(Unselected)
Gates	Ungated

Dam Information

Type	Earth
Status	Certified
Purpose(s)	REG
Use(s)	SEW, IRR

Location

Year Built	1892
Latitude	38.3754°
Longitude	-120.9233°
Stream	Offstream
Tributary To	
US Public Land Survey System	
-¼, S18, T6N, R10E, MD B&M	
Quad Book	2C-37A1
Quad Map	IRISH HILL
National Forest	N.I.N.F.
NID Number	CA00006

Hazard Potential

Hazard Class	1C
Total Class Weight	6
Fed. Hazard Class	Low

Jurisdiction

FERC Number	
Exempt Desc.	(Unselected)

Attributes

Inoperable	No
Receives Spillway Letter	No
Instrumentation	No

Hydrology

Estimate Date	4/19/1940
Est. Type	1000
Drainage Area, Sq Mi	0.00
Mean Annual Precip, In	0.00
Peak Inflow, cfs	20.00
Peak Outflow, cfs	20.00
Max Stage, Ft	2.20
Residual Freeboard, Ft	2.20

Seismic Parameters

Estimate Date	
Fault	
Max Magnitude	
Deterministic Level	
Peak Ground Acc., g	
Arias Intensity, m/s	
Shear Wave Vel., m/s	

Outlet Works

Type	
Drawdown Estimates, Days	
Short Term	
Long Term	

Restrictions

Restriction	None
Duration	
Restricted Elev., Ft	
Reason	
Start Date	

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Safety of Dams

Dam Information Summary

Henderson Dam, No. 2029.000, Area 6, Amador County

Amador Regional Sanitation Authority

Dam Dimensions

Dam Height, Ft	56.00
Crest Width, Ft	8.00
Dam Length, Ft	630.00
Crest Elevation, Ft	86.50
Volume, CY	70,000.00
Barrier Height, Ft	53.00
MPWS Elev., Ft	83.50
MPWS Capacity, AF	500.00
Parapet Code	None
Parapet Height, Ft	0.00
Total Freeboard, Ft	3.00
Oper. Freeboard, Ft	3.00

Certificate Information

Max Cert. Elev., Ft	83.50
Issue Date	10/6/1980

Reservoir

Name	Primary Reservoir
Duration	Year Round
Surface Area, Ac	31.00
Storage Capacities, AF	
at Cert Elev.	500.00
at Dam Crest	595.00
at SW Crest	500.00

Primary Spillway

Crest Elev, Ft	83.50
Type	Sharp Crested Weir
Gates	Ungated

Dam Information

Type	Earth
Status	Certified
Purpose(s)	STO
Use(s)	SEW, IRR

Location

Year Built	1923
Latitude	38.3856°
Longitude	-120.8771°
Stream	Jackass Creek
Tributary To	
US Public Land Survey System	
-¼, S9, T6N, R10E, MD B&M	
Quad Book	2C-37A1
Quad Map	IRISH HILL
National Forest	N.I.N.F.
NID Number	CA00005

Hazard Potential

Hazard Class	2B
Total Class Weight	12
Fed. Hazard Class	Significant

Jurisdiction

FERC Number	
Exempt Desc.	(Unselected)

Attributes

Inoperable	No
Receives Spillway Letter	No
Instrumentation	No

Hydrology

Estimate Date	5/2/1971
Est. Type	1000
Drainage Area, Sq Mi	1.00
Mean Annual Precip, In	0.00
Peak Inflow, cfs	752.00
Peak Outflow, cfs	489.00
Max Stage, Ft	785.30
Residual Freeboard, Ft	1.30

Seismic Parameters

Estimate Date	
Fault	
Max Magnitude	
Deterministic Level	
Peak Ground Acc., g	
Arias Intensity, m/s	
Shear Wave Vel., m/s	

Outlet Works

Type	
Drawdown Estimates, Days	
Short Term	
Long Term	

Restrictions

Restriction	None
Duration	
Restricted Elev., Ft	
Reason	
Start Date	

HENDERSON RESERVOIR STAGE-STORAGE DATA

BASED ON AERIAL TOPOGRAPHIC SURVEY DATA
PROVIDED BY ARSA STAFF AND GARY GHIO

AMADOR REGIONAL SANITATION AUTHORITY

HENDERSON RESERVOIR VOLUME

4/21/2015

Elev (ft)	Area (ac)	Volume (ac-ft)	Cumulative Volume (ac-ft)	Cumulative Volume (MG)	Incremental Volume Increase (ac-ft)	
780	30.06	14.96	451.83	147.22	14.96	Spillway
779.5	29.80	14.84	436.86	142.34	14.84	
779	29.57	14.70	422.02	137.51	14.70	
778.5	29.22	14.53	407.33	132.72	14.53	
778	28.88	14.34	392.80	127.99	14.34	2 ' Freeboard
777.5	28.47	14.14	378.46	123.31	14.14	
777	28.07	13.92	364.33	118.71	13.92	
776.5	27.62	13.70	350.41	114.17	13.70	
776	27.17	13.47	336.71	109.71	13.47	
775.5	26.69	13.23	323.24	105.32	13.23	
775	26.23	12.97	310.01	101.01	12.97	
774.5	25.67	12.69	297.04	96.78	12.69	
774	25.11	12.39	284.34	92.65	12.39	
773.5	24.46	12.10	271.95	88.61	12.10	
773	23.96	11.83	259.84	84.66	11.83	
772.5	23.34	11.53	248.02	80.81	11.53	
772	22.78	11.20	236.49	77.05	11.20	
771.5	22.01	10.86	225.29	73.41	10.86	
771	21.41	10.54	214.44	69.87	10.54	
770.5	20.73	10.18	203.90	66.44	10.18	
770	19.99	9.85	193.72	63.12	9.85	
769.5	19.40	9.55	183.87	59.91	9.55	
769	18.79	9.24	174.33	56.80	9.24	
768.5	18.17	8.94	165.09	53.79	8.94	
768	17.57	8.64	156.15	50.88	8.64	
767.5	16.97	8.33	147.51	48.06	8.33	
767	16.34	8.03	139.19	45.35	8.03	
766.5	15.79	7.79	131.15	42.73	7.79	
766	15.36	7.57	123.37	40.20	7.57	
765.5	14.93	7.36	115.80	37.73	7.36	
765	14.52	7.16	108.43	35.33	7.16	
764.5	14.11	6.96	101.28	33.00	6.96	
764	13.73	6.74	94.32	30.73	6.74	
763.5	13.25	6.53	87.57	28.53	6.53	
763	12.86	6.34	81.05	26.41	6.34	
762.5	12.51	6.16	74.71	24.34	6.16	
762	12.13	5.91	68.55	22.34	5.91	
761.5	11.52	5.67	62.64	20.41	5.67	
761	11.15	5.47	56.97	18.56	5.47	
760.5	10.75	5.26	51.50	16.78	5.26	
760	10.30	5.03	46.23	15.06	5.03	
759.5	9.83	4.80	41.20	13.42	4.80	
759	9.37	4.57	36.40	11.86	4.57	
758.5	8.91	4.35	31.83	10.37	4.35	

758	8.48	4.12	27.48	8.96	4.12
757.5	8.00	3.89	23.36	7.61	3.89
757	7.57	3.65	19.47	6.34	3.65
756.5	7.03	3.40	15.82	5.16	3.40
756	6.59	3.15	12.42	4.05	3.15
755.5	6.01	2.88	9.27	3.02	2.88
755	5.49	2.55	6.39	2.08	2.55
754.5	4.70	2.20	3.85	1.25	2.20
754	4.12	1.34	1.64	0.54	1.34
753.5	1.23	0.31	0.31	0.10	0.31
753	0	0.00	0.00	0.00	0.00

* spillway elevation = 780'
Volume established from 11-07-08 aerial topo

PRESTON RESERVOIR STAGE-STORAGE DATA PROVIDED BY ARSA STAFF AND GARY GHIO

Preston Reservoir

Elevation	Area (AC)	Capacity (AC-FT)	Elevation	
325	0	0	325	
330	3	5	330	
335	6	25	335	
340	8	60	340	
345	12	110	345	
350	16	175	350	
353	18	235	353	2' Freeboard
355	20	270	355	Spillway

ATTACHMENT D

Amador Regional Sanitation Agency
2024 Individual Water Balance Update

City of Ione Response to February 3, 2025, Review Letter and
2024 COWRF Capacity and Operations TM
by West Yost Engineers

THIS PAGE INTENTIONALLY LEFT BLANK

City of Ione
P.O. Box 398
1 E. Main Street
Ione, CA 95640



February 24, 2024 SENT VIA: EMAIL

Kari Holmes, P.E.
Supervising Water Resources Control Engineer
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA
Kari.Holmes@waterboards.ca.gov

Subject: Certification Letter for Castle Oaks Golf Course Recycled Water Demands

Dear Ms. Holmes,

On August 14, 2024, the Central Valley Water Quality Control Board (Regional Board) issued a 13267 Order letter to the City of Ione (City), Amador Regional Sanitation Agency (ARSA) and Portlock International Ltd. (Portlock), the three entities permitted the Regional Board under Water Reclamation Requirement Order 93-240 (WRRs) to land apply recycled water from the Castle Oaks Water Reclamation Facility (COWRF) to the Castle Oaks Golf Course (golf course). The City owns and operates the COWRF, which provides the recycled water to the golf course. The City also owns the golf course, which is leased and operated by Portlock. ARSA is permitted to supply water to the COWRF to meet the irrigation needs of the golf course.

The 13267 Order requires that the three WRRs permittees submit an updated water balance for the ARSA system to the Regional Board by December 13, 2024. Most of the required information under the 13267 Order does not pertain to the COWRF or golf course operations. Consequently, ARSA lead the development of the response required under the 13267 Order.

To address requirements specific to the City-led operations, the City previously submitted the *Castle Oaks Golf Course Recycled Water Demands Technical Memorandum* (Water Demands TM) that provided information and supporting documentation for the following topics:

- Historical and theoretical influent flows to the COWRF,
- Historical and theoretical recycled water use at the Golf Course,
- Agronomic water demands of the Golf Course,
- Storage capacity and operation of the Golf Course recycled water storage ponds, and

- Golf Course tailwater and overspray control and monitoring – including BMPs minimize runoff or overspray and practices to improve the application of recycled water to the use area.

On February 3, 2025, the Regional Board issued a letter titled *Review of Site-Specific Water Balance, Amador County Regional Outfall And Castle Oaks Golf Course And Development, City Of Ione/Amador Regional Sanitation Authority/Portlock Int. LLC., WDR 93-240, Amador County*. This letter documented additional information that must be addressed in the site-specific water balance. The specific items identified that apply to the City's operation and the City's response to these items are summarized in the table below.

Summary of Responses to Regional Board Comments

Regional Board Comment	City Response
The City of Ione is currently developing a Title 22 Engineering Report for the use of recycled water produced at the COWRF on the COGC. Title 22 requires setbacks for the irrigation of recycled water near water courses, residential areas, and public spaces. It is unclear if the acreage used to calculate the COGC disposal capacity considers these setbacks. More information shall be submitted, and the water balance shall be updated accordingly as needed.	Title 22 includes the following setback distance requirements applicable to disinfected tertiary recycled water: • No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well. • No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well. • Any use of recycled water shall comply with the following: – Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency. – Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities. – Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff. As part of development of the Title 22 Report, the City's consultant team West Yost Associates comprised of cross-connection control specialists conducted surveys of the golf course to confirm setback distance requirements were being satisfied. The irrigated acreages used in the water balances were developed from the information obtained during this survey. There are no known domestic water supply wells within 50-feet of the use area (or within 100 feet of the irrigation impoundments). The team also observed spray irrigation practices and confirmed there was no evidence of spray mist or runoff entering enter dwellings, designated

Summary of Responses to Regional Board Comments	
Regional Board Comment	**City Response**
	outdoor eating areas, or food handling facilities or drinking fountains. Based on this information, the setback distances do not need to be modified to meet the requirements of Title 22. The existing irrigated acreages used in the water balances were developed from the information obtained during this survey. These acreages do not need to be modified to conform to Title 22. Additional details will be included in the Title 22 Report. No change is required to address this statement.
The submittal indicates that COGC has an "overflow" from one of the recycled water holding ponds into Mule Creek. This is an unpermitted discharge and cannot be used as part of the water balance. The submittal also states "In addition, the recycled water remaining in Lake I at the end of the irrigation season is diluted with 1.2 million gallons of potable water. Golf course staff reported that this practice was developed in partnership with the California Department of Health Services to minimize the potential for discharge of recycled water to surface waters." No such practice has been permitted by the Department of Health Services (now the Division of Drinking Water, or DDW) nor the Central Valley Water Board. It is inaccurate to state that the Discharger believed this to be an approved discharge, as an NOV was issued for the same discharge on 28 January 2020. This discharge must cease immediately, the water balance shall be updated appropriately.	The City understands the Board's direction that the "dual use" of the ponds on the golf course is not an approved discharge and must cease. Importantly, for purposes of addressing comments on the updated water balance for the ARSA system, discharge from these ponds was not accounted for in the City's water balance. Accordingly, no revision is required to the water balance to address the Regional Board's comment. Moving forward, the City will reach out to and coordinate with the Regional Board, DDW, and the golf course to take action to address the prohibited discharge. Development of such action(s) may be appropriate as part of the preparation and finalization of the City's Title 22 Report.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this letter and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Sincerely,



George Lee, City Manager

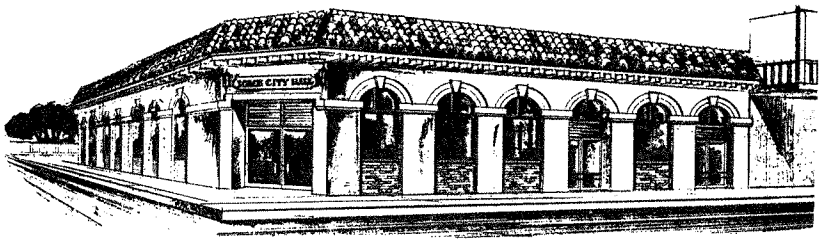
CC:

Mr. Kenny Croyle, PE
Water Resources Control Engineer
Central Valley Regional Water Quality Control Board
Kenny.Croyle@waterboards.ca.gov

Mr. Howard Hold
Senior Engineering Geologist
Central Valley Regional Water Quality Control Board
Harold.Hold@waterboards.ca.gov

Mr. Scott Armstrong
Senior Engineering Geologist
Central Valley Regional Water Quality Control Board
Scott.Armstrong@waterboards.ca.gov

City of Ione



Corner of Church & Main P.O. Box 398 Ione, California 95640
Phone (209) 274-2412

December 9, 2024

John Baum, P.E. (sent via email: John.Baum@waterboards.ca.gov)
Assistant Executive Officer, Rancho Cordova Office
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA

Subject: Certification Letter for Castle Oaks Water Reclamation Facility Capacity and Operations TM, Water Reclamation Requirement Order 93-240

Dear Mr. John Baum,

On August 14, 2024, the Central Valley Water Quality Control Board (Regional Board) issued a 13267 Order letter to the City of Ione (City), Amador Regional Sanitation Agency (ARSA) and Portlock International Ltd. (Portlock), the three entities permitted the Regional Board under Water Reclamation Requirement Order 93-240 (WRRs) to land apply recycled water from the Castle Oaks Water Reclamation Facility (COWRF) to the Castle Oaks Golf Course (golf course). The City owns and operates the COWRF, which provides recycled water to the golf course. The City also owns the golf course, which is leased and operated by Portlock. ARSA is permitted to supply water to the COWRF to meet the irrigation needs of the golf course.

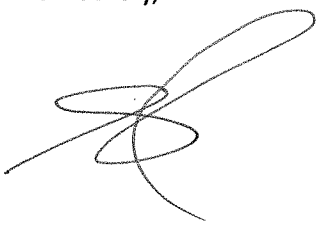
The 13267 Order requires that the three WRRs permittees submit an updated water balance for the ARSA system to the Regional Board by December 13, 2024. The letter specifies six items (A through F) that must be provided. The attached *Castle Oaks Water Reclamation Facility Capacity and Operations Technical Memorandum* (Capacity Operations TM) addresses the requirements under Item D of this letter, which states the following information must be provided:

The current and expected treatment capacity and operation schedule of the tertiary treatment plant. These numbers should be provided and certified by Ione. Supporting documentation must be included.

The City of Ione, City Manager has reviewed the contents of the Capacity Operations TM and provides the following certification statement:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Sincerely,



George Lee
City of Ione
City Manager

CC: Kenny Croyle, PE, WDRS and Title 27 Compliance and Enforcement Unit, CVRWQCB

Howard Hold, Senior Engineering Geologist, WDRS and Title 27 Compliance and Enforcement Unit, CVRWQCB

Scott Armstrong, CVRWQCB, Rancho Cordova

Ginachi Amah, Recycled Water Unit Supervisor, Division of Drinking Water, State Water Resources Control Board

WEST YOST
Water. Engineered.

1001 Galaxy Way
Suite 310
Concord CA 94520

925.949.58
925.949.5845 fax
westyost.com

TECHNICAL MEMORANDUM

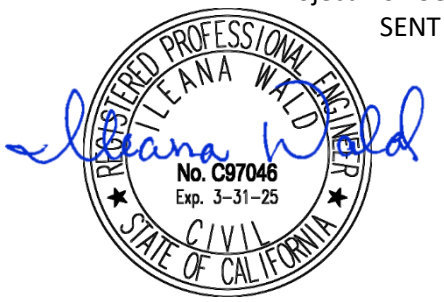
DATE: December 9, 2024

Project No.: 988-50-24-10
SENT VIA: EMAIL

TO: George Lee, City of Ione

FROM: Ileana Wald, PE, RCE #97046

REVIEWED BY: Kathryn Gies, PE, RCE #65022



SUBJECT: Castle Oaks Water Reclamation Facility Capacity and Operations Summary

This technical memorandum (TM) provides information and supporting documentation related to the capacity and operations of the Castle Oaks Water Reclamation Facility (COWRF), which is owned and operated by the City of Ione (City). The purpose of this TM is to inform development of a water balance for the Amador Regional Sanitation Authority (ARSA) wastewater disposal system. The following topics are addressed:

- Background Information
- Treatment Facilities Description
- Recycled Water Treatment Operations
- Treatment Capacity Summary

BACKGROUND INFORMATION

Facility Overview

The COWRF is a tertiary-only recycled water treatment plant located at 10100 Five Mile Drive in Ione, Amador County, California (see Figure 1, Vicinity Map). The facility receives disinfected secondary treated wastewater that is further treated through coagulation, filtration, and chlorine disinfection processes. A schematic diagram, hydraulic profile and design criteria for the COWRF that were included in the As-Built drawing set are included as Attachment A.

The COWRF produces "Disinfected Tertiary Recycled Water" as defined under the California Code of Regulations (CCR), Title 22 for irrigation use at the Castle Oaks Golf Course (golf course), which is leased and operated by Portlock International Ltd. (Portlock). There are no other uses or use areas. The City's Wastewater Treatment Facility (WWTF) is located adjacent to the COWRF but does not presently send treated effluent to the COWRF for treatment.



WEST YOST - N:\Clients\988 City of Ione\50-24-10 As Needed\GIS\MXD\Vicinity Map.mxd - aguillebeau - 11/20/2024

Prepared by:

WEST YOST

N

0 200 400 Feet

Prepared for:

City of Ione

Capacity and Operations TM

Vicinity Map

Fig 332

Regulatory History

The City, ARSA and Portlock are the three entities permitted the Central Valley Water Quality Control Board (Regional Board) under Water Reclamation Requirement Order 93-240 (WRRs) to discharge recycled water from the COWRF to the golf course. ARSA is specifically permitted to supply secondary treated wastewater to the COWRF to meet the irrigation needs of the golf course.

On August 14, 2024, the Regional Board issued a 13267 Order letter to the three WRRs permittees that requires the submission of an updated water balance for the ARSA system to the Regional Board by December 13, 2024. The letter specifies six items (A through F) that must be provided. This TM addresses the requirements under Item D of this letter, which states the following information must be provided:

> *The current and expected treatment capacity and operation schedule of the tertiary treatment plant. These numbers should be provided and certified by Ione. Supporting documentation must be included.*

TREATMENT FACILITIES DESCRIPTION

The treatment process train consists of preliminary screening, chemical coagulation, direct sand filtration, and chlorine disinfection. The layout of COWRF's treatment facilities are shown on Figure 2. The major treatment components of the COWRF include:

- Influent flow control and screening,
- Coagulation/flocculation,
- Filtration,
- Chlorine disinfection,
- Effluent pumping, and
- Solids treatment and handling.

Influent Flow Control and Screening

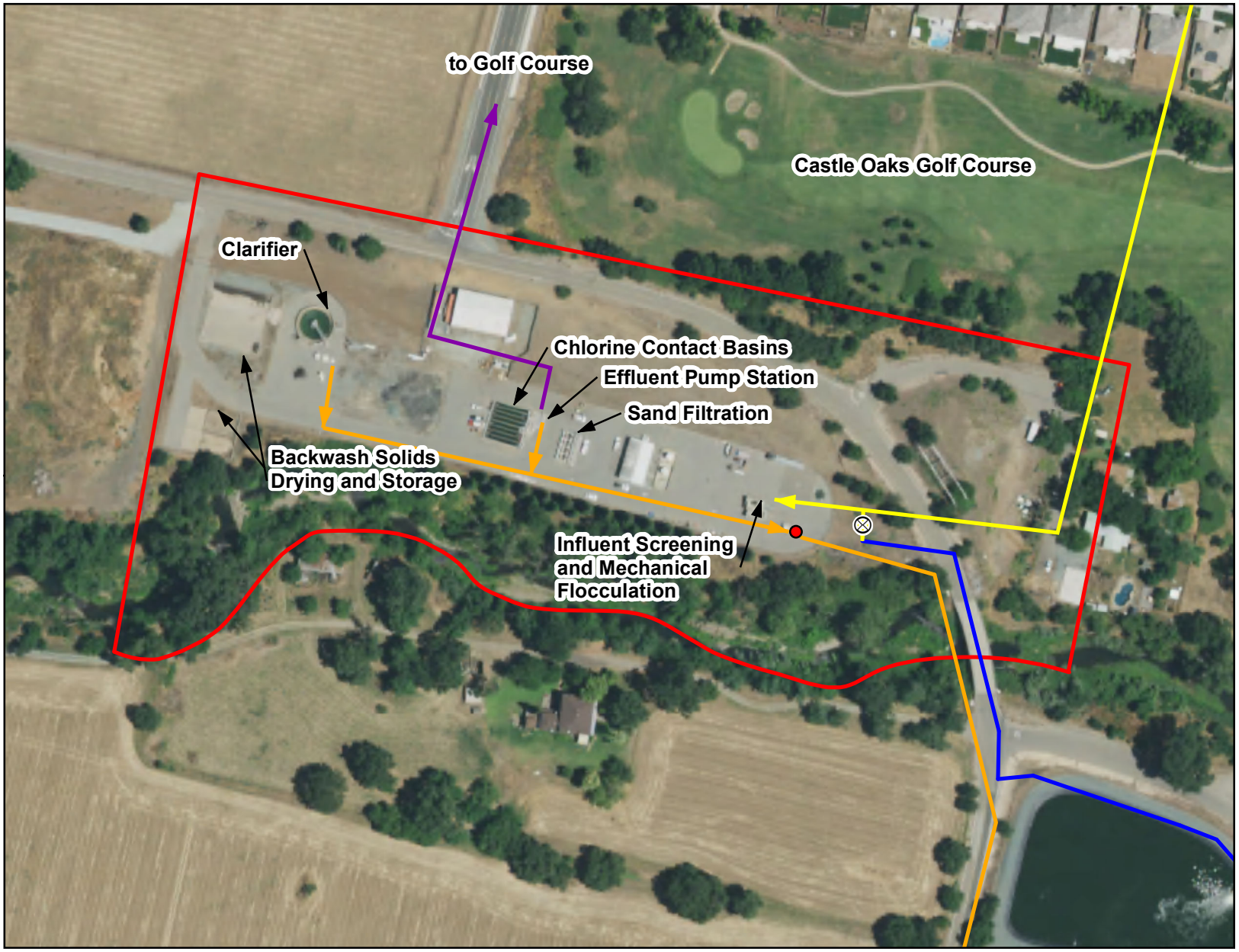
The COWRF headworks structure includes a magnetic flow meter, a pneumatically operated butterfly valve for flow control, screens, and an influent sample tap. The flow through the COWRF is controlled by the butterfly control valve and is based on an operator-set target flow rate. The flow rate is set to match the demand from the golf course. The valve will shut automatically in the event of a critical process failure (high liquid levels, high turbidity, or low chlorine residual) or power outage.

One static parabolic screen is provided to remove large solids prior to filtration. The screen opening size is 0.10 inch and the stated capacity of the screen is 1,350 gallons per minute (gpm).

Coagulation/Flocculation

Screened recycled water flows by gravity to the rapid mix chamber. Alum and/or polymer are added downstream of the static screen and prior to rapid mixer that promotes coagulation of the solids. Additional polymer can also be added before recycled water flows through two mechanical flocculation chambers. The signal from the influent flow meter is used to automatically flow pace the alum and polymer metering pumps to achieve a desired dosing rate. Adjustments to the dosing rate can be made by the operators based on measured filter effluent turbidity.

WEST YOST - \\wya.local\Corporate\Clients\988 City of Ione\50-24-10 As Needed\GIS\MXD\COWRF Facilities.mxd - aguillebeau - 11/20/2024



Control Valve
Pump Station
to Golf Course
COWRF Influent
Discharge to WWTP
Discharge to WWTP Ponds
COWRF Boundary

Prepared by:

WEST YOST

N

0 100 200 Feet

Prepared for:

City of Ione
Capacity and Operations TM

COWRF Facilities

Fig

Filtration

After flocculation, recycled water flows from the flocculation chambers by gravity through the tertiary filters. The tertiary filtration system consists of continuous backwash, upflow, deep bed, and granular media DynaSand filters manufactured by Parkson Corporation. There are four filter cells, each containing two 50 square feet (ft^2) filter modules. The filter cells are operated in parallel with three duty and one standby unit. The design filtration rate for each filter cell is 2.8 gallons per minute per square foot (gpm/ft^2); however, each filter unit should be able to process up to 5 gpm/ ft^2.

The Parkson Dyansand filter is approved for the production of disinfected tertiary recycled water, as documented in a letter dated December 1, 1986, from the CDPH Drinking Water Program (now known as DDW)[1]. Additional design criteria for the tertiary filtration system is summarized in Attachment A.

Compressed air is used for continuous backwashing of a portion of the sand medium. Backwash (filter reject) from the filters is collected in a common trough and flows by gravity to the filter backwash clarifier. The filter reject stream is expected to be 5 to 10 percent of the total plant flow[2]. However, the filter reject flows are measured, and this data indicates that backwash flows are 10 to 20 percent of the total plant flow.

Chlorine Disinfection

After filtration, recycled water flows to the chlorine mixing chamber where the sodium hypochlorite solution is added. The sodium hypochlorite solution dosing pumps are flow paced to the plant influent flow meter to achieve a desired dosing rate. Adjustments to the dosing rate can be made by the operators based on measured final effluent chlorine residual. A high-speed mechanical mixer in the chlorine mixing chamber ensures that the chlorine solution is well mixed with the recycled water flow.

After mixing, recycled water enters the Chlorine Contact Basin (CCB), which is a concrete basin with a serpentine, rectangular shape (Figure 3). The CCB is divided into two halves (CCB-1 and CCB-2) which could be operated individually in parallel or together in series. However, the two basins are exclusively operated in series. Each half can also be isolated and operated independently when the other needs to be drained for maintenance. However, CCB maintenance is typically done when the COWRF is offline.

The total volume of the CCB is reported as a nominal 100,000 gallons[3]. The channels are 6 feet wide and 6 feet deep and are separated by 8-foot-high concrete baffle walls. However, the detailed record drawings for the COWRF[4] show that the CCB operating volume is approximately 112,000 gallons, with a length-to-width ratio of 66 to 1. At the COWRF's design flow of 1.2 million gallons per day (MGD), the CCB's hydraulic retention (HRT) time is 134 minutes. The HRT in the CCB is controlled solely by the influent flow rate. The fixed volume of water in the CCB is controlled by a slide gate in each CCB half that allows water to overflow into the effluent clear well. If only one half of the CCB is operated (CCB-1 or CCB-2), the maximum flow that can be treated is 0.6 MGD.

A tracer study will be conducted to demonstrate modal contact time for flow through CCB for compliance with CCR, Title 22, Section 60301.230.a.1. The tracer study protocol was submitted to the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) for review on October 1, 2024. The tracer study will be conducted in winter 2024/2025, the results of which will be incorporated into an updated Title 22 Engineering Report.

[1] CA SWRCB Division of Drinking Water. April 2023. Alternative Treatment Technology Report for Recycled Water, Appendix C. Historic Conditionally Accepted Granular Media Filters.
[2] City of Ione. May 1994. Castle Oaks Operation & Maintenance Manual.
[3] City of Ione. May 1994. Castle Oaks Operation & Maintenance Manual.
[4] Nolte and Associates. March 1992. City of Ione, Castle Oaks Wastewater Reclamation Plant, Record Drawings.

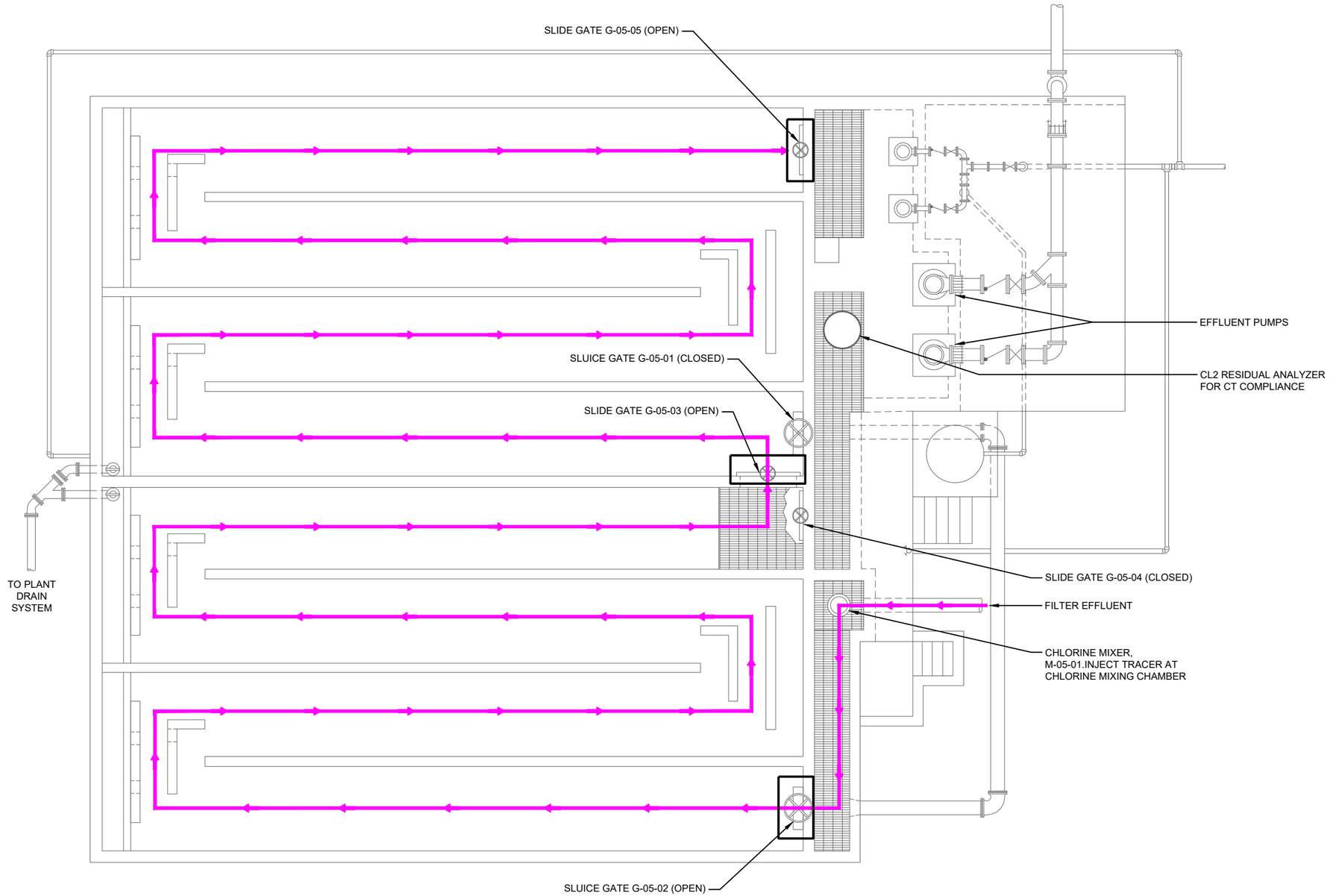


Figure 3

Chlorine Contact Basin Flow Schematic

W:\Clients\988 City of Ione\50-23-05 Title 22 Update\CAD\Figures\98850-2305-Fig3 Chlor-Contact-Basin Flow Schematic.dwg 11/21/2024 7:41 AM sbarber

Effluent Pumping

Downstream of the CCB effluent weir, the disinfected recycled water enters the effluent pump station wet well. There are two effluent pumps, each rated at 850 gpm. Therefore, each pump can convey the entire treatment flow of 1.2 mgd to the golf course.

The effluent flow meter that was originally installed at the COWRF was not capable of providing an accurate flow measurement in its configuration. Therefore, the City historically reported effluent flow as influent flow. With the adoption of the current Monitoring and Reporting Program in October 2021, the City began reporting the effluent flow as the difference between the influent flow and the measured filter backwash flow at the start of the 2022 irrigation season. The City recently replaced the effluent flow meter and will initiate using this flow meter to report effluent flow in the 2025 irrigation season.

Solids Treatment and Handling

The filter backwash stream is routed to the Filter Backwash Clarifier, where suspended solids are removed in the through settling. The solids concentration of the filter reject stream is estimated to be 400 to 600 mg/L and the maximum alum sludge loading from the filter is projected at 300 to 1,000 lb/day.

Overflow from the Filter Backwash Clarifier is discharged to the plant drain system that leads to the Decant Pump Station. The pump station discharges the backwash flow to the City of Ione WWTF collections system, where it is combined with raw wastewater and directed to the WWTF for treatment.

Sludge from the Filter Backwash Clarifier is pumped to one of the three sludge drying beds. After drying, the sludge is stored and eventually disposed of in a landfill. An under-drain on Sludge Drying Beds 1 and 2 returns decanted water by gravity to the Decant Pump Station. Sludge Drying Bed 3, constructed in 2002, is provided with an integral sump to return decant water to the Filter Backwash Clarifier.

RECYCLED WATER TREATMENT OPERATIONS

Secondary effluent is stored prior to discharge to the COWRF. As such, the influent flow does not follow a diurnal pattern. Instead, flow through the plant is steady throughout the day. As previously noted, the influent control valve is used to set the desired influent flow rate to the COWRF based on the demands of the golf course.

The COWRF is in operation when there is irrigation demand at the golf course, typically April through November. Recent flow rates at the COWRF from available Daily Monitoring Report (DMR) data from January 2018 through October 2023[5] are summarized on Figure 4. As previously noted, influent flow was reported as effluent flow prior to April 2022 and starting in 2022 effluent flows have been calculated. The maximum daily influent flow to the COWRF was approximately 1.25 MGD in January 2018. For months where no influent or effluent flows are shown, the COWRF was offline.

[5] DMR data for May 2023 at COWRF was not available.

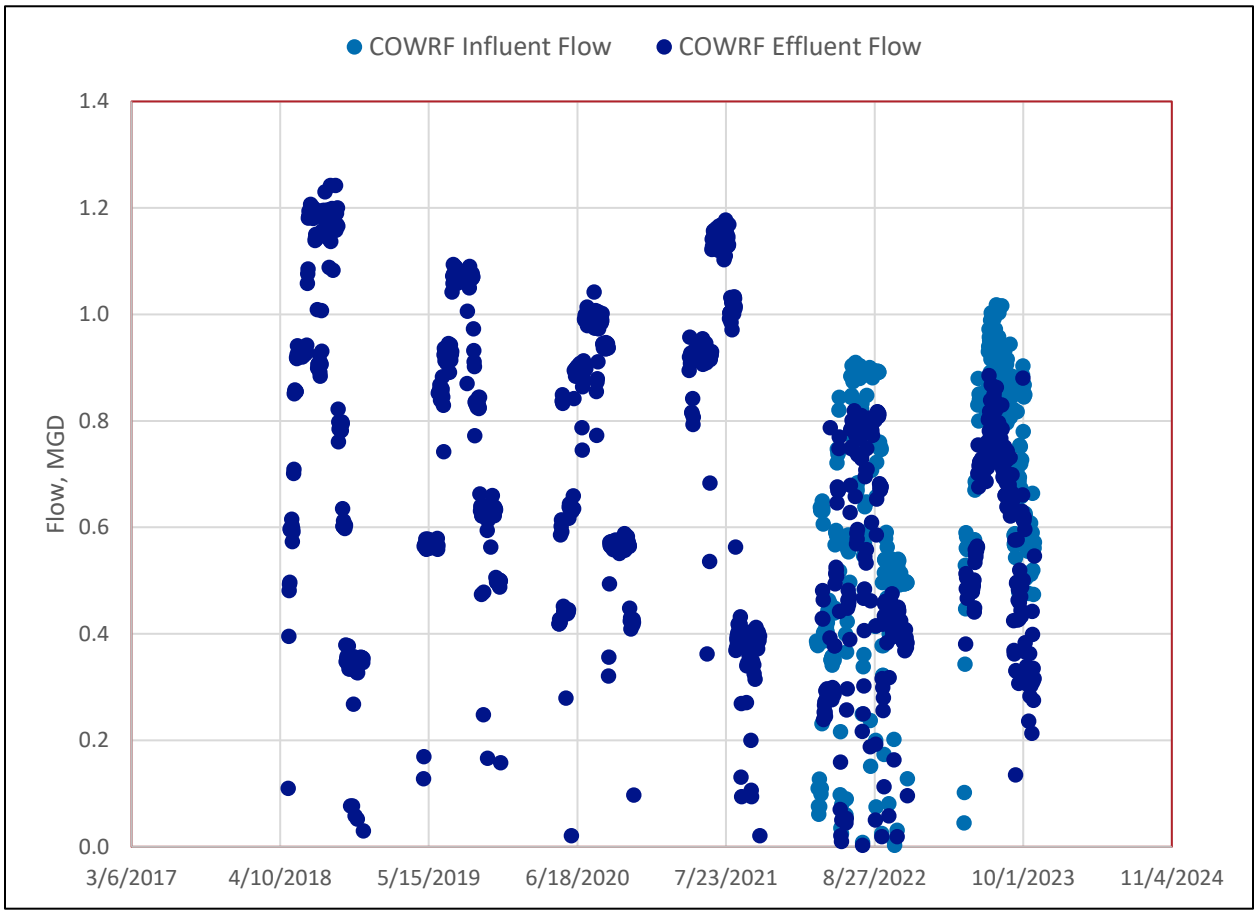


Figure 4. Recent COWRF Flows

Monthly average effluent flows from COWRF are summarized in Table 2. In recent years the average monthly flow through the COWRF ranged from 0.43 MGD to 0.95 MGD.

Table 2. Monthly Average Effluent Flows from COWRF

Month	Effluent Flow[a,b], MGD
January	-
February	-
March	-
April	0.53
May	0.63
June	0.82
July	0.95
August	0.92
September	0.68
October	0.48
November	0.43
December	-

a) Data from available DMR data averaged over period between January 2018 and October 2023. The sole flow meter is located at the influent pump station. Prior to April 2022, influent flow was reported as effluent flow. Starting in 2022, effluent flows have been estimated.
b) For months where a dash (-) is shown, plant was offline, therefore there was no effluent flow.
MGD = Million Gallons per Day

TREATMENT CAPACITY

The COWRF is designed to treat an average peak flow of 1.2 MGD. The facility's treatment capacity is primarily limited by the CCB capacity.

REFERENCES

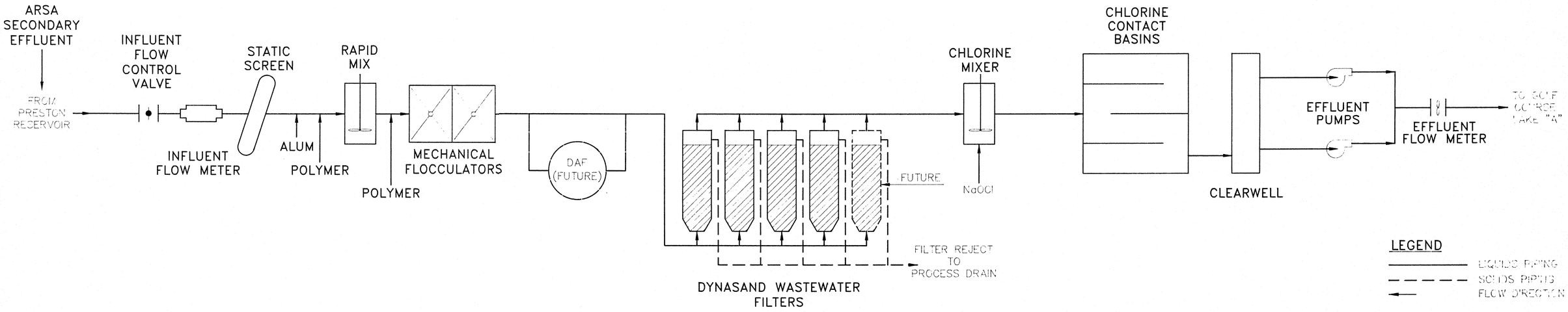
California State Water Resources Control Board, Division of Drinking Water. April 2023. *Alternative Treatment Technology Report for Recycled Water,* Appendix C. Historic Conditionally Accepted Granular Media Filters.

City of Ione. May 1994. *Castle Oaks Operation & Maintenance Manual*.

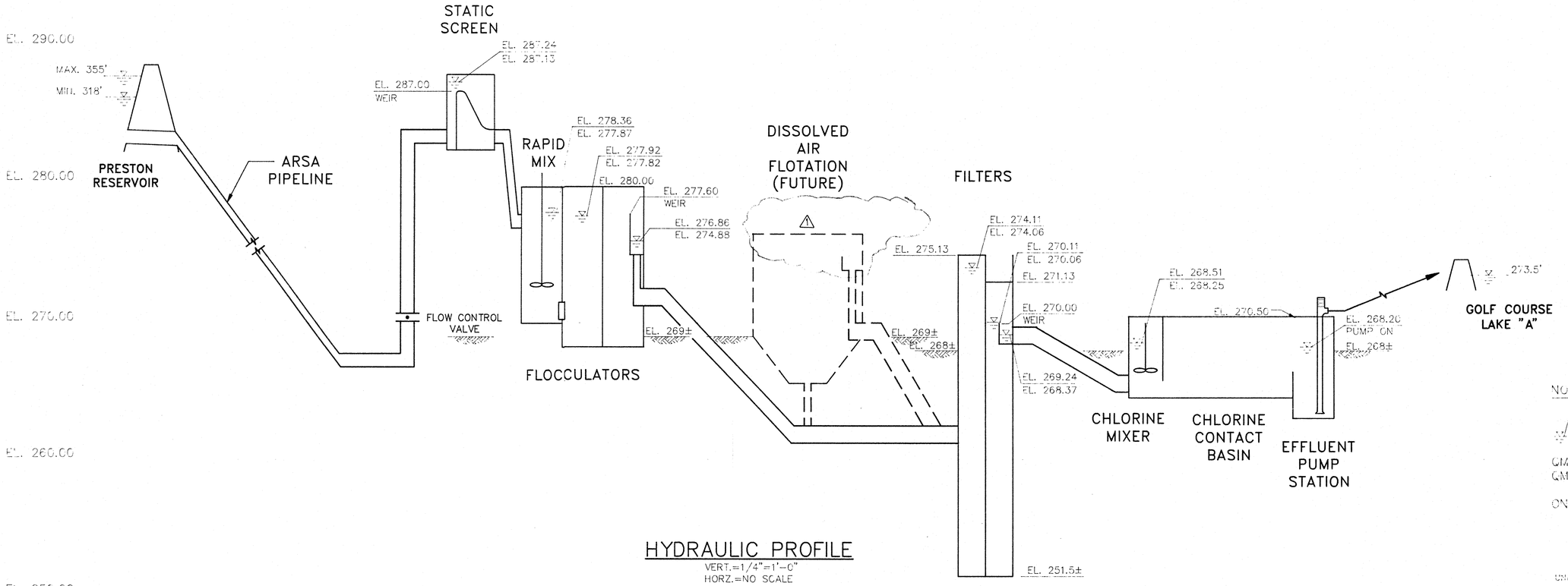
Nolte and Associates. March 1992. *City of Ione, Castle Oaks Wastewater Reclamation Plant*, Record Drawings.

Attachment A

As-Built Drawing Set Excerpts



PROCESS FLOW DIAGRAM



HYDRAULIC PROFILE

VERT.=1/4"=1'-0"
HORZ.=NO SCALE

NOTES FOR HYDRAULIC PROFILE

EL. 274.11 WSEL AT QMAX
EL. 274.00 WSEL AT QMIN

QMAX = 1.5 MGD
QMIN = 0.6 MGD

ONE FILTER OUT OF SERVICE

UNAUTHORIZED CHANGES & USES

CAUTION: The engineer preparing these plans will not be responsible for or liable for unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

DATE:	DEC 1991
SCALE:	AS NOTED
DRAWN BY:	K.C. HAYES
CHECKED BY:	C.C. LEKVEN
PROJ. MGR.:	DAVE RICHARD
PROJ. ENGR.:	C.C. LEKVEN

NO.	BY	DATE	REVISIONS
1		3/2/92	ADDENDUM 3

NOLTE and ASSOCIATES
Engineers / Planners / Surveyors
■ Sacramento (916) 641-1500 □ San Diego (619) 278-9392 □ San Jose (408) 287-3460 □ Walnut Creek (415) 934-8060

CITY OF IONE
CASTLE OAKS WASTEWATER RECLAMATION PLANT
COI 006960

PROCESS FLOW DIAGRAM & HYDRAULIC PROFILE

SHEET G1.2
OF SHEETS
JOB NO. 2853-90-52

DESIGN CRITERIA

PARAMETER	VALUE
INFLUENT CHARACTERISTICS	
DESIGN FLOW	1.2 mgd
TURBIDITY	40 – 60 NTU
SUSPENDED SOLIDS	mg/L
HEADWORKS	
STATIC SCREEN	
NUMBER OF UNITS	1
OPENING SIZE	0.10 IN.
CAPACITY, CLEAN WATER	1,350 gpm
RAPID MIX – FLOCCULATION	
RAPID MIX	
NUMBER OF CHAMBERS	1
VOLUME	357 gal
DETENTION TIME AT 1.2 mgd	26 sec
SIDEWATER DEPTH	5.3 ft
NUMBER OF RAPID MIXERS	1
MAXIMUM VELOCITY GRADIENT	750 sec^{-1}
MAXIMUM MIXER SPEED	500 rpm
FLOCCULATION	
NUMBER OF COMPARTMENTS	2
DETENTION TIME AT 1.2 mgd	20 min
SIDEWATER DEPTH	9.5 ft
NUMBER OF FLOCCULATORS	2
TYPE OF FLOCCULATOR	VERTICAL TURBINE
MAXIMUM VELOCITY GRADIENT	80 sec^{-1}
MAXIMUM FLOCCULATOR SPEED	30 rpm
FILTERS	
TYPE	CONTINUOUS BACKWASH, UPFLOW
NUMBER OF CELLS	4
CELL SIZE	100 ft^2
TOTAL FILTER AREA	400 ft^2
MEDIUM CHARACTERISTICS	
DEPTH	80 inches
SAND DIAMETER	1.4 mm
UNIFORMITY COEFFICIENT	1.5
FILTRATION RATE	
FOUR CELLS IN OPERATION	2.08 gpm/ft^2
THREE CELLS IN OPERATION	2.78 gpm/ft^2
AIRLIFT COMPRESSOR	
TYPE	SINGLE STAGE RECIPROCATING
NUMBER	2
CAPACITY	35 cfm
PRESSURE	35 psi
MOTOR SIZE	20 hp

PARAMETER	VALUE
CHLORINE CONTACT BASIN	
CHLORINE MIXING	
NUMBER OF CHAMBERS	1
VOLUME PER CHAMBER	209 gal
DETENTION TIME AT 1.2 mgd	15 sec
SIDEWATER DEPTH	3.1 ft
NUMBER OF CHLORINE MIXERS	1
MINIMUM VELOCITY GRADIENT	500 sec^{-1}
MAXIMUM MIXER SPEED	500 rpm
CHLORINE CONTACT BASIN	
VOLUME	100,000 gal
DETENTION TIME AT 1.2 mgd	2 hrs
SIDEWATER DEPTH	6 ft
ALUM FEED SYSTEM	
STORAGE TANKS	
NUMBER	2
TYPE	CROSS–LINKED POLYETHYLENE
VOLUME, EACH	5,000 gal
METERING PUMPS	
DESIGN DOSE	100 mg/L
NUMBER	2
CAPACITY, EACH	10 gph
TYPE	MECHANICAL DIAPHRAGM
CONTROL	FLOW PACED
POLYMER FEED SYSTEM	
DESIGN DOSE	1 – 5 mg/L
AUTOMATIC LIQUID POLYMER DILUTION UNITS, NUMBER	2
CAPACITY, EACH	1.0 gph
TYPE OF POLYMER	EMULSION
EFFLUENT PUMPING	
EFFLUENT PUMPS	
NUMBER OF PUMPS	2
TYPE	VERTICAL TURBINE
CAPACITY, EACH	850 gpm @ 35 ft. TDH
MOTOR SIZE	15 hp

PARAMETER	VALUE
CHLORINATION	
CHLORINE STORAGE/FEED	
TYPE	LIQUID SODIUM HYPOCHLORITE
STORAGE TANK, NUMBER	1
VOLUME, EACH	3,000
CHLORINE DOSAGE	15 mg/L
METERING PUMPS	
NUMBER	2
CAPACITY, EACH	0–12 gph
TYPE	MECHANICAL DIAPHRAGM
CONTROL	COMPOUND LOOP
RESIDUAL ANALYZERS, NUMBER	1
PLANT WATER	
PLANT WATER PUMPS	
NUMBER OF PUMPS	2
TYPE	VERTICAL TURBINE
CAPACITY, EACH	125 gpm @ 161 ft. TDH
MOTOR SIZE	10 hp
HYDROPNEUMATIC TANK VOLUME	528 gallons
TYPE	BLADDER
PLANT HYDRAULIC	
DESIGN FLOWS	
FILTER INFLUENT PIPING, Q MAX.	1.5 mgd
PLANT DRAIN, Q MAX.	1,000 gpm

UNAUTHORIZED CHANGES & USES

CAUTION: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.

DATE: DEC 1991
SCALE: AS NOTED
DRAWN BY: K.C. HAYES
CHECKED BY: C.C.LEKVEN
PROJ. MGR.: DAVE RICHARD
PROJ. ENGR.: C.C.LEKVEN

NO.	BY	DATE	REVISIONS
6			
5			
4			
3			
2			
1			

NOLTE and ASSOCIATES
Engineers / Planners / Surveyors
■ Sacramento (916) 641-1500 □ San Diego (619) 278-9392 □ San Jose (408) 287-3400 □ Walnut Creek (415) 934-8060

CITY OF IONE
CASTLE OAKS WASTEWATER RECLAMATION PLANT
COI 006961

DESIGN CRITERIA

SHEET G1.3 OF SHEETS
JOB NO. 2853-90-52

DATE: XX, 1991
K-G13.DWG

ATTACHMENT E

Amador Regional Sanitation Agency
2024 Individual Water Balance Update

2024 COGC Recycled Water Demands TM
by West Yost Engineers

THIS PAGE INTENTIONALLY LEFT BLANK

City of Ione
P.O. Box 398
1 E. Main Street
Ione, CA 95640

John Baum, P.E. (sent via email: John.Baum@waterboards.ca.gov)
Assistant Executive Officer, Rancho Cordova Office
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA

Subject: Certification Letter for Castle Oaks Golf Course Recycled Water Demands

Dear Mr. John Baum,

On August 14, 2024, the Central Valley Water Quality Control Board (Regional Board) issued a 13267 Order letter to the City of Ione (City), Amador Regional Sanitation Agency (ARSA) and Portlock International Ltd. (Portlock), the three entities permitted the Regional Board under Water Reclamation Requirement Order 93-240 (WRRs) to land apply recycled water from the Castle Oaks Water Reclamation Facility (COWRF) to the Castle Oaks Golf Course (golf course). The City owns and operates the COWRF, which provides the recycled water to the golf course. The City also owns the golf course, which is leased and operated by Portlock. ARSA is permitted to supply water to the COWRF to meet the irrigation needs of the golf course.

The 13267 Order requires that the three WRRs permittees submit an updated water balance for the ARSA system to the Regional Board by December 13, 2024. The letter specifies six items (A through F) that must be provided. Most of the required information under the 13267 Order does not pertain to the COWRF or golf course operations. Consequently, ARSA is leading the development of the response required under the 13267 Order, which will be presented separately. The attached *Castle Oaks Golf Course Recycled Water Demands Technical Memorandum* (Water Demands TM) only addresses the requirements under Item B of the 13267 Order, which states:

> *The acreage and agronomic rate at which recycled water can be applied to the Castle Oaks Golf Course without violating setback requirements, Title 22 requirements, impacting groundwater, or causing runoff to surface water. These numbers and calculations should be provided and certified by Ione and Portlock*

International LTD. Supporting documentation and references must be included in the submittal. Information regarding tailwater control/return and monitoring plans for compliance with applicable land application area requirements must also be included.

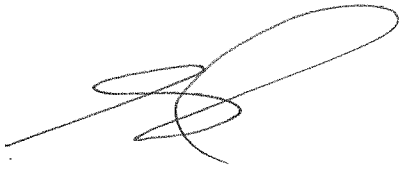
The Water Demands TM provides information and supporting documentation for the following topics:

- Historical and theoretical influent flows to the COWRF,
- Historical and theoretical recycled water use at the Golf Course,
- Agronomic water demands of the Golf Course,
- Storage capacity and operation of the Golf Course recycled water storage ponds, and
- Golf Course tailwater and overspray control and monitoring – including BMPs to minimize runoff or overspray and practices to improve the application of recycled water to the use area.

The City of Ione has reviewed the contents of the attached Water Demands TM and provide the following certification statement:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Sincerely,



George Lee
City Manager
City of Ione

CC: Kenny Croyle, PE, WDRS and Title 27 Compliance and Enforcement Unit, CVRWQCB

Howard Hold, Senior Engineering Geologist, WDRS and Title 27 Compliance and Enforcement Unit, CVRWQCB

Scott Armstrong, CVRWQCB, Rancho Cordova

WEST YOST
Water. Engineered.

1001 Galaxy Way
Suite 310
Concord CA 94520

925.949.58
925.949.5845 fax
westyost.com

TECHNICAL MEMORANDUM

DATE: December 10, 2024

Project No.: 988-50-24-10
SENT VIA: EMAIL

TO: George Lee, City of Ione

CC: Daniel Griffin, Castle Oaks Golf Course
Justin Granados, WaterStone Service

FROM: Allie Ahern, EIT

REVIEWED BY: Kathryn Gies, PE, RCE #65022

SUBJECT: Castle Oaks Golf Course Recycled Water Demands



This technical memorandum (TM) provides information and supporting documentation related to water needs of the Castle Oaks Golf Course (golf course), which receives recycled water from the Castle Oaks Water Reclamation Facility (COWRF). The purpose of this TM is to inform development of a water balance for the Amador Regional Sanitation Authority (ARSA) wastewater disposal system. The following topics are addressed:

- Background Information
- Golf Course Irrigable Acreage
- Golf Course Storage Ponds
- Golf Course Agronomic Water Demands
- COWRF Influent Flows
- Golf Course Tailwater and Overspray Control and Monitoring

BACKGROUND INFORMATION

This section provides background information relevant to this TM. The following topics are addressed:

- Regulatory History
- Applicable Regulatory Standards for Water Balances
- Golf Course Demands vs. COWRF Influent Flows

Regulatory History

The City of Ione (City), ARSA and Portlock International Ltd. (Portlock) are the three entities permitted the Central Valley Water Quality Control Board (Regional Board) under Water Reclamation Requirement Order 93-240 (WRRs) to land apply recycled water from the COWRF to the golf course. The City owns and operates the COWRF, which provides the recycled water to the golf course. The City also owns the golf course, which is leased and operated by Portlock. ARSA is permitted to supply water to the COWRF to meet the irrigation needs of the golf course.

On August 14, 2024, the Regional Board issued a 13267 Order letter to the three WRRs permittees that requires the submission of an updated water balance for the ARSA system to the Regional Board by December 13, 2024. The letter specifies six items (A through F) that must be provided. This TM addresses the requirements under Item B of this letter, which states:

> *The acreage and agronomic rate at which recycled water can be applied to the Castle Oaks Golf Course without violating setback requirements, Title 22 requirements, impacting groundwater, or causing runoff to surface water. These numbers and calculations should be provided and certified by Ione and Portlock International LTD. Supporting documentation and references must be included in the submittal. Information regarding tailwater control/return and monitoring plans for compliance with applicable land application area requirements must also be included.*

Applicable Regulatory Standards for Water Balances

The 13267 Order states that the water balance must be in compliance with the requirements and guidance of the Regional Board's guidance document *Requirements for Water Balance Update and Calibration*, which is provided as Attachment A to the 13267 Order. Several of the procedures defined in this guidance document are applicable to the development of this TM, as follows:

<u>Requirements for Water Balance Update and Calibration, Section 4:</u>

> *The normal operations and maintenance of land application areas should be considered. [Operations and Maintenance] O&M Manuals should be referenced as well as historical monitoring data (i.e. percolation rates, observed standing water). Specific conditions of the [WRRs] should also be taken into account. The following should be taken into consideration:*
>
> *A. Recycling area/land application area/disposal system hydraulic loading rates should be distributed monthly in accordance with expected seasonal variations based on crop evapotranspiration rates.*
>
> *B. The distribution of precipitation (i.e. storm intensity, light rain over a lot of days or heavy rain over a few days), as well as other factors such as wind and saturated conditions must be taken into account when determining the number of days a disposal system can be operated each month. The most reliable way to estimate this is based off of historical records from a water year of intensity similar to that which is being modeled.*
>
> *C. It should be specified whether the tailwater is collected, and if so if it is returned to the sprayfields directly or to one of the ponds.*
>
> *D. If applicable, storm water runoff shall be accounted for in the tailwater return calculations.*
>
> *E. Maximum disposal capacity of land application areas should be based on soil studies, cropping plans, percolation studies, and/or operator notes.*

Requirements for Water Balance Update and Calibration, Section 5:

A. All water balances shall start on 1 October and end on 30 September.

…

C. The water balance should include an assessment of the facility's capacity and performance during a normal water year and during a year with a total annual precipitation for a return period of 100 years.

D. Local precipitation data for the 100-year annual return period, distributed monthly in accordance with mean monthly precipitation patterns shall be used. However, periods of high intensity storms should also be considered in the calculations.

E. All water balances should be based on all available data. All data should also be quality controlled and used with discretion.

…

G. For each wastewater treatment, storage, or disposal pond and containment structure, provide the following information:

a. Identification (name) and function of the pond.

b. Surface area, depth, and volumetric capacity at two feet of freeboard.

c. Height (relative to surrounding grade), crest width, interior slope, and exterior slope of each berm or levee.

d. Materials used to construct each berm or levee.

e. Description of engineered liner, if any. Include a copy of the Construction Quality

f. Estimated steady state percolation rate for each unlined pond.

g. Depth to shallow groundwater below the base and pond inverts.

h. Precipitation and evapotranspiration data shall be from recognized stations. The source of this information shall be provided, including a link to the data.

i. Overfilling/overflow prevention features.

j. Operation and maintenance procedures.

Golf Course Demands vs. COWRF Influent Flows

During the COWRF tertiary treatment process, a fraction of the influent to the COWRF is discarded as filter backwash and sent to the City of Ione's Wastewater Treatment Facility (WWTF). The remaining influent to the COWRF is treated to tertiary standards and recycled at the golf course. Therefore, the influent flow to the COWRF needs to be greater than the agronomic water demand of the golf course to accommodate the losses due to filter backwash, and the ARSA water balances need to include the portion of influent sent as filter backwash to the WWTF.

The City is concurrently in the process of preparing a water balance for its WWTF in accordance with a separate 13267 Order. The WWTF water balance will also need to account for the COWRF backwash flows. Accordingly, this TM presents calculations that define both the COWRF influent flows needed to meet the golf course agronomic demands for use in the ARSA water balance and the backwash flow from the COWRF to the WWTF for use in the WWTF water balance.

GOLF COURSE IRRIGABLE ACREAGE

The irrigable acreage of the golf course was determined based on inspection of the golf course irrigation system and discussions with staff. This area was mapped and quantified using GIS mapping and data processing tools. Figure 1 presents the map created. The following areas of the golf course were not included in the calculated irrigable acreage:

- natural, undeveloped areas surrounding Mule Creek and Sutter Creek
- areas abutting residences surrounding the golf course; some of these areas are irrigated by residents while others remain unirrigated
- hardscape and permanent water features

The total irrigable area of the golf course was determined to be 130 acres.

COGC_TM_Fig1: W:\Clients\988 City of Ione\50-23-05 Title 22 Update\GIS\Title 22 Update\Title 22 Update.aprx - aahern - 11/6/2024



City of Ione Boundary

Golf Course Irrigable Area

Lakes

PS Irrigation Pump Station



Prepared by:

WEST YOST

0 800 1,600 US Feet

N

Prepared for:

City of Ione

Castle Oaks Golf Course

Recycled Water Demands

Castle Oaks Golf Course Irrigable Area

Fig

GOLF COURSE STORAGE PONDS

The golf course has nine ponds that can be filled with recycled water during the irrigation season. The ponds serve as aesthetic features and water hazard obstacles for the golf course and are used to hold recycled water before it is pumped to the golf course. Limited construction information is available for the ponds, but the ponds are understood to be unlined and constructed of native soil material. Estimates of the depth, volume and percolation rates of the ponds are not available. However, it is estimated that on average, the depth of groundwater below the golf course ranges from 8 to 13 feet. The surface area of each pond has been estimated using GIS mapping and data processing tools and is presented in Table 1.

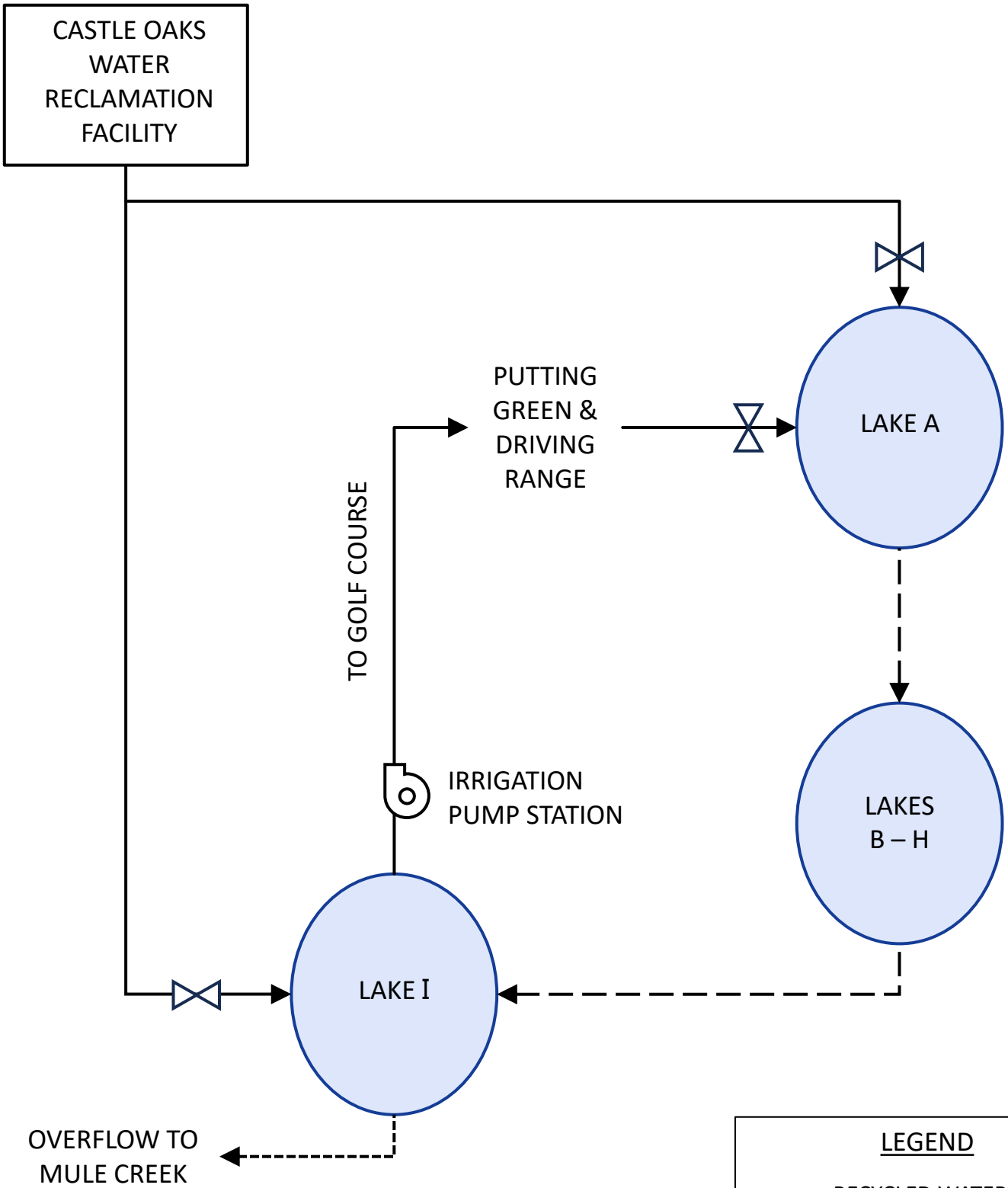
Table 1. Golf Course Storage Pond Surface Area

Pond Name	Surface Area, acres
Lake A	0.8
Lake B	1.2
Lake C	0.4
Lake D	1.1
Lake E	2.2
Lake F	1.1
Lake G	1.6
Lake H	1.4
Lake I	3.1

The ponds are hydraulically connected to each other. The maximum water level of each pond is controlled by a fixed standpipe located in an access port approximately 20 to 100 feet from the lake's edge. Water overflowing the standpipe of the upstream lake is conveyed by to the following lake downstream, with Lake A being the furthest upstream lake, and Lake I being the furthest downstream lake. The Lake I overflow standpipe connects to a wetlands area that is tributary to the nearby surface water body Mule Creek. Figure 2 presents a schematic of the recycled water irrigation system.

Recycled water from the COWRF can be pumped directly to either Lake I or Lake A. Recycled water is then pumped from Lake I to the golf course irrigation system. Under current operations, recycled water is sent by default to Lake I. Golf course staff relate that recycled water is only pumped to Lake A for short periods during the irrigation season, when golf course demands are not keeping up with flows from the COWRF and Lake I is at risk of overflowing. Typically, recycled water that is directed to Lake A will remain in the Lake until it has percolated or evaporated. However, recycled water can discharge from Lake A to the downstream lakes if Lake A overflows. However, golf course staff indicate that the amount of recycled water flow sent to Lake A is not enough to result in overflows.

Figure 2. Castle Oaks Golf Course Recycled Water Storage and Irrigation System Schematic



The ponds also serve as catchment for stormwater runoff the golf course. During the winter rainfall season, stormwater runoff will fill the nine ponds, and they will eventually overflow to Mule Creek. To prevent the discharge of recycled water to Mule Creek, recycled water is only delivered to the golf course during the irrigation season (typically between April and October). This allows for water in Lake I to percolate and evaporate before the rainy season begins. In addition, the recycled water remaining in Lake I at the end of the irrigation season is diluted with 1.2 million gallons of potable water. Golf course staff reported that this practice was developed in partnership with the California Department of Health Services1 to minimize the potential for discharge of recycled water to surface waters.

GOLF COURSE AGRONOMIC WATER DEMANDS

Calculation Procedures

The steps and major assumptions used to determine the rate at which recycled water can be supplied to the golf course are described below.

Climate Data

Rainfall data reported by the Ione National Climate Data Center (NCDC) weather station #0442832 was used to define the average annual rainfall, 1-in-100-year annual rainfall, and the monthly distributions of rainfall, as follows:

- The average rainfall year was defined as having a total rainfall of 22.0 inches.
- The 1-in-100 rainfall year was defined as having a total rainfall of 41.1 inches.
- The monthly distributions were defined based on the 1906 to 1977 monthly Normal rainfall distribution values, with the Normal values being statistically determined values reported by the California Department of Water Resources (DWR).

DWR defined all of these values. This information on is documented in Attachment A and summarized in Table 2.

Reference evapotranspiration (ET) for each month is based on long-term monthly average ET values for the Plymouth California Irrigation Management Information System (CIMIS) Station #227, located approximately 13 miles northeast of the golf course. This information is documented in Attachment A of this TM and summarized in Table 2, along with the monthly total rainfall values for the average and 1-in-100 rainfall years.

[1] CDPH has since been incorporated into the State Water Board as the Division of Drinking Water (DDW).

Table 2. Applicable Climate Data

Month	Average Rainfall,[(a)] inches	1-in-100 Year Rainfall,[(a)] inches	Reference ET,[(b)] inches
October	1.15	2.15	3.24
November	2.81	5.24	1.68
December	3.54	6.58	1.21
January	5.09	9.48	1.48
February	3.14	5.86	1.95
March	3.20	5.95	3.02
April	1.75	3.26	4.57
May	0.63	1.18	5.97
June	0.23	0.43	7.19
July	0.07	0.13	7.64
August	0.13	0.24	6.98
September	0.33	0.62	4.99
Total	**22.1**	**41.1**	**49.9**

(a) NCDC weather station #044283
(b) Plymouth CIMIS station #227

Crop ET

Monthly crop ET values for the golf course were calculated by multiplying the reference ET values from Table 2 by a representative crop coefficient. Grasses grown on the golf course include:

- perennial rye grass
- poa annua
- creeping bent grass
- tall fescue
- Bermuda grass

Apart from Bermuda grass, all grasses used on the golf course are considered cool season grasses. Meyer and Gibeault at the University of California, Irvine report monthly crop coefficients for cool season grasses (see of Attachment B). The average of these reported monthly crop coefficients for April to October, calculated to be 0.88, was used as a representative crop coefficient for all months.

Pond ET

Monthly ET values for the storage pond Lake I were set equal to the respective monthly reference ET values.

Historical Recycled Water Demands

Evaluation of historical recycled water demands was based on the following:

- To properly maintain the golf course greens, recycled water is delivered to the COWRF and golf course solely based on golf course demands.
- Golf course flow data is tracked by golf course staff, and total monthly and annual flow volumes based on this data are shown in Table 3.
- The historical average volume of recycled water delivered was calculated for each calendar month and was used to calibrate and confirm the theoretical recycled water demand for the golf course.

Table 3. Historical Golf Course Recycled Water Demand

Month	Volume of Recycled Water Used, million gallons (MG)									Average, acre-feet
	2017	2018	2019	2020	2021	2022	2023	2024	Average	
October	16.5	8.4	16.7	14.5	8.2	9.1	11.9	20.3[a]	12.2	37.4
November	0	3.2	13.9	6.1	0	9.1	0	2.6[a]	5.3	16.4
December	0	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0
April	0	0	0	1.1	12.7	8.1	0.9	0	2.9	8.8
May	18.1	19.1	15.1	14.1	25.2	12.1[b]	15.8	17.6	17.9	54.9
June	25.6	26.5	21.1	19.6	21.4	10.8[b]	22.0	28.3	23.5	72.2
July	29.4	29.0	27.2	26.6	31.7	20.4	25.1	28.3	27.2	83.6
August	29.1	29.8	26.5	25.8	23.3	21.0	22.0	26.1	25.5	78.1
September	23.0	24.1	24.1	16.2	9.0[c]	15.7	15.0	24.2	20.3	62.4
Total, MG	**141.7**	**140.2**	**144.6**	**123.9**	**131.5**	**106.3**	**118.1**	**147.5**	**134.8**	**413.8**

(a) Values excluded from average calculation. The COWRF influent flow meter failed on October 9, 2024 and COWRF staff requested that water be sent to the COWRF at a steady rate of 800 gallons per minute until the end of the irrigation season in mid-November. Therefore, during this period, there was less ability to match the effluent flows from the COWRF to golf course agronomic demands and it is not clear these are representative values.

(b) Values excluded from average calculation. There was limited recycled water supply available from ARSA during the period of May to June 2022 and the golf course was under-irrigated.

(b) Value is excluded from average because it is anomalous when compared with September recycled water use volumes of other years. Operations staff responsible for this data are not available to confirm its accuracy.

Theoretical Recycled Water Demands

Theoretical recycled water demands for the golf course were developed based on the following:

- Theoretical agronomic demands are calculated by multiplying the difference between the calculated monthly crop ET and monthly rainfall values by the total area of the golf course (130 acres) and dividing by an irrigation efficiency factor. For months with more precipitation than ET, the irrigation demand was set equal to zero.

- Irrigation efficiencies for solid set spray irrigation systems like that used on the golf course can range from 60 to 85 percent (see Attachment C, Table 8.2b). A calibration process, described in the next section, has been used to define the irrigation efficiency for this site.
- Theoretical evaporative losses from the storage ponds are calculated by multiplying the difference between the reference ET and monthly rainfall values by the total area of the impoundment.
- As noted previously, recycled water is only sent to and pumped from Lake I. Therefore, evaporative losses from only Lake I (3.1 acres) are included.
- Losses are calculated for months only when recycled water is delivered to the golf course.
- There have been no attempts to quantify percolation losses from Lake I. Therefore, percolation losses are assumed to be zero.
- Total theoretical recycled water demands are the sum of the theoretical monthly golf course agronomic demands and the theoretical monthly evaporative losses from Lake I.

Average Year Theoretical Recycled Water Demand Calibration

The site-specific irrigation efficiency factor used to calculate the theoretical irrigation demand is determined by adjusting the irrigation efficiency value used in the calculation of the average-year theoretical recycled water demand until the demand matches the historical recycled water supplied.

The resulting irrigation efficiency is 84 percent, on the upper end of the typical range for spray irrigation cited above. ***This calibration process demonstrates that the golf course irrigation system is very efficient and experiences limited losses.***

1-in-100 Year Recycled Water Demand

The 100-year theoretical recycled water demand is calculated using the procedures described above but applying 1-in-100-year rainfall values and retaining the 84 percent irrigation efficiency determined from the average year water balance.

Agronomic Water Demands

The calculated average rainfall year theoretical demand to be used in the water balance analysis is shown in Table 4. The calculated average 1-in-100-year theoretical demand to be used in the water balance analysis is shown in Table 5.

The historical data show irrigation demands in November, but the theoretical demands do not indicate a need for irrigation water in this month. This discrepancy likely reflects the fact that rainfall typically does not begin until late November in this area, while there are still irrigation demands earlier in the month. Despite this discrepancy, the annual theorical demand matches closely to the historical values for the average year. Therefore, the methodology applied provides an accurate estimate for purposes of developing an annual water balance for COWRF.

Table 4. Monthly Golf Course Recycled Water Demand for an Average Rainfall Year

Month	(1) Climate Values, inches: Rainfall	(2) Climate Values, inches: Reference ET	(3) Historical Demand, acre-feet	(4) Theoretical Average-Year Demand, acre-feet: Irrigation Demand	(5) Theoretical Average-Year Demand, acre-feet: Pond Losses	(6) Theoretical Average-Year Demand, acre-feet: Total Demand
October	1.15	3.24	37.4	21.9	0.5	22.4
November	2.81	1.68	16.4	0	0	0
December	3.54	1.21	0	0	0	0
January	5.09	1.48	0	0	0	0
February	3.14	1.95	0	0	0	0
March	3.20	3.02	0	0	0	0
April	1.75	4.57	8.8	29.3	0.7	30.0
May	0.63	5.97	54.9	59.6	1.4	61.0
June	0.23	7.19	72.2	78.6	1.8	80.4
July	0.07	7.64	83.6	85.8	2.0	87.8
August	0.13	6.98	78.1	77.5	1.8	79.3
September	0.33	4.99	62.4	52.4	1.2	53.6
Total, acre-feet per year (AFY)	**22.0**	**49.9**	**413.8**	**405.1**	**9.4**	**414.5**

Notes:
(1) 1906-1977 monthly rainfall normals for Ione NCDC weather station #044283
(2) Long-term monthly average reference ET from Plymouth CIMIS station #227
(3) Average of monthly irrigation volumes applied to the golf course from 2017 to 2024 from Table 3
(4) = (irrigated area of 130 acres) x [Column 2 x (crop coefficient of 0.88) - Column 1] / (irrigation efficiency of 0.84) / 12 inches/foot
(5) = (storage pond area of 3.1 acres) x (Column 2 - Column 1) / 12 inches per foot
(6) = Column 4 + Column 5

Table 5. Monthly Golf Course Recycled Water Demand for a 1-in-100 Rainfall Year

Month	(1)	(2)	(3)	(4)	(5)
	Climate Values, inches		Theoretical 100-Year Demand, acre-feet		
	Rainfall	Reference ET	Irrigation Demand	Pond Losses	Total Demand
October	2.15	3.24	9.0	0.3	9.3
November	5.24	1.68	0	0	0
December	6.58	1.21	0	0	0
January	9.48	1.48	0	0	0
February	5.86	1.95	0	0	0
March	5.95	3.02	0	0	0
April	3.26	4.57	9.8	0.3	10.1
May	1.18	5.97	52.5	1.2	53.7
June	0.43	7.19	76.1	1.7	77.8
July	0.13	7.64	85.0	1.9	86.9
August	0.24	6.98	76.1	1.7	77.8
September	0.62	4.99	48.6	1.1	49.7
Total, AFY	**41.1**	**49.9**	**357.1**	**8.2**	**365.3**

Notes:

(1) = 100-year return period annual total distributed monthly in proportion to 1906-1997 monthly Normals for Ione NCDC weather station #044283

(2) Long-term monthly average reference ET from Plymouth CIMIS station #227

(3) = (irrigated area of 130 acres) x [Column 2 x (crop coefficient of 0.88) - Column 1] / (irrigation efficiency of 0.84) / 12 inches per foot

(4) = (storage pond area of 3.1 acres) x (Column 2 - Column 1) / 12 inches/foot

(5) = Column 4 + Column 5

COWRF INFLUENT FLOWS

Calculation Procedures

The theoretical influent flow to the COWRF is calculated for each month using the following formula:

Golf Course Irrigation Demand/(1-backwash percentage)

The Golf Course Irrigation Demands were discussed in the previous section. The backwash percentages are calculated based on historical COWRF influent and backwash flow data, as described in the sections below.

Historical COWRF Influent Flows

Historical monthly influent flows to the COWRF are shown in Table 6. Influent flows beginning in April 2022 are reported in the monthly COWRF discharge monitoring reports (DMRs). Prior to 2022, COWRF DMRs did not present influent flows. However, the influent flows were determined from available golf course demand data and backwash flow data.[2]

Table 6. Historical COWRF Influent Flows

Month	Volume of COWRF Influent Flow, MG								
	2017	2018	2019	2020	2021	2022	2023	2024	Average
October	19.5	10.3	20.7	17.9	10.5	10.9	19.2	27.7[(a)]	17.1
November	0	4.8	15.8	7.8	0	11.3	9.3	4.0[(a)]	8.8
December	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	2.0	0	0	2.0
April	0	0	0	0.9	14.4	12.7	2.1	0	7.5
May	20.4	21.6	17.1	16.8	29.1	14.0[(b)]	18.8	19.8	19.7
June	29.1	30.1	23.7	23.0	24.7	13.1[(b)]	25.8	32.0	25.2
July	34.1	33.5	31.2	30.2	35.7	23.1	29.5	32.1	31.2
August	33.3	36.9	33.3	30.1	27.0	23.2	27.4	32.3	30.3
September	27.1	27.7	28.1	20.2	11.2[(b)]	18.5	21.4	28.0	22.8
Total, MG	**163.4**	**164.9**	**169.7**	**146.7**	**152.7**	**128.8**	**153.5**	**174.7**	**164.5**

(a) Values excluded from this evaluation. The COWRF influent flow meter failed on October 9, 2024. Reported influent is an estimate of the actual flow received during this period.

(b) Although values reported in these months are not representative of typical influent flows (and thus irrigation demands), they are useful in determining the percentage of backwash flow generated. Therefore, these values are not excluded from this portion of the analysis.

[2] To determine influent flows prior to April 2022, monthly COWRF effluent flows from the DMRs were compared to golf course flows and filter backwash flows. If the reported COWRF effluent flow was larger than the golf course flow, it was confirmed to be actual influent flow by verifying that it was equal to the sum of the golf course influent flow and the filter backwash flow. If the reported COWRF effluent flow was equivalent to the golf course flow, the COWRF influent flow was calculated by summing the COWRF effluent flow and filter backwash flow. The 2017 COWRF influent flows were calculated by summing monthly golf course influent flows and filter backwash flows because COWRF DMRs were not available.

Historical COWRF Backwash Flows

Historical monthly filter backwash flows from the COWRF are shown in Table 7 .

Table 7. Historical COWRF Filter Backwash Flows

Month	Volume of COWRF Filter Backwash Flow, MG								
	2017	2018	2019	2020	2021	2022	2023	2024	Average
October	3.0	1.9	4.0	3.4	2.4	1.7	7.3[(a)]	5.0	3.1
November	0	1.1	1.9	1.7	0	2.3	4.1[(a)]	1.7	1.2
December	0	0	0	0	0	0	0	0	0.0
January	0	0	0	0	0	0	0	0	0.0
February	0	0	0	0	0	0	0	0	0.0
March	0	0	0	0	0	0	0	0	0.0
April	0	0	0	0	2.0	2.0	0.1	0	1.4
May	2.2	2.5	1.9	2.7	3.9	1.9	3.0	2.2	2.5
June	3.4	3.6	2.5	3.8	3.4	2.0	3.7	3.6	3.2
July	4.7	4.4	3.9	3.6	4.0	2.7	4.4	3.8	3.9
August	4.2	3.9	3.9	4.3	3.8	2.7	5.4[(a)]	5.1	4.0
September	4.1	3.5	4.0	4.0	2.6	2.2	6.4[(a)]	5.5	3.7
Total, MG	**21.7**	**20.9**	**22.1**	**23.4**	**21.9**	**17.5**	**34.4**	**26.8**	**23.5**

(a) Values were not used in calculated average. Operations staff were performing excessive backwashing of the filters. This practice has since ceased.

Filter Backwash Flow Percentages

The percentage of COWRF influent flow that was discarded as backwash flow to the WWTF each month was calculated by dividing the backwash flow by the influent flow. Table 8 shows the results of this calculation. From the percentages shown, a monthly average was calculated. Monthly average backwash percentages range from 13 to 20 percent.

Table 8. Historical COWRF Filter Backwash Flow Percentage

Month	Filter Backwash Flow as a Percentage of Influent Flow, percent								
	2017	2018	2019	2020	2021	2022	2023	2024	**Average**
October	15	18	19	19	23	16	38[a]	18[b]	**18**
November	-[c]	23	12	22	-	20	44[a]	41[b]	**19**
December	-	-	-	-	-	-	-	-	**-**
January	-	-	-	-	-	-	-	-	**-**
February	-	-	-	-	-	-	-	-	**-**
March	-	-	-	-	-	-	-	-	**-**
April	-	-	-	-	14	16	7[d]	-	**15**
May	11	12	11	16	13	13	16	11	**13**
June	12	12	11	16	14	15	15	11	**13**
July	14	13	13	12	11	12	15	12	**13**
August	13	11	12	14	14	12	20[a]	16	**13**
September	15	13	14	20	23	12	30[a]	20	**17**

(a) Values were not used in calculated average. Operations staff were performing excessive backwashing of the filters. This practice has since ceased.

(b) Values excluded from this evaluation. The COWRF influent flow meter failed on October 9, 2024. Reported influent is an estimate of the actual flow received during this period.

(c) "-" indicate there were no flows to the COWRF during this period.

(d) The backwash percentage during April 2023 was abnormally low. Influent flow to the COWRF began six days before the end of the month and effluent and backwash were only discharged on two of the six days. This value was not used in the calculated average.

Theoretical COWRF Influent Flow

The calculated average rainfall year theoretical flow to the COWRF to be used in the water balance analysis is shown in Table 9. The calculated average 1-in-100-year theoretical flow to the COWRF to be used in the water balance analysis is shown in Table 10.

Table 9. Monthly COWRF Influent Demand for an Average Rainfall Year

Month	Average-Year Golf Course Recycled Water Demand,[(a)] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[(b)] percent	Average-Year COWRF Influent Flow,[(c)] acre-feet
October	22.4	18	27.3
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	30.0	15	35.3
May	61.0	13	70.1
June	80.4	13	92.4
July	87.8	13	100.9
August	79.3	13	91.1
September	53.6	17	64.6
Total, AFY	**414.5**	**-**	**481.7**

(a) From Table 4, Column 6
(b) From Average column in Table 8
(c) = Column 1/(1 - Column 2)

Table 10. Monthly COWRF Influent Capacity for a 1-in-100 Rainfall Year

Month	1-in-100-Year Golf Course Recycled Water Demand,[a] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[b] percent	1-in-100-Year COWRF Influent Flow,[c] acre-feet
October	9.3	18	11.3
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	10.1	15	11.9
May	53.7	13	61.7
June	77.8	13	89.4
July	86.9	13	99.9
August	77.8	13	89.4
September	49.7	17	59.9
Total, AFY	**365.3**	**-**	**423.5**

(a) From Table 5, Column 5
(b) From Average column in Table 8
(c) = Column 1 / (1 - Column 2)

Theoretical COWRF Backwash Percentages and Flows

A calculated theoretical backwash flow from the COWRF to the WWTF will be used in the water balance analysis for the WWTF, based on the influent flows from Table 9 and Table 10 and average historical backwash flow percentages by month from Table 8. The theoretical COWRF backwash flow for an average rainfall year is shown in Table 11. The theoretical COWRF backwash flow for a 1-in-100 rainfall year is shown in Table 12.

Table 11. Monthly COWRF Backwash Flow for an Average Rainfall Year

Month	Average-Year COWRF Influent Flow,[a] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[b] percent	Average-Year COWRF Backwash to WWTF,[c] acre-feet
October	27.3	18	4.9
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	35.3	15	5.3
May	70.1	13	9.1
June	92.4	13	12.0
July	100.9	13	13.1
August	91.1	13	11.8
September	64.6	17	11.0
Total, AFY	**481.7**	**-**	**67.2**

(a) From Table 9
(b) From Table 8
(c) = Column 1 x Column 2

Table 12. Monthly COWRF Backwash Flow for a 1-in-100 Rainfall Year

Month	1-in-100-Year COWRF Influent Flow,[a] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[b] percent	1-in-100-Year COWRF Backwash to WWTF,[c] acre-feet
October	11.3	18	2.0
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	11.9	15	1.8
May	61.7	13	8.0
June	89.4	13	11.6
July	99.9	13	13.0
August	89.4	13	11.6
September	59.9	17	10.2
Total, AFY	**423.5**	**-**	**58.2**

(a) From Table 10
(b) From Table 8
(c) = Column 1 x Column 2

GOLF COURSE TAILWATER AND OVERSPRAY CONTROL AND MONITORING

This section provides information about Best Management Practices (BMPs) and monitoring for tailwater and overspray control from the golf course. The following topics are addressed:

- Golf Course Field Monitoring
- Golf Course Best Management Practices
- Golf Course Storage Pond Monitoring

Golf Course Field Monitoring

The City, in coordination with the golf course management, is required to perform daily, weekly, and monthly monitoring of the golf course when recycled water is being applied, as outlined in the WRR's Monitoring and Reporting Program (MRP). These requirements are summarized in Table 13. In addition to the elements outlined below, the daily inspections must note any evidence of erosion, field saturation, runoff or the presence of nuisance conditions.

The MRP was adopted December 21, 2021, and did not become effective until after the end of the 2021 irrigation season. Since its adoption, the MRP requirements related to the golf course operations shown in Table 13 have not been satisfied. The City and golf course staff are currently developing the protocols to implement this monitoring and will initiate the program beginning in the 2025 irrigation season.

Table 13. Golf Course Monitoring Requirements				
Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	gallons	Continuous	Daily	Monthly
Rainfall[a]	inches	Measurement		
Acreage Applied[b]	acres	Calculated		
Tailwater Runoff Observation	--	Observation		
(a) As measured at the weather station nearest to the disposal site.				
(b) Specific disposal fields shall be identified.				

Flow

Currently, golf course staff monitor the daily total flow that is applied to the golf course. This flow is measured from the irrigation pump station and recorded in the golf course's central computer system. The measurement can be reported in up to 15-minute increments. Golf course staff report the daily total flows to the City.

Rainfall

Rainfall collects in a plastic rain gage located at the maintenance yard, and golf course staff manually read the gage daily at approximately the same time of day. That measurement is compared to a reported weather station located in the nearby City of Jackson to confirm its accuracy. The onsite, measured rainfall data is reported to the City.

Acreage Applied

The golf course's central computer system has the ability report the areas that are watered each night. These areas are grouped and reported by area category according to the type of plant that is watered. The area categories are:

- Greens
- Tees
- Fairway
- Perimeter
- Rough
- Club House
- Driving Range
- Putting Green

Irrigation generally occurs on all areas of the golf course simultaneously. In rare instances an area category may be watered alone. Starting with the 2025 irrigation season, golf course staff will report the acreage that is watered daily and include that information in the flow report provided to the City monthly.

Tailwater Runoff Observation Monitoring

Starting with the 2025 irrigation season, City staff will inspect the golf course daily for evidence of runoff and overspray. These inspections will occur in the morning, just after irrigation occurs. During these inspections, special attention will be paid to the following five vulnerable areas, which have the most potential for recycled water to escape the use area:

- Castle Oaks Clubhouse
- Areas abutting Mule Creek
- Spyglass Drive near the Irrigation Pump Station
- Castle Oaks Drive and Shakeley Lane intersection
- Near the bathroom by Vista Lane

Monitoring each location will be done through an observatory drive by each location in the early morning. Evidence of runoff or overspray includes wet areas on hardscape sidewalks and roadways surrounding the extents of the landscaped area. If these areas are wet or water appears to be draining from landscape into the gutters, the irrigation system should be further investigated for problems. Inspection logbook entries for the golf course monitoring will be submitted with the monthly monitoring reports.

Golf Course Best Management Practices

Overspray and runoff of recycled water from the use area is minimized and controlled through the implementation of BMPs. Spray irrigation systems are vulnerable to inefficiencies related to runoff or overspray caused by pressure fluctuations, wind, or equipment malfunction. If any part of the system is not working optimally, the result is a less uniform application of water which increases the likelihood of water escaping the recycled water use area. Even the most efficiently designed system must be maintained and constantly monitored to mitigate system avoid problems.

The COWRF BMP strategies include engineered controls and mechanisms to minimize runoff or overspray and practices to improve the application of water to a use area. Specific BMPs employed to control for runoff or overspray include:

- Irrigation is ceased during extended and extensive windy periods.
- Irrigation is avoided when the soil is saturated to prevent runoff.
- All sprinkler heads are uniform in brand, model and nozzle size to apply water as uniformly across the plant material as possible.
- A minimum four-foot distance from neighboring backyards and buildings is maintained as practical throughout areas of the golf course. This has been done through head removal, spray range or arc reduction or elimination of a zone. In areas where the four-foot buffer cannot be maintained and irrigated turf is desired, such as near a tee, hole or walkways, the irrigation water is applied with lower impact heads with a smaller arc radius.
- Irrigation occurs in the evening or early morning hours to avoid public interaction, reduce evaporative loses, and take advantage of calmer wind patterns.
- Good horticultural practices are performed including, mowing, de-thatching, aeration, and pest control as necessary to increase the plant and soil water absorbance.
- Irrigation is applied as close as practical to match the amount of water lost through ET and the soil needs.

- Duration of water application is applied to match percolation rates to reduce runoff.
- Installation of low angle heads have been installed in areas near residential backyards to reduce mist from wind drift of spray.
- Tall plants are present along edges and perimeters to create a plant buffer.
- Regular maintenance is performed of the irrigation system which includes inspecting and repairing leaks.

Golf Course Storage Pond Monitoring

Monitoring of irrigation storage ponds when they contain recycled water is also required under the MRP. These requirements are summarized in Table 14.

Table 14. Golf Course Storage Pond Monitoring Requirements

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Freeboard	feet	Measurement	Twice Weekly – 3 days apart	Monthly
Odors	--	Observation	Weekly	
Dissolved Oxygen	milligrams per liter	Grab	Weekly	
pH	pH units	Grab	Monthly	

Similar to the irrigation area, the MRP requirements related to the ponds have not been consistently satisfied. The City and golf course staff are currently developing the protocols to implement this monitoring and will initiate the program beginning in the 2025 irrigation season.

Freeboard

The MRP requires the freeboard be monitored as the difference between the top of the bank of the storage pond to the level of the water. This measurement provides the City with confidence that recycled water cannot escape the storage pond containment area. However, as noted previously, each pond is equipped with a standpipe that serves as an overflow structure. Therefore, it is more appropriate to monitor freeboard as the difference between the top of the overflow structure to the top of the water surface.

Currently, the City has the ability to measure the freeboard of Lake A by means of a level monitoring rod. This capability is not set up in Lakes B through I. Lake I is manually kept at a level that is below the 12-inch overflow standpipe that conveys overflow water to a wetland area that eventually flows to Mule Creek. Prior to the start of the 2025 irrigation season, the City will need to install a level monitoring rod in each pond so that freeboard can be measured.

In addition, the City will employ the following monitoring practices in the 2025 irrigation season:

- Twice a week during the irrigation season, each storage pond should be observed, and freeboard monitored.
- For Pond I, it is expected that there will be recycled water present in the pond throughout the irrigation season and this pond should be monitored during each bi-weekly event.

- Recycled water is occasionally directed to Pond A. Therefore, this pond will be inspected as part of the bi-weekly monitoring. If there is standing water present in Pond A, then monitoring of this pond will be completed.
- If there is any evidence that Pond A has overflowed to Pond B (or any downstream pond) via the pond standpipes, then monitoring of the downstream ponds will also be performed.
- City staff will be responsible for making the appropriate observations to determine whether recycled water is being stored in any of the ponds.
- Golf course staff will provide information to the City regarding where COWRF flows are directed. Specifically, the monthly reports provided to the City will include information about which pond was receiving flow on each day.

Odors

The City is required to evaluate if any objectionable odors are being emitted from the storage ponds once every week. This will be needed for each pond that holds recycled water.

Dissolved Oxygen and pH

The City is required to collect and measure the dissolved oxygen and pH in a grab sample collected from each recycled water storage pond weekly. These measurements can be made using field test instruments provided that:

- The operator is trained in proper use and maintenance of the instruments,
- The instruments are field calibrated at the frequency recommended by the manufacturer,
- The instruments are serviced and/or calibrated at the manufacturer's recommended frequency, and
- Field calibration reports are maintained and a calibration log verifying calibration of all handheld monitoring instruments and devices are submitted with the monthly monitoring report.

Attachment A

Rainfall and Reference ET Data

IONE, CALIFORNIA (044283)

Period of Record Monthly Climate Summary

Period of Record : 03/01/1906 to 06/30/1977

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)					Insuff	icient	Data						
Average Min. Temperature (F)					Insuff	icient	Data						
Average Total Precipitation (in.)	5.08	3.14	3.19	1.75	0.63	0.23	0.07	0.13	0.33	1.15	2.81	3.53	22.04
Average Total SnowFall (in.)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 0% Min. Temp.: 0% Precipitation: 99.9% Snowfall: 99.9% Snow Depth: 99.8%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

D

Rainfall Depth Duration Frequency at Ione

Station Number	Station	County	Latitude	Longitude	Elevation	Years Recorded
B00 4283 00	Ione	Amador	38.348	-120.938	284.0	89

Rainfall Statistics	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	8-Day	10-Day	15-Day	20-Day	30-Day	60-Day	1-Year
Pr=0.5	1.92	2.55	3.01	3.38	3.70	3.99	4.48	4.91	5.79	6.51	7.68	10.19	21.28
Pr=0.2	2.55	3.37	3.98	4.47	4.89	5.27	5.92	6.48	7.64	8.58	10.11	13.39	27.84
Pr=0.1	2.92	3.87	4.55	5.11	5.60	6.02	6.76	7.40	8.71	9.78	11.52	15.23	31.54
Pr=0.04	3.36	4.44	5.22	5.86	6.40	6.89	7.73	8.45	9.94	11.16	13.13	17.32	35.70
Pr=0.02	3.66	4.83	5.67	6.36	6.96	7.48	8.39	9.17	10.78	12.09	14.22	18.74	38.51
Pr=0.01	3.94	5.19	6.10	6.84	7.47	8.04	9.01	9.84	11.57	12.97	15.23	20.06	41.11
Pr=0.005	4.21	5.54	6.51	7.29	7.96	8.56	9.59	10.48	12.31	13.79	16.19	21.31	43.57
Pr=0.002	4.54	5.97	7.01	7.85	8.58	9.22	10.33	11.28	13.23	14.82	17.40	22.87	46.64
Pr=0.001	4.79	6.29	7.38	8.26	9.02	9.69	10.85	11.85	13.90	15.57	18.26	23.99	48.84
Pr=0.0001	5.53	7.26	8.50	9.52	10.39	11.15	12.48	13.62	15.96	17.87	20.94	27.46	55.66

Annual Maxima	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	8-Day	10-Day	15-Day	20-Day	30-Day	60-Day	1-Year
2007	---	---	---	---	---	---	---	---	---	---	---	---	---
2006	---	---	---	---	---	---	---	---	---	---	---	---	---
2005	---	---	---	---	---	---	---	---	---	---	---	---	---
2004	---	---	---	---	---	---	---	---	---	---	---	---	---
2003	---	---	---	---	---	---	---	---	---	---	---	---	---
2002	---	---	---	---	---	---	---	---	---	---	---	---	---
2001	---	---	---	---	---	---	---	---	---	---	---	---	---
2000	1.85	2.80	4.29	4.74	4.99	4.99	5.22	5.79	7.52	9.05	10.35	11.82	21.39
1999	2.02	2.44	3.42	3.42	3.42	3.42	3.42	4.17	5.51	5.72	8.41	10.90	15.39
1998	2.37	3.55	4.11	4.36	4.98	5.85	6.61	7.31	8.07	10.05	14.21	21.25	30.46
1997	2.37	3.55	4.11	4.36	4.98	5.85	6.61	7.31	8.07	10.05	14.21	21.25	43.59
1996	3.75	3.85	3.85	3.85	3.85	3.85	3.85	3.85	4.74	5.27	6.16	11.53	22.80
1995	2.90	4.71	5.05	5.33	5.58	5.71	7.45	8.02	9.08	9.83	12.42	16.90	35.50
1994	1.27	1.70	1.95	2.05	2.15	2.42	2.55	2.55	3.45	3.67	5.27	5.87	15.52
1993	1.81	2.26	2.26	2.84	3.18	4.50	4.91	5.13	7.10	7.52	10.16	16.58	29.21
1992	2.30	3.18	3.18	3.24	4.11	5.17	5.97	6.06	6.98	7.16	9.13	10.62	20.43
1991	1.60	2.28	2.88	3.52	3.52	3.52	4.08	5.15	6.28	7.38	10.07	11.94	16.59
1990	1.82	2.35	2.37	2.37	2.37	2.37	2.37	2.37	2.90	2.90	3.33	6.23	17.33
1989	1.05	1.90	2.05	2.06	2.26	2.41	2.52	2.82	3.36	3.75	5.85	7.67	16.85
1988	1.55	1.90	1.90	1.90	1.90	1.90	2.05	2.13	2.75	3.47	4.78	6.57	11.67
1987	1.81	2.43	2.54	2.54	2.87	2.87	3.38	3.62	3.62	5.31	5.31	9.80	13.86
1986	2.75	4.85	5.65	6.65	6.85	6.95	7.90	8.00	8.00	9.45	12.97	18.47	33.02
1985	---	---	---	---	---	---	---	---	---	---	---	---	17.93
1984	---	---	---	---	---	---	---	---	---	---	---	---	23.39
1983	---	---	---	---	---	---	---	---	---	---	---	---	41.81
1982	---	---	---	4.62	5.24	5.24	5.53	5.53	7.29	8.43	9.95	15.59	39.56
1981	2.04	2.94	3.80	4.17	4.32	5.01	6.02	6.02	6.21	6.21	6.62	11.24	17.15
1980	---	---	---	---	---	---	---	---	---	---	---	---	

1979	1.54	2.28	2.83	3.82	3.82	3.82	4.02	4.97	5.49	6.53	7.09		
1978	1.54	2.28	2.83	3.82	3.82	3.82	4.02	4.97	5.49	6.53	7.09	12.65	20.87
1977	0.92	1.03	1.09	1.12	1.12	1.12	1.24	1.26	1.26	1.26	2.18	3.32	8.73
1976	0.78	1.23	1.70	1.70	1.91	2.06	2.06	2.06	2.18	3.21	3.73	5.00	11.87
1975	1.97	2.56	3.14	3.27	3.38	3.52	4.84	6.08	7.82	8.47	8.50	15.06	28.24
1974	---	---	---	---	---	---	---	---	---	---	---	---	33.80
1973	2.48	2.76	3.51	4.54	4.86	4.86	6.09	7.38	8.60	9.26	12.09	19.82	35.95
1972	3.05	3.88	3.92	3.98	3.98	5.03	5.90	5.96	6.05	6.73	7.92	9.62	16.80
1971	3.05	4.40	5.02	5.13	6.25	6.57	6.57	7.61	8.20	8.22	9.81	13.34	21.20
1970	2.94	2.94	3.48	3.48	3.72	3.72	4.97	5.90	6.37	7.01	9.55	12.27	21.13
1969	2.75	3.15	3.15	3.23	3.31	3.54	5.63	6.09	8.33	8.80	9.89	16.66	30.23
1968	1.76	2.12	2.12	2.43	2.43	2.48	2.51	3.20	3.20	3.49	4.61	8.77	17.12
1967	2.52	4.13	4.15	4.63	4.97	4.99	5.38	6.53	7.36	7.36	7.89	11.44	29.07
1966	1.79	1.95	2.46	2.48	3.27	3.74	4.03	4.13	5.17	5.17	5.17	9.69	16.47
1965	---	3.43	---	---	---	---	---	7.18	8.10	---	---	---	25.01
1964	1.98	2.44	2.86	3.06	3.06	3.06	3.25	3.45	5.45	6.58	6.84	9.13	18.12
1963	2.88	3.52	4.20	4.65	4.65	4.65	4.65	4.65	6.07	6.38	6.38	10.35	24.44
1962	1.25	2.08	2.93	3.02	4.05	4.53	6.47	7.17	7.61	7.75	9.09	11.98	18.00
1961	1.38	1.68	2.16	2.16	2.16	2.26	2.40	2.77	2.93	3.23	4.81	6.51	13.82
1960	1.33	1.53	1.86	1.86	2.09	2.42	2.82	3.25	3.67	5.03	6.18	7.86	16.68
1959	1.65	2.09	2.09	2.55	2.88	3.22	3.68	4.01	4.01	4.75	6.13	10.54	13.45
1958	---	---	---	---	---	---	---	---	---	---	---	---	41.69
1957	---	---	---	---	---	---	---	---	---	---	---	---	18.93
1956	---	---	---	---	---	---	---	---	---	---	---	---	28.58
1955	---	---	---	---	---	---	---	---	---	---	---	---	18.28
1954	---	---	---	---	---	---	---	---	---	---	---	---	16.40
1953	---	---	---	---	---	---	---	---	---	---	---	---	15.10
1952	2.21	3.15	3.68	3.77	3.77	3.77	3.77	4.06	4.68	6.56	7.47	13.11	27.05
1951	4.65	5.30	5.30	5.30	5.55	5.70	6.24	6.25	6.25	8.87	10.85	14.60	28.76
1950	2.70	2.70	2.70	3.97	3.97	3.97	3.97	5.05	5.05	5.55	9.52	10.41	18.30
1949	1.76	2.71	3.14	3.14	3.14	3.14	3.72	3.86	4.87	5.45	6.93	10.49	17.23
1948	1.28	1.41	1.70	1.83	2.03	2.03	2.43	2.43	4.08	4.39	6.67	8.68	17.76
1947	2.16	3.12	3.20	3.20	3.91	3.91	3.91	4.13	4.13	4.13	4.82	7.33	14.54
1946	1.90	1.90	3.20	3.38	4.37	4.98	5.16	5.42	5.70	6.31	7.49	11.80	20.14
1945	2.68	3.88	4.78	4.78	4.98	5.27	5.27	5.27	5.66	5.66	5.66	9.58	23.66
1944	2.25	2.41	2.53	2.53	3.23	3.39	3.93	4.28	5.68	5.68	7.47	10.20	19.25
1943	2.05	2.78	3.58	3.81	4.43	4.77	5.38	5.42	7.10	8.03	10.13	15.90	27.61
1942	2.00	3.48	4.20	4.60	5.32	5.81	5.91	5.91	7.68	8.17	8.17	12.92	26.67
1941	1.85	2.40	2.46	3.46	5.46	5.46	4.17	4.52	7.17	8.59	11.13	14.00	25.17
1940	1.65	2.72	3.46	3.76	4.20	4.79	5.24	5.54	5.95	6.00	8.96	16.37	24.86
1939	1.72	2.40	2.55	2.80	2.80	2.80	2.80	2.80	2.80	3.17	3.42	5.93	14.01
1938	2.30	3.65	4.05	4.55	4.80	4.80	5.25	6.95	9.40	10.35	12.10	16.00	27.25
1937	4.40	4.65	5.85	6.15	6.60	6.95	7.70	8.15	8.70	9.50	10.10	19.90	34.99
1936	2.00	2.30	3.50	4.20	4.35	4.50	6.05	6.40	10.33	10.33	13.28	19.99	28.29
1935	2.50	2.72	2.72	2.72	3.25	4.30	4.52	4.52	5.22	5.65	6.35	9.47	23.94
1934	1.70	2.85	2.85	4.05	4.52	4.52	4.52	4.52	4.52	6.40	8.77	9.67	

1933	1.20	1.72	1.72	1.72	2.32	3.12	3.12	3.82	3.82	3.82	5.07		
1932	1.75	1.92	2.59	3.58	3.75	3.80	4.49	4.97	5.58	5.88	6.60	10.05	19.99
1931	1.65	1.65	1.65	2.53	2.53	2.53	2.65	2.65	2.65	2.65	3.92	6.39	12.62
1930	1.39	2.25	2.25	2.57	2.57	2.78	3.35	3.71	5.17	5.33	5.62	10.86	17.07
1929	1.91	2.98	3.49	3.49	3.49	3.49	3.49	3.57	4.07	4.07	4.07	6.57	15.52
1928	1.68	2.60	3.40	4.06	4.79	4.92	4.92	4.92	5.92	6.10	6.27	9.09	18.80
1927	1.50	3.00	3.00	4.25	4.25	4.51	5.46	5.96	6.26	6.91	7.41	10.51	24.11
1926	2.55	2.80	2.90	3.55	3.55	4.55	5.10	5.10	6.48	8.99	10.04	10.29	21.54
1925	1.95	3.05	3.27	3.27	3.52	3.74	4.27	5.79	5.94	7.79	8.41	11.84	28.60
1924	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	2.35	3.00	3.00	4.95	10.50
1923	2.20	3.00	4.30	5.30	5.30	5.30	5.50	6.10	6.70	6.70	9.30	14.15	26.07
1922	2.17	2.52	3.45	3.95	3.95	3.95	3.95	4.44	7.09	7.16	9.46	14.80	24.30
1921	3.85	3.95	4.50	4.72	4.72	4.72	4.72	5.72	6.62	7.02	7.72	13.51	26.57
1920	2.10	3.55	3.90	4.05	4.20	4.20	4.20	4.31	4.82	5.19	7.04	9.26	15.46
1919	2.25	3.55	3.90	4.00	4.05	4.40	4.60	4.70	5.00	6.45	8.15	10.35	18.75
1918	1.60	2.35	2.35	2.35	3.45	4.25	4.70	4.70	6.50	6.50	8.10	11.30	15.50
1917	1.30	2.30	2.60	2.90	3.25	3.55	4.10	4.35	4.55	4.55	5.35	7.25	17.70
1916	---	---	---	---	---	---	---	---	---	---	---	---	20.00
1915	1.50	1.95	2.15	2.30	2.83	3.03	3.88	4.20	5.88	6.20	7.77	10.87	22.80
1914	2.26	3.11	3.49	3.61	3.99	3.99	3.99	4.48	5.47	6.96	9.81	13.52	22.90
1913	1.20	1.84	2.22	2.72	2.95	3.36	3.36	3.55	4.01	4.01	4.01	4.86	14.26
1912	0.69	1.04	1.15	1.22	1.30	1.45	1.86	2.16	2.47	2.86	3.43	5.36	12.68
1911	2.17	3.57	5.27	6.12	6.45	7.30	7.80	8.42	10.82	15.51	18.06	24.30	30.46
1910	2.00	3.00	3.00	3.45	3.88	3.88	3.93	3.93	4.00	4.69	5.92	8.90	20.89
1909	1.45	2.60	3.80	4.42	4.54	5.07	5.99	6.39	7.99	9.21	12.66	19.24	26.01
1908	1.30	1.60	1.60	1.78	1.78	1.78	1.83	3.03	3.63	3.63	5.51	9.04	14.27
1907	4.37	6.79	7.38	7.53	8.38	8.53	8.53	8.53	8.53	10.60	12.20	18.04	33.82
1906	2.40	2.54	3.22	3.62	3.85	3.85	3.85	5.03	7.47	9.20	10.45	15.43	30.93
1905	2.90	2.90	2.90	3.20	4.20	4.20	4.55	4.85	5.55	5.55	5.50	9.65	25.95
1904	1.51	2.62	3.12	3.15	3.15	3.25	3.75	4.86	6.07	6.42	7.20	12.05	21.42
1903	1.85	2.92	3.58	4.10	5.01	5.03	5.03	5.53	5.53	7.54	9.71	10.34	22.39
1902	1.21	1.79	2.09	2.61	3.01	3.41	3.87	4.41	5.03	6.03	7.72	9.29	20.19
1901	2.05	2.79	3.61	4.03	4.03	4.72	5.54	5.52	5.54	7.35	7.69	11.29	25.48
1900	1.85	2.34	2.41	2.80	2.86	2.86	2.86	3.88	4.82	5.66	6.45	9.69	21.51
1899	1.93	2.56	3.20	3.54	4.04	4.04	4.94	7.17	7.80	7.93	9.00	9.22	20.03
1898	3.60	4.47	4.64	4.64	4.64	4.64	4.64	4.76	5.11	5.11	5.23	7.30	13.77
1897	---	---	---	---	---	---	---	---	---	---	---	---	---
1896	---	---	---	---	---	---	---	---	---	---	---	---	---
1895	---	---	---	---	---	---	---	---	---	---	---	---	---
1894	---	---	---	---	---	---	---	---	---	---	---	---	---
1893	---	---	---	---	---	---	---	---	---	---	---	---	---
1892	---	---	---	---	---	---	---	---	---	---	---	---	---
1891	---	---	---	---	---	---	---	---	---	---	---	---	---
1890	---	---	---	---	---	---	---	---	---	---	---	---	---
1889	---	---	---	---	---	---	---	---	---	---	---	---	---
1888	---	---	---	---	---	---	---	---	---	---	---	---	---

Monthly Average ETo Report

California Irrigation Management Information System (CIMIS)

Rendered in ENGLISH Units.

Printed on Wednesday, August 31, 2022

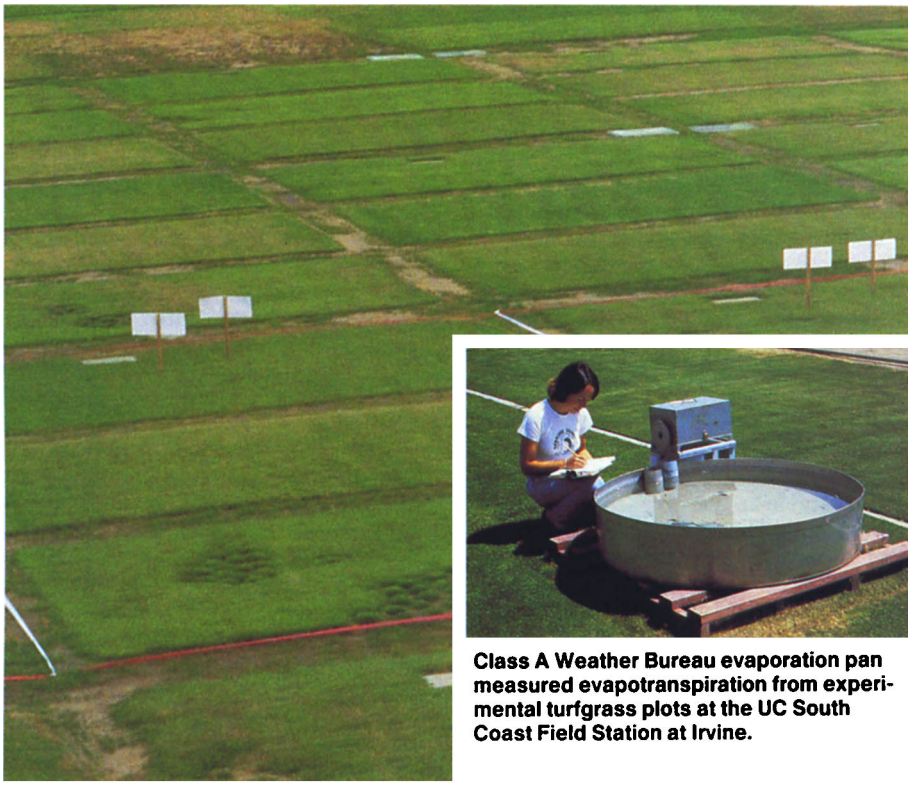
Average ETo Values by Station

Stn Id	Stn Name	CIMIS Region	Jan (in)	Feb (in)	Mar (in)	Apr (in)	May (in)	Jun (in)	Jul (in)	Aug (in)	Sep (in)	Oct (in)	Nov (in)	Dec (in)	Total (in)
227	Plymouth	SFH	1.48	1.95	3.02	4.57	5.97	7.19	7.64	6.98	4.99	3.24	1.68	1.21	49.92

CIMIS Region Abbreviations		
BIS - Bishop	CCV - Central Coast Valleys	ICV - Imperial/Coachella Valley
LAB - Los Angeles Basin	MBY - Monterey Bay	NCV - North Coast Valleys
NEP - Northeast Plateau	SAV - Sacramento Valley	SBE - San Bernardino
SFB - San Francisco Bay	SJV - San Joaquin Valley	SFH - Sierra Foothill
SCV - South Coast Valleys		

Attachment B

Turfgrass Performance Under Reduced Irrigation
Meyer and Gibeault



Class A Weather Bureau evaporation pan measured evapotranspiration from experimental turfgrass plots at the UC South Coast Field Station at Irvine.

Turfgrass performance under reduced irrigation

Jewell L. Meyer □ Victor A. Gibeault

Turfgrass in California requires irrigation during all or most of the year. Water restrictions imposed during the drought in 1976 and 1977 forced turf managers to reexamine many concepts about irrigation. Turfgrass managers had to make drastic cuts in water use and hope that the turf would survive. One significant result of the drought was the realization that lower levels of turf quality were acceptable in many situations and that large water savings could be achieved. No information was available, however, on the best conservation practices or on the minimum amounts of water needed to keep the turf alive.

Research was begun in 1979 to produce irrigation methodology that could be used to develop water-saving irrigation practices anywhere in California and in other arid and semiarid regions. The three-year study showed that major savings of water can be achieved, especially with warm-season grasses, with no appreciable loss of turf quality.

Turf-irrigation study

Specifically, the objectives of the research were to: (1) investigate the effects of applying reduced amounts of irrigation water calculated as a percentage of evapotranspiration of applied water on cool-season and warm-season turfgrasses; (2) evaluate a below-ground system as a potentially more efficient method of turf irrigation than standard sprinkler application; and (3) develop a set of crop coefficients that California turfgrass managers can use to determine on-site water use by both cool- and warm-season turfgrasses.

The study was conducted at the University of California South Coast Field Station, Irvine. The variables tested included: two irrigation methods, sprinkler application of water and a subterranean or buried trickle/drip water application (8-inch depth, 23-inch spacing); three irrigation regimes, 100, 80, and 60 percent of calculated evapotranspiration; and six commonly used turfgrasses, three cool-season varieties (Kentucky bluegrass, perennial ryegrass, and tall fescue) and three warm-season types (hybrid bermudagrass, zoysiagrass, and Seashore Paspalum).

The field plot was a randomized split-block design. The area was divided into two turf blocks, one for cool-season grasses and the other for warm-season grasses. Each block consisted of four replications, and within each replication were six randomized irrigation plots measuring 15 by 24 feet. Irrigation plots were divided into three turf subplots of 8 by 15 feet. The three sprinkler and three subterranean irrigation plots per replication were installed in September 1979 for above- and below-ground water application. Each sprinkler irrigation plot contained six high-pop brass sprinkler heads designed to apply 10 gallons of water per minute at a pressure of 35 pounds per square inch. The coefficient of uniformity was 87 percent.

Tensiometers at 3- and 6-inch depths in the cool-season grasses and 8- and 12-inch depths in the warm-season grasses indicated soil water status; neutron probe access tubes were installed in plots to a depth of 4 feet in the cool-season and 6 feet in the warm-season grasses. Scheduling was by the water budget technique calculated weekly using wind-modified pan evaporation data. State-of-the-art controllers were programmed with this irrigation scheduling information. The amount of irrigation was modified so that water did not pass below the 4-foot and 6-foot depths of the neutron probe access tubes during the irrigation season.

Annual crop coefficients, determined from previous research using applied water and evaporation pan data, were 0.7 annually for warm-season grasses and 0.8 for cool-season grasses. Monthly crop coefficients were developed in this experiment to evaluate responses of the six turfgrass species to 60 percent and 80 percent of replacement evapotranspiration for water conservation.

Turf performance

Overhead sprinkler irrigation provided acceptable performance of some turfgrass species, even when less than the optimum amount of water was applied. Subterranean irrigation did not provide acceptable turf with the shallow-rooted cool-season species, at the system depth and spacing used in this study. The very deeply rooted hybrid bermudagrass was the best-performing species with subterranean irrigation.

Under sprinkler irrigation, there was no significant difference in cool-season grass performance between the 100 percent and 80 percent regimes (table 1). This could be described as a potential level of water conservation amounting to 21.1 percent savings (77.2 inches versus 61 inches). The savings could be tenuous, however, because of more weed and disease activity (such as Gerlachia patch on Kentucky bluegrass) when irrigated with less than the optimum amount of water. The 60 percent regime significantly reduced the turf quality of the three cool-season grasses tested.

In the warm-season grasses, the appearance of hybrid bermudagrass and Seashore Paspalum was not significantly different under any of the irrigation regimes. As irrigation amounts were reduced, zoysiagrass appearance ratings declined because of nematode activity ob-

served on the roots. Both Santa Ana hybrid bermudagrass and Adalayd (Excalibre) Seashore Paspalum had very good color, density, texture, uniformity, and freedom from weeds and diseases, irrespective of irrigation regimes. Clearly there is potential for considerable water savings with these grasses. This study showed a 40 percent reduction in actual water applied between the optimum and lowest irrigation regime (65.5 versus 39 inches).

Because of the field plot design necessary for this study, it wasn't possible to compare statistically the turf performance results between the warm- and cool-season grasses. Hybrid bermuda and Seashore Paspalum performed very well, however, with 52.7 inches of water applied (60 percent irrigation regime), whereas the cool-season grasses needed at least 82.4 inches (80 percent irrigation regime). Thirty-six percent less water was applied to the warm-season species than to the cool-season species for acceptable turf quality. If applied water in the 60 percent irrigation treatment in warm-season grasses (52.7 inches) is compared with that in the 100 percent treatment in cool-season grasses (104.4 inches), the saving in water is 49.5 percent.

Water application

The cool-season grass in the 100 percent regime received 43 inches of water in 1982 (table 2). Warm-season grasses received only 34 inches. Rainfall of 18.45 inches occurred primarily from November to March. The soil profile held about 10 inches depth of water in the top 6 feet. Rainfall did not appreciably affect the applied water during the primary growing season, April through November. Likewise, the 34 inches applied to the warm-season grasses was not appreciably affected by, nor was there evidence of, deep percolation during the primary growing season, when only 4 inches of rain fell. The rainfall is subtracted from the original evaporation pan reading and is therefore reasonably accounted for in the calculated applications.

In 1983, a higher than normal rainfall of 32 inches occurred. The soil profile was filled during the winter, however, and only 9 inches of rain fell from April to October 30, of which 4 inches occurred in early April. Water moved below the root zone only on June 29, August 29, October 5, and October 17 in all plots of 100 and 80 percent irrigation in 1983. Even during a season of higher than normal rainfall, the applied water, 38.7 inches in cool-season grasses (1983), was similar to that of the drier year (1982) with 43 inches applied. Most of the 5 inches of implied higher use by cool-season grasses may have moved through deep percolation.

The water applied to warm-season grasses was 34 inches in 1982 and 33 inches in 1983. This small difference indicates that managers can schedule carefully and conserve water in a wet or dry season.

TABLE 1. Cool- and warm-season turfgrass appearance ratings and water applied for the duration of the study (August 1981 to December 1983).

Irrigation regime	Turf appearance 8/81 - 12/83*			Water application (actual)	ET_{grass}†
% of ET				*in.*	
Cool season	Ken. blue	Per. rye	Tall fesc.		
100	5.5 y	6.2 y	5.8 y	104.4	77.3
80	5.3 y	5.9 y	5.7 yz	82.4	61.0
60	4.8 z	5.0 z	5.3 z	62.7	46.4
Warm season	Bermuda	Paspalum	Zoysia		
100	6.5 ns‡	5.8 ns	5.6 x	88.4	65.5
80	6.5	5.8	4.8 y	69.4	51.4
60	6.4	5.4	4.2 z	52.7	39.0

* Rated on a scale of 1 to 9, with 1 indicating worst appearance and 9 best. Values followed by common letters are not significantly different at the 5% level of probability.
† ET_{grass} equals the actual applied water divided by the extra water factor (EWF_{90}), which is 1.35.
‡ No significant difference.

TABLE 2. Actual water applied in 1982 (1/1/82 to 12/31/82) and 1983 (1/1/83 to 12/31/83)

Sprinkler plots	1982		1983	
	Water applied*	Rainfall	Water applied†	Rainfall
% of ET	*inches*			
Cool season				
100	43.2	18.45	38.7	31.78
80	35.0		31.9	
60	26.6		24.5	
Warm season				
100	34.0		33.0	
80	27.4		25.8	
60	21.6		19.6	

* Class A pan evaporation 55.0 inches for 1982.
† Class A pan evaporation 55.63 inches for 1983.

TABLE 3. Turfgrass crop coefficients (Kp and Kc) of warm- and cool-season grasses.

Month	Kp*		Kc†	
	Warm	Cool	Warm	Cool
J	.44	.49	.55	.61
F	.43	.51	.54	.64
M	.61	.60	.76	.75
A	.58	.83	.72	1.04
M	.63	.76	.79	.95
J	.54	.70	.68	.88
J	.57	.75	.71	.94
A	.57	.69	.71	.86
S	.50	.59	.62	.74
O	.43	.60	.54	.75
N	.46	.55	.58	.69
D	.44	.48	.55	.60

* Monthly crop coefficient (Kp) is used with a Class A Weather Bureau evaporation pan with the equation $ET_{grass} = ET_{pan} \times Kp$
† The crop coefficient Kc is used with reference evapotranspiration (ETo) from a CIMIS weather station with the equation $ET_{grass} = ETo \times Kc$.

Conclusions

The monthly crop coefficients (table 3) calculated and used for nearly three years proved to be very accurate for both warm- and cool-season turfgrasses. Crop coefficients can be used with reference evapotranspiration from the Department of Water Resources California Irrigation Management Information System (CIMIS) program. Turfgrass managers can use these crop coefficients to determine on-site water use by turfgrasses from either a Class A Weather Bureau evaporation pan or from a computerized weather station that gives reference evapotranspiration with the equation given in table 3.

In conclusion, warm-season turfgrasses have a greater potential for water conservation than do cool-season turfgrasses. Under the conditions of this study, sprinkler irrigation was superior to subterranean irrigation for water conservation and turfgrass performance. And lastly, a well-designed, uniform irrigation system is necessary to maximize water conservation in turfgrass management.

Jewell L. Meyer is Irrigation and Soils Specialist and Victor A. Gibeault is Environmental Horticulturist, Cooperative Extension, University of California, Riverside. *Financial support for this study was granted by the Metropolitan Water District of Southern California, City of Los Angeles Department of Water and Power, Municipal Water District of Orange County, and the San Diego County Water Authority. Also the support of the Southern California Turfgrass Council, the Lloyd Foundation, and the Golf Course Superintendent's Association of Southern California is appreciated. The authors acknowledge the assistance of Ralph Strohman and Mark Mahody, Staff Research Associates, UC Riverside.*

Attachment C

Water Application Efficiency,
Bill Kranz, University of Nebraska Lincoln Extension
Irrigation Specialist,
Northeast Research and Extension Center

Irrigation Chapter 8 - Irrigation Efficiencies

Author: Bill Kranz, University of Nebraska Lincoln Extension Irrigation Specialist, Northeast Research and Extension Center, Norfolk, NE.

Water Application **Efficiency**

The ability to manage an irrigation system is contingent on an accurate estimate of the percentage of water pumped that becomes available for crop use. No irrigation system delivers water at 100 percent efficiency. Water may be lost through delivery systems or pipelines and some water may remain in the **soil**, but not be used by the crop. Some water may run off the soil surface into lowland areas. Still other water may be lost to evaporation in the air, or from the soil and plant surfaces. *Figures 8.1a* and *8.1b* show the major losses for sprinkler and surface irrigation systems. To know how much water to pump, these losses must be totaled and added to the amount of water needed by the crop.

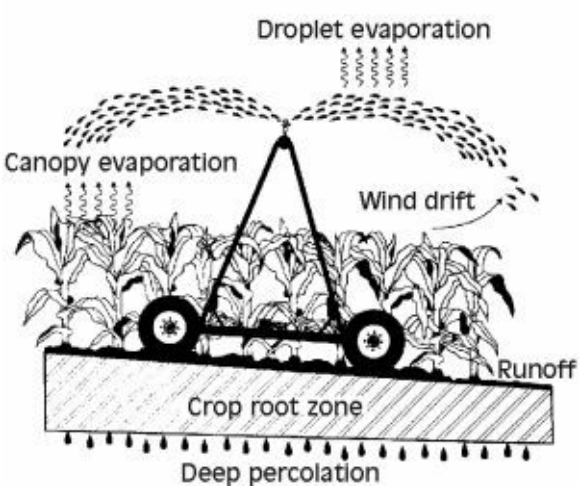


Figure 8.1. a) Potential water losses during irrigation with a center pivot. b) Potential water losses during irrigation with a **furrow irrigation** system.

In most cases, the goal is to insure that all areas of the field receive a **set** amount of uniformly applied water. Consider the catch can test data shown in *Figure 8.2.* The cans recording application depths below the horizontal line are not receiving enough water — catches are less than the desired 0.85 inches. Another application will be needed to insure that the entire field receives at least 0.85 inches of water. This will require using more water and energy than is necessary. If this pattern occurs during each irrigation, plants in the areas receiving less than 0.85 inches eventually could experience water stress. The cans recording application depths above the line receive at least 0.85 inches of water. Any extra water applied could lead to surface **runoff** or deep **percolation**.

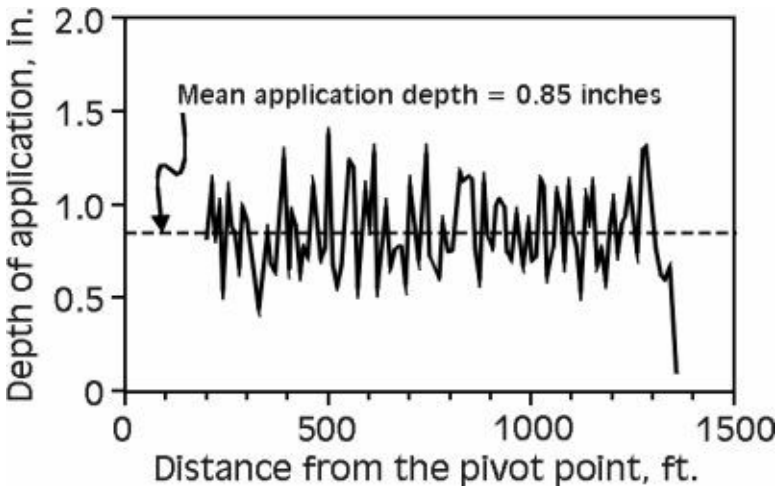


Figure 8.2. Example of catch-can data from a center pivot with low pressure spray nozzle, mounted at 10 foot intervals and 7 feet above the soil surface.

Water application efficiency accounts for how uniformly the water is applied and can be used for other assessments. If the center pivot owner is trying to decide whether switching to a new sprinkler package would be economical, the change in water application efficiency could be a major factor. If water becomes limited, changing to a system with a higher water application efficiency will provide more useable water to the crop and reduce pumping costs.

To maximize irrigation water use, it must be uniformly applied in the right amount and at the right time. Reaching these objectives requires knowledge of water delivery characteristics, field soils and slopes, and the expected crop water use rates.

Mathematical relationships have been developed to help quantify the amount of applied water that becomes available for plant use.

Water application efficiency refers to the amount of water applied that is stored in the crop root zone. This value is determined by water distribution characteristics, system management, soil conditions, the crop, and weather conditions. Water application efficiency pertains to an individual irrigation event.

Equation 8.1 is used to determine water application efficiency.

Equation 8.1 $E_a = [\underline{\text{Depth of water stored in the rootzone } (d_s) \times 100}$ / ***Depth of water pumped*** $(d_p)\ ]$

where:

E_a = Average water application efficiency, %

Depth of water stored in the rootzone (d_s) = Average depth of water stored in the rootzone, inches

Depth of water pumped (d_p) = Average depth of water delivered from source, inches

Irrigation efficiency refers to the amount of water removed from the water source that is used by the crop. This value is determined by irrigation system management, water distribution characteristics, crop water use rates, weather and soil conditions. Irrigation efficiency pertains to the use of water for an entire growing season.

Depth Stored

The depth of water stored in the root zone can be estimated based on field observation of what happens to the water during an application event. Field observation reports should note if runoff occurs and estimate the amount of runoff. With experience, you'll begin to know where and when runoff is likely to occur. For example, runoff from center pivot systems will likely occur first near the outside edge of the irrigated area because the water application rate is greatest there. Other factors include low **infiltration** rate soils, steep slopes and lack of plant residue cover.

Another more accurate method is to record the **soil water** content before and after an irrigation event using one of the methods discussed in *Chapter 3, Soil Water*. If the hand-feel method is used, the **soil water content** will need to be recorded at enough locations to develop accurate estimates of the water stored in the crop root zone. The depth of water applied is found by subtracting the reading taken before the irrigation.

Equation 8.2 d_s = ***["After" reading – "Before" reading]***

Where:

d_s = Depth of water stored in the rootzone

Example 8.1

A center pivot irrigation system is supplied with enough water to apply 1.1 inches of water to an irrigated area. Soil water content readings recorded before the irrigation event showed an average water content of 3.5 inches in the top 3 feet of soil. Soil water content readings after the irrigation showed an average of 4.4 inches in the top 3 feet of soil. To find the average depth of water stored in the crop rootzone we subtract the before irrigation reading from the after irrigation reading.

Using *Equation 8.2* d_s = ["After" reading – "Before" reading]

d_s = [4.4 inches – 3.5 inches]

d_s = 0.9 inches

Depth Pumped

The depth of water pumped can be determined using the procedures presented in *Chapter 7, Flow Measurements and Basic Water Calculations*. The information needed includes an accurate estimate of the pumping rate in gallons per minute. This information can be recorded using a flow meter installed as part of the system or periodically using an attached flow meter (ultrasonic flow meter, pilot tube type meter, etc.).

The average flow rate can be determined by recording the accumulator reading prior to and after each irrigation event. Subtracting the reading recorded prior to the irrigation from the reading after the irrigation event will result in the total volume of water pumped. Taking the total volume and dividing by the irrigation time will give the average pumping rate. For this estimate to be accurate, the irrigation time must be accurate to the nearest hour if possible. A more precise record of the total irrigation time will improve the estimate of the pumping flow rate. (The hour meter on the motor or center pivot is accurate enough to estimate the pumping time.) *Equations 8.3* and *8.4* are used to make these calculations. The following example shows how to incorporate field data into the equations.

Equation 8.3 Pumping rate = [Reading 2 – Reading 1] / [Time]

where:

Pumping rate = Water deliver rate, gallons per minute or acre-inches per minute

Reading 1 = Totalizer reading before the irrigation event, gallons or acre-inches

Reading 2 = Totalizer reading after the irrigation event, gallons or acre-inches

Time = Time required to complete the irrigation event, minutes

Example 8.2

The meter also has an accumulator at the bottom that registers total gallons pumped. Before the irrigation event, the accumulator reading was 6,553,300 gallons, and after the irrigation event the meter read 10,167,500 gallons. The irrigation event required 77 hours and 15 minutes.

Using *Equation 8.3*

Pumping rate = [Reading 2-Reading 1] / [Time]

Pumping rate = [10,167,500 - 6,553,300] gallons [(77 hr x 60 min/hr) + 15 min]

Pumping rate = [3,614,200] gallons / [4620 + 15] minutes

Pumping rate = 780 gallons per minute

If the accumulator records flow in acre-inches, the same process is used unless the desire is to determine the flow rate in gallons per minute. To convert acre-inches per minute to gallons per minute, multiply the result from *Equation 8.3* in acre-inches per minute by 27,154 gallons per acre-inch.

To convert the flow rate in gallons per minute to the gross depth of water pumped, we use *Equation 8.4.* If the result from *Equation 8.3* is in acre-inches per minute, the constant 27,154 gallons per acre-inch is not used.

Equation 8.4 d_p = [flow rate x time] / [area irrigated x 27,154]

where:

d_p = Depth pumped = Average depth of water pumped, *inches*

Flow rate = Average water delivery rate, *gallons per minute*

Time = Total irrigation time, *minutes*

Area irrigated = Total irrigated area, *acres*

27,154 = Conversion factor, *gallons per acre-inch or gal / ac-in*

Example 8.3

Let's assume that the field area for Example 8.2 was 123 acres. We calculated the flow rate at 780 gallons per minute and the total irrigation time at 4635 minutes. Using *Equation 8.3*:

Depth pumped (d_p) = [Flow rate x time] / [Area irrigated x 27,154]

Depth pumped (d_p) = [780 *gal/min* x 4635 *minutes*] [123 *acres* x 27154 *gal / ac-in*]

Depth pumped (d_p) = [3,615,300]*gallons* / [3,339,942] *gallons / inch*

Depth pumped (d_p) = 1.08 inches

To complete the calculation of the water application efficiency, use *Equation 8.1* to compare the amount of water pumped with the increase in water stored in the crop rootzone.

Example 8.4

From Example 8.1 we found that 0.9 inches of water was stored in the three-foot crop rootzone. From Example 8.3 we found that 1.08 inches of water was pumped from the water source into the center pivot. To find the application efficiency we use *Equation 8.1.*

$$E_a = \left[\frac{\text{Depth of water stored in the rootzone } (d_s) \times 100}{\text{Depth of water pumped } (d_p)} \right]$$

$$E_a = [\ 0.9 \text{ inches} / 1.08 \text{ inches}\ ] \times 100$$

$$E_a = 83\%$$

In these examples it was determined that only 83 percent of the water pumped from the irrigation source reached the soil and was usable by the crop. That means that 17 percent of the water was lost during application.

Potential Delivery Losses

The amount of water loss due to irrigation depends of the type of irrigation system — sprinkler or surface. In addition, the magnitude of each type of loss may be different. Let's begin by listing some major sources of water loss during irrigation. To keep the losses for surface and sprinkler irrigation separate, *Table 8.1* lists the potential losses for each type of system.

Table 8.1. Potential sources of water loss during an irrigation event for surface and sprinkler irrigation systems.

Sources of water losses	Surface Irrigation	Sprinkler irrigation
Distribution system	Yes	Yes
Air evaporation	No	Yes
Plant interception	No	Yes
Soil evaporation	Yes	Yes
Deep percolation	Yes	Yes
Runoff	Yes	Yes

Surface Irrigation Systems

The major losses for surface irrigation systems are deep percolation and surface runoff. These two losses could cause the water application efficiency to be reduced to less than 50 percent if the system is not managed properly. Ways to minimize these losses are discussed in *Chapter 11, Furrow Irrigation Management* (https://passel2.unl.edu/view/lesson/bda727eb8a5a/11).

Another source of water loss is in the distribution system. If the water flows across the head of the field in an open ditch, each foot of ditch loses water to soil infiltration and water surface evaporation. The best way to eliminate these losses is to transport the water through an enclosed pipeline. For many furrow irrigated fields this will require a small pumping plant to overcome the friction loss associated with forcing water through the pipeline.

Surface irrigation implies that surface evaporation will contribute to water loss. One way to limit soil evaporation loss is to wet less of the soil surface. For fields with slopes less than 1 percent, irrigating every other furrow is a viable option. This effectively cuts surface evaporation losses by nearly 50 percent without sacrificing crop production. Irrigating every other furrow also will reduce the amount of water lost to deep percolation and surface runoff.

Pipelines can have losses too. Worn gaskets or loose fitting pipeline connections could produce leaks at each joint. These losses are usually small in comparison to other losses, but by their sheer number could add up to substantial water losses. This kind of loss is the easiest to eliminate by replacing gaskets.

Sprinkler Irrigation Systems

Sprinkler irrigation systems, especially center pivots, typically have greater water application efficiencies than surface systems. While they may have more potential sources of loss, the magnitude of each loss is generally quite low. *Table 8.1* shows that sprinkler irrigation systems may experience loss from all six of the potential water loss sources while surface irrigation systems lose water from only four. This is because most sprinkler irrigation systems spray water into the air to deliver water to the entire soil surface with an upright crop canopy located between the sprinkler and soil.

Developments in sprinkler technology have reduced the amount of water lost between the sprinkler/nozzle and soil surface. The irrigation time or the accumulated time that water is applied to the crop canopy causes the major loss during sprinkler irrigation events. Applied water evaporates off the leaves of the crop canopy. Thus, the longer water droplets are delivered to the crop, the greater the total evaporation loss. Lowering the sprinkler/nozzle pressure reduces the wetted diameter of the sprinkler/nozzle thus reducing irrigation time and total canopy evaporation losses. In addition, lower wetted diameters reduce water evaporation losses in the air and wind drift losses.

Proper management of sprinkler irrigation systems can greatly reduce deep percolation losses. An irrigation system managed to keep the soil profile completely full at all times will experience some deep percolation losses. This is because the system does not apply water at 100 percent uniformity. Some areas will receive more water than others due to sprinkler pressure differences caused by soil elevation differences. Pressure regulators or flow control nozzles help insure that water delivered to the soil surface is as uniform as possible. Other portions of the field could be affected when wind distorts the water application pattern. Such distortion can be reduced by avoiding operation when winds exceed 10 mph.

How do I Evaluate Losses?

There are two main ways to evaluate water loss during irrigation: 1) take detailed field measurements; and 2) visually estimate losses. In some cases it may be necessary to combine these methods to develop an accurate estimate of where losses occur and how significant they are to the system’s application efficiency. For example, to estimate water losses during irrigation, measure the flow rate of water entering the system with a flow meter. Visually estimate how much of the water is lost to runoff. This amount, however, will not account for other potential losses. *Table 8.2* presents the potential magnitude of some of these losses for different irrigation systems. For furrow irrigation systems record how long it takes for the water to reach a certain point in the field or record flow rates into the furrow and how long it takes water to reach the end of the furrow. When coupled with soil types and furrow slopes, a computer model can be used to estimate how efficiently the water is being applied.

Table 8.2a. Percent irrigation water losses for different furrow irrigation systems.

Type of irrigation system	Distribution system	Air evaporation	Soil evaporation	Canopy evaporation	Deep percolation	Surface runoff	efficiency
Every row	1-5	<1.0	1--5	0.0	10-20	10-35	40-75
W/Surge valve	1-5	<1.0	1-5	0.0	5-15	5-15	60-85
W/Reuse	1-5	1-2	1-5	0.0	10-20	0	55-90
Siphon tube	5-10	1-2	1-5	0.0	15-25	15-25	40-75
Alternate row	1-5	<0.5	1-5	0.0	5-15	10-20	60-85

Table 8.2b. Percent irrigation water losses for different Sprinkler Irrigation systems.

Type of irrigation system	Distribution system	Air evaporation	Soil evaporation	Canopy evaporation	Deep percolation	Surface runoff	Overall efficiency
Handmove	<1.0	3-5	1-5	10-15	5-10	0-5	60-80
Solid set	<1.0	3-5	1-5	10-15	0-10	0-5	60-85
Traveler	<1.0	1-3	1-5	1-5	0-5	5-10	55-75
High pressure impact	<0.5	1-3	0-1	1-5	0-5	0-5	70-80
Low pressure impact	<0.5	1-3	0-1	1-3	0.5	0-10	75-85
Low pressure spray	<0.5	1-3	0-1	1-3	0-5	0-20	70-90
Low pressure bubble	<0.5	0.0	0-0.5	0.0	0-5	20-40	60-95
Drip irrigation	<0.5	0.0	0.0	0.0	5-30	0.0	70-95

ATTACHMENT F

Amador Regional Sanitation Agency
2024 Individual Water Balance Update

2025 Revised ARSA Detailed Water Balance Calculations

THIS PAGE INTENTIONALLY LEFT BLANK

Water Balance Update - ARSA Storage & Disposal Facilities

Scenario 1: Current Flows & Facilities, Uncalibrated

February 2025 By: Bill Slenter/Steven Whittlesey, HydroScience

WASTEWATER INFLUENT FLOW		***MAX STORAGE CAPACITIES***		***OTHER INPUTS***	
Daily Average Wastewater Influent Flow	**312,636** gpd	Henderson Reservoir	392.8 ac-ft		
		Preston Reservoir	235.0 ac-ft	100-YR Multiplier	1.92 unitless
		Total System	627.8 ac-ft	Pan Evap Coefficient	0.75 unitless

		100-YEAR ANNUAL PRECIPITATION RETURN PERIOD													***AVERAGE ANNUAL PRECIPITATION RETURN PERIOD***											
	No. Days	31	30	31	31	28	31	30	31	30	31	31	30		31	30	31	31	28	31	30	31	30	31	31	30	
	Units	October	November	December	January	February	March	April	May	June	July	August	September	Water Year	October	November	December	January	February	March	April	May	June	July	August	September	Water Year
CLIMATE INPUTS																											
Precipitation	in	2.30	6.66	6.72	7.35	5.95	5.78	3.96	0.90	0.29	0.19	0.36	0.63	41.11	1.20	3.47	3.50	3.83	3.10	3.01	2.06	0.47	0.15	0.10	0.19	0.33	21.41
2016/2017 WY Precipitation	in	6.31	2.55	5.38	15.07	4.73	3.39	4.09	0.53	1.28	0.00	0.02	0.02	43.37													
Pan Evaporation	in	3.77	1.40	0.72	0.72	1.12	2.32	4.18	7.04	9.43	11.17	9.50	6.51	57.88	3.77	2.10	1.50	1.50	2.20	3.70	5.60	7.40	8.60	9.40	8.30	6.60	60.67
Effective Water Surface Evaporation	in	2.83	0.79	0.41	0.41	0.63	1.31	3.14	5.28	7.07	8.38	7.13	4.88	42.23	2.83	1.05	0.54	0.54	0.84	1.74	3.14	5.28	7.07	8.38	7.13	4.88	43.41
WASTEWATER GENERATION																											
Facility Wastewater Effluent (ADWF)	MG	9.7	9.4	9.7	9.7	8.8	9.7	9.4	9.7	9.4	9.7	9.7	9.4	114.1	9.7	9.4	9.7	9.7	8.8	9.7	9.4	9.7	9.4	9.7	9.7	9.4	114.1
I/I Contributions	MG	3.0	7.4	7.5	8.1	6.7	6.5	4.7	1.6	1.0	0.9	1.1	1.4	49.9	1.9	4.2	4.2	4.6	3.8	3.7	2.8	1.2	0.9	0.8	0.9	1.1	30.1
TOTAL Wastewater Effluent	ac-ft	39.1	51.5	52.6	54.6	47.4	49.7	43.2	34.7	31.9	32.6	33.1	33.0	503.2	35.7	41.7	42.7	43.7	38.6	41.2	37.3	33.4	31.5	32.3	32.6	32.0	442.7
2016/2017 WY Effluent Flow Values	ac-ft	33.8	34.3	50.6	94.9	81.3	47.6	49.4	29.5	27.3	26.5	33.8	33.8	542.8													
WATERSHED CONTRIBUTING AREAS																											
Precipitation into Henderson Reservoir	ac-ft	5.5	16.0	16.2	17.7	14.3	13.9	9.5	2.2	0.7	0.5	0.9	1.5	98.9	2.9	8.4	8.4	9.2	7.5	7.2	5.0	1.1	0.4	0.2	0.5	0.8	51.5
Run-off into Henderson Reservoir	ac-ft	0.8	2.4	2.4	2.7	2.2	2.1	1.4	0.3	0.1	0.1	0.1	0.2	14.8	0.4	1.3	1.3	1.4	1.1	1.1	0.7	0.2	0.1	0.0	0.1	0.1	7.7
Precipitation into Preston Forebay	ac-ft	0.4	1.1	1.1	1.2	1.0	1.0	0.7	0.2	0.0	0.0	0.1	0.1	6.9	0.2	0.6	0.6	0.6	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.1	3.6
Precipitation into Preston Reservoir	ac-ft	3.5	10.0	10.1	11.0	8.9	8.7	5.9	1.4	0.4	0.3	0.5	1.0	61.7	1.8	5.2	5.3	5.7	4.7	4.5	3.1	0.7	0.2	0.2	0.3	0.5	32.1
Run-off into Preston Reservoir	ac-ft	2.7	7.8	7.9	8.6	7.0	6.8	4.7	1.1	0.3	0.2	0.4	0.7	48.3	1.4	4.1	4.1	4.5	3.6	3.5	2.4	0.6	0.2	0.1	0.2	0.4	25.2
STORAGE RESERVOIRS																											
Henderson Reservoir Volume	ac-ft	27.5	56.6	125.9	196.6	270.8	333.4	392.8	392.8	336.4	238.9	130.1	41.7		27.5	35.6	86.2	138.0	191.6	237.4	283.6	281.6	218.8	122.6	27.5	27.5	
Henderson Reservoir Evaporation	ac-ft	-1.8	-0.7	-0.5	-0.7	-1.3	-2.9	-7.5	-12.6	-16.0	-16.0	-9.6	-3.6	-73.1	-1.8	-0.7	-0.6	-0.8	-1.4	-3.3	-6.6	-11.0	-12.9	-10.9	-4.4	-3.0	-57.4
Henderson Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Forebay Evaporation	ac-ft	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-6.6	-0.5	-0.2	-0.1	-0.1	-0.1	-0.3	-0.5	-0.9	-1.2	-1.4	-1.2	0.0	-6.4
Preston Forebay Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Reservoir Volume	ac-ft	0.0	6.5	25.2	44.1	64.7	81.1	99.6	139.9	135.5	127.2	117.3	109.8		75.1	75.9	84.7	94.1	104.5	112.3	118.9	120.9	115.8	107.9	89.7	0.0	
Preston Reservoir Evaporation	ac-ft	0.0	-0.2	-0.2	-0.2	-0.4	-1.1	-2.9	-6.1	-8.0	-9.1	-7.3	-4.8	-40.2	-2.2	-0.8	-0.4	-0.5	-0.8	-1.7	-3.3	-5.5	-7.2	-8.2	-6.2	0.0	-36.8
Preston Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Beginning Water Storage	ac-ft	27.5	63.2	151.1	240.7	335.5	414.5	492.4	532.7	471.9	366.1	247.4	151.5		102.6	111.5	170.9	232.2	296.1	349.7	402.5	402.6	334.7	230.5	117.1	27.5	
Reservoir Evaporation	ac-ft	-1.8	-1.0	-0.8	-1.0	-1.8	-4.2	-10.9	-19.5	-25.1	-26.5	-18.1	-9.2	-119.9	-4.4	-1.7	-1.1	-1.3	-2.4	-5.4	-10.3	-17.4	-21.3	-20.4	-11.8	-3.0	-100.6
Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LAND APPLICATION DISPOSAL DEMANDS																											
Bowers' Ranch	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016/2017 WY Bower's Ranch	ac-ft	-7.7	0	0	0	0	0	0	0	-24.6	-26.7	-26.7	-26.7	-112.4													
Hoskins' Ranch	ac-ft	-3.3	0.0	0.0	0.0	0.0	0.0	-2.3	-19.4	-24.7	-26.0	-23.5	-16.4	-115.5	-1.8	0.0	0.0	0.0	0.0	0.0	-3.2	-16.4	-22.8	-24.9	-23.1	-14.6	-106.7
2016/2017 WY Hoskin's Ranch	ac-ft	0	0	0	0	0	0	0	-8.3	-27	-32.8	-26.4	-36.5	-131.0													
Castle Oaks Golf Course	ac-ft	-11.3	0.0	0.0	0.0	0.0	0.0	-11.9	-61.7	-89.4	-99.9	-89.4	-59.9	-423.4	-27.3	0.0	0.0	0.0	0.0	0.0	-35.3	-70.1	-92.4	-100.9	-91.1	-64.6	-481.7
RAW WATER MAKE-UP																											
Bower's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Hoskin's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COGC Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	48.4	
Total Unmet Irrigation Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	48.4	51.1
MONTHLY STORAGE BALANCE																											
Total Inflows (excluding Unmet Irrigation Demands)	ac-ft	52.0	88.9	90.3	95.8	80.8	82.2	65.4	39.8	33.5	33.6	35.1	36.5	733.9	42.4	61.1	62.4	65.2	56.0	58.1	48.9	36.1	32.3	32.8	33.6	33.9	562.8
Total Inflows (including Unmet Irrigation Demands)	ac-ft	52.0	88.9	90.3	95.8	80.8	82.2	65.4	39.8	33.5	33.6	35.1	36.5	733.9	42.4	61.1	62.4	65.2	56.0	58.1	48.9	36.1	32.3	32.8	36.3	82.3	613.9
Total Outflows	ac-ft	-16.3	-1.0	-0.7	-1.0	-1.8	-4.2	-25.1	-100.6	-139.2	-152.4	-131.0	-85.5	-658.8	-33.5	-1.7	-1.1	-1.3	-2.4	-5.4	-48.8	-103.9	-136.5	-146.2	-126.0	-82.3	-689.0
Beginning Storage Volume	ac-ft	27.5	63.2	151.1	240.7	335.5	414.5	492.4	532.7	471.9	366.1	247.4	151.5		102.6	111.5	170.9	232.2	296.1	349.7	402.5	402.6	334.7	230.5	117.1	27.5	
Change in Water Volume	ac-ft	35.7	87.9	89.6	94.9	79.0	77.9	40.2	-60.8	-105.7	-118.8	-95.9	-49.0		8.9	59.4	61.3	63.9	53.7	52.8	0.1	-67.9	-104.2	-113.4	-89.7	0.0	
Final Storage Volume	ac-ft	63.2	151.1	240.7	335.5	414.5	492.4	532.7	471.9	366.1	247.4	151.5	102.6		111.5	170.9	232.2	296.1	349.7	402.5	402.6	334.7	230.5	117.1	27.5	27.5	

Maximum Seasonal Storage Used (ac-ft)	**532.7**	173.6 Mgal		Maximum Seasonal Storage Used (ac-ft)	**402.6**	131.2 Mgal
Henderson Unutilized Capacity (ac-ft)	**0.0**	0.0 Mgal		Henderson Unutilized Capacity (ac-ft)	**109.2**	35.6 Mgal
Preston Unutilized Capacity (ac-ft)	**95.1**	31.0 Mgal		Preston Unutilized Capacity (ac-ft)	**114.1**	37.2 Mgal

Water Balance Update - ARSA Storage & Disposal Facilities

Scenario 2a: Current Flows & Facilities, Calibrated at Avg Year Rainfall Distribution

February 2025 By: Bill Slenter/Steven Whittlesey, HydroScience

WASTEWATER INFLUENT FLOW		***MAX STORAGE CAPACITIES***		***OTHER INPUTS***	
		Henderson Reservoir	392.8 ac-ft		
Daily Average Wastewater Influent Flow	**312,636** gpd	Preston Reservoir	235.0 ac-ft	100-YR Multiplier	1.92 unitless
		Total System	627.8 ac-ft	Pan Evap Coefficient	0.75 unitless

		100-YEAR ANNUAL PRECIPITATION RETURN PERIOD													***AVERAGE ANNUAL PRECIPITATION RETURN PERIOD***											
	No. Days	31	30	31	31	28	31	30	31	30	31	31	30		31	30	31	31	28	31	30	31	30	31	31	30	
	Units	October	November	December	January	February	March	April	May	June	July	August	September	Water Year	October	November	December	January	February	March	April	May	June	July	August	September	Water Year
CLIMATE INPUTS																											
Precipitation - Calibrated Avg Year Distribution	in	2.30	6.66	6.72	7.35	5.95	5.78	3.96	0.90	0.29	0.19	0.36	0.63	41.11	1.20	3.47	3.50	3.83	3.10	3.01	2.06	0.47	0.15	0.10	0.19	0.33	21.41
Precipitation - Calibrated & 2016/207 Distribution	in	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02														
2016/2017 WY Precipitation	in	6.31	2.55	5.38	15.07	4.73	3.39	4.09	0.53	1.28	0.00	0.02	0.02	43.37													
Pan Evaporation	in	3.77	1.40	0.72	0.72	1.12	2.32	4.18	7.04	9.43	11.17	9.50	6.51	57.88	3.77	2.10	1.50	1.50	2.20	3.70	5.60	7.40	8.60	9.40	8.30	6.60	60.67
Effective Water Surface Evaporation	in	2.83	0.79	0.41	0.41	0.63	1.31	3.14	5.28	7.07	8.38	7.13	4.88	42.23	2.83	1.05	0.54	0.54	0.84	1.74	3.14	5.28	7.07	8.38	7.13	4.88	43.41
WASTEWATER GENERATION																											
Facility Wastewater Effluent (ADWF)	MG	9.7	9.4	9.7	9.7	8.8	9.7	9.4	9.7	9.4	9.7	9.7	9.4	114.1	9.7	9.4	9.7	9.7	8.8	9.7	9.4	9.7	9.4	9.7	9.7	9.4	114.1
I/I Contributions - Climate Calibration Only	MG	3.0	7.4	7.5	8.1	6.7	6.5	4.7	1.6	1.0	0.9	1.1	1.4	49.9	1.9	4.2	4.2	4.6	3.8	3.7	2.8	1.2	0.9	0.8	0.9	1.1	
I/I Contributions - Calibrated (25% Factor Applied)	MG	3.0	7.4	9.3	10.1	8.4	8.1	5.9	1.6	1.0	0.9	1.1	1.4	58.2	1.9	4.2	5.3	5.7	4.8	4.7	3.5	1.2	0.9	0.8	0.9	1.1	34.9
TOTAL Wastewater Effluent - Climate Calibration Only	ac-ft	39.1	51.5	52.6	54.6	47.4	49.7	43.2	34.7	31.9	32.6	33.1	33.0	503.2	35.7	41.7	42.7	43.7	38.6	41.2	37.3	33.4	31.5	32.3	32.6	32.0	442.7
TOTAL Wastewater Effluent	ac-ft	39.1	51.5	58.3	60.8	52.5	54.7	46.8	34.7	31.9	32.6	33.1	33.0	528.9	35.7	41.7	46.0	47.2	41.6	44.1	39.5	33.4	31.5	32.3	32.6	32.0	457.4
2016/2017 WY Effluent Flow Values	ac-ft	33.8	34.3	50.6	94.9	81.3	47.6	49.4	29.5	27.3	26.5	33.8	33.8	542.8													
WATERSHED CONTRIBUTING AREAS																											
Precipitation into Henderson Reservoir	ac-ft	5.5	16.0	16.2	17.7	14.3	13.9	9.5	2.2	0.7	0.5	0.9	1.5	98.9	2.9	8.4	8.4	9.2	7.5	7.2	5.0	1.1	0.4	0.2	0.5	0.8	51.5
Run-off into Henderson Reservoir	ac-ft	0.8	2.4	2.4	2.7	2.2	2.1	1.4	0.3	0.1	0.1	0.1	0.2	14.8	0.4	1.3	1.3	1.4	1.1	1.1	0.7	0.2	0.1	0.0	0.1	0.1	7.7
Precipitation into Preston Forebay	ac-ft	0.4	1.1	1.1	1.2	1.0	1.0	0.7	0.2	0.0	0.0	0.1	0.1	6.9	0.2	0.6	0.6	0.6	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.1	3.6
Precipitation into Preston Reservoir	ac-ft	3.5	10.0	10.1	11.0	8.9	8.7	5.9	1.4	0.4	0.3	0.5	1.0	61.7	1.8	5.2	5.3	5.7	4.7	4.5	3.1	0.7	0.2	0.2	0.3	0.5	32.1
Run-off into Preston Reservoir	ac-ft	2.7	7.8	7.9	8.6	7.0	6.8	4.7	1.1	0.3	0.2	0.4	0.7	48.3	1.4	4.1	4.1	4.5	3.6	3.5	2.4	0.6	0.2	0.1	0.2	0.4	25.2
STORAGE RESERVOIRS																											
Henderson Reservoir Volume	ac-ft	27.5	56.6	125.9	202.3	282.7	350.4	392.8	392.8	336.4	238.9	130.1	41.7		27.5	35.6	86.2	141.3	198.4	247.0	296.1	296.1	233.0	136.4	31.6	27.5	
Henderson Reservoir Evaporation	ac-ft	-1.8	-0.7	-0.5	-0.7	-1.3	-3.0	-7.5	-12.6	-16.0	-16.0	-9.6	-3.6	-73.2	-1.8	-0.7	-0.6	-0.8	-1.4	-3.4	-6.7	-11.3	-13.4	-11.6	-4.7	-3.0	-59.3
Henderson Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Forebay Evaporation	ac-ft	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-6.6	-0.5	-0.2	-0.1	-0.1	-0.1	-0.3	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-7.2
Preston Forebay Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Reservoir Volume	ac-ft	0.0	6.5	25.2	44.1	64.7	81.1	121.6	165.0	160.1	151.0	140.1	131.8		96.5	96.8	105.6	114.9	125.2	132.9	139.3	141.0	135.4	126.7	116.5	26.9	
Preston Reservoir Evaporation	ac-ft	0.0	-0.2	-0.2	-0.2	-0.4	-1.1	-3.3	-6.6	-8.7	-10.0	-8.2	-5.4	-44.3	-2.6	-1.0	-0.5	-0.5	-0.9	-1.9	-3.6	-6.1	-8.0	-9.0	-7.3	-1.9	-43.3
Preston Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Beginning Water Storage	ac-ft	27.5	63.2	151.1	246.4	347.4	431.5	514.4	557.8	496.4	389.9	270.2	173.5		124.0	132.5	191.8	256.2	323.5	380.0	435.3	437.1	368.4	263.1	148.1	54.4	
Total Reservoir Evaporation	ac-ft	-1.8	-1.0	-0.8	-1.0	-1.9	-4.3	-11.3	-20.1	-25.9	-27.5	-18.9	-9.8	-124.1	-4.8	-1.9	-1.2	-1.4	-2.5	-5.6	-10.8	-18.2	-22.5	-22.0	-13.2	-5.8	-109.8
Total Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LAND APPLICATION DISPOSAL DEMANDS																											
Bowers' Ranch	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016/2017 WY Bower's Ranch	ac-ft	-7.7	0	0	0	0	0	0	-24.6	-26.7	-26.7	-26.7	-26.7	-112.4													
Hoskins' Ranch	ac-ft	-3.3	0.0	0.0	0.0	0.0	0.0	-2.3	-19.4	-24.7	-26.0	-23.5	-16.4	-115.5	-1.8	0.0	0.0	0.0	0.0	0.0	-3.2	-16.4	-22.8	-24.9	-23.1	-14.6	-106.7
2016/2017 WY Hoskin's Ranch	ac-ft	0	0	0	0	0	0	0	-8.3	-27	-32.8	-26.4	-36.5	-131.0													
Castle Oaks Golf Course	ac-ft	-11.3	0.0	0.0	0.0	0.0	0.0	-11.9	-61.7	-89.4	-99.9	-89.4	-59.9	-423.4	-27.3	0.0	0.0	0.0	0.0	0.0	-35.3	-70.1	-92.4	-100.9	-91.1	-64.6	-481.7
UNMET IRRIGATION DEMANDS																											
Bower's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Hoskin's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COGC Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.2	
Total Unmet Irrigation Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.2	24.2
MONTHLY STORAGE BALANCE																											
Total Inflows (excluding Unmet Irrigation Demands)	ac-ft	52.0	88.9	96.0	102.0	85.9	87.1	68.9	39.8	33.5	33.6	35.1	36.5	759.5	42.4	61.1	65.6	68.7	58.9	61.0	51.0	36.1	32.3	32.8	33.6	33.9	577.5
Total Inflows (including Unmet Irrigation Demands)	ac-ft	52.0	88.9	96.0	102.0	85.9	87.1	68.9	39.8	33.5	33.6	35.1	36.5	759.5	42.4	61.1	65.6	68.7	58.9	61.0	51.0	36.1	32.3	32.8	33.6	58.1	601.8
Total Outflows	ac-ft	-16.3	-1.0	-0.7	-1.0	-1.8	-4.3	-25.5	-101.2	-140.0	-153.4	-131.8	-86.1	-663.1	-33.9	-1.8	-1.2	-1.4	-2.5	-5.6	-49.3	-104.7	-137.7	-147.8	-127.3	-85.0	-698.2
Beginning Storage Volume	ac-ft	27.5	63.2	151.1	246.4	347.4	431.5	514.4	557.8	496.4	389.9	270.2	173.5		124.0	132.5	191.8	256.2	323.5	380.0	435.3	437.1	368.4	263.1	148.1	54.4	
Change in Water Volume	ac-ft	35.7	87.9	95.3	101.0	84.1	82.9	43.4	-61.4	-106.5	-119.7	-96.7	-49.5		8.5	59.3	64.4	67.3	56.5	55.4	1.8	-68.7	-105.4	-115.0	-93.7	-26.9	
Final Storage Volume	ac-ft	63.2	151.1	246.4	347.4	431.5	514.4	557.8	496.4	389.9	270.2	173.5	124.0		132.5	191.8	256.2	323.5	380.0	435.3	437.1	368.4	263.1	148.1	54.4	27.5	

Maximum Seasonal Storage Used (ac-ft)	**557.8**	181.8 Mgal		Maximum Seasonal Storage Used (ac-ft)	**437.1**	142.4 Mgal
Henderson Unutilized Capacity (ac-ft)	**0.0**	0.0 Mgal		Henderson Unutilized Capacity (ac-ft)	**96.7**	31.5 Mgal
Preston Unutilized Capacity (ac-ft)	**70.0**	22.8 Mgal		Preston Unutilized Capacity (ac-ft)	**94.0**	30.6 Mgal

Water Balance Update - ARSA Storage & Disposal Facilities

Scenario 2b: Current Flows & Facilities, Calibrated at 2016/17 Rainfall Distribution

February 2025 By: Bill Slenter/Steven Whittlesey, HydroScience

WASTEWATER INFLUENT FLOW		***MAX STORAGE CAPACITIES***		***OTHER INPUTS***	
		Henderson Reservoir	392.8 ac-ft		
Daily Average Wastewater Influent Flow	**312,636** gpd	Preston Reservoir	235.0 ac-ft	100-YR Multiplier	1.92 unitless
		Total System	627.8 ac-ft	Pan Evap Coefficient	0.75 unitless

		100-YEAR ANNUAL PRECIPITATION RETURN PERIOD													***AVERAGE ANNUAL PRECIPITATION RETURN PERIOD***											
	No. Days	31	30	31	31	28	31	30	31	30	31	31	30		31	30	31	31	28	31	30	31	30	31	31	30	
	Units	October	November	December	January	February	March	April	May	June	July	August	September	Water Year	October	November	December	January	February	March	April	May	June	July	August	September	Water Year
CLIMATE INPUTS																											
Precipitation - Calibrated & 2016/17 Distribution	in	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02	41.11	1.20	3.47	3.50	3.83	3.10	3.01	2.06	0.47	0.15	0.10	0.19	0.33	21.41
Precipitation - Calibrated & 2016/207 Distribution	in	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02														
2016/2017 WY Precipitation	in	6.31	2.55	5.38	15.07	4.73	3.39	4.09	0.53	1.28	0.00	0.02	0.02	43.37													
Pan Evaporation	in	3.77	1.40	0.72	0.72	1.12	2.32	4.18	7.04	9.43	11.17	9.50	6.51	57.88	3.77	2.10	1.50	1.50	2.20	3.70	5.60	7.40	8.60	9.40	8.30	6.60	60.67
Effective Water Surface Evaporation	in	2.83	0.79	0.41	0.41	0.63	1.31	3.14	5.28	7.07	8.38	7.13	4.88	42.23	2.83	1.05	0.54	0.54	0.84	1.74	3.14	5.28	7.07	8.38	7.13	4.88	43.41
WASTEWATER GENERATION																											
Facility Wastewater Effluent (ADWF)	MG	9.7	9.4	9.7	9.7	8.8	9.7	9.4	9.7	9.4	9.7	9.7	9.4	114.1	9.7	9.4	9.7	9.7	8.8	9.7	9.4	9.7	9.4	9.7	9.7	9.4	114.1
I/I Contributions - Climate Calibration Only	MG	6.7	3.1	5.8	15.0	5.2	3.9	4.6	1.2	1.9	0.7	0.7	0.7	49.9	1.9	4.2	4.2	4.6	3.8	3.7	2.8	1.2	0.9	0.8	0.9	1.1	30.1
I/I Contributions - Calibrated (25% Factor Applied)	MG	6.7	3.1	7.3	18.8	6.5	4.9	5.8	1.2	1.9	0.7	0.7	0.7	58.5	1.9	4.2	5.3	5.7	4.8	4.7	3.5	1.2	0.9	0.8	0.9	1.1	34.9
TOTAL Wastewater Effluent - Climate Calibration Only	ac-ft	50.3	38.4	47.6	75.8	42.9	41.8	42.9	33.5	34.7	32.0	32.0	31.1	503.2	35.7	41.7	42.7	43.7	38.6	41.2	37.3	33.4	31.5	32.3	32.6	32.0	442.7
TOTAL Wastewater Effluent	ac-ft	50.3	38.4	52.1	87.4	46.9	44.9	46.5	33.5	34.7	32.0	32.0	31.1	529.8	35.7	41.7	46.0	47.2	41.6	44.1	39.5	33.4	31.5	32.3	32.6	32.0	457.4
2016/2017 WY Effluent Flow Values	ac-ft	33.8	34.3	50.6	94.9	81.3	47.6	49.4	29.5	27.3	26.5	33.8	33.8	542.8													
WATERSHED CONTRIBUTING AREAS																											
Precipitation into Henderson Reservoir	ac-ft	14.4	5.8	12.3	34.4	10.8	7.7	9.3	1.2	2.9	0.0	0.0	0.0	98.9	2.9	8.4	8.4	9.2	7.5	7.2	5.0	1.1	0.4	0.2	0.5	0.8	51.5
Run-off into Henderson Reservoir	ac-ft	2.2	0.9	1.8	5.2	1.6	1.2	1.4	0.2	0.4	0.0	0.0	0.0	14.8	0.4	1.3	1.3	1.4	1.1	1.1	0.7	0.2	0.1	0.0	0.1	0.1	7.7
Precipitation into Preston Forebay	ac-ft	1.0	0.4	0.8	2.4	0.7	0.5	0.6	0.1	0.2	0.0	0.0	0.0	6.9	0.2	0.6	0.6	0.6	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.1	3.6
Precipitation into Preston Reservoir	ac-ft	9.0	3.6	7.6	21.4	6.7	4.8	5.8	0.8	1.8	0.0	0.0	0.0	61.7	1.8	5.2	5.3	5.7	4.7	4.5	3.1	0.7	0.2	0.2	0.3	0.5	32.1
Run-off into Preston Reservoir	ac-ft	7.0	2.8	6.0	16.8	5.3	3.8	4.6	0.6	1.4	0.0	0.0	0.0	48.3	1.4	4.1	4.1	4.5	3.6	3.5	2.4	0.6	0.2	0.1	0.2	0.4	25.2
STORAGE RESERVOIRS																											
Henderson Reservoir Volume	ac-ft	27.5	78.1	122.4	188.2	314.4	372.3	392.8	392.8	334.0	242.0	132.0	41.5		27.5	35.6	86.2	141.3	198.4	247.0	296.1	296.1	233.0	136.4	31.6	27.5	
Henderson Reservoir Evaporation	ac-ft	-1.8	-0.8	-0.5	-0.7	-1.4	-3.1	-7.5	-12.6	-15.9	-16.2	-9.7	-3.6	-73.6	-1.8	-0.7	-0.6	-0.8	-1.4	-3.4	-6.7	-11.3	-13.4	-11.6	-4.7	-3.0	-59.3
Henderson Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Forebay Evaporation	ac-ft	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-6.6	-0.5	-0.2	-0.1	-0.1	-0.1	-0.3	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-7.2
Preston Forebay Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Reservoir Volume	ac-ft	0.0	17.0	23.5	37.8	78.1	90.3	128.3	170.9	164.7	158.1	146.4	136.9		95.9	96.3	105.0	114.4	124.6	132.4	138.7	140.5	134.9	126.2	116.0	26.4	
Preston Reservoir Evaporation	ac-ft	0.0	-0.2	-0.1	-0.2	-0.5	-1.1	-3.4	-6.8	-8.9	-10.3	-8.4	-5.5	-45.4	-2.6	-1.0	-0.5	-0.5	-0.9	-1.9	-3.6	-6.1	-7.9	-9.0	-7.3	-1.9	-43.2
Preston Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Beginning Water Storage	ac-ft	27.5	95.1	145.9	225.9	392.5	462.6	521.1	563.7	498.7	400.1	278.4	178.4		123.4	131.9	191.2	255.6	323.0	379.4	434.8	436.6	367.9	262.5	147.6	53.9	
Total Reservoir Evaporation	ac-ft	-1.8	-1.2	-0.7	-0.9	-2.0	-4.4	-11.4	-20.2	-26.0	-27.8	-19.2	-9.9	-125.6	-4.8	-1.8	-1.2	-1.4	-2.5	-5.6	-10.8	-18.2	-22.5	-22.0	-13.1	-5.8	-109.7
Total Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LAND APPLICATION DISPOSAL DEMANDS																											
Bowers' Ranch	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016/2017 WY Bower's Ranch	ac-ft	-7.7	0	0	0	0	0	0	-24.6	-26.7	-26.7	-26.7	-26.7	-112.4													
Hoskins' Ranch	ac-ft	-3.3	0.0	0.0	0.0	0.0	0.0	-2.3	-19.4	-24.7	-26.0	-23.5	-16.4	-115.5	-1.8	0.0	0.0	0.0	0.0	0.0	-3.2	-16.4	-22.8	-24.9	-23.1	-14.6	-106.7
2016/2017 WY Hoskin's Ranch	ac-ft	0	0	0	0	0	0	0	-8.3	-27	-32.8	-26.4	-36.5	-131.0													
Castle Oaks Golf Course	ac-ft	-11.3	0.0	0.0	0.0	0.0	0.0	-11.9	-61.7	-89.4	-99.9	-89.4	-59.9	-423.4	-27.3	0.0	0.0	0.0	0.0	0.0	-35.3	-70.1	-92.4	-100.9	-91.1	-64.6	-481.7
UNMET IRRIGATION DEMANDS																											
Bower's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Hoskin's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COGC Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.7	
Total Unmet Irrigation Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.7	24.7
MONTHLY STORAGE BALANCE																											
Total Inflows (excluding Unmet Irrigation Demands)	ac-ft	83.9	52.0	80.7	167.5	72.0	62.9	68.2	36.3	41.5	32.0	32.1	31.2	760.4	42.4	61.1	65.6	68.7	58.9	61.0	51.0	36.1	32.3	32.8	33.6	33.9	577.5
Total Inflows (including Unmet Irrigation Demands)	ac-ft	83.9	52.0	80.7	167.5	72.0	62.9	68.2	36.3	41.5	32.0	32.1	31.2	760.4	42.4	61.1	65.6	68.7	58.9	61.0	51.0	36.1	32.3	32.8	33.6	58.6	602.2
Total Outflows	ac-ft	-16.3	-1.2	-0.7	-0.9	-2.0	-4.4	-25.6	-101.3	-140.1	-153.7	-132.1	-86.2	-664.5	-33.9	-1.8	-1.2	-1.4	-2.5	-5.6	-49.3	-104.7	-137.7	-147.8	-127.3	-85.0	-698.1
Beginning Storage Volume	ac-ft	27.5	95.1	145.9	225.9	392.5	462.6	521.1	563.7	498.7	400.1	278.4	178.4		123.4	131.9	191.2	255.6	323.0	379.4	434.8	436.6	367.9	262.5	147.6	53.9	
Change in Water Volume	ac-ft	67.6	50.8	80.0	166.6	70.1	58.5	42.6	-65.0	-98.6	-121.8	-100.0	-55.0		8.5	59.3	64.4	67.3	56.5	55.4	1.8	-68.7	-105.3	-114.9	-93.7	-26.4	
Final Storage Volume	ac-ft	95.1	145.9	225.9	392.5	462.6	521.1	563.7	498.7	400.1	278.4	178.4	123.4		131.9	191.2	255.6	323.0	379.4	434.8	436.6	367.9	262.5	147.6	53.9	27.5	

Maximum Seasonal Storage Used (ac-ft)	**563.7**	183.7 Mgal		Maximum Seasonal Storage Used (ac-ft)	**436.6**	142.3 Mgal
Henderson Unutilized Capacity (ac-ft)	**0.0**	0.0 Mgal		Henderson Unutilized Capacity (ac-ft)	**96.7**	31.5 Mgal
Preston Unutilized Capacity (ac-ft)	**64.1**	20.9 Mgal		Preston Unutilized Capacity (ac-ft)	**94.5**	30.8 Mgal

Water Balance Update - ARSA Storage & Disposal Facilities

Scenario 3a: Future Flows & Facilities, Calibrated at Avg Year Rainfall Distribution

February 2025 By: Bill Slenter/Steven Whittlesey, HydroScience

WASTEWATER INFLUENT FLOW	***MAX STORAGE CAPACITIES***		***OTHER INPUTS***	
Daily Average Wastewater Influent Flow **319,420** gpd	Henderson Reservoir	392.8 ac-ft	I/I Reduction Factor	0.00% unitless
	Preston Reservoir	235.0 ac-ft	100-YR Multiplier	1.92 unitless
	Total System	627.8 ac-ft	Pan Evap Coefficient	0.75 unitless

		100-YEAR ANNUAL PRECIPITATION RETURN PERIOD													***AVERAGE ANNUAL PRECIPITATION RETURN PERIOD***											
	No. Days	31	30	31	31	28	31	30	31	30	31	31	30		31	30	31	31	28	31	30	31	30	31	31	30	
	Units	October	November	December	January	February	March	April	May	June	July	August	September	Water Year	October	November	December	January	February	March	April	May	June	July	August	September	Water Year
CLIMATE INPUTS																											
Precipitation - Calibrated Avg Year Distribution	in	2.30	6.66	6.72	7.35	5.95	5.78	3.96	0.90	0.29	0.19	0.36	0.63	41.11	1.20	3.47	3.50	3.83	3.10	3.01	2.06	0.47	0.15	0.10	0.19	0.33	21.41
Precipitation - Calibrated & 2016/17 Distribution	in	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02	41.11													
2016/2017 WY Precipitation	in	6.31	2.55	5.38	15.07	4.73	3.39	4.09	0.53	1.28	0.00	0.02	0.02	43.37													
Pan Evaporation	in	3.77	1.40	0.72	0.72	1.12	2.32	4.18	7.04	9.43	11.17	9.50	6.51	57.88	3.77	2.10	1.50	1.50	2.20	3.70	5.60	7.40	8.60	9.40	8.30	6.60	60.67
Effective Water Surface Evaporation	in	2.83	0.79	0.41	0.41	0.63	1.31	3.14	5.28	7.07	8.38	7.13	4.88	42.23	2.83	1.05	0.54	0.54	0.84	1.74	3.14	5.28	7.07	8.38	7.13	4.88	43.41
WASTEWATER GENERATION																											
Facility Wastewater Effluent (ADWF)	MG	9.9	9.6	9.9	9.9	8.9	9.9	9.6	9.9	9.6	9.9	9.9	9.6	116.6	9.9	9.6	9.9	9.9	8.9	9.9	9.6	9.9	9.6	9.9	9.9	9.6	116.6
I/I Contributions - Calibrated	MG	3.0	7.4	9.3	10.1	8.4	8.1	5.9	1.6	1.0	0.9	1.1	1.4	58.2	1.9	4.2	5.3	5.7	4.8	4.7	3.5	1.2	0.9	0.8	0.9	1.1	34.9
TOTAL Wastewater Effluent	ac-ft	39.7	52.1	59.0	61.41	53.1	55.4	47.4	35.4	32.5	33.2	33.7	33.6	536.5	36.3	42.3	46.6	47.9	42.1	44.7	40.1	34.1	32.1	32.9	33.2	32.7	465.0
2016/2017 WY Effluent Flow Values	ac-ft	33.8	34.3	50.6	94.9	81.3	47.6	49.4	29.5	27.3	26.5	33.8	33.8	542.8													
WATERSHED CONTRIBUTING AREAS																											
Precipitation into Henderson Reservoir	ac-ft	5.5	16.0	16.2	17.7	14.3	13.9	9.5	2.2	0.7	0.5	0.9	1.5	98.9	2.9	8.4	8.4	9.2	7.5	7.2	5.0	1.1	0.4	0.2	0.5	0.8	51.5
Run-off into Henderson Reservoir	ac-ft	0.8	2.4	2.4	2.7	2.2	2.1	1.4	0.3	0.1	0.1	0.1	0.2	14.8	0.4	1.3	1.3	1.4	1.1	1.1	0.7	0.2	0.1	0.0	0.1	0.1	7.7
Precipitation into Preston Forebay	ac-ft	0.4	1.1	1.1	1.2	1.0	1.0	0.7	0.2	0.0	0.0	0.1	0.1	6.9	0.2	0.6	0.6	0.6	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.1	3.6
Precipitation into Preston Reservoir	ac-ft	3.5	10.0	10.1	11.0	8.9	8.7	5.9	1.4	0.4	0.3	0.5	1.0	61.7	1.8	5.2	5.3	5.7	4.7	4.5	3.1	0.7	0.2	0.2	0.3	0.5	32.1
Run-off into Preston Reservoir	ac-ft	2.7	7.8	7.9	8.6	7.0	6.8	4.7	1.1	0.3	0.2	0.4	0.7	48.3	1.4	4.1	4.1	4.5	3.6	3.5	2.4	0.6	0.2	0.1	0.2	0.4	25.2
STORAGE RESERVOIRS																											
Henderson Reservoir Volume	ac-ft	27.5	57.3	127.2	204.2	285.3	353.5	392.8	392.8	337.0	240.2	132.0	44.1		27.5	36.3	87.4	143.2	200.9	250.2	299.8	300.4	237.9	141.7	37.3	27.5	
Henderson Reservoir Evaporation	ac-ft	-1.8	-0.7	-0.5	-0.7	-1.3	-3.0	-7.5	-12.6	-16.0	-16.1	-9.7	-3.7	-73.5	-1.8	-0.7	-0.6	-0.8	-1.5	-3.4	-6.7	-11.4	-13.5	-11.8	-5.0	-3.0	-60.2
Henderson Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Forebay Evaporation	ac-ft	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-6.6	-0.5	-0.2	-0.1	-0.1	-0.1	-0.3	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-7.2
Preston Forebay Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Reservoir Volume	ac-ft	0.0	6.5	25.2	44.1	64.7	81.1	125.3	169.3	164.3	155.1	144.1	135.6		103.2	103.4	112.1	121.4	131.7	139.4	145.7	147.3	141.6	132.6	122.2	38.4	
Preston Reservoir Evaporation	ac-ft	0.0	-0.2	-0.2	-0.2	-0.4	-1.1	-3.4	-6.7	-8.9	-10.2	-8.3	-5.5	-45.0	-2.7	-1.0	-0.5	-0.6	-0.9	-2.0	-3.7	-6.2	-8.2	-9.3	-7.5	-2.4	-45.0
Preston Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Beginning Water Storage	ac-ft	27.5	63.8	152.3	248.3	350.0	434.6	518.1	562.1	501.3	395.3	276.0	179.7		130.6	139.7	199.6	264.6	332.6	389.6	445.5	447.7	379.5	274.4	159.5	65.9	
Total Reservoir Evaporation	ac-ft	-1.8	-1.0	-0.8	-1.0	-1.9	-4.3	-11.4	-20.2	-26.0	-27.7	-19.1	-10.0	-125.0	-4.9	-1.9	-1.2	-1.4	-2.5	-5.7	-10.9	-18.5	-22.9	-22.5	-13.7	-6.2	-112.4
Total Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LAND APPLICATION DISPOSAL DEMANDS																											
Bowers' Ranch	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016/2017 WY Bower's Ranch	ac-ft	-7.7	0	0	0	0	0	0	0	-24.6	-26.7	-26.7	-26.7	-112.4													
Hoskins' Ranch	ac-ft	-3.3	0.0	0.0	0.0	0.0	0.0	-2.3	-19.4	-24.7	-26.0	-23.5	-16.4	-115.5	-1.8	0.0	0.0	0.0	0.0	0.0	-3.2	-16.4	-22.8	-24.9	-23.1	-14.6	-106.7
2016/2017 WY Hoskin's Ranch	ac-ft	0	0	0	0	0	0	0	-8.3	-27	-32.8	-26.4	-36.5	-131.0													
COWRF and Castle Oaks Golf Course	ac-ft	-11.3	0.0	0.0	0.0	0.0	0.0	-11.9	-61.7	-89.4	-99.9	-89.4	-59.9	-423.4	-27.3	0.0	0.0	0.0	0.0	0.0	-35.3	-70.1	-92.4	-100.9	-91.1	-64.6	-481.7
UNMET IRRIGATION DEMANDS																											
Bower's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Hoskin's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COGC Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	
Total Unmet Irrigation Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	12.5
MONTHLY STORAGE BALANCE																											
Total Inflows (excluding Unmet Irrigation Demands)	ac-ft	52.6	89.5	96.7	102.7	86.5	87.8	69.6	40.5	34.1	34.3	35.8	37.1	767.1	43.0	61.8	66.3	69.4	59.5	61.6	51.7	36.7	32.9	33.5	34.3	34.5	585.1
Total Inflows (including Unmet Irrigation Demands)	ac-ft	52.6	89.5	96.7	102.7	86.5	87.8	69.6	40.5	34.1	34.3	35.8	37.1	767.1	43.0	61.8	66.3	69.4	59.5	61.6	51.7	36.7	32.9	33.5	34.3	47.0	597.7
Total Outflows	ac-ft	-16.3	-1.0	-0.7	-1.0	-1.8	-4.3	-25.6	-101.3	-140.2	-153.6	-132.0	-86.2	-664.0	-34.0	-1.9	-1.2	-1.4	-2.5	-5.7	-49.4	-105.0	-138.0	-148.3	-127.9	-85.5	-700.8
Beginning Storage Volume	ac-ft	27.5	63.8	152.3	248.3	350.0	434.6	518.1	562.1	501.3	395.3	276.0	179.7		130.6	139.7	199.6	264.6	332.6	389.6	445.5	447.7	379.5	274.4	159.5	65.9	
Change in Water Volume	ac-ft	36.3	88.5	95.9	101.7	84.6	83.5	44.0	-60.8	-106.0	-119.3	-96.3	-49.1		9.0	59.9	65.1	68.0	57.0	55.9	2.2	-68.3	-105.1	-114.8	-93.6	-38.4	
Final Storage Volume	ac-ft	63.8	152.3	248.3	350.0	434.6	518.1	562.1	501.3	395.3	276.0	179.7	130.6		139.7	199.6	264.6	332.6	389.6	445.5	447.7	379.5	274.4	159.5	65.9	27.5	

Maximum Seasonal Storage Used (ac-ft)	**562.1**	183.2 Mgal	Maximum Seasonal Storage Used (ac-ft)	**447.7**	145.9 Mgal
Henderson Unutilized Capacity (ac-ft)	**0.0**	0.0 Mgal	Henderson Unutilized Capacity (ac-ft)	**92.4**	30.1 Mgal
Preston Unutilized Capacity (ac-ft)	**65.7**	21.4 Mgal	Preston Unutilized Capacity (ac-ft)	**87.7**	28.6 Mgal

Water Balance Update - ARSA Storage & Disposal Facilities

Scenario 3b: Future Flows & Facilities, Calibrated at 2016/17 Rainfall Distribution

February 2025 By: Bill Slenter/Steven Whittlesey, HydroScience

WASTEWATER INFLUENT FLOW	***MAX STORAGE CAPACITIES***		***OTHER INPUTS***	
Daily Average Wastewater Influent Flow **319,420** gpd	Henderson Reservoir	392.8 ac-ft	I/I Reduction Factor	0.00% unitless
	Preston Reservoir	235.0 ac-ft	100-YR Multiplier	1.92 unitless
	Total System	627.8 ac-ft	Pan Evap Coefficient	0.75 unitless

		100-YEAR ANNUAL PRECIPITATION RETURN PERIOD													***AVERAGE ANNUAL PRECIPITATION RETURN PERIOD***												
	No. Days	31	30	31	31	28	31	30	31	30	31	31	30		31	30	31	31	28	31	30	31	30	31	31	30	
	Units	October	November	December	January	February	March	April	May	June	July	August	September	Water Year	October	November	December	January	February	March	April	May	June	July	August	September	Water Year
CLIMATE INPUTS																											
Precipitation - Calibrated & 2016/17 Distribution	in	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02	41.11	1.20	3.47	3.50	3.83	3.10	3.01	2.06	0.47	0.15	0.10	0.19	0.33	21.41
Precipitation - Calibrated & 2016/17 Distribution	in	5.98	2.42	5.10	14.28	4.48	3.21	3.88	0.50	1.21	0.00	0.02	0.02														
2016/2017 WY Precipitation	in	6.31	2.55	5.38	15.07	4.73	3.39	4.09	0.53	1.28	0.00	0.02	0.02	43.37													
Pan Evaporation	in	3.77	1.40	0.72	0.72	1.12	2.32	4.18	7.04	9.43	11.17	9.50	6.51	57.88	3.77	2.10	1.50	1.50	2.20	3.70	5.60	7.40	8.60	9.40	8.30	6.60	60.67
Effective Water Surface Evaporation	in	2.83	0.79	0.41	0.41	0.63	1.31	3.14	5.28	7.07	8.38	7.13	4.88	42.23	2.83	1.05	0.54	0.54	0.84	1.74	3.14	5.28	7.07	8.38	7.13	4.88	43.41
WASTEWATER GENERATION																											
Facility Wastewater Effluent (ADWF)	MG	9.9	9.6	9.9	9.9	8.9	9.9	9.6	9.9	9.6	9.9	9.9	9.6	116.6	9.9	9.6	9.9	9.9	8.9	9.9	9.6	9.9	9.6	9.9	9.9	9.6	116.6
I/I Contributions - Calibrated	MG	6.7	3.1	7.3	18.8	6.5	4.9	5.8	1.2	1.9	0.7	0.7	0.7	58.5	1.9	4.2	5.3	5.7	4.8	4.7	3.5	1.2	0.9	0.8	0.9	1.1	34.9
TOTAL Wastewater Effluent	ac-ft	51.0	39.1	52.8	88.02	47.4	45.5	47.1	34.2	35.4	32.6	32.7	31.7	537.4	36.3	42.3	46.6	47.9	42.1	44.7	40.1	34.1	32.1	32.9	33.2	32.7	465.0
2016/2017 WY Effluent Flow Values	ac-ft	33.8	34.3	50.6	94.9	81.3	47.6	49.4	29.5	27.3	26.5	33.8	33.8	542.8													
WATERSHED CONTRIBUTING AREAS																											
Precipitation into Henderson Reservoir	ac-ft	14.4	5.8	12.3	34.4	10.8	7.7	9.3	1.2	2.9	0.0	0.0	0.0	98.9	2.9	8.4	8.4	9.2	7.5	7.2	5.0	1.1	0.4	0.2	0.5	0.8	51.5
Run-off into Henderson Reservoir	ac-ft	2.2	0.9	1.8	5.2	1.6	1.2	1.4	0.2	0.4	0.0	0.0	0.0	14.8	0.4	1.3	1.3	1.4	1.1	1.1	0.7	0.2	0.1	0.0	0.1	0.1	7.7
Precipitation into Preston Forebay	ac-ft	1.0	0.4	0.8	2.4	0.7	0.5	0.6	0.1	0.2	0.0	0.0	0.0	6.9	0.2	0.6	0.6	0.6	0.5	0.5	0.3	0.1	0.0	0.0	0.0	0.1	3.6
Precipitation into Preston Reservoir	ac-ft	9.0	3.6	7.6	21.4	6.7	4.8	5.8	0.8	1.8	0.0	0.0	0.0	61.7	1.8	5.2	5.3	5.7	4.7	4.5	3.1	0.7	0.2	0.2	0.3	0.5	32.1
Run-off into Preston Reservoir	ac-ft	7.0	2.8	6.0	16.8	5.3	3.8	4.6	0.6	1.4	0.0	0.0	0.0	48.3	1.4	4.1	4.1	4.5	3.6	3.5	2.4	0.6	0.2	0.1	0.2	0.4	25.2
STORAGE RESERVOIRS																											
Henderson Reservoir Volume	ac-ft	27.5	78.8	123.7	190.1	317.0	375.4	392.8	392.8	334.7	243.3	133.8	43.9		27.5	36.3	87.4	143.2	200.9	250.2	299.8	300.4	237.9	141.7	37.3	27.5	
Henderson Reservoir Evaporation	ac-ft	-1.8	-0.8	-0.5	-0.7	-1.4	-3.1	-7.5	-12.6	-15.9	-16.2	-9.7	-3.7	-73.8	-1.8	-0.7	-0.6	-0.8	-1.5	-3.4	-6.7	-11.4	-13.5	-11.8	-5.0	-3.0	-60.2
Henderson Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Forebay Evaporation	ac-ft	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-6.6	-0.5	-0.2	-0.1	-0.1	-0.1	-0.3	-0.5	-0.9	-1.2	-1.4	-1.2	-0.8	-7.2
Preston Forebay Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preston Reservoir Volume	ac-ft	0.0	17.0	23.5	37.8	78.1	90.3	132.0	175.2	168.9	162.2	150.4	140.7		102.6	102.9	111.6	120.9	131.1	138.9	145.2	146.8	141.1	132.2	121.8	38.0	
Preston Reservoir Evaporation	ac-ft	0.0	-0.2	-0.1	-0.2	-0.5	-1.1	-3.5	-6.8	-9.0	-10.4	-8.5	-5.6	-46.1	-2.7	-1.0	-0.5	-0.6	-0.9	-2.0	-3.7	-6.2	-8.1	-9.3	-7.5	-2.4	-44.9
Preston Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Beginning Water Storage	ac-ft	27.5	95.8	147.2	227.9	395.1	465.7	524.8	568.0	503.6	405.5	284.2	184.6		130.1	139.1	199.0	264.1	332.0	389.0	445.0	447.2	379.0	273.9	159.1	65.5	
Total Reservoir Evaporation	ac-ft	-1.8	-1.2	-0.7	-0.9	-2.0	-4.4	-11.5	-20.3	-26.1	-28.0	-19.4	-10.1	-126.5	-4.9	-1.9	-1.2	-1.4	-2.5	-5.7	-10.9	-18.5	-22.8	-22.5	-13.7	-6.2	-112.3
Total Reservoir Percolation	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LAND APPLICATION DISPOSAL DEMANDS																											
Bowers' Ranch	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016/2017 WY Bower's Ranch	ac-ft	-7.7	0	0	0	0	0	0	0	-24.6	-26.7	-26.7	-26.7	-112.4													
Hoskins' Ranch	ac-ft	-3.3	0.0	0.0	0.0	0.0	0.0	-2.3	-19.4	-24.7	-26.0	-23.5	-16.4	-115.5	-1.8	0.0	0.0	0.0	0.0	0.0	-3.2	-16.4	-22.8	-24.9	-23.1	-14.6	-106.7
2016/2017 WY Hoskin's Ranch	ac-ft	0	0	0	0	0	0	0	-8.3	-27	-32.8	-26.4	-36.5	-131.0													
COWRF and Castle Oaks Golf Course	ac-ft	-11.3	0.0	0.0	0.0	0.0	0.0	-11.9	-61.7	-89.4	-99.9	-89.4	-59.9	-423.4	-27.3	0.0	0.0	0.0	0.0	0.0	-35.3	-70.1	-92.4	-100.9	-91.1	-64.6	-481.7
UNMET IRRIGATION DEMANDS																											
Bower's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Hoskin's Ranch Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
COGC Unmet Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	
Total Unmet Irrigation Demands	ac-ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	13.0
MONTHLY STORAGE BALANCE																											
Total Inflows (excluding Unmet Irrigation Demands)	ac-ft	84.5	52.6	81.4	168.2	72.6	63.5	68.8	37.0	42.2	32.6	32.8	31.8	768.0	43.0	61.8	66.3	69.4	59.5	61.6	51.7	36.7	32.9	33.5	34.3	34.5	585.1
Total Inflows (including Unmet Irrigation Demands)	ac-ft	84.5	52.6	81.4	168.2	72.6	63.5	68.8	37.0	42.2	32.6	32.8	31.8	768.0	43.0	61.8	66.3	69.4	59.5	61.6	51.7	36.7	32.9	33.5	34.3	47.5	598.1
Total Outflows	ac-ft	-16.3	-1.2	-0.7	-0.9	-2.0	-4.4	-25.7	-101.4	-140.3	-153.9	-132.3	-86.4	-665.4	-34.0	-1.9	-1.2	-1.4	-2.5	-5.7	-49.4	-105.0	-138.0	-148.3	-127.9	-85.5	-700.7
Beginning Storage Volume	ac-ft	27.5	95.8	147.2	227.9	395.1	465.7	524.8	568.0	503.6	405.5	284.2	184.6		130.1	139.1	199.0	264.1	332.0	389.0	445.0	447.2	379.0	273.9	159.1	65.5	
Change in Water Volume	ac-ft	68.3	51.5	80.6	167.2	70.6	59.1	43.2	-64.4	-98.1	-121.3	-99.6	-54.6		9.1	59.9	65.1	68.0	57.0	55.9	2.3	-68.3	-105.1	-114.8	-93.6	-38.0	
Final Storage Volume	ac-ft	95.8	147.2	227.9	395.1	465.7	524.8	568.0	503.6	405.5	284.2	184.6	130.1		139.1	199.0	264.1	332.0	389.0	445.0	447.2	379.0	273.9	159.1	65.5	27.5	

Maximum Seasonal Storage Used (ac-ft)	**568.0**	185.1 Mgal	Maximum Seasonal Storage Used (ac-ft)	**447.2**	145.7 Mgal
Henderson Unutilized Capacity (ac-ft)	**0.0**	0.0 Mgal	Henderson Unutilized Capacity (ac-ft)	**92.4**	30.1 Mgal
Preston Unutilized Capacity (ac-ft)	**59.8**	19.5 Mgal	Preston Unutilized Capacity (ac-ft)	**88.2**	28.7 Mgal

WEST YOST
Water. Engineered.

1001 Galaxy Way
Suite 310
Concord CA 94520

925.949.58
925.949.5845 fax
westyost.com

TECHNICAL MEMORANDUM

DATE: February 26, 2024

Project No.: 988-50-24-10
SENT VIA: EMAIL

TO: George Lee, City Manager, City of Ione

CC: Justin Granados, WaterStone Services

FROM: Kathryn Gies, PE, RCE #65022
Allie Ahern, EIT

REVIEWED BY: Charles Hardy, PE, RCE #71015



SUBJECT: Updated Water Balance for City of Ione Wastewater Treatment Facility, Waste Discharger Requirements Order R5-2013-0022-001

This technical memorandum (TM) provides information and supporting documentation related to an updated water balance for the City of Ione (City) Wastewater Treatment Facility (WWTF). The following topics are addressed:

- Background Information
- Existing Facilities
- Historical Influent Flows
- Climate Data
- Current (2024) Influent Flows
- Projected 2030 Influent Flows
- Estimated Capacity of Existing Discharge Areas
- Operational Assumptions
- Water Balance Results

BACKGROUND INFORMATION

Waste Discharge Requirements

The City and the Jackson Rancheria Development Corporation (Jackson Rancheria) are the two entities permitted under Central Valley Regional Water Quality Control Board (Regional Board) Waste Discharge Requirements (WDRs) Order R5-2013-0022-001 and the associated Revised Monitoring and Reporting Program R5-2013-0022 REV1 (MRP) (Regional Board, 2014b) for the treatment of domestic wastewater at the WWTF and disposal and reuse of the secondary effluent. The WDRs were initially adopted on April 11, 2013, and revised December 5, 2014 (Regional Board, 2014c).

The WDRs present the following information related to the capacity of the WWTF and disposal system:

- The allowable influent average dry weather flow (ADWF)[1] to the WWTF is limited to 0.50 million gallons per day (mgd) based on the water balances that were included in the City's 2012 Report of Waste Discharge (ROWD) (GHD Inc., 2012a).
- The allowable influent ADWF to the WWTF can increase to 0.52 mgd following Executive Officer approval of a 2020 Capacity Expansion Completion Report. The WDRs were modified in 2014 to make this provision performance-based because of changes in City operations that occurred in 2013 that effectively increased the available disposal capacity provided by the percolation basins. However, the 0.52 mgd limit was not modified. The understanding at the time was the capacity limit would be modified with the submission of the 2020 Capacity Expansion Completion Report.
- WDRs Finding 29 states: "The City states that the current treatment capacity is 0.55 mgd."

Cease and Desist Order

On December 5, 2014, the Regional Bord adopted Cease and Desist Order 2014-0157 (CDO) (Regional Board, 2014a) that addressed the City's inability to comply with the following requirements of the WDRs:

- **Prohibition A.1:** Discharge of wastes to surface waters or surface water drainage courses is prohibited. (Only as this provision relates to the discharge of degraded groundwater into Sutter Creek).
- **Groundwater Limitation D.2:** Release of waste constituents from any portion of the WWTF shall not cause groundwater to contain constituents in concentrations that exceed either the Primary or Secondary Maximum Contaminant Levels established therein.
- **Discharge Specification E.1:** No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of [the WDRs].
- **Discharge Specification E.3:** The discharge shall remain within the permitted waste treatment/containment structures and land application areas (LAAs) at all times.

The CDO specifically requires a series of actions to be completed by the City to address the issues identified above. These actions are as follows:

- Construct facility improvements that will effectively stop the mechanisms that result in the mobilization and discharge of iron and manganese in violation of the Groundwater Limitations in the WDRs;
- Effectively stop any indirect discharge (seepage) of polluted groundwater to Sutter Creek; and
- Bring the facility into compliance with the WDRs.

[1] ADWF is defined in the WDRs as the total flow for the months of July through September, inclusive, divided by 92 days.

Compliance with the first requirement was to be demonstrated through achievement of specific groundwater numeric targets defined in the CDO. The CDO also requires that all ponds be lined or permanently closed if the specified groundwater numeric targets for iron and manganese defined in the CDO are not met by their compliance dates.

13267 Order Requirements

On August 14, 2024, the Regional Board issued a 13267 Order letter to the two WDRs permittees that requires submittal of an updated water balance for the WWTF to the Regional Board by December 13, 2024. The letter specifies the following three items that should be included in the water balance:

- The forecasted influent flows and proposed flows over the next 5 years based on population growth. Estimates must be supported by City planning documents.
- Any changes to collection system, treatment plant, and disposal features or their operation planned in the next 5 years.
- If the facility does not have sufficient capacity to treat and dispose of all wastewater onsite, the submittal must include the volume of excess effluent that would need to be disposed of each year to ensure all wastewater is treated and disposed of properly without causing or threatening to cause a violation of the permit or a condition of pollution.

The 13267 Order also states that the water balance must be in compliance with the requirements and guidance of the Regional Board's guidance document *Requirements for Water Balance Update and Calibration*.

In addition to the above requirements, Regional Board staff issued an email to the City that stated that the Regional Board cannot consider a water balance complete if it represents operation of a facility that causes violation of a WDRs and/or an enforcement order, with the following examples of reasons the Regional Board would consider a water balance incomplete:

1. The provided influent flow rate is higher than the treatment capacity, which could cause effluent limit exceedances.
2. The provided rate of treated wastewater being applied to a LAA is too high and threatens to impact groundwater or violate conditions of the WDRs such as runoff or saturated conditions.
3. The inclusion of disposal capacity via percolation ponds which are required to be lined or closed by an enforcement order.
4. The acceptance of a waste stream not described in the WDRs.
5. The operation of ponds or reservoirs that would exceed freeboard requirements of the WDRs.

Of the above-listed examples, Numbers 1 and 3 could pertain to the WWTF. Therefore, both topics are addressed herein.

Review Of Site-Specific Water Balance

On February 3, 2025, Regional Board staff issued a letter titled Review of Site Specific Water Balance that identified data gaps and deficiencies that must be addressed. The following specific changes were required:

- *The WDRs state that the total disposal capacity of the facility is 0.75 MGD, with the caveat that: "The water balances are based on the assumption of year-round cropping of all available LAAs. Therefore, this Order requires year round cropping of all LAAs and allows year-round irrigation with recycled effluent to meet crop water needs." The Town Field, a 67 acre land application area (LAA) that provides roughly 85% of the permitted disposal capacity, is leased to and managed by a farmer who does not crop year round. Standing water after rain events percolates slowly due to higher groundwater leaving the LAA saturated for long periods of time. Consequently, irrigation and cropping during the wet season is highly variable. Board staff's understanding is that the City has no control of how the LAA is managed.*

  In addition, since the WDRs were adopted the City modified the treatment train by lining Ponds 1-5. Ponds 1-4 were unlined treatment ponds, and pond 5 was a percolation pond. Lining Ponds 1-5 decreased the disposal capacity due to the loss of percolation.

  The water balance includes scenarios where Ponds 6 and/or 7 are used for percolation. This is not consistent with the requirements of the Ione WWTF WDRs or Cease and Desist Order (CDO) R5-2014-0157, which requires the lining or closure of the ponds. The effluent disposal capacity and flow limit in the WDRs have not been modified to reflect these changes. Therefore the 0.75 MGD effluent disposal capacity is an overestimation and should not be used. *The Report shall be updated to reflect the calculated current disposal capacity conditions within the requirements of the CDO and WDRs, and include supporting technical analysis to support that value.*
- *Rainfall data for a 1-100-year wet season is based on 2016/2017. Although the total rainfall is higher than 2020-2024 the distribution of storms is very different. In 2017 the rain was much heavier in January/February, but other months had more rain during 2020-2024 than they did in 2017. It may be more representative to distribute the total flow more evenly over the wet season of the 1-100 model year. However, as this is occurring in the midst of the wet season when storage capacity is high and irrigation potential is low the effect may be minimal. The Discharger shall examine the sensitivity of the water balance to changes in monthly rainfall and include narrative analysis of the findings. If needed a factor of safety should be integrated into the water balance to accommodate fluctuations in estimated monthly rainfall values.*
- *Tailwater flows from the Town Field are estimated as no flow data is available. However, for months when greater than eight (8) inches of precipitation are projected the submitted water balance caps the amount of tailwater received from the Town Field at eight (8) inches. More information shall be submitted to support this restriction* [i.e. the water balance caps the amount of tailwater received from the Town Field as the runoff calculated form eight (8) inches of rainfall], *or the water balance shall be revised to not include a cap on precipitation values used to estimate tailwater flows.*

- *The water balance shall reflect true site conditions, and not include operational decisions that would cause a violation of the WDRs, applicable enforcement Order, or any applicable regulation. For example, the water balance cannot include assumptions such as the use of an unpermitted discharge to surface water, irrigation when LAAs are saturated, or discharge at a flow rate that would cause violations of applicable effluent limits. If the current facility cannot accommodate current or projected 5 year flows the volume of that deficit shall be calculated as required by Item 3 of the 14 August 2024 Water Code Section 13267 Order. In order to properly examine the water balance calculations, it is necessary that the spreadsheets containing the data and formulas are submitted along with the narrative portion of the report. All spreadsheets used to construct the tables and surmise conclusions shall be submitted.*

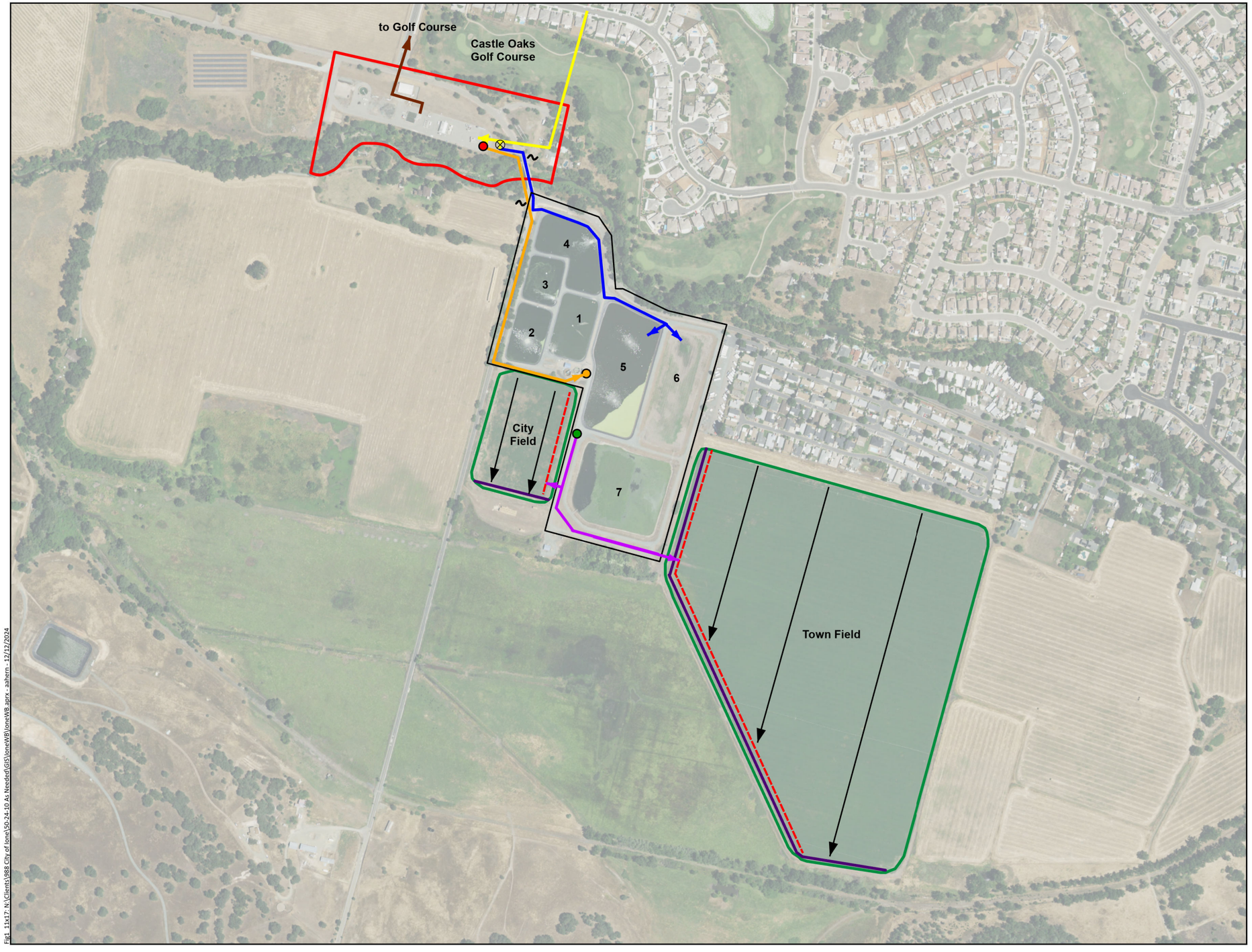
EXISTING FACILITIES

This section provides an overview of the WWTF pond system and LAA facilities.

WWTF Pond System

The WWTF is a pond-based treatment facility owned by the City and operated under contract by WaterStone Services, LLC. The WWTF is located south of the City, near the intersection of Marlette Road and Dave Brubeck Road. A map of the WWTF and connected facilities is shown on Figure 1. A flow schematic of the WWTF system is shown on Figure 2.

The WWTF treats wastewater generated from the City in five lined and aerated treatment ponds (Ponds 1 through 5). These ponds provide secondary wastewater treatment through aeration and settling. Pond 5 was historically operated as a percolation pond and is described as such in the current WDRs. However, with the lining and aeration improvements made since the WDRs were adopted, Pond 5 currently functions as a treatment pond. Ponds 6 and 7 are currently used for disposal through percolation and evaporation during periods when the effluent cannot be used for irrigation purposes.



- City WWTF Headworks
- Secondary Effluent Pump Station
- COWRF Pump Station
- Control Valve
- WWTF Boundary
- Castle Oaks Water Reclamation Facility (COWRF) Boundary
- Irrigation Area Boundary
- COWRF Influent
- COWRF Effluent to Golf Course
- Filter Backwash from COWRF
- Secondary Effluent from ARSA
- Irrigation Pipeline
- Wheel Line Irrigation Header
- Tailwater Ditch

Fig1 11x17: N:\Clients\988 City of Ione\50-24-10 As Needed\GIS\IoneWB\IoneWB.aprx - aahern - 12/12/2024

Prepared by:

WEST YOST

N

0 350 700

US Feet

Prepared for:

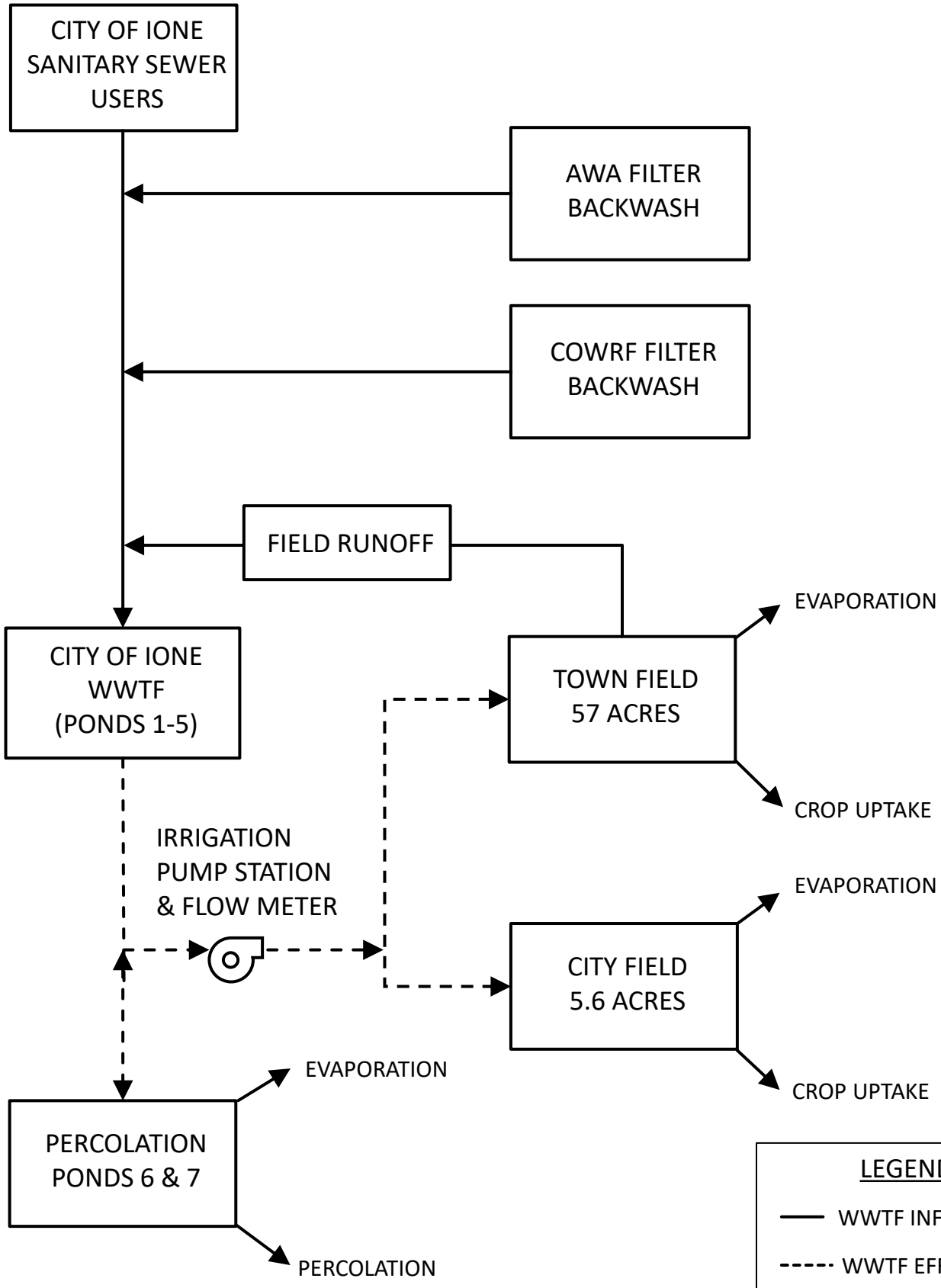
City of Ione

Updated Water Balance

WWTF Site Map

Fig 400

Figure 2. WWTF System Schematic



Detailed dimensions of each pond are presented in Table 1. Figure 3 provides a more detailed layout of the City's pond system, interconnection piping and groundwater monitoring piezometers described further below.

Table 1. WWTF Pond Dimensions

Pond[a]	Depth,[b] feet	Water Surface Area,[b] acres	Volume,[b] million gallons (MG)	Volume,[b] acre-feet	Pond Bottom Elevation, feet mean sea level (msl)
1	8.0	1.5	3.2	9.8	265.0
2	8.0	1.2	2.2	6.8	265.0
3	7.0	1.0	1.8	5.5	266.0
4	8.0	2.0	3.8	11.7	265.0
5	10.0	4.7	13.6	41.8	263.0
6	7.3	3.9	8.2	25.2	266.7
7	5.3	5.3	8.4	25.8	265.7

Source: 2017/2018 Pond 1-5 As-Built Survey

(a) Information for Ponds 1 - 5 is from the 2017/2018 Pond 1-5 As-Built Survey. Information for Ponds 6 and 7 is from the 2020 Capacity Expansion Completion Report.

(b) Depth, surface area and volume are shown at two feet of freeboard.

Quarterly groundwater monitoring is conducted at serval monitoring wells associated with the WWTF site. Piezometers 1, 2 and 3 (P1, P2 and P3) are specifically used to measure the groundwater elevations surrounding unlined Ponds 6 and 7. As shown on Figure 3, P1 lies on the east side of Pond 7, P3 lies in the northwest corner of Pond 7, and P2 lies northeast of Pond 6 adjacent to Sutter Creek. In this location, groundwater elevations at P2 are also likely influenced by creek water levels.

WEST YOST - N:\Clients\988 City of Ione\50-24-10 As Needed\GIS\IoneWB\IoneWB.aprx - aahern - 12/12/2024



- Headworks
- Secondary Effluent Pump Station
- Manholes
- Pond System Control Structures
- Groundwater Monitoring Point
- Irrigation Area Boundary
- Secondary Effluent from ARSA
- Filter Backwash from COWRF
- Irrigation Pipeline

Prepared by:

WEST YOST

0 150 300 Feet

N

Prepared for:

City of Ione

Updated Water Balance

WWTF Pond Layout

Fig 403

The influence of the WWTF ponds on the groundwater elevations at the WWTF site has changed significantly since the lining of Ponds 1 through 5 in 2019. Therefore, an assessment of depth to groundwater beneath the ponds should be based on data collected since 2019. A review of post 2019 quarterly groundwater monitoring data indicates that the highest groundwater elevations at P1, P2 and P3 occurred in the first quarter of 2023 (P2) and first quarter of 2024 (P1 and P3). The lowest groundwater elevations occurred in the third quarter of 2021 (for all 3). The groundwater elevations and corresponding depths below the invert of Ponds 6 and 7 for these periods are shown in Table 2 and Table 3. Groundwater elevation gradient maps from these monitoring periods are also included in Attachment A, taken from the respective quarterly monitoring reports prepared by others for the City.

Table 2. Pond 6 Depth to Groundwater

Measurement Period	Season	P2 Groundwater Elevation, feet msl	Groundwater Depth Below Pond 6, feet[(a)]
Q3 2021	Dry	257.30	9.4
Q1 2023	Wet	264.10	2.6
Q1 2024		262.64	4.1

(a) Groundwater depths below the invert of Pond 6 at 266.7 feet msl based on the respective P2 groundwater elevations.

Table 3. Pond 7 Depth to Groundwater

Measurement Period	Season	Groundwater Elevation, feet msl			Average Groundwater Depth Below Pond 7, feet[(a)]
		P1	P3	Average	
Q3 2021	Dry	256.80	251.60	254.20	11.5
Q1 2023	Wet	264.11	259.11	261.61	4.1
Q1 2024		264.61	260.44	261.03	4.7

(a) Groundwater depths below the invert of Pond 7 at 265.7 feet msl based on the respective averages of P1 and P3 groundwater elevations.

Land Application Areas

During the summer irrigation season, treated WWTF effluent is distributed via the secondary effluent pump station to two LAAs: the Town Field and City Field. Pertinent details regarding these two LAAs are as follows:

- Both LAAs are used to grow fodder crops (i.e. crops not intended for human consumption).
- As shown on Figure 1, the City Field is a 5.6-acre area located within the WWTF site. Currently, alfalfa is grown on the City field.
- The Town Field is a 57-acre irrigation site owned by Jackson Rancheria and is located directly east of the WWTF (see Figure 1).
- Since the City began irrigating the site with recycled water, alfalfa has been grown on this the Town Field.
- Both LAAs are irrigated by hand-move spray irrigation systems and are managed by an agricultural worker employed by Jackson Rancheria.

- Runoff is collected from the Town Field year-round and returned to the WWTF via the City's collection system.
- Runoff from the City Field is collected during the irrigation season. During the winter months, runoff is allowed to pond within the property until it evaporates or percolates.

A certification letter from Jackson Rancheria specific to the Town Field recycled water operations is provided in Attachment B.

Facility Changes Impacting Treatment Capacity Defined in the ROWD

The City has made significant changes to the WWTF since the development of the 2012 ROWD, as discussed above. These changes have impacted both the treatment and disposal capacity values that were stated in the ROWD, and that are documented in the WDRs[2].

With respect to treatment capacity, the WDRs state that the City reported that the influent ADWF capacity of the WWTF is 0.55 mgd. A disconnect between the stated capacity and the improvements made to the pond treatment system is found upon review of the June 2009 Wastewater Master Plan (Lee & Ro, Inc. and PMC, 2009), the March 2010 ROWD (Lee & Ro, Inc., 2010) and the November 2012 Supplement to the Revised ROWD (GHD Inc., 2012b). Specifically, the capacity statements made in the 2010 ROWD lean heavily on the 2009 Wastewater Master Plan values to define capacity with little to no assessment of the benefits provided by the City's projects that provided solids removal, pond lining, and increased aeration. Moreover, the 2009 Wastewater Master Plan does not characterize or assess the low load flows (i.e. backwash from the Castle Oaks Water Reclamation Facility (COWRF) and filter backwash from the Ione Water Treatment Plant (WTP)) that contribute to the ADWF entering the WWTF but have virtually no impact on treatment capacity.

Table 4 provides a summary of the aeration improvements made to the pond system since 2009. As shown, the City has significantly increased the aeration provided in the treatment ponds. This increase provides for added capacity through increased oxygen availability and improved mixing. More importantly, by lining and adding aeration to Pond 5, this facility no longer operates as a percolation/disposal pond as described in the WDRs. Indeed, Pond 5 is now better characterized as a treatment pond.

[2] As previously noted, and as documented in the 2014 WDR Amendment, the City has also made operational changes that have increased the available disposal capacity of the percolation ponds. However, because these water balances may not consider the percolation ponds as a vehicle for disposal, additional discussion regarding these changes is not included in this report.

Table 4. WWTF Pond System Aeration Improvements			
Facility	Original Aeration Capacity	Upgraded Aeration Capacity	Upgraded Aerator Type
Pond 1	1 aerator @ 15 horsepower (HP)	2@7.5 HP 1@ 15 HP	Floating Brush High-Speed Floating
Pond 2	1@ 7.5 HP	1@ 7.5 HP 1@ 15 HP	Floating Brush High-Speed Floating
Pond 3	1@ 7.5 HP	1@ 7.5 HP 1@ 15 HP	Floating Brush High-Speed Floating
Pond 4	1@ 7.5 HP	1@ 7.5 HP	Floating Brush
Pond 5	None	2@15) HP	High-Speed

A preliminary modeling analysis of the treatment pond system was developed to define the capacity of the ponds at current flow rates and at the projected 2030 flow rates, as defined in this TM. In addition, a model was developed to define the overall treatment capacity. For this analysis, the following assumptions were applied:

- Biochemical Oxygen Demand (BOD) removal in Ponds 1 through 4 is a first-order mechanism, where the first-order removal-rate constant "k" at 20 degrees Celsius (°C) is assumed to be 0.276 per day (U.S. Environmental Protection Agency, 2011).
- For Pond 5, the first order rate coefficient was defined based on the loading rate to the pond. Values ranged from 0.083 to 0.129 per day.
- The reaction rate coefficients were adjusted to reflect a treated water temperature of 10.9°C, which is based on the lowest monthly average measured influent temperature of Pond 5 in December and January. Assuming that the influent temperature of Pond 5 is the treatment temperature for all upstream ponds is a conservative assumption.
- The available volume of Pond 5 was adjusted down from the total capacity of 13.7 million gallons (MG) to 10.1 MG (or 31 acre-feet) based on average December through January operating levels (see Table 33 later in this TM).

The results of this analysis are shown in Table 5. As shown, the existing treatment system potentially has a theoretical ADWF capacity to process flows up to 0.72 mgd.

Table 5. WWTF Treatment Pond Modeling Analysis Results

Parameter	Units	Current (2024) Flows	Year 2030 Flows	Estimated Design Flows
Base Flow	mgd	0.41[(a)]	0.51[(b)]	0.58
ADWF[(c)]	mgd	0.55	0.65	0.72
Maximum Month Influent Flow	mgd	1.09	1.34	1.53
Maximum Month Influent BOD Load	pounds per day	1,450	1,800	2,060
Pond 4 Effluent BOD	mg/L	32	41	48
Pond 5 Effluent BOD	mg/L	20	24	30

(a) See Current (2024) Influent Flows section presented later in this TM.
(b) See Projected 2030 Influent Flows section presented later in this TM.
(c) Difference between Base Flow and ADWF values are the non-load inputs from sewer system inflow and infiltration, COWRF filter backwash, and AWA WTP filter backwash.

The City is currently working to update and calibrate the model of the treatment system. A final assessment of the current WWTF treatment capacity, including Pond 5, will be presented in a technical report prepared by a California Licensed Civil Engineer.

It is also noted that the effluent limitations described in the WDRs are specifically applied to effluent discharged to the percolation ponds. Since Pond 5 is lined it no longer is a percolation pond, these limits should apply only to discharges to Pond 6 and Pond 7. To remedy this, the City proposes a modification to the MRP[3] to change the effluent monitoring location.

[3] The City will need to develop new water storage and/or effluent management strategies to ensure compliance with the CDO. Once the new strategies are identified, the City will be in position to prepare and submit a new ROWD so support development of a new permit that incorporates changes to the treatment system.

A summary of the proposed changes to the MRP is provided in the table below.

The City of Ione shall collect un-disinfected effluent samples immediately downstream of Pond ~~4~~ 5 before the effluent is discharged into the percolation ponds. At a minimum, effluent monitoring shall include the following:

Constituent	Units	Sample Type	Sample Frequency	Reporting Frequency
ARSA secondary effluent flows to the percolation ponds	gpd	Meter Observation	Daily	Monthly
Total effluent flows to the percolation ponds[1, 2]	gpd	Calculated	Daily	Monthly
BOD_5	mg/L	Grab	Monthly	Monthly
Total dissolved solids	mg/L	Grab	Monthly	Monthly
Electrical conductivity	µmhos/cm	Grab	Monthly	Monthly
Total nitrogen	mg/L	Grab	Monthly	Monthly
pH	pH units	Grab	Monthly	Monthly
Standard minerals[3]	mg/L	Grab	Annually	Annually

1. *Sum of influent flows at the headworks and ARSA secondary effluent flows to the percolation ponds.*
2. *For continuous analyzers, the City shall document and report routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation.*
3. *Standard minerals shall include, at a minimum, the following elements/compounds: arsenic, aluminum,boron, calcium, chloride, dissolved iron, magnesium, dissolved manganese, potassium, sodium, sulfate,total alkalinity (including alkalinity series), and hardness.*

HISTORICAL INFLUENT FLOWS

This section describes the historical flows from each source that contributes to the WWTF influent.

Total Influent Flows

Influent flows to the WWTF come from the following sources:

- Filter backwash from the Castle Oaks Water Reclamation Facility (COWRF)
- Filter backwash from the Ione Water Treatment Plant (WTP), operated by the Amador Water Agency (AWA)
- Base City flows (i.e. wastewater from City sewer customers)
- Wet weather flows, which including inflow and infiltration (I&I) to the wastewater collection system and tailwater runoff from the Town Field

The total historical average daily influent flows to the WWTF are shown in Table 6. The average annual flow (AAF) and ADWF to the WWTF for each year is also shown.[4]

As shown, flows were significantly higher in the 2024 irrigation season as compared to previous years. WWTF staff have reported that they suspect that during the 2024 irrigation season there was a leak in the valve that connects the COWRF and WWTF influent flow lines. This leak caused a portion of the flow sent from Preston Reservoir to enter the WWTF instead of the COWRF. This observation is supported by a review of the COWRF data that demonstrates the flow sent from Preston Reservoir was 100,000 to 300,000 gallons per day (gpd) higher than the reported COWRF influent flows. As discussed recently with the Regional Board staff, **the City has identified the cause of the leak as a damaged seal in the drain valves in the chlorine contact basins. The City has fixed the issue.**

[4] The ADWF period is defined as July through September, consistent with the definition in the WDRs.

Table 6. Historical Average WWTF Influent Flow

Month	Average Daily WWTF Influent Flow, mgd								
	2016	2017	2018	2019	2020	2021	2022	2023	2024
October	0.381	0.423	0.395	0.486	0.502	0.490	0.390	0.615	0.860
November	0.329	0.352	0.386	0.530	0.431	0.343	0.433	0.447	0.583
December	0.371	0.318	0.344	0.430	0.346	0.555	0.510	0.431	-
January	0.433	0.656	0.406	0.480	0.399	0.412	0.451	0.894	0.545
February	0.386	0.582	0.353	0.805	0.361	0.434	0.396	0.575	0.723
March	0.474	0.454	0.609	0.790	0.460	0.351	0.395	0.939	0.656
April	0.364	0.422	0.471	0.495	0.473	0.395	0.546	0.582	0.590
May	0.375	0.375	0.438	0.546	0.538	0.395	0.485	0.607	0.849
June	0.406	0.381	0.404	0.470	0.562	0.462	0.457	0.597	0.839
July	0.386	0.418	0.333	0.355	0.563	0.520	0.454	0.578	0.784
August	0.395	0.453	0.247	0.447	0.554	0.505	0.474	0.656	0.897
September	0.413	0.490	0.375	0.517	0.536	0.465	0.409	0.616	0.894
AAF, mgd	**0.393**	**0.444**	**0.397**	**0.529**	**0.477**	**0.444**	**0.450**	**0.628**	**0.747**
ADWF, mgd	**0.398**	**0.454**	**0.318**	**0.440**	**0.551**	**0.497**	**0.446**	**0.617**	**0.858**

COWRF Backwash Flows

The COWRF provides tertiary recycled water to meet the irrigation demands of the Castle Oaks Golf Course (golf course). During the COWRF tertiary treatment process, a fraction of the flows through the COWRF is discarded as filter backwash and sent to the WWTF. Historical COWRF backwash flows are shown in Table 7. The COWRF ADWF for each year, which is used in calculating historical Base City flows, is also shown.

Table 7. Historical COWRF Backwash Flow

Month	Volume of COWRF Backwash Flow, MG								
	2016	2017	2018	2019	2020	2021	2022	2023	2024
October	2.2	3.0	1.9	4.0	3.4	2.4	1.7	7.3[(a)]	5.0
November	0	0	1.1	1.9	1.7	0	2.3	4.1[(a)]	1.7
December	0	0	0	0	0	0	0	0	-
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	2.0	2.0	0.1	0
May	1.7	2.2	2.5	1.9	2.7	3.9	1.9	3.0	2.2
June	3.6	3.4	3.6	2.5	3.8	3.4	2.0	3.7	3.6
July	3.4	4.7	4.4	3.9	3.6	4.0	2.7	4.4	3.8
August	3.7	4.2	3.9	3.9	4.3	3.8	2.7	5.4[(a)]	5.1
September	4.1	4.1	3.5	4.0	4.0	2.6	2.2	6.4[(a)]	5.5
Total, MG	**18.7**	**21.7**	**20.9**	**22.1**	**23.4**	**21.9**	**17.5**	**34.4**	**26.9**
ADWF, mgd	**0.122**	**0.141**	**0.128**	**0.128**	**0.129**	**0.113**	**0.083**	**0.158**	**0.157**

(a) Backwash flows during this period were irregular due to filter maintenance. Values were not used in calculated average.

AWA Backwash Flows

The AWA discharges filter backwash flows from the Ione WTP to the City's wastewater system. Historical monthly backwash flows from AWA are shown in Table 8. The AWA filter ADWF backwash for each year, which was used in calculating the historical Base City flows, is also shown.

AWA flows to the WWTF decreased significantly after the completion of a filter upgrade project in 2016. Since then, intentional efforts have been made by AWA to further reduce flows. Between 2020 and 2021, the total volume of AWA flows sent to the WWTF decreased from 3.45 MG to 1.72 MG. Since 2021, total AWA flows to the WWTF have remained below 2 MG per year.

Table 8. Historical AWA Backwash Flow									
Month	Volume of AWA Backwash Flow, MG								
	2016	2017	2018	2019	2020	2021	2022	2023	2024
October	0.10	0.13	0.27	0.13	0.32	0.14	0.02	0.24	0.53
November	1.56	0.47	0.05	0.62	0.27	0.06	0.14	0.16	0.31
December	1.66	0.26	0.11	0.11	0.50	0.23	0.08	0.19	-
January	1.23	1.72	0.51	0.32	0.35	0.15	0.06	0.16	0.10
February	1.08	0.29	0.41	0.23	0.38	0.21	0.05	0.04	0.29
March	0.09	0.10	0.40	0.01	0.21	0.16	0.05	0.04	0.21
April	0.48	0.09	0.09	0.50	0.30	0.29	0.22	0.04	0.20
May	0.34	0.28	0.40	0.59	0.40	0.10	0.06	0.34	0.22
June	0.10	0.29	0.51	0.50	0.33	0.11	0.06	0.06	0.09
July	0.29	0.27	0.25	0.32	0.05	0.14	0.13	0.06	0.43
August	0.13	0.16	0.14	0.18	0.18	0.06	0.30	0.08	0.19
September	0.05	0.57	0.24	0.02	0.16	0.07	0.03	0.28	0.17
Total, MG	**7.11**	**4.60**	**3.38**	**3.53**	**3.45**	**1.72**	**1.20**	**1.69**	**1.90**
ADWF, mgd	**0.005**	**0.011**	**0.007**	**0.006**	**0.004**	**0.003**	**0.005**	**0.005**	**0.009**

Base City Flows

The base flow for the City can be determined by subtracting COWRF and AWA backwash ADWFs from the WWTF ADWF. The calculated daily average Base City flows for 2016 through 2024 are shown in Table 9.

Table 9. Historical Base City Wastewater Flows				
Year	ADWF, mgd			
	WWTF Influent ADWF	COWRF Backwash ADWF	AWA Backwash ADWF	Base City ADWF
2016	0.398	0.122	0.005	0.271
2017	0.454	0.142	0.011	0.301
2018	0.318	0.128	0.007	0.183
2019	0.440	0.128	0.006	0.306
2020	0.551	0.129	0.004	0.418
2021	0.497	0.113	0.003	0.381
2022	0.446	0.083	0.005	0.358
2023	0.617	0.158	0.005	0.454
2024	0.858	0.157	0.009	0.692
Average (2016-2023)[(a)]	**0.465**	**0.125**	**0.006**	**0.334**

(a) Averages exclude 2024 flow values due to the influence of Preston Reservoir flows being inadvertently directed to the WWTF.

Wet Weather Flows

During wet weather months, I&I from the City's collection system and collected tailwater runoff from the Town Field enter the WWTF. These flows have been calculated for each month by subtracting COWRF backwash flows, AWA backwash flows and base City flows from the total WWTF influent flow. For this analysis the monthly Base City flows were calculated by multiplying the Base City flow determined for each year, as presented in Table 9, by the number of days in each month. Calculated wet weather flows are presented in Table 10.

Table 10. Historical Wet Weather Flows

Month	Volume of Wet Weather Flows, MG[(a)]							
	2016	2017	2018	2019	2020	2021	2022	2023
October	1.1	0.6	4.4	1.5	0	0.8	0	0
November	0.2	1.0	4.9	4.2	0	0	0	0
December	1.4	0.2	4.9	3.7	0	5.2	4.6	0
January	3.8	9.2	6.4	5.1	0	0.8	2.8	13.5
February	2.1	7.6	4.3	13.7	0	1.3	1.0	3.3
March	6.2	4.6	12.8	15.0	1.1	0	1.1	15.0
April	2.3	3.5	8.5	5.2	1.4	0	3.4	3.7
May	1.2	0	5.0	5.0	0.6	0	2.0	1.4
June	0.3	0	2.5	1.9	0.2	0	0.9	0.5
July	0	0	0	0	0.8	0.2	0.1	0
August	0	0.3	0	0.3	0	0	0.6	0.8
September	0.1	1.0	2.0	2.3	0	0	0	0
Total	**18.7**	**28.0**	**55.7**	**57.9**	**4.1**	**8.3**	**16.5**	**38.2**

(a) Calculated wet weather flows include I&I and collected tailwater runoff from the Town Field.

CLIMATE DATA

The California Department of Water Resources (DWR) has defined the average annual rainfall, 1-in-100-year annual rainfall, and the monthly distributions of rainfall based on rainfall data for the Ione National Climate Data Center (NCDC) weather station. These values are as follows:

- The average rainfall year was defined as having a total rainfall of 22.0 inches.
- The 1-in-100 rainfall year was defined as having a total rainfall of 41.1 inches.
- The monthly rainfall distribution values were defined based on the 1906 to 1997 "Normal" monthly values as calculated by the DWR.

Reference evapotranspiration (ET) for each month is based on long-term monthly average ET values for the Plymouth California Irrigation Management Information System (CIMIS) station, located approximately 13 miles northeast of the WWTF. This rainfall and reference ET information is presented in Table 11, based on the DWR information provided in Attachment C.

Table 11. Applicable Climate Data

Month	Average Rainfall,[(a)] inches	1-in-100 Year Rainfall,[(a,b)] inches	Reference ET,[(c)] inches
October	1.15	2.15	3.24
November	2.81	5.24	1.68
December	3.53	6.58	1.21
January	5.08	9.48	1.48
February	3.14	5.86	1.95
March	3.19	5.95	3.02
April	1.75	3.26	4.57
May	0.63	1.18	5.97
June	0.23	0.43	7.19
July	0.07	0.13	7.64
August	0.13	0.24	6.98
September	0.33	0.62	4.99
Total	**22.0**	**41.1**	**49.9**

(a) Ione NCDC weather station #044283.
(b) Monthly 1-in-100 rainfall values are calculated from the total 1-in-100 year rainfall value and the ratio of average monthly rainfall to average total rainfall.
(c) Plymouth CIMIS station #227.

CURRENT (2024) INFLUENT FLOWS

This section presents the estimated current (2024) influent flows to the WWTF from each source. These flows will be used to develop the current condition water balances.

Current Base Flows

Equivalent dwelling unit (EDU) data was used to calculate the average daily Base City flow per EDU for each year. The number of EDUs and calculated Base City flow per EDU for each year are presented in Table 12.

Table 12. Development of Daily Average Base City Flow per EDU

Year	Number of EDUs	Base City ADWF, mgd	Flow per EDU, gpd/EDU
2016	1,825[(a)]	0.271	148
2017	1,899[(b)]	0.302	159
2018	1,973[(b)]	0.183	93
2019	2,047[(c)]	0.306	149
2020	2,269[(d)]	0.418	184
2021	2,208[(d)]	0.381	173
2022	2,373[(d)]	0.358	151
2023	2,481[(d)]	0.454	183
2024	2,520[(d)]	0.692	275
Average[(e)]		**0.334**	**164**

(a) From 2020 Expansion Completion Report by Dexter Wilson Engineering (2016).
(b) The 2017 and 2018 EDU values were calculated by taking the difference between the reported 2019 and 2016 EDUs and distributing their addition across the three years.
(c) From 2021 Water Balance Update and 2020 Expansion Completion Report by Coastland Engineers.
(d) From City Sewer January Billing Register for January of each year.
(e) Averages exclude 2018 and 2024 flow values.

As previously noted, the WWTF influent flows in 2024 included flows from Preston Reservoir that were inadvertently discharged to the WWTF. Atypical flows in 2024 is further demonstrated by that fact that the ADWF per EDU in 2024 was almost twice the ADWF per EDU of the four years prior. Due to the uncertainty associated with estimating this atypical influent flow to the WWTF, 2024 Base City flows have been excluded from the water balance analysis.

In addition, the 2018 Base City flow per EDU of 93 gpd is also anomalous when compared with the Base City flows of past and future years. Therefore, the data from 2018 has also been excluded from the calculation of the average Base City flow per EDU.

With the two exclusions noted above, the data in Table 12 demonstrates that the overall average daily base flow per EDU for 2016 to 2023 was calculated to be 164 gpd per EDU. To define the current daily base flow for use in the calibrated water balance, the overall average daily base flow per EDU was multiplied by the number of EDUs in 2024. **The current (2024) base flow is value is calculated to be 0.41 mgd.**

COWRF Backwash

The theoretical agronomic demands of the golf course, the COWRF influent rate needed to fulfill these demands, and the fraction of influent discarded as backwash were determined in the recently completed Castle Oaks Golf Course Recycled Water Demands TM, which is included as Attachment D. The calculated theoretical backwash flows will be used in the WWTF water balance analyses. The theoretical COWRF backwash flow for an average rainfall year is shown in Table 13. The theoretical COWRF backwash flow for a 1-in-100 rainfall year is shown in Table 14.

Table 13. Theoretical Monthly COWRF Backwash Flow for an Average Rainfall Year

Month	Average-Year COWRF Influent Flow, acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow, percent	Average-Year COWRF Backwash to WWTF, acre-feet
October	27.3	18	4.9
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	35.3	15	5.3
May	70.1	13	9.1
June	92.4	13	12.0
July	100.9	13	13.1
August	91.1	13	11.8
September	64.6	17	11.0
Total, AFY	**481.7**	**-**	**67.2**

Source: Castle Oaks Golf Course Recycled Water Demands TM, Table 11

AFY = acre-feet per year

Table 14. Theoretical Monthly COWRF Backwash Flow for a 1-in-100 Rainfall Year

Month	1-in-100-Year COWRF Influent Flow, acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow, percent	1-in-100-Year COWRF Backwash to WWTF, acre-feet
October	11.3	18	2.0
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	11.9	15	1.8
May	61.7	13	8.0
June	89.4	13	11.6
July	99.9	13	13.0
August	89.4	13	11.6
September	59.9	17	10.2
Total, AFY	**423.5**	**-**	**58.2**

Source: Castle Oaks Golf Course Recycled Water Demands TM, Table 12

AWA Backwash Flows

As previously noted, AWA flows to the WWTF decreased significantly since 2021. Therefore, AWA flow data from 2021 to 2024 were used as the basis for defining current AWA flows in the average water balances. Monthly AWA backwash flows from 2021 to 2024 are shown in Table 15. The average AWA backwash flow received was calculated for each month and was used directly in the average rainfall year and 1-in-100 rainfall year water balances.

Table 15. Historical AWA Backwash Flow

Month	Volume of AWA Backwash Flow, MG					Average, acre-feet
	2021	2022	2023	2024	Average	
October	0.14	0.02	0.24	0.53	0.23	0.71
November	0.06	0.14	0.16	0.31	0.17	0.52
December	0.23	0.08	0.19	-	0.17	0.52
January	0.15	0.06	0.16	0.10	0.12	0.37
February	0.21	0.05	0.04	0.29	0.15	0.46
March	0.16	0.05	0.04	0.21	0.12	0.37
April	0.29	0.22	0.04	0.20	0.19	0.58
May	0.10	0.06	0.34	0.22	0.18	0.55
June	0.11	0.06	0.06	0.09	0.08	0.25
July	0.14	0.13	0.06	0.43	0.19	0.58
August	0.06	0.30	0.08	0.19	0.16	0.49
September	0.07	0.03	0.28	0.17	0.14	0.43
Total	**1.72**	**1.20**	**1.69**	**2.74**	**1.90**	**5.83**

Town Field Tailwater Runoff

The City is required to collect winter tailwater runoff from the Town Field and recirculate it to the headworks. However, the volume of tailwater collected is not measured before it is combined with the overall WWTF influent flow. Therefore, an estimate of runoff must be made (as noted above, this estimated is also used to define the I&I relationship). A modified rational method for calculating runoff based on precipitation and ET was used to estimate theoretical monthly runoff volumes for inclusion in the water balance using the following equations:

Runoff = Precipitation – Crop ET - Interception - Infiltration

Infiltration = Infiltration Factor x (Precipitation – Crop ET - Interception)

Monthly total precipitation and reference ET from the Plymouth CIMIS Station were used to calibrate the theoretical runoff calculation parameters.[5] These values are presented in Table 16 and Table 17, respectively.

Table 16. Historical Monthly Precipitation

Year	Total Precipitation by Month, inches[(a)]												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	**Total**
2019	6.3	11.1	7.0	1.9	6.3	0	0	0	1.4	0	1.5	6.2	**42**
2020	2.2	0.0	6.4	3.3	2.5	0	0	0	0	0	1.8	1.8	**18**
2021	5.9	2.4	2.8	0.1	0.1	0	0	0	0	8.5	1.0	8.7	**29**
2022	0.3	0.1	1.0	3.9	0.1	0.3	0	0	0.7	0	0.5	15.9	**23**
2023	9.7	4.6	8.3	0.2	1.1	0.1	0	0	0.6	1.4	1.7	2.1	**30**

(a) Plymouth CIMIS station #227.

Table 17. Historical Monthly ET

Year	Total Reference ET by Month, inches[(a)]												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	**Total**
2019	1.8	1.6	3.0	4.6	5.0	7.2	7.8	7.1	4.9	3.9	2.2	1.5	**50**
2020	1.6	2.7	2.9	4.5	6.1	7.6	8.3	7.0	5.3	4.2	2.0	1.3	**53**
2021	1.4	2.0	3.4	5.5	7.2	7.8	8.4	7.1	4.4	1.1	1.3	0.8	**50**
2022	1.7	2.5	3.7	3.3	2.6	7.4	8.1	6.8	3.7	1.9	1.4	0.9	**44**
2023	1.3	1.7	2.3	5.0	5.8	6.7	8.5	7.3	4.7	3.6	2.0	1.2	**50**

(a) Plymouth CIMIS station #227.

The monthly crop ET was set equal to the monthly reference ET, as the alfalfa that is grown on the Town Field is typically assigned a crop coefficient of 1 (DWR, 2015).

Interception is the precipitation in inches captured on the vegetation, including the leaves and roots of the plants, and surface depressions in the soil. The calibrated interception value was determined to be 3 inches.

The formula for infiltration also includes an infiltration factor. Different infiltration factors were used for saturated and unsaturated soil conditions:

- For months with saturated soil conditions, an infiltration factor of 0.4 was used.
- For months with unsaturated soil conditions, an infiltration factor of 0.6 was used.

[5] The Ione NCDC weather station (#044283), which was used to define average and 1-in-100 year rainfall statistics previously in this TM is no longer an active station. Therefore, the Plymouth CIMIS station is the closest currently active rain gauge to the WWTF. Also, the Plymouth CIMIS station data does not have an adequate historical record to establish average and 1-in-100 year rainfall statistics.

Soil conditions were considered saturated when the two-month cumulative precipitation was greater than 10 inches. The two-month cumulative precipitation was calculated as the sum of total precipitation in the previous and current month.

Finally, the City has the ability to shut off tailwater flow from the Town Field when rainfall is heavy and tailwater flows threaten to inundate the WWTF. Shutting off the return flow causes stormwater to accumulate on the field, allowing it to infiltrate over a longer period and reduce the total runoff volume to the WWTF. This has been the historical practice to avoid overwhelming the plant. To calibrate the runoff and I&I models (both of which depend on the same flow data), the maximum monthly precipitation cutoff value used to calculate runoff was set to 8 inches for any month where the total precipitation was greater than 8 inches. Using this cutoff value, the combined runoff and I&I models provided reasonable results (i.e. if the value was not cutoff, the I&I calculations would be under-estimated). A summary of the calculated historical Town Field Runoff is provided in Table 18.

Table 18. Estimated Historical Town Field Runoff

Year	Total Runoff by Month, acre-feet												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	**Total**
2019	2.8	4.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	**13.0**
2020	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.9**
2021	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0	6.1	**15.1**
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
2023	7.2	0.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**14.3**

As noted above, the historical values shown in Table 18 were used to define the I&I relationship. However, holding runoff on the Town Field may have historically resulted in runoff leaving the site. Therefore, the practice of holding runoff on the Town Field is not included in the analysis of future conditions. To address this in the water balance model, the minimum rainfall cutoff value was set to 20 inches, which far exceeds the monthly rainfall for any month. Therefore, the model effectively ignores this cutoff value[6].

A summary of the parameters used to calculate the theoretical tailwater runoff flows is shown in Table 19. The theoretical Town Field tailwater runoff for an average rainfall year is shown in Table 20. The theoretical Town Field tailwater runoff for a 1-in-100 rainfall year is shown in Table 21.

[6] The runoff cap feature of the model was retained in the event the model is used in the future where runoff capture is improved/allowed.

Table 19. Summary of Tailwater Runoff Calculation Parameters

Parameter	Value
Interception, inches	3
Two-Month Cumulative Precipitation to Saturate Soil, inches	10
Unsaturated Soil Infiltration Factor	0.4
Saturated Soil Infiltration Factor	0.6
Maximum Monthly Precipitation Used to Calculate Runoff, inches	20[(a)]

(a) The calibrated value was 8 inches. However, future models apply 20 inches of rainfall, which far exceeds monthly rainfall values and is effectively negates the storage of runoff on the Town Field. The monthly maximum rainfall cutoff value is retained in the model in the event effective runoff capture is developed in the future.

Table 20. Theoretical Monthly Town Field Tailwater Runoff for an Average Rainfall Year

Month	Average Year Rainfall, inches[(a)]	ET, inches[(a)]	Theoretical Infiltration, inches	Theoretical Runoff, inches	Theoretical Runoff, acre-feet
October	1.15	3.24	0	0	0
November	2.81	1.68	0	0	0
December	3.54	1.21	0	0	0
January	5.09	1.48	0.36	0.24	3.5
February	3.14	1.95	0	0	0
March	3.2	3.02	0	0	0
April	1.75	4.57	0	0	0
May	0.63	5.97	0	0	0
June	0.23	7.19	0	0	0
July	0.07	7.64	0	0	0
August	0.13	6.98	0	0	0
September	0.33	4.99	0	0	0
Total	**22.0**	**49.9**	**0.36**	**0.24**	**3.5**

(a) From Table 11.

Table 21. Theoretical Monthly Town Field Tailwater Runoff for a 1-in-100 Rainfall Year

Month	1-in-100 Year Rainfall, inches[(a)]	ET, inches[(a)]	Theoretical Infiltration, inches	Theoretical Runoff, inches	Theoretical Runoff, acre-feet	Theoretical Runoff without Rainfall Cap, acre-feet
October	2.15	3.24	0	0	0	0
November	5.24	1.68	0.3	0.2	3.3	3.3
December	6.58	1.21	0.9	1.4	20.7	20.7
January	9.48	1.48	2.0	3.0	22.2	43.7
February	5.86	1.95	0.4	0.5	8.0	8.0
March	5.95	3.02	0	0	0	0
April	3.26	4.57	0	0	0	0
May	1.18	5.97	0	0	0	0
June	0.43	7.19	0	0	0	0
July	0.13	7.64	0	0	0	0
August	0.24	6.98	0	0	0	0
September	0.62	4.99	0	0	0	0
Total	**41.1**	**49.9**	**3.6**	**3.7**	**54.2**	**75.7**

(a) From Table 11.

Inflow and Infiltration

Theoretical I&I into the City collection system was determined using a linear regression analysis of historical WWTF influent and climate data. Monthly data from 2019 to 2023 was analyzed. For each wet weather month, defined as November to April, monthly I&I was calculated using the following equation:

I&I = WWTF Influent - Base City Flow - AWA Backwash - Estimated Town Field Runoff

If the calculated I&I for any month was less than zero, that month was excluded from the analysis. The average daily I&I for each month was calculated by dividing the monthly I&I by the number of days in the month.

For each month, the average daily precipitation was calculated by dividing the monthly precipitation by the number of days in the month. The two-month average precipitation was calculated as the sum of the daily average precipitation of the previous and current month.

The average daily I&I and two-month average precipitation were plotted for each month and used to calculate a linear equation. The plotted data and corresponding equation are shown on Figure 4.

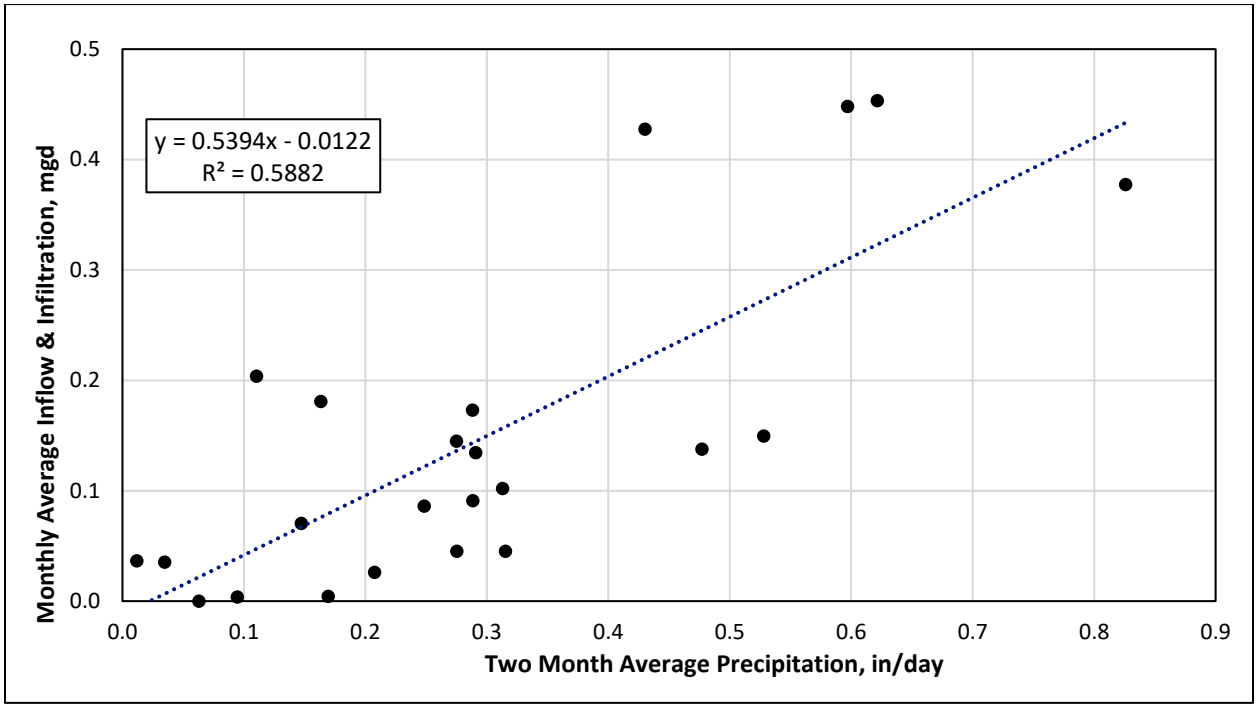


Figure 4. Two-Month Average Precipitation versus Daily Average I&I per Month

The slope and intercept from the linear regression equation were used to calculate the theoretical I&I for each month as a function of the two-month cumulative precipitation. The theoretical monthly I&I for an average rainfall year is shown in Table 22. The theoretical monthly I&I for a 1-in-100 rainfall year is shown in Table 23.

I&I is assumed to not increase appreciably with expansion of the City collection system in the next 5 years, as new infrastructure is less susceptible to I&I. Therefore, the same I&I was used for the current and Year 2030 water balance models.

Table 22. Theoretical Monthly I&I Flows for an Average Rainfall Year

Month	Average Year Rainfall, inches[a]	Theoretical I&I, mgd	Theoretical I&I, acre-feet
October	1.15	0.61	1.9
November	2.81	1.50	4.6
December	3.54	1.89	5.8
January	5.09	2.73	8.4
February	3.14	1.68	5.2
March	3.2	1.71	5.2
April	1.75	0.93	2.9
May	0.63	0.33	1.0
June	0.23	0.11	0.3
July	0.07	0.03	0.1
August	0.13	0.06	0.2
September	0.33	0.17	0.5
Total	**22.0**	**11.8**	**36.1**

(a) From Table 11.

Table 23. Theoretical Monthly I&I Flows for a 1-in-100 Rainfall Year

Month	1-in-100 Year Rainfall, inches[a]	Theoretical I&I, inches	Theoretical I&I, acre-feet
October	2.15	1.15	3.5
November	5.24	2.81	8.6
December	6.58	3.53	10.8
January	9.48	5.10	15.7
February	5.86	3.15	9.7
March	5.95	3.20	9.8
April	3.26	1.75	5.4
May	1.18	0.62	1.9
June	0.43	0.22	0.7
July	0.13	0.06	0.2
August	0.24	0.12	0.4
September	0.62	0.32	1.0
Total	**41.1**	**22.0**	**67.7**

(a) From Table 11.

Total Influent Flows

The current theoretical influent flows to the WWTF used for the average rainfall year and 1-in-100 rainfall year water balances are presented in Table 24 and Table 25, respectively. **As shown, the current ADWF is estimated to be approximately 0.55 mgd.**

Table 24. Current Theoretical Influent Flows for an Average Rainfall Year

Month	Inflows, acre-feet					
	Base City	I&I	Field Runoff	COWRF Backwash	AWA Backwash	Total
October	39.3	1.9	0	4.9	0.71	46.8
November	38.0	4.6	0	0	0.52	43.1
December	39.3	5.8	0	0	0.52	45.6
January	39.3	8.4	3.5	0	0.37	51.6
February	35.5	5.2	0	0	0.46	41.2
March	39.3	5.2	0	0	0.37	44.9
April	38.0	2.9	0	5.3	0.58	46.8
May	39.3	1.0	0	9.1	0.55	50.0
June	38.0	0.3	0	12.0	0.25	50.6
July	39.3	0.1	0	13.1	0.58	53.1
August	38.0	0.2	0	11.8	0.49	50.5
September	39.3	0.5	0	11.0	0.43	51.2
Total, AFY	**462.6**	**36.1**	**3.5**	**67.2**	**5.83**	**575.2**
AAF, mgd	**0.41**	**0.032**	**0.003**	**0.060**	**0.005**	**0.51**
ADWF, mgd	**0.41**	**0.003**	**0**	**0.127**	**0.005**	**0.55**

Table 25. Current Theoretical Influent Flows for a 1-in-100 Rainfall Year

Month	Inflows, acre-feet					
	Base City	I&I	Field Runoff	COWRF Backwash	AWA Backwash	Total
October	39.3	3.5	0	2	0.71	45.5
November	38.0	8.6	3.3	0	0.52	50.4
December	39.3	10.8	20.7	0	0.52	71.3
January	39.3	15.7	43.7	0	0.37	99.1
February	35.5	9.7	8	0	0.46	53.7
March	39.3	9.8	0	0	0.37	49.5
April	38.0	5.4	0	1.8	0.58	45.8
May	39.3	1.9	0	8	0.55	49.8
June	38.0	0.7	0	11.6	0.25	50.6
July	39.3	0.2	0	13	0.58	53.1
August	38.0	0.4	0	11.6	0.49	50.5
September	39.3	1.0	0	10.2	0.43	50.9
Total, AFY	**462.6**	**67.7**	**54.2**	**58.2**	**5.83**	**670.0**
AAF, mgd	**0.41**	**0.06**	**0.048**	**0.052**	**0.005**	**0.60**
ADWF, mgd	**0.41**	**0.006**	**0**	**0.123**	**0.005**	**0.55**

PROJECTED 2030 INFLUENT FLOWS

The City reports that 75 to 100 homes per year are expected to be built in each of the next 5 years. The projected number of EDUs for 2025 through 2030 was calculated by conservatively adding 100 EDUs for each year to the reported 2,520 EDUs in January 2024. The projected daily Base City flow for each year was calculated by multiplying the number of EDUs by the calculated average daily base flow per EDU of 164 gpd per EDU (from Table 12). The projected Base City flows are summarized in Table 26.

Table 26. Projected Base City Flows

Year	Projected Number of EDUs	Projected Base City Flow, mgd[(a)]
2025	2,620	0.43
2026	2,720	0.45
2027	2,820	0.46
2028	2,920	0.48
2029	3,020	0.50
2030	3,120	0.51

(a) Projected Base City Flow = (Projected Number of EDUs) x (Average Daily Base Flow of 164 gpd per EDU).

The projected Year 2030 theoretical influent flows to the WWTF used for the average rainfall year and 1-in-100 rainfall year water balances are presented in Table 27 and Table 28, respectively. **As shown, the projected 2030 ADWF is approximately 0.65 mgd[7].**

Table 27. Projected 2030 Influent Flows for an Average Rainfall Year

Month	Inflows, acre-feet					
	Base City	I&I	Field Runoff	COWRF Backwash	AWA Backwash	**Total**
October	48.5	1.9	0	4.9	0.71	56.0
November	47.0	4.6	0	0	0.52	52.1
December	48.5	5.8	0	0	0.52	54.8
January	48.5	8.4	3.5	0	0.37	60.8
February	43.8	5.2	0	0	0.46	49.5
March	48.5	5.2	0	0	0.37	54.1
April	47.0	2.9	0	5.3	0.58	55.8
May	48.5	1.0	0	9.1	0.55	59.2
June	47.0	0.3	0	12.0	0.25	59.6
July	48.5	0.1	0	13.1	0.58	62.3
August	47.0	0.2	0	11.8	0.49	59.5
September	48.5	0.5	0	11.0	0.43	60.4
Total, AFY	**571.0**	**36.1**	**3.5**	**67.2**	**5.83**	**683.9**
AAF, mgd	**0.51**	**0.032**	**0.003**	**0.060**	**0.005**	**0.61**
ADWF, mgd	**0.51**	**0.003**	**0**	**0.127**	**0.005**	**0.65**

[7] It is noted that this flow is lower than the current estimated treatment capacity for the WWTF including Pond 5. As noted, this capacity will be confirmed through future analyses and submitted to the Regional Board.

Table 28. Projected 2030 Influent Flows for a 1-in-100 Rainfall Year						
	Inflows, acre-feet					
Month	Base City	I&I	Field Runoff	COWRF Backwash	AWA Backwash	**Total**
October	48.5	3.5	0	2.0	0.71	54.7
November	47.0	8.6	3.3	0	0.52	59.4
December	48.5	10.8	20.7	0	0.52	80.5
January	48.5	15.7	43.7	0	0.37	108.3
February	43.8	9.7	8	0	0.46	62.0
March	48.5	9.8	0	0	0.37	58.7
April	47.0	5.4	0	1.8	0.58	54.8
May	48.5	1.9	0	8.0	0.55	59.0
June	47.0	0.7	0	11.6	0.25	59.6
July	48.5	0.2	0	13.0	0.58	62.3
August	47.0	0.4	0	11.6	0.49	59.5
September	48.5	1.0	0	10.2	0.43	60.1
Total, AFY	**571.0**	**67.7**	**54.2**	**58.2**	**5.83**	**778.7**
AAF, mgd	**0.51**	**0.06**	**0.048**	**0.052**	**0.005**	**0.70**
ADWF, mgd	**0.51**	**0.006**	**0**	**0.123**	**0.005**	**0.64**

ESTIMATED CAPACITY OF EXISTING DISCHARGE AREAS

This section describes the procedures used to calculate the theoretical capacity of the WWTF disposal areas. As previously noted, the WWTF currently relies on two ways to discharge effluent: land application and percolation.

Land Application Area Irrigation Demands

During the summer irrigation season, the WWTF sends secondary effluent to two LAAs, the 57-acre Town Field and 5.6-acre City Field. The capacity of the LAAs to accept flows is limited by the crop irrigation demands[8]. The theoretical irrigation demand of each LAA for an average rainfall year was calibrated using historical monthly irrigation demand values. The historical monthly irrigation demands for the Town and City Fields are shown in Table 29 and Table 30.

[8] It

Table 29. Historical Town Field Irrigation Demands

Month	Volume of Secondary Effluent Used, MG							Average, acre-feet
	2019	2020	2021	2022	2023	2024	Average	
October	0	0	0	7.3	0	1.2	1.4	4.3
November	0	0	0	0	0	2.3	0.4	1.2
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	3.6	0	0	0	0.6	1.8
May	0	0	1.0	0	0	0	0.2	0.6
June	2.6	4.7	7.8	8.6	0.3	5.7	5.0	15.4
July	3.2	5.4	3.7	4.6	1.8	7.9	4.4	13.5
August	4.6	6.9	7.3	4.4	5.2	12.8	6.9	21.2
September	1.3	5.3	4.6	1.0	4.6	5.9	3.8	11.7
Total	**11.7**	**22.3**	**28**	**25.9**	**11.9**	**35.8**	**22.7**	**69.7**

Table 30. Historical City Field Irrigation Demands

Month	Volume of Secondary Effluent Used, MG							Average, acre-feet
	2018	2019	2020	2021	2022	2023	Average	
October	0	0	0	0	0.5	0	0.1	0.3
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0.4	0	0	0	0	0	0.1	0.3
June	0.3	0.3	0.2	0.3	0.9	0.4	0.4	1.2
July	0.5	0.7	0.2	0.3	0[(a)]	0.3	0.4	1.2
August	0.6	0.3	0.4	0.7	0[(a)]	0.8	0.6	1.8
September	0.3	0.1	0.7	0.8	0[(a)]	1	0.6	1.8
Total	**2.1**	**1.4**	**1.5**	**2.1**	**1.4**	**2.5**	**2.2**	**6.6**

(a) Values excluded from average. Effluent was not sent to the City Field during this period due to circumstances unrelated to irrigation demand.

Theoretical irrigation demands are calculated using the following formula:

Irrigation Demand = (Crop ET - Precipitation) / Crop Area / Irrigation Efficiency

The crop ET is calculated by multiplying the Reference ET shown in Table 11 by a representative crop coefficient. Crop coefficients for alfalfa crops such as those grown on the Town and City Fields are typically close to 1 (DWR, 2015). Irrigation efficiencies for hand-move spray irrigation systems like that used on the Town and City Fields can range from 60 to 80 percent (see Attachment E, Table 8.2b).

The theoretical irrigation demand can be calibrated by adjusting the irrigation efficiency value until the theoretical demand matches the historical irrigation volume supplied. However, assuming the highest irrigation efficiency value of 80 percent, the crop coefficient required to match the theoretical irrigation demand to historical irrigation volumes for the Town and City Fields was 0.32. These findings suggest that either (a) the historical reported irrigation flows are not accurate and/or (b) the fields are being irrigated well below agronomic rates (which would be the case if the field is not well drained). Given the uncertainty with the irrigation efficient values, it is suspected that the irrigation demands of the Town and City Fields are likely in between the historical irrigation demands and theoretical irrigation demands calculated with a crop coefficient of 1.

Discussions with City staff indicate that there is very little flow directed to the percolation basins during the summer irrigation season, suggesting that most of the flow is sent to the Town Field and City Field. This would not be the case if the crop coefficient was 0.32. Therefore, the water balance models were developed using two different methods:

1. Using the theoretical irrigation demand calculated with the calibrated crop coefficient of 0.32.
2. Using theoretical irrigation demand calculated with a crop coefficient of 1.

A comparison of these values with historical irrigation volumes for the Town Field is presented in Table 31 and for the City Field in Table 32. It is also noted that the City is planning to replace the effluent flow meter for the Town Field prior to the initiation of the 2025 irrigation season to allow for ongoing assessment of the crop coefficient and irrigation demands to be made.

Table 31. Historical and Theoretical Town Field Irrigation Demand

Month	Historical Average Irrigation Volume, acre-feet	Theoretical Irrigation Demand, acre-feet[(a)]	
		Calculated with Crop Coefficient of 0.32	Calculated with Crop Coefficient of 1
October	4.3	4.0	12.4
November	1.2	0	0
December	0	0	0
January	0	0	0
February	0	0	0
March	0	0	0
April	1.8	5.4	16.7
May	0.6	10.1	31.7
June	15.4	13.2	41.3
July	13.5	14.4	44.9
August	21.2	13.0	40.7
September	11.7	8.9	27.7
Total, AFY	**69.7**	**69.0**	**215.5**

(a) Theoretical irrigation demand for an average rainfall year.

Table 32. Historical and Theoretical City Field Irrigation Demand

Month	Historical Average Irrigation Volume, acre-feet	Theoretical Irrigation Demand, acre-feet[(a)]	
		Calculated with Crop Coefficient of 0.32	Calculated with Crop Coefficient of 1
October	0.3	0.4	1.2
November	0	0	0
December	0	0	0
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0.5	1.6
May	0.3	1.0	3.1
June	1.2	1.3	4.1
July	1.2	1.4	4.4
August	1.8	1.3	4.0
September	1.8	0.9	2.7
Total, AFY	**6.6**	**6.8**	**21.2**

(a) Theoretical irrigation demand for an average rainfall year.

Percolation Ponds Percolation Rates

Effluent flows that exceed the demand of the LAAs are currently disposed of via percolation in Ponds 6 and 7. The capacity of the percolation ponds to accept flows is limited by the sustained percolation rate. As noted in the December 12 Water Balance TM, a percolation rate for Ponds 6 and 7 was estimated using a water balance approach around the ponds. This analysis demonstrated that the ponds have a sustained percolation rate of 3.0 inches per day in months where saturated soil conditions were likely to occur (February through May) and a percolation rate of 3.6 inches per day in other months (June through January). **However, as required by Regional Board staff, the water balances presented herein do not account for any percolation disposal in the ponds to reflect the requirements of the CDO.**

OPERATIONAL ASSUMPTIONS

This section addresses the operational assumptions applied in developing the water balances.

Pond 5

As previously noted, the City currently operates Pond 5 as a treatment pond, where it is used to equalize flows prior to discharge to the percolation ponds and LAAs. For purposes of the water balance, monthly net storage volumes for Pond 5 were matched to historical monthly storage volumes over the past five years. The average monthly Pond 5 storage volumes from 2019 to 2023 are shown in Table 33.[9] The overall average storage volume was calculated for each month and used in the water balances.

Table 33. Historical Pond 5 Storage

Month	Monthly Pond 5 Storage Volume, acre-feet					
	2019	2020	2021	2022	2023	Average
October	32.1	37.1	38.5	35.9	41.7	37.1
November	30.6	23.3	38.9	36.2	30	31.8
December	32.7	23.5	36.9	38.3	11.3	28.5
January	37.1	33.0	25.8	35.2	36.6	33.5
February	38.3	33.2	26.8	34.9	40.4	34.7
March	39.9	33.6	27.3	34.3	41.2	35.3
April	38.8	39.9	32.2	38.6	41.5	38.2
May	37.8	39.0	37.4	37.1	40.1	38.3
June	32.7	27.7	30.8	29.3	31.5	30.4
July	15.6	34.8	26.4	23.4	34.3	26.9
August	29.9	20.4	14.7	31.8	41.7	27.7
September	34.1	29.3	19.2	36.7	41.7	32.2

[9] A volume-to-depth curve was used to calculate the storage volume of Pond 5 from weekly freeboard measurements. The monthly averages of the calculated storage volumes are shown in Table 33.

Ponds 6 and 7

The analysis assumes that both Ponds 6 and 7 are emptied in October to another storage location (not yet defined). Each month thereafter, flows that exceed the storage/evaporative capacity of the two ponds are also assumed to be directed to the same storage location.

WATER BALANCE RESULTS

Water balance models were developed for the current and projected 2030 flow conditions assuming the disposal capacity provided by percolation ponds is eliminated and the ponds are converted to storage. To provide a better understanding of the range of potential operating conditions, models were developed for the following scenarios:

- Average rainfall year and crop coefficient of 0.32 for the Town and City Fields[10]
- Average rainfall year and crop coefficient of 1 for the Town and City Fields[11]
- 1-in-100 rainfall year and crop coefficient of 0.32 for the Town and City Fields
- 1-in-100 rainfall year and crop coefficient of 1 for the Town and City Fields

The results of the water balances are summarized for the current flow conditions in Table 34 and for the 1-in-100 yar conditions in Table 35. Additional details are provided in Attachment F. Key findings from this analysis are as follows:

- **At current City Base Flows of 0.41 mgd, the City would have an excess of up to 594 acre-feet of water that requires storage and/or disposal if the percolation ponds were lined.**
- **At projected 2030 City Base Flows 0.51 mgd, an excess of up to 697 acre-feet of water would require storage and/or disposal if the percolation ponds were lined[12].**

As a final note, Regional Board staff have requested that the City consider the sensitivity of the water balance to the distribution of rainfall. For this analysis, the existing facilities do not provide adequate capacity for storage and disposal and there is excess water each month. Given this, the amount of excess flow generated in each month will not impact the results of the analysis.

[10] The recent data suggests an unusually low crop coefficient for the Town and City Fields. Additional data collection is needed to confirm the value.

[11] A crop coefficient of 1 would be typical for the types of crops grown on the City and Town Fields.

[12] As discussed in the December Water Balance TM, the existing disposal capacity provided at the WWTF with the observed percolation rates is approximately 0.75 mgd ADWF. Therefore, there is no immediate risk of overflow based on the current configuration.

Table 34. Summary of Current Water Balance Results, No Percolation

Scenario	Base City Flow, mgd	Total WWTF Inflows, AFY	Irrigation, AFY				Pond 6 & 7 Flows, AFY				Excess Flow to Additional Storage, AFY
			Town Field Demand	Town Field Provided	City Field Demand	City Field Provided	Pond 7 Inflows	Pond 7 Outflows	Pond 6 Inflows	Pond 6 Outflows	
Average Rainfall Year											
Crop Coeff. of 0.32	0.41	572.0	69	69	7	7	474	0	462	0	453
Crop Coeff. of 1			215	215	21	21	313	0	301	0	292
1-in-100 Rainfall Year											
Crop Coeff. of 0.32	0.41	666.8	62	62	6	6	600	0	597	0	594
Crop Coeff. of 1			193	193	19	19	457	0	454	0	451

Table 35. Summary of 2030 Water Balance Results, No Percolation

Scenario	Base City Flow, mgd	Total WWTF Inflows, AFY	Irrigation, AFY				Pond 6 & 7 Flows, AFY				Excess Flow to Additional Storage, AFY
			Town Field Demand	Town Field Provided	City Field Demand	City Field Provided	Pond 7 Inflows	Pond 7 Outflows	Pond 6 Inflows	Pond 6 Outflows	
Average Rainfall Year											
Crop Coeff. of 0.32	0.51	683.9	69	69	7	7	586	0	574	0	563
Crop Coeff. of 1			215	215	21	21	425	0	413	0	403
1-in-100 Rainfall Year											
Crop Coeff. of 0.32	0.51	778.7	62	62	6	6	703	0	700	0	693
Crop Coeff. of 1			193	193	19	19	559	0	556	0	550

REFERENCES

California Department of Water Resources (DWR) and University of California, Davis, 2015. *Consumptive Use Program Plus (CUP+) Model, Version 6.1.* Accessed at https://water.ca.gov/Programs/Water-Use-And-Efficiency/Land-And-Water-Use/Agricultural-Water-Use-Models on December 11, 2024.

Central Valley Regional Water Quality Control Board, 2014a. *Cease and Desist Order R5-2014-0157 for City of Ione Wastewater Treatment Facility, Amador County.* December 2014.

Central Valley Regional Water Quality Control Board, 2014b. *Revised Monitoring and Reporting Program R5-2013-0022 (Rev 1) for City of Ione and Greenrock Ranch Lands, LLC., Ione Wastewater Treatment Facility, Amador County.* December 2014.

Central Valley Regional Water Quality Control Board, 2014c. *Waste Discharge Requirements Order R5-2013-0022-001 for City of Ione and Greenrock Ranch Lands, LLC., Ione Wastewater Treatment Facility, Amador County.* December 2014.

Coastland Engineers, 2021. *City of Ione Water Balance Update and 2020 Capacity Expansion Completion Report.* March 2021

Dexter Wilson Engineering, Inc., 2016. *City of Ione 2020 Capacity Expansion Completion Report.* December 2016.

Lee & Ro, Inc. and PMC, 2009. *City of Ione Wastewater Master Plan*. December 2009.

Lee & Ro, Inc., 2010. *Ione Water Reclamation Facility Report of Waste Discharge.* March 2010.

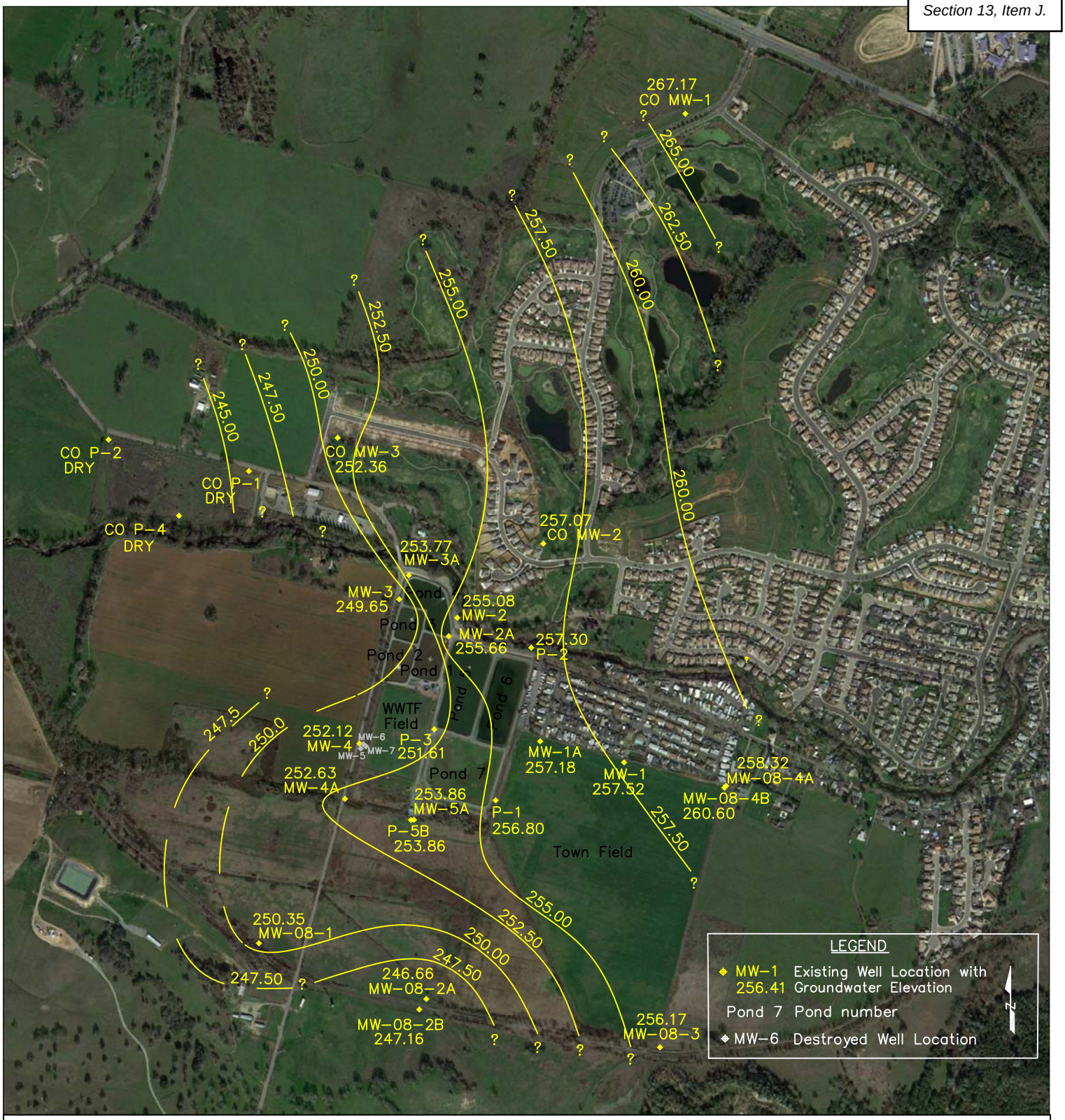
GHD Inc., 2012a. *City of Ione Revised Report of Waste Discharge.* September 2012.

GHD Inc., 2012b. *City of Ione Supplement to the Revised Report of Waste Discharge.* November 2012.

U.S. Environmental Protection Agency, 2011. *Principles of Wastewater Treatment Pond Systems for Plant Operators, Engineers, and Managers.* August 2011.

Attachment A

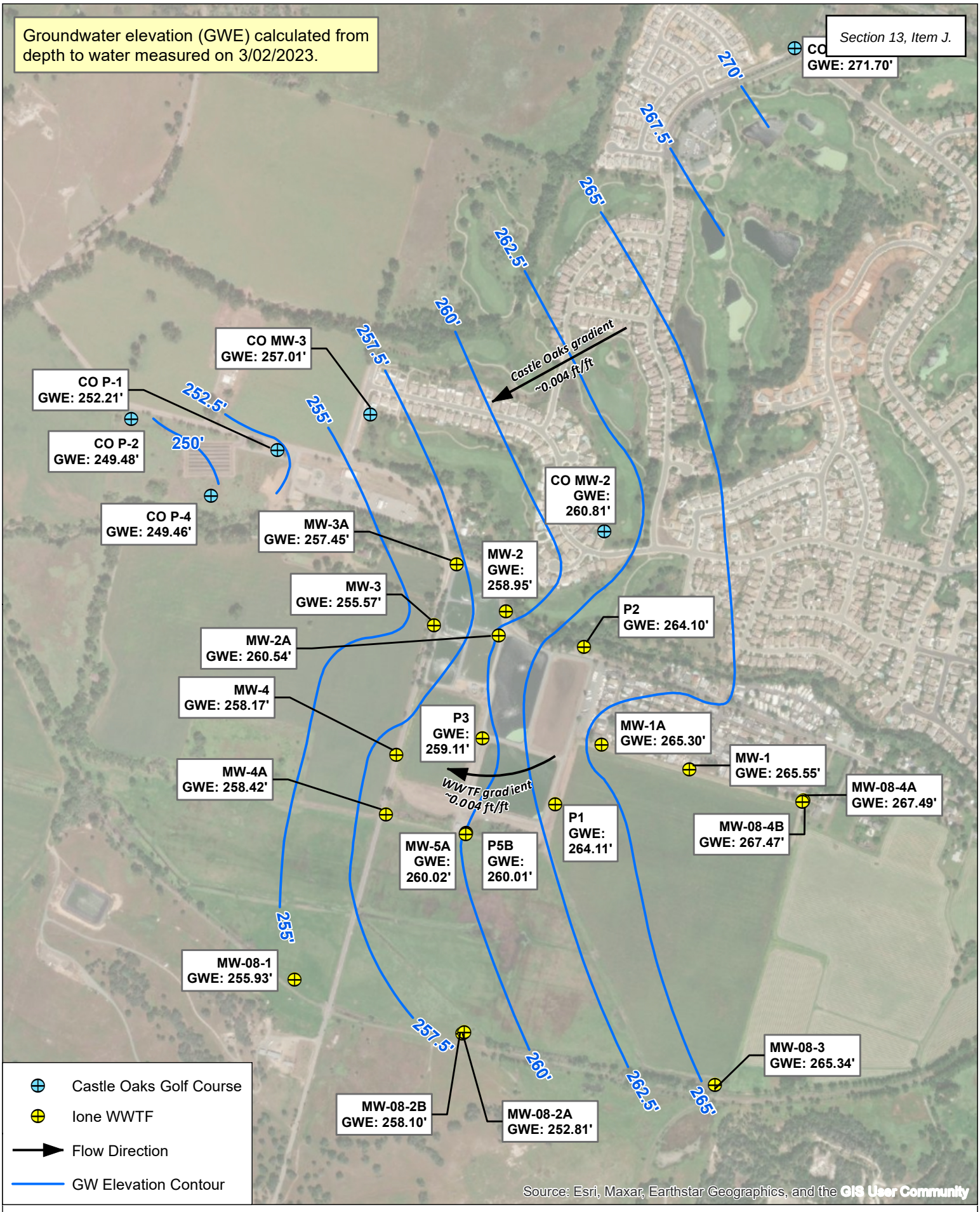
Groundwater Gradient Maps



EcoUrban Associates
PO Box 411
Ione, CA 95640
(209)487-4802

Figure 3
Groundwater Gradient Map
Third Quarter 2021
Wastewater Treatment Facility
City of Ione
Ione, California

Project No.:	AMA.104.01
Drawn by:	CES
Dated:	10/20/21
Scale:	~1"=1,000'
Rev'd by:	CE



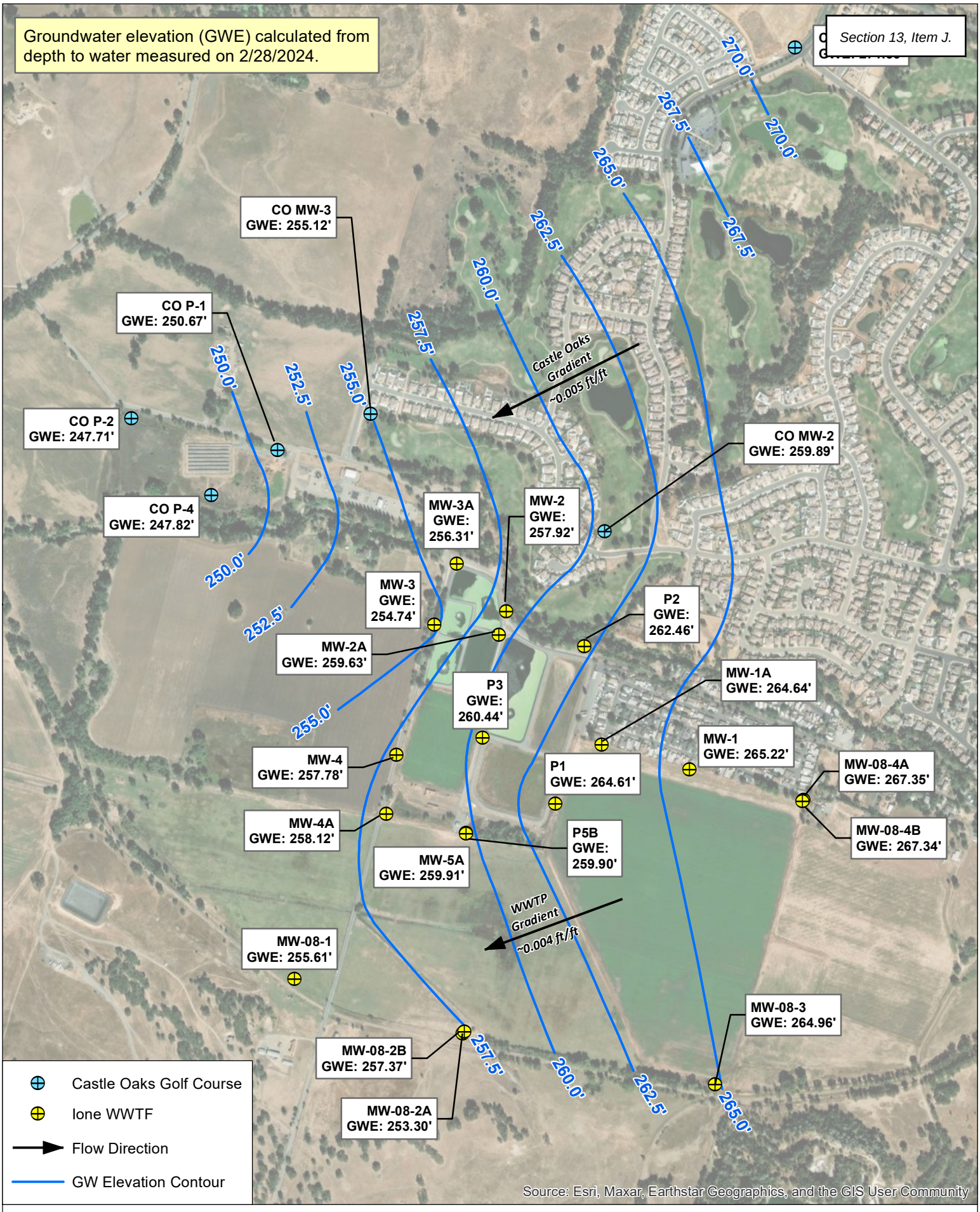
0 500 1,000
Feet

Groundwater Elevation Map

Ione WWTF & Castle Oaks Golf Course

PROVOST & PRITCHA

3/28/2023 G:\Dellavalle-1020\102022001-Ione WWTP & Castle Oak GW Consulting\400 GIS\Map\1Q2023_GW_elevation_map.mxd



0 500 1,000
Feet

Groundwater Elevation Map

Ione WWTF & Castle Oaks Golf Course

PROVOST & PRITCHA

4/23/2024 G:\Dellavalle-1020\102022001-Ione WWTP & Castle Oak GW Consulting\400 GIS\Map\1Q2024_GW_elevation_map.mxd

Attachment B

Jackson Rancheria Water Balance Certification Letter

JACKSON RANCHERIA
BAND OF MIWUK INDIANS

December 10, 2024

John Baum, P.E. (sent via email: John.Baum@waterboards.ca.gov)
Assistant Executive Officer, Rancho Cordova Office
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA

Subject: Certification Letter Regarding Town Field Operations, Waste Discharger Requirements R5-2013-0022-001

Dear Mr. John Baum,

On August 14, 2024, the Central Valley Water Quality Control Board (Regional Board) issued a California Water Code section 13267 Order (Order) to the City of Ione (City) and Jackson Rancheria Development Corporation (Jackson Rancheria), the two entities permitted by the Regional Board under Waste Discharger Requirements (WDRs) R5-2013-0022-001, which regulates the treatment and disposal and reuse of domestic wastewater from the City's serviced area. The WDRs were initially adopted on April 11, 2013, and were revised December 5, 2014.

The City owns and operates its Wastewater Treatment Facility (WWTF) and delivers secondary-23 recycled water to Town Field, where Jackson Rancheria Development Corporation (the Property's owner) applies the recycled water to the land pursuant to the 2013 Recycled Water Agreement (Recycled Water Agreement), which is attached hereto.

The 13267 Order requires submission of an updated water balance for the WWTF to the Regional Board by December 13, 2024. The letter specifies the following three items that should be included in the water balance:

1. *The forecasted influent flows and proposed flows over the next 5 years based on population growth. Estimates must be supported by City planning documents.*
2. *Any changes to collection system, treatment plant, and disposal features or their operation planned in the next 5 years.*
3. *If the facility does not have sufficient capacity to treat and dispose of all wastewater onsite, the submittal must include the volume of excess effluent that would need to be disposed of each year to ensure all wastewater is treated and disposed of properly without causing or threatening to cause a violation of the permit or a condition of pollution*

Although Jackson Rancheria is a permittee under WDRs R5-2013-0022-001, the City is responsible for providing the information required to be submitted in the 13267 Order pursuant to the Recycled Water Agreement. Furthermore, the City owns and operates the pump station that delivers water to the Town

Field, and the City measures and records the flows that are sent. Consequently, the City is leadin development of the responses to the 13267 Order, which will be presented separately in the *Updated Water Balance for the City of Ione Wastewater Treatment Facility Waste Discharger Requirements R5-2013-0022-001 Technical Memorandum* (Ione WWTF TM).

Because the City controls the quality of water that is developed under the permit, the amount of relevant information that can be certified by Jackson Rancheria Development Corporation is very limited. This information is as follows:

- The Town Field is a 57-acre land application area (LAA) located east of the City's WWTF.
- The LAA is used to grow fodder crops (i.e., crops not intended for human consumption). Since the initiation of irrigation with recycled water, the field has been planted in an alfalfa crop.
- During the summer irrigation season, the water received from the City is applied to irrigation via a hand-move spray irrigation system.
- An agricultural employee manages the operations of the Town Field. The employee requests water deliveries based on observed crop needs.
- Runoff is collected from the Town Field year-round and returned to the WWTF.

The Chief Executive Officer (CEO) of the Jackson Rancheria Development Corporation has reviewed the contents of the Ione WWTF TM and hereby certifies the facts recited in the bullets above, with the following certification statement:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this letter, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Sincerely,



Crystal Jack
CEO
Jackson Rancheria Development Corporation

CC: Kenny Croyle, PE, WDRS and Title 27 Compliance and Enforcement Unit, CVRWQCB

Howard Hold, Senior Engineering Geologist, WDRS and Title 27 Compliance and Enforcement Unit, CVRWQCB

Scott Armstrong, CVRWQCB, Rancho Cordova

Ginachi Amah, Recycled Water Unit Supervisor, Division of Drinking Water, State Water Resources Control Board

Amador County Recorder
Kimberly L. Grady
DOC- 2013-0002941-00
REQD BY CITY OF IONE
Tuesday, APR 02, 2013 14:48
Ttl Pd $0.00 Nbr-0000237718
CT2/R1/1-17

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:

City Clerk
City of Ione
P.O. Box 398
Ione, CA 95640

No recording fee required pursuant to Government Code sections 6103 and 27383

THIS SPACE FOR RECORDERS USE ONLY

Recycled Water Agreement

This Recycled Water Agreement ("Agreement") is made and entered into as of March 5, 2013 ("Effective Date"), by and between Greenrock Ranch Lands LLC ("GREENROCK"), a Delaware Limited Liability Corporation, including designated lessees, agents, employees and assigns, and the City of Ione ("CITY"), a municipal corporation of the State of California. GREENROCK and the CITY are sometimes individually referred to herein as a "Party" and, together, as the "Parties."

RECITALS

A. The CITY owns and operates certain wastewater treatment and disposal facilities known as the City of Ione Wastewater Treatment Plant ("Treatment Plant"). The Treatment Plant, located at 1600 West Marlette Street (APNs 005-130-023, 039, 042, 043, 045), treats effluent to secondary standards in four treatment ponds and disposes of the effluent through three percolation/evaporation ponds (percolation ponds).

B. The Treatment Plant treats domestic wastewater from the City of Ione and filter backwash water from a water treatment plant operated by Amador Water Agency. The percolation/evaporation ponds also accept secondary effluent from Preston Reservoir, and in the future may receive additional wastewater and influent from these and other facilities.

C. The Treatment Plant operates under Waste Discharge Requirements Order No. 95-125 dated May 26, 1995 issued by the Central Valley Regional Water Quality Control Board ("Central Valley Board"). The Treatment Plant is subject to a Cease and Desist Order ("CDO") issued by the Central Valley Board concerning groundwater conditions near the percolation ponds at the Treatment Plant. As a component of the CITY's CDO compliance strategy, the CITY proposes to reduce the hydraulic loading to the percolation ponds by reducing storage in the percolation ponds during certain times of the year. In order to reduce storage and percolation to groundwater in the City's percolation/evaporation ponds, the CITY proposes to deliver Recycled Water to neighboring lands for irrigation purposes.

D. GREENROCK owns certain real property in Amador County, Assessor's Parcel No. 00513005200, consisting of approximately 65-acres ("Property"). The Property is depicted on the map attached hereto as Exhibit "A" and described in Exhibit "B," both of which are incorporated herein by reference. The Property is currently leased by GREENROCK for agricultural operations.

E. GREENROCK and the CITY contemplate that the CITY will provide and GREENROCK and its lessee will accept secondary-23 recycled water ("Recycled Water") for agricultural irrigation on the Property, as set forth herein.

COVENANTS AND AGREEMENT

NOW THEREFORE, based on the foregoing recitals, which are incorporated into the operative provisions of this Agreement, and for good and valuable consideration, the receipt and sufficiency of which are acknowledged by the Parties, the Parties covenant and agree as follows:

1. TERM

a. The term of this Agreement is for a period of 30 years, commencing upon execution of both Parties, and shall renew automatically for successive terms, without further action of either Party unless earlier terminated by mutual written agreement of the Parties, or as otherwise provided herein.

2. RECYCLED WATER DELIVERY

a. **Delivery Amount:** The CITY will deliver and GREENROCK will accept as much Recycled Water as GREENROCK may request for the reasonable irrigation of the Property. For illustrative purposes only, GREENROCK anticipates an average annual demand of approximately 280 acre feet of Recycled Water for irrigation of the Town Field..

b. **Location of Water Delivery:** The CITY will deliver Recycled Water to the Property near the location delineated "Point of Beginning" on Exhibit "A." The CITY at its sole costs and expense, and at no cost or expense to GREENROCK, will obtain all required easements, entitlements, permits and other property necessary to deliver Recycled Water to the Property, and the CITY will construct, install, control, operate, maintain, replace, and be responsible for, the pipeline, pumps, equipment and material required to deliver Recycled Water from the Treatment Plant to the Property.

c. **Coordination for Water Delivery:** The CITY and GREENROCK will each designate a representative to coordinate water delivery to the Property. The designated representatives shall develop a mutually acceptable delivery schedule through an "Implementation Agreement" that will govern the operations of both Parties with regard to water delivery and irrigation of the Town Field and any other irrigated lands covered by the City's Waste Discharge Requirements such as, but not limited to, the Clifton Field.

i) The CITY shall notify GREENROCK's designated representative at least fourteen (14) days prior to the commencement of scheduled delivery to confirm deliveries. Delivery of Recycled Water to the Property shall be supplied, to the extent feasible, to meet the irrigation demands of the Property.

d. **Limitations Precluding Delivery of Water:** The Parties acknowledge and agree that such delivery and/or use of Recycled Water may not be possible, feasible or practical at times, or may be prohibited for unanticipated reasons or for reasons beyond the control of the CITY and/or GREENROCK. The CITY will not be obligated to provide and GREENROCK will not be required to accept Recycled Water pursuant to the terms of this Agreement when such delivery and/or acceptance is prevented by, without limitation: Acts of God, shortage of Recycled Water not caused by the intentional or negligent acts of the CITY, reduction in transmission capacity, equipment malfunction, changes in operations on the Property, discharge or monitoring requirements, a determination by any regulatory agency that Recycled Water is not suitable for the intended use, a determination that the activity is unlawful, a determination that the activity may violate any operations permits, including but not limited to any National Pollutant Discharge Elimination System permits, a determination that a constituent of Recycled Water is harmful to the plants or animals on the Property, or any other unanticipated cause. In the event of such acts or any one of them causing delay or suspension of deliveries, the Parties shall immediately meet and confer and shall develop an alternative delivery schedule or such other resolution as may be acceptable to both parties.

3. RECYCLED WATER QUALITY AND USE

a. Recycled Water delivered to GREENROCK pursuant to this Agreement will be treated to the secondary-23 recycled water standards, and will be of a quality to comply with the CITY's Waste Discharge Requirements and any other permits administered by the Central Valley Regional Water Quality Control Board. The CITY will also maintain compliance with current California Department of Health Services regulations. The CITY will provide to GREENROCK copies of any test reports of Recycled Water as are periodically required of the CITY by regulatory agencies to characterize the Recycled Water.

b. GREENROCK will irrigate the Property pursuant to good farming and agricultural practices, consistent with runoff, ponding, and environmental restrictions required pursuant to statute, ordinance, regulation, permit or law, and not harmful to the Property or GREENROCK's operations thereon. CITY shall notify the GREENROCK in writing of modifications to the CITY's delivery practices to the extent necessary to comply with statute, ordinance, regulation, permit or law. In irrigating the Property, GREENROCK shall not use Recycled Water in violation of any statute, ordinance, regulation, permit or law.

c. Delivery of Recycled Water and GREENROCK's use thereof is subject to the "Defense, Indemnification, and Hold Harmless Agreement Between the City of Ione and Greenrock Ranch Lands LLC" entered into on October 2, 2012 and which is incorporated herein by reference and attached hereto as Exhibit "C."

4. CITY TO PAY COST OF RECYCLED WATER USE

a. The CITY at its sole costs and expense, with no cost or expense to GREENROCK, will pay all costs to construct, install, control, operate, maintain, and replace the irrigation equipment on the Property associated with the delivery and use of the Recycled Water. Such works may include but not be limited to land leveling, irrigation lines, pipelines, valves, meters, pumps, discharge equipment, and containment or tail-water recovery equipment ("Irrigation Equipment"). In the event that excavating a portion of the Property is necessary to construct, install, control, operate, maintain or replace the Irrigation Equipment, GREENROCK will notify the CITY in writing of the required work and City shall perform the work in accordance with all applicable laws.

b. Upon termination of this Agreement, the Irrigation Equipment shall become the property of GREENROCK, once the Parties negotiate a reasonable sale price for the residual value of any such equipment, unless GREENROCK notifies the CITY in writing prior to termination that it wants the CITY to remove the Irrigation Equipment. If GREENROCK notifies the CITY that it wants the CITY to remove some or all of the Irrigation Equipment, the CITY shall remove the designated Irrigation Equipment and return the Property to its original condition to the extent reasonably practicable.

5. EASEMENT FOR DELIVERY OF RECYCLED WATER AND IRRIGATION

a. **Easement:** GREENROCK grants and conveys to the CITY a non-exclusive easement to: (1) convey and deliver Recycled Water to and onto the Property and for irrigation of the Property; (2) construct, install, control, operate and maintain the Irrigation Equipment and/or other supporting or associated fixtures, equipment and appurtenances to the Turnout; and (3) enter upon and access the Property to accomplish the purposes of (1) and (2) above (collectively, "Easement"). The Easement granted herein may be used by the CITY's employees, agents, representatives and contractors. Prior to entry upon the Property, the CITY shall provide notice (written or oral) to GREENROCK of any required access, and shall work with GREENROCK to schedule a mutually convenient time for the CITY to access the Property.

b. **Interference with Operations:** When entering the Property, the CITY shall not interfere with the Property and GREENROCK's operations thereon except to the extent necessary to comply with any conditions of the Central Valley Board's Waste Discharge Requirements. In addition to the CITY's indemnity obligations pursuant to Exhibit "C," the CITY is solely responsible for any damage caused or liability suffered by GREENROCK resulting from the CITY entering the Property.

6. GREENROCKTO OWN EQUIPMENT AND CROPS

a. GREENROCK's operations and equipment on the Property, including all crops raised and harvested and any supporting or associated equipment and appurtenances, will be solely owned and controlled by GREENROCK. The CITY shall not interfere with GREENROCK's operations on the Property and shall not have or acquire any right, title or interest to any equipment or resulting benefit or asset, monetary or otherwise, associated with the operations.

7. CONSIDERATION

a. GREENROCK agrees to accept and use Recycled Water in return for the CITY's agreement to deliver Recycled Water and pay for all costs for facilities, works and other appurtenances necessary for delivery and use of the Recycled Water, pursuant to the terms of this Agreement. CITY agrees to construct, operate, maintain, replace and grant facilities and Irrigation Equipment, and deliver Recycled Water, as required in this Agreement.

b. In addition, CITY shall make a single payment to GREENROCK of $15,000 within 30 days of the effective date of this agreement, as fair and reasonable consideration for uncertainties in the delivery and timing of Recycled Water during the 2013 calendar year ("Temporary Easement Fee"). To the extent Recycled Water cannot be reliably delivered to GREENROCK pursuant to this agreement by October, 2013, the parties shall meet and confer to discuss whether the Temporary Easement Fee should be extended beyond 2013.

8. RIGHT OF FIRST REFUSAL TO ADDITIONAL WATER

a. To the extent that the CITY possesses, controls and/or owns Recycled Water in excess of the Committed Delivery that is available for the CITY to supply to a water user and which has not been previously committed to another water user as of the Effective Date ("Additional Recycled Water"), GREENROCK shall have the right to accept and take delivery of all or a portion of the Additional Water pursuant to the terms of this Agreement, either on the subject property or any other property owned or controlled by GREENROCK or its parent company, prior to the CITY offering and/or providing any of the Additional Water to another water user or otherwise disposing of the Additional Water. If the CITY has Additional Recycled Water available, it shall notify GREENROCK to determine if GREENROCK desires to accept and take delivery of the Additional Water. The Parties understand and acknowledge that the sources of the Additional Water are not limited to the current Recycled Water sources available to the CITY, but include any and all sources of Recycled Water that the CITY may have or obtain in the future.

b. The Parties acknowledge this provision excludes any Recycled Water receiving additional treatment beyond the existing supply that receives secondary treatment with disinfection, such as, but not limited to Recycled Water treated to tertiary standards. In no case, however, shall CITY reduce deliveries to GREENROCK subject to this Agreement as a result of secondary treatment to tertiary or other standards, except upon mutual agreement of the Parties.

9. RECORDATION

a. The Parties will cause this Agreement to be recorded promptly after its execution in the Official Records of the County of Amador, State of California.

10. METHOD AND PLACE OF GIVING NOTICE, SUBMITTING BILLS AND MAKING PAYMENTS

a. Except as otherwise specified in this Agreement, all notices, bills, and payments shall be made in writing and shall be personally delivered or sent by prepaid registered or certified mail, return receipt requested, to the following address:

CITY:
Attn: City Manager
City of Ione
P.O. Box 398
1 E. Main Street
Ione, CA 95640

GREENROCK:
Attn: John C. Telischak
Greenrock Ranch Lands, LLC
45 Koch Road, Suite A
Corte Madera, CA 94925

When so addressed and sent by prepaid registered or certified mail, said notice, bill, or payment shall be deemed given or made upon deposit in the United States mail. In all other instances, notices, bills, or payments shall be deemed given or made at the time of actual delivery.

Changes may be made in the names or addresses of the person to whom notices, bills, or payments are to be given by giving notice pursuant to this paragraph.

11. BREACH; REMEDIES

a. Should one party breach any of the terms and conditions of this Agreement, the non-breaching Party shall give written notice to the other Party. If the breach is not cured within 30 calendar days from the date notice is given, the non-breaching party may, in addition to any remedies provided by this Agreement or by law or equity, terminate this Agreement on an additional 30 calendar days written notice.

12. ASSIGNMENT

a. Except as otherwise specified in this Agreement, no Party may assign its rights and obligations hereunder without the prior written consent of the other Party.

13. ENVIRONMENTAL COMPLIANCE

a. The CITY is solely responsible for its compliance with any statute, ordinance, regulation, permit, or law regulating the delivery, use and/or recovery of Recycled Water.

14. GENERAL PROVISIONS

a. **Authority:** Each Party represents that the representative of the Party executing this Agreement has the authority to enter into this Agreement on behalf of such Party and bind such Party to the terms and conditions of this Agreement and the performance of such Party's obligations and responsibilities as set forth in this Agreement, and this Agreement has been duly authorized by all required action and that the Party's execution of this Agreement and performance of its obligations under this Agreement will not violate any contract, transaction, option, covenant, condition, obligation or undertaking of such party, nor to the best of such Party's knowledge will it violate any law, ordinance, statute, order, permit or regulation.

b. **Construction and Interpretation:** To the fullest extent allowed by law, the provision of this Agreement shall be construed and given effect in a manner that avoids any violation of statute, ordinance,

regulation, permit or law. This Agreement is entered into freely and voluntarily. This Agreement has been arrived at through negotiation; each Party has consulted with counsel and had a full and fair opportunity to revise the terms of this Agreement. As such, any interpretation of this Agreement should not favor any Party.

c. **Third-Party Beneficiaries:** This Agreement is not intended to create any third-party beneficiaries. This Agreement is for the sole benefit of the Parties and their respective successors and/or permitted assignees, and no other person or entity shall be entitled to rely on or receive any benefit from this Agreement.

d. **Severability:** If any provision of this Agreement is determined to be void by any court of competent jurisdiction, then such determination shall not affect any other provision of this Agreement, and all such other provisions shall remain in full force and effect provided, however, that the purpose of this Agreement is not frustrated. It is the intention of the Parties that if any provision of this Agreement is capable of two constructions, one of which would render the provision void and the other of which would render the provision valid, then the provision shall have the meaning which renders it valid.

e. Waiver: No waiver by either Party of any provisions or breach of this Agreement shall be deemed to be a waiver of any other provision hereof or of any subsequent breach by either Party of the same or any other provisions.

f. **Entire Agreement:** This Agreement contains the entire agreement of the Parties with respect to any matter covered or mentioned in this Agreement, and supersedes all prior negotiations, understanding and agreements, and no prior agreement or understanding pertaining to any such matter shall be effective for any purpose.

g. **Amendments:** No provision of this Agreement may be amended or added to except by an agreement in writing signed by the Parties or their respective successors in interest, expressing by its terms an intention to modify this Agreement.

h. **Successors and Assigns:** The right and benefit to receive and the obligation to take Recycled Water shall be a covenant running with the Property, and the obligation to provide Recycled Water to the Property shall be that of the CITY. Upon transfer of title or interest in the Treatment Plant or the Property, all rights, duties, and obligations undertaken by this Agreement shall succeed to the new owner(s), lessees, heirs, executors, or assigns.

i. **Attorneys' Fees:** The prevailing party in any action or proceeding to enforce or interpret this Agreement or otherwise arising out of or in connection with the subject matter hereof (including, but not limited to, any suit, arbitration, entry of judgment, post-judgment motion or enforcement, appeal, bankruptcy litigation, attachment or levy) shall be entitled to recover its costs and expenses, including, but not limited to, attorneys', experts' and consultants' fees and costs.

j. **Necessary Actions:** Each Party agrees to execute and deliver additional documents and instruments and to take any additional actions as may be reasonably required to carry out the purposes of this Agreement.

k. **Force Majeure:** No Party will be liable by reason of any failure or delay in the performance of its obligations for any cause beyond its reasonable control, including but not limited to electrical outages, riots, insurrection, war, fires, flood, earthquakes, explosions and other Acts of God.

l. **Governing Law and Venue:** This Agreement shall be construed and interpreted in accordance with the laws of the State of California. Any action brought relating to this Agreement shall be heard exclusively in a State court in the County of Amador.

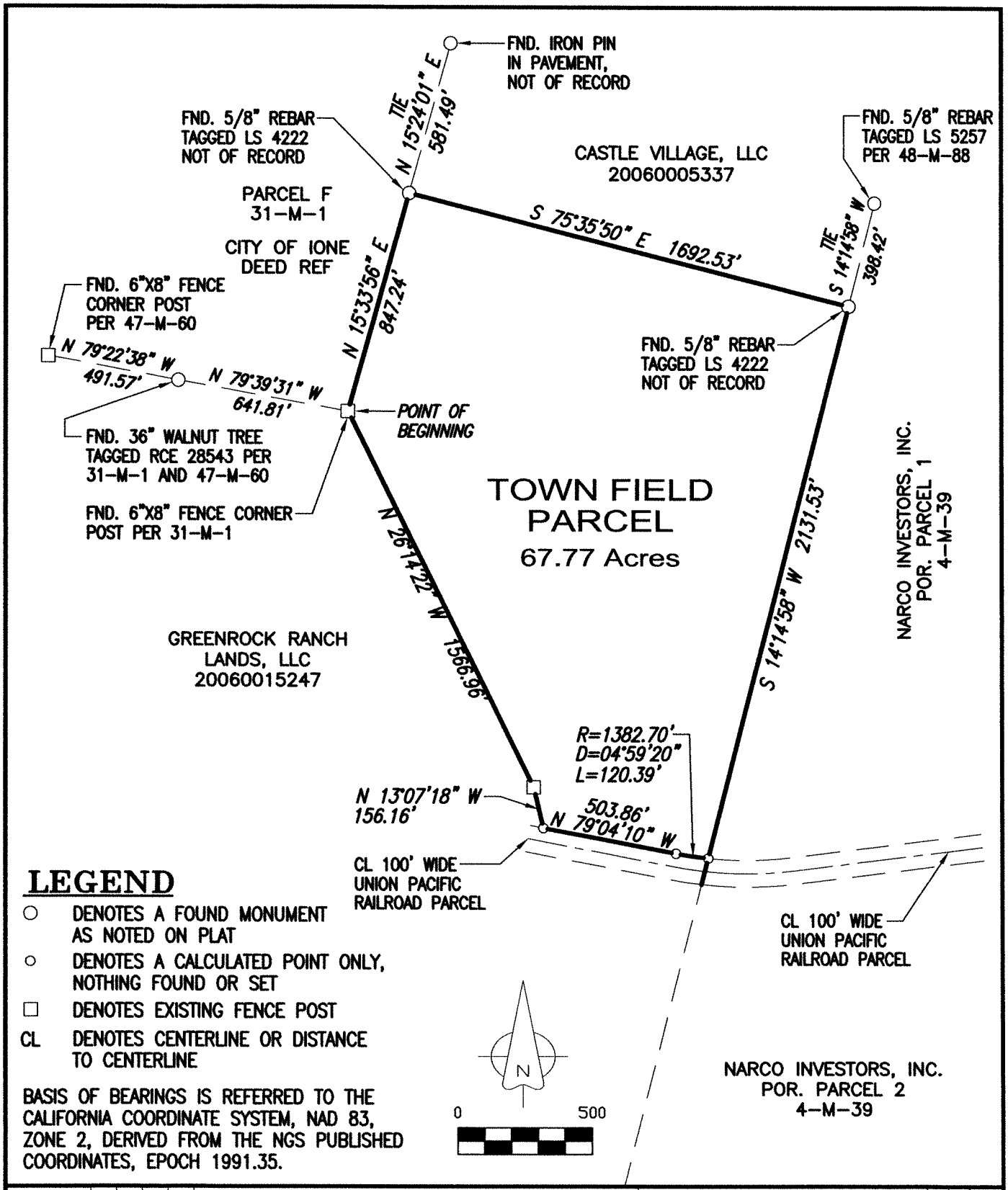
m. **Counterparts; Faxed/Electronic Signatures:** This Agreement may be signed in counterparts and facsimile or electronic signatures shall have the same effect as original signatures.

IN WITNESS WHEREOF, the Parties have fully executed this **AGREEMENT**.

GREENROCK RANCH LANDS, LLC By _____ John Telischak, Authorized Agent	CITY OF IONE By _____ Dan Epperson, Mayor of Ione
	CITY OF IONE APPROVED AS TO FORM: By _____ James D. Maynard, City Attorney

EXHIBIT "A"

Map Depicting Property



LEGEND

- ○ DENOTES A FOUND MONUMENT AS NOTED ON PLAT
- ○ DENOTES A CALCULATED POINT ONLY, NOTHING FOUND OR SET
- □ DENOTES EXISTING FENCE POST
- CL DENOTES CENTERLINE OR DISTANCE TO CENTERLINE

BASIS OF BEARINGS IS REFERRED TO THE CALIFORNIA COORDINATE SYSTEM, NAD 83, ZONE 2, DERIVED FROM THE NGS PUBLISHED COORDINATES, EPOCH 1991.35.

EXHIBIT MAP
TOWN FIELD PARCEL

BEING A PORTION OF THE RANCHO ARROYO SECO
AMADOR COUNTY, CALIFORNIA

SHEET 1 OF 1 SHEETS
JOB NO.: 1211-11
DRAWN BY: GMW
SCALE: 1" = 500'
DATE: 12.13.2012

TOMA & ASSOCIATES INC.
ENGINEERING - SURVEYING - PLANNING
41 Summit Street, Jackson, CA 95642
(209) 223-0156

REVISIONS BY

EXHIBIT "B"

Legal Description of the Property

TOWN FIELD PARCEL 67.77 Acres

A parcel of land situated in the County of Amador, State of California, and being a portion of the Rancho Arroyo Seco, and being more particularly described as follows:

Beginning at a fence corner post at the Southeast corner of "PARCEL "F" 15.67 AC.", as shown and so designated upon that certain official map entitled "RECORD OF SURVEY A PORTION OF RANCHO ARROYO SECO AND THE CITY OF IONE AMADOR COUNTY CALIFORNIA", and recorded in the office of the Recorder of Amador County in Book 31 of Maps and Plats at Page 1, et seq; thence, from said point of beginning, along the East line of said Parcel F, North 15° 33' 56" East 847.24 feet; thence, leaving said East line, South 75° 35' 50" East 1692.53 feet to a 5/8 inch rebar lagged LS 4222 found on the West line of "PARCEL No 1 78.556 AC.", as shown and so designated upon that certain official map entitled "PLAT OF F.P. TOMAIUOLO RANCH", and recorded in Book 4 of Maps and Plats at Page 39, Amador County Records; thence, along said West line of Parcel No. 1, South 14° 14' 58" West 2131.53 feet to a point in the North line of the Union Pacific Railroad parcel of land; thence, along said North line of said Union Pacific Railroad parcel of land, along the arc of a non-tangent curve to the right, having a radius of 1,382.70 feet, through a central angle of 04° 59' 20", for an arc length of 120.39 feet; thence North 79° 04' 10" West 503.86 feet; thence, leaving said Union Pacific Railroad parcel of land, North 13° 07' 18" West 156.16 feet to a fence corner post; thence North 26° 14' 22" West 1,566.96 feet to the point of beginning, and containing 67.77 acres of land, more or less.

The basis of bearings for the legal description above is referred to the California Coordinate System, NAD 83, Zone 2.

C. L. Toma 12/13/12

Ciro L. Toma PLS 3570 License expires 6/30/14

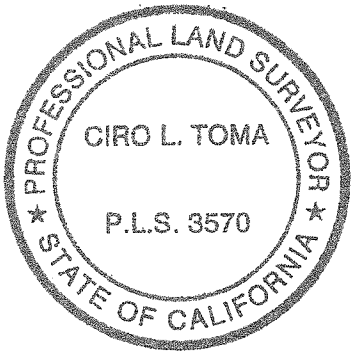


EXHIBIT "C"

Defense, Indemnification, and Hold Harmless Agreement between the City of Ione and Greenrock Ranch LLC

Attachment C

Rainfall and Reference ET Data

IONE, CALIFORNIA (044283)

Period of Record Monthly Climate Summary

Period of Record : 03/01/1906 to 06/30/1977

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)					Insuff	icient	Data						
Average Min. Temperature (F)					Insuff	icient	Data						
Average Total Precipitation (in.)	5.08	3.14	3.19	1.75	0.63	0.23	0.07	0.13	0.33	1.15	2.81	3.53	22.04
Average Total SnowFall (in.)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 0% Min. Temp.: 0% Precipitation: 99.9% Snowfall: 99.9% Snow Depth: 99.8%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

D

Rainfall Depth Duration Frequency at Ione

Station Number	Station	County	Latitude	Longitude	Elevation	Years Recorded
B00 4283 00	Ione	Amador	38.348	-120.938	284.0	89

Rainfall Statistics	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	8-Day	10-Day	15-Day	20-Day	30-Day	60-Day	1-Year
Pr=0.5	1.92	2.55	3.01	3.38	3.70	3.99	4.48	4.91	5.79	6.51	7.68	10.19	21.28
Pr=0.2	2.55	3.37	3.98	4.47	4.89	5.27	5.92	6.48	7.64	8.58	10.11	13.39	27.84
Pr=0.1	2.92	3.87	4.55	5.11	5.60	6.02	6.76	7.40	8.71	9.78	11.52	15.23	31.54
Pr=0.04	3.36	4.44	5.22	5.86	6.40	6.89	7.73	8.45	9.94	11.16	13.13	17.32	35.70
Pr=0.02	3.66	4.83	5.67	6.36	6.96	7.48	8.39	9.17	10.78	12.09	14.22	18.74	38.51
Pr=0.01	3.94	5.19	6.10	6.84	7.47	8.04	9.01	9.84	11.57	12.97	15.23	20.06	41.11
Pr=0.005	4.21	5.54	6.51	7.29	7.96	8.56	9.59	10.48	12.31	13.79	16.19	21.31	43.57
Pr=0.002	4.54	5.97	7.01	7.85	8.58	9.22	10.33	11.28	13.23	14.82	17.40	22.87	46.64
Pr=0.001	4.79	6.29	7.38	8.26	9.02	9.69	10.85	11.85	13.90	15.57	18.26	23.99	48.84
Pr=0.0001	5.53	7.26	8.50	9.52	10.39	11.15	12.48	13.62	15.96	17.87	20.94	27.46	55.66

Annual Maxima	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	8-Day	10-Day	15-Day	20-Day	30-Day	60-Day	1-Year
2007	---	---	---	---	---	---	---	---	---	---	---	---	---
2006	---	---	---	---	---	---	---	---	---	---	---	---	---
2005	---	---	---	---	---	---	---	---	---	---	---	---	---
2004	---	---	---	---	---	---	---	---	---	---	---	---	---
2003	---	---	---	---	---	---	---	---	---	---	---	---	---
2002	---	---	---	---	---	---	---	---	---	---	---	---	---
2001	---	---	---	---	---	---	---	---	---	---	---	---	---
2000	1.85	2.80	4.29	4.74	4.99	4.99	5.22	5.79	7.52	9.05	10.35	11.82	21.39
1999	2.02	2.44	3.42	3.42	3.42	3.42	3.42	4.17	5.51	5.72	8.41	10.90	15.39
1998	2.37	3.55	4.11	4.36	4.98	5.85	6.61	7.31	8.07	10.05	14.21	21.25	30.46
1997	2.37	3.55	4.11	4.36	4.98	5.85	6.61	7.31	8.07	10.05	14.21	21.25	43.59
1996	3.75	3.85	3.85	3.85	3.85	3.85	3.85	3.85	4.74	5.27	6.16	11.53	22.80
1995	2.90	4.71	5.05	5.33	5.58	5.71	7.45	8.02	9.08	9.83	12.42	16.90	35.50
1994	1.27	1.70	1.95	2.05	2.15	2.42	2.55	2.55	3.45	3.67	5.27	5.87	15.52
1993	1.81	2.26	2.26	2.84	3.18	4.50	4.91	5.13	7.10	7.52	10.16	16.58	29.21
1992	2.30	3.18	3.18	3.24	4.11	5.17	5.97	6.06	6.98	7.16	9.13	10.62	20.43
1991	1.60	2.28	2.88	3.52	3.52	3.52	4.08	5.15	6.28	7.38	10.07	11.94	16.59
1990	1.82	2.35	2.37	2.37	2.37	2.37	2.37	2.37	2.90	2.90	3.33	6.23	17.33
1989	1.05	1.90	2.05	2.06	2.26	2.41	2.52	2.82	3.36	3.75	5.85	7.67	16.85
1988	1.55	1.90	1.90	1.90	1.90	1.90	2.05	2.13	2.75	3.47	4.78	6.57	11.67
1987	1.81	2.43	2.54	2.54	2.87	2.87	3.38	3.62	3.62	5.31	5.31	9.80	13.86
1986	2.75	4.85	5.65	6.65	6.85	6.95	7.90	8.00	8.00	9.45	12.97	18.47	33.02
1985	---	---	---	---	---	---	---	---	---	---	---	---	17.93
1984	---	---	---	---	---	---	---	---	---	---	---	---	23.39
1983	---	---	---	---	---	---	---	---	---	---	---	---	41.81
1982	---	---	---	4.62	5.24	5.24	5.53	5.53	7.29	8.43	9.95	15.59	39.56
1981	2.04	2.94	3.80	4.17	4.32	5.01	6.02	6.02	6.21	6.21	6.62	11.24	17.15
1980	---	---	---	---	---	---	---	---	---	---	---	---	

1979	1.54	2.28	2.83	3.82	3.82	3.82	4.02	4.97	5.49	6.53	7.09		
1978	1.54	2.28	2.83	3.82	3.82	3.82	4.02	4.97	5.49	6.53	7.09	12.65	20.87
1977	0.92	1.03	1.09	1.12	1.12	1.12	1.24	1.26	1.26	1.26	2.18	3.32	8.73
1976	0.78	1.23	1.70	1.70	1.91	2.06	2.06	2.06	2.18	3.21	3.73	5.00	11.87
1975	1.97	2.56	3.14	3.27	3.38	3.52	4.84	6.08	7.82	8.47	8.50	15.06	28.24
1974	---	---	---	---	---	---	---	---	---	---	---	---	33.80
1973	2.48	2.76	3.51	4.54	4.86	4.86	6.09	7.38	8.60	9.26	12.09	19.82	35.95
1972	3.05	3.88	3.92	3.98	3.98	5.03	5.90	5.96	6.05	6.73	7.92	9.62	16.80
1971	3.05	4.40	5.02	5.13	6.25	6.57	6.57	7.61	8.20	8.22	9.81	13.34	21.20
1970	2.94	2.94	3.48	3.48	3.72	3.72	4.97	5.90	6.37	7.01	9.55	12.27	21.13
1969	2.75	3.15	3.15	3.23	3.31	3.54	5.63	6.09	8.33	8.80	9.89	16.66	30.23
1968	1.76	2.12	2.12	2.43	2.43	2.48	2.51	3.20	3.20	3.49	4.61	8.77	17.12
1967	2.52	4.13	4.15	4.63	4.97	4.99	5.38	6.53	7.36	7.36	7.89	11.44	29.07
1966	1.79	1.95	2.46	2.48	3.27	3.74	4.03	4.13	5.17	5.17	5.17	9.69	16.47
1965	---	3.43	---	---	---	---	---	7.18	8.10	---	---	---	25.01
1964	1.98	2.44	2.86	3.06	3.06	3.06	3.25	3.45	5.45	6.58	6.84	9.13	18.12
1963	2.88	3.52	4.20	4.65	4.65	4.65	4.65	4.65	6.07	6.38	6.38	10.35	24.44
1962	1.25	2.08	2.93	3.02	4.05	4.53	6.47	7.17	7.61	7.75	9.09	11.98	18.00
1961	1.38	1.68	2.16	2.16	2.16	2.26	2.40	2.77	2.93	3.23	4.81	6.51	13.82
1960	1.33	1.53	1.86	1.86	2.09	2.42	2.82	3.25	3.67	5.03	6.18	7.86	16.68
1959	1.65	2.09	2.09	2.55	2.88	3.22	3.68	4.01	4.01	4.75	6.13	10.54	13.45
1958	---	---	---	---	---	---	---	---	---	---	---	---	41.69
1957	---	---	---	---	---	---	---	---	---	---	---	---	18.93
1956	---	---	---	---	---	---	---	---	---	---	---	---	28.58
1955	---	---	---	---	---	---	---	---	---	---	---	---	18.28
1954	---	---	---	---	---	---	---	---	---	---	---	---	16.40
1953	---	---	---	---	---	---	---	---	---	---	---	---	15.10
1952	2.21	3.15	3.68	3.77	3.77	3.77	3.77	4.06	4.68	6.56	7.47	13.11	27.05
1951	4.65	5.30	5.30	5.30	5.55	5.70	6.24	6.25	6.25	8.87	10.85	14.60	28.76
1950	2.70	2.70	2.70	3.97	3.97	3.97	3.97	5.05	5.05	5.55	9.52	10.41	18.30
1949	1.76	2.71	3.14	3.14	3.14	3.14	3.72	3.86	4.87	5.45	6.93	10.49	17.23
1948	1.28	1.41	1.70	1.83	2.03	2.03	2.43	2.43	4.08	4.39	6.67	8.68	17.76
1947	2.16	3.12	3.20	3.20	3.91	3.91	3.91	4.13	4.13	4.13	4.82	7.33	14.54
1946	1.90	1.90	3.20	3.38	4.37	4.98	5.16	5.42	5.70	6.31	7.49	11.80	20.14
1945	2.68	3.88	4.78	4.78	4.98	5.27	5.27	5.27	5.66	5.66	5.66	9.58	23.66
1944	2.25	2.41	2.53	2.53	3.23	3.39	3.93	4.28	5.68	5.68	7.47	10.20	19.25
1943	2.05	2.78	3.58	3.81	4.43	4.77	5.38	5.42	7.10	8.03	10.13	15.90	27.61
1942	2.00	3.48	4.20	4.60	5.32	5.81	5.91	5.91	7.68	8.17	8.17	12.92	26.67
1941	1.85	2.40	2.46	3.46	5.46	5.46	4.17	4.52	7.17	8.59	11.13	14.00	25.17
1940	1.65	2.72	3.46	3.76	4.20	4.79	5.24	5.54	5.95	6.00	8.96	16.37	24.86
1939	1.72	2.40	2.55	2.80	2.80	2.80	2.80	2.80	2.80	3.17	3.42	5.93	14.01
1938	2.30	3.65	4.05	4.55	4.80	4.80	5.25	6.95	9.40	10.35	12.10	16.00	27.25
1937	4.40	4.65	5.85	6.15	6.60	6.95	7.70	8.15	8.70	9.50	10.10	19.90	34.99
1936	2.00	2.30	3.50	4.20	4.35	4.50	6.05	6.40	10.33	10.33	13.28	19.99	28.29
1935	2.50	2.72	2.72	2.72	3.25	4.30	4.52	4.52	5.22	5.65	6.35	9.47	23.94
1934	1.70	2.85	2.85	4.05	4.52	4.52	4.52	4.52	4.52	6.40	8.77	9.67	

1933	1.20	1.72	1.72	1.72	2.32	3.12	3.12	3.82	3.82	3.82	5.07		
1932	1.75	1.92	2.59	3.58	3.75	3.80	4.49	4.97	5.58	5.88	6.60	10.05	19.99
1931	1.65	1.65	1.65	2.53	2.53	2.53	2.65	2.65	2.65	2.65	3.92	6.39	12.62
1930	1.39	2.25	2.25	2.57	2.57	2.78	3.35	3.71	5.17	5.33	5.62	10.86	17.07
1929	1.91	2.98	3.49	3.49	3.49	3.49	3.49	3.57	4.07	4.07	4.07	6.57	15.52
1928	1.68	2.60	3.40	4.06	4.79	4.92	4.92	4.92	5.92	6.10	6.27	9.09	18.80
1927	1.50	3.00	3.00	4.25	4.25	4.51	5.46	5.96	6.26	6.91	7.41	10.51	24.11
1926	2.55	2.80	2.90	3.55	3.55	4.55	5.10	5.10	6.48	8.99	10.04	10.29	21.54
1925	1.95	3.05	3.27	3.27	3.52	3.74	4.27	5.79	5.94	7.79	8.41	11.84	28.60
1924	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	2.35	3.00	3.00	4.95	10.50
1923	2.20	3.00	4.30	5.30	5.30	5.30	5.50	6.10	6.70	6.70	9.30	14.15	26.07
1922	2.17	2.52	3.45	3.95	3.95	3.95	3.95	4.44	7.09	7.16	9.46	14.80	24.30
1921	3.85	3.95	4.50	4.72	4.72	4.72	4.72	5.72	6.62	7.02	7.72	13.51	26.57
1920	2.10	3.55	3.90	4.05	4.20	4.20	4.20	4.31	4.82	5.19	7.04	9.26	15.46
1919	2.25	3.55	3.90	4.00	4.05	4.40	4.60	4.70	5.00	6.45	8.15	10.35	18.75
1918	1.60	2.35	2.35	2.35	3.45	4.25	4.70	4.70	6.50	6.50	8.10	11.30	15.50
1917	1.30	2.30	2.60	2.90	3.25	3.55	4.10	4.35	4.55	4.55	5.35	7.25	17.70
1916	---	---	---	---	---	---	---	---	---	---	---	---	20.00
1915	1.50	1.95	2.15	2.30	2.83	3.03	3.88	4.20	5.88	6.20	7.77	10.87	22.80
1914	2.26	3.11	3.49	3.61	3.99	3.99	3.99	4.48	5.47	6.96	9.81	13.52	22.90
1913	1.20	1.84	2.22	2.72	2.95	3.36	3.36	3.55	4.01	4.01	4.01	4.86	14.26
1912	0.69	1.04	1.15	1.22	1.30	1.45	1.86	2.16	2.47	2.86	3.43	5.36	12.68
1911	2.17	3.57	5.27	6.12	6.45	7.30	7.80	8.42	10.82	15.51	18.06	24.30	30.46
1910	2.00	3.00	3.00	3.45	3.88	3.88	3.93	3.93	4.00	4.69	5.92	8.90	20.89
1909	1.45	2.60	3.80	4.42	4.54	5.07	5.99	6.39	7.99	9.21	12.66	19.24	26.01
1908	1.30	1.60	1.60	1.78	1.78	1.78	1.83	3.03	3.63	3.63	5.51	9.04	14.27
1907	4.37	6.79	7.38	7.53	8.38	8.53	8.53	8.53	8.53	10.60	12.20	18.04	33.82
1906	2.40	2.54	3.22	3.62	3.85	3.85	3.85	5.03	7.47	9.20	10.45	15.43	30.93
1905	2.90	2.90	2.90	3.20	4.20	4.20	4.55	4.85	5.55	5.55	5.50	9.65	25.95
1904	1.51	2.62	3.12	3.15	3.15	3.25	3.75	4.86	6.07	6.42	7.20	12.05	21.42
1903	1.85	2.92	3.58	4.10	5.01	5.03	5.03	5.53	5.53	7.54	9.71	10.34	22.39
1902	1.21	1.79	2.09	2.61	3.01	3.41	3.87	4.41	5.03	6.03	7.72	9.29	20.19
1901	2.05	2.79	3.61	4.03	4.03	4.72	5.54	5.52	5.54	7.35	7.69	11.29	25.48
1900	1.85	2.34	2.41	2.80	2.86	2.86	2.86	3.88	4.82	5.66	6.45	9.69	21.51
1899	1.93	2.56	3.20	3.54	4.04	4.04	4.94	7.17	7.80	7.93	9.00	9.22	20.03
1898	3.60	4.47	4.64	4.64	4.64	4.64	4.64	4.76	5.11	5.11	5.23	7.30	13.77
1897	---	---	---	---	---	---	---	---	---	---	---	---	---
1896	---	---	---	---	---	---	---	---	---	---	---	---	---
1895	---	---	---	---	---	---	---	---	---	---	---	---	---
1894	---	---	---	---	---	---	---	---	---	---	---	---	---
1893	---	---	---	---	---	---	---	---	---	---	---	---	---
1892	---	---	---	---	---	---	---	---	---	---	---	---	---
1891	---	---	---	---	---	---	---	---	---	---	---	---	---
1890	---	---	---	---	---	---	---	---	---	---	---	---	---
1889	---	---	---	---	---	---	---	---	---	---	---	---	---
1888	---	---	---	---	---	---	---	---	---	---	---	---	---

Monthly Average ETo Report

California Irrigation Management Information System (CIMIS)

Rendered in ENGLISH Units.

Printed on Wednesday, August 31, 2022

Average ETo Values by Station

Stn Id	Stn Name	CIMIS Region	Jan (in)	Feb (in)	Mar (in)	Apr (in)	May (in)	Jun (in)	Jul (in)	Aug (in)	Sep (in)	Oct (in)	Nov (in)	Dec (in)	Total (in)
227	Plymouth	SFH	1.48	1.95	3.02	4.57	5.97	7.19	7.64	6.98	4.99	3.24	1.68	1.21	49.92

CIMIS Region Abbreviations		
BIS - Bishop	CCV - Central Coast Valleys	ICV - Imperial/Coachella Valley
LAB - Los Angeles Basin	MBY - Monterey Bay	NCV - North Coast Valleys
NEP - Northeast Plateau	SAV - Sacramento Valley	SBE - San Bernardino
SFB - San Francisco Bay	SJV - San Joaquin Valley	SFH - Sierra Foothill
SCV - South Coast Valleys		

Attachment D

Castle Oaks Golf Course Recycled Water Demands TM

WEST YOST
Water. Engineered.

1001 Galaxy Way
Suite 310
Concord CA 94520

925.949.58
925.949.5845 fax
westyost.com

TECHNICAL MEMORANDUM

DATE: December 10, 2024

Project No.: 988-50-24-10
SENT VIA: EMAIL

TO: George Lee, City of Ione

CC: Daniel Griffin, Castle Oaks Golf Course
Justin Granados, WaterStone Service

FROM: Allie Ahern, EIT

REVIEWED BY: Kathryn Gies, PE, RCE #65022

SUBJECT: Castle Oaks Golf Course Recycled Water Demands



This technical memorandum (TM) provides information and supporting documentation related to water needs of the Castle Oaks Golf Course (golf course), which receives recycled water from the Castle Oaks Water Reclamation Facility (COWRF). The purpose of this TM is to inform development of a water balance for the Amador Regional Sanitation Authority (ARSA) wastewater disposal system. The following topics are addressed:

- Background Information
- Golf Course Irrigable Acreage
- Golf Course Storage Ponds
- Golf Course Agronomic Water Demands
- COWRF Influent Flows
- Golf Course Tailwater and Overspray Control and Monitoring

BACKGROUND INFORMATION

This section provides background information relevant to this TM. The following topics are addressed:

- Regulatory History
- Applicable Regulatory Standards for Water Balances
- Golf Course Demands vs. COWRF Influent Flows

Regulatory History

The City of Ione (City), ARSA and Portlock International Ltd. (Portlock) are the three entities permitted the Central Valley Water Quality Control Board (Regional Board) under Water Reclamation Requirement Order 93-240 (WRRs) to land apply recycled water from the COWRF to the golf course. The City owns and operates the COWRF, which provides the recycled water to the golf course. The City also owns the golf course, which is leased and operated by Portlock. ARSA is permitted to supply water to the COWRF to meet the irrigation needs of the golf course.

On August 14, 2024, the Regional Board issued a 13267 Order letter to the three WRRs permittees that requires the submission of an updated water balance for the ARSA system to the Regional Board by December 13, 2024. The letter specifies six items (A through F) that must be provided. This TM addresses the requirements under Item B of this letter, which states:

> *The acreage and agronomic rate at which recycled water can be applied to the Castle Oaks Golf Course without violating setback requirements, Title 22 requirements, impacting groundwater, or causing runoff to surface water. These numbers and calculations should be provided and certified by Ione and Portlock International LTD. Supporting documentation and references must be included in the submittal. Information regarding tailwater control/return and monitoring plans for compliance with applicable land application area requirements must also be included.*

Applicable Regulatory Standards for Water Balances

The 13267 Order states that the water balance must be in compliance with the requirements and guidance of the Regional Board's guidance document *Requirements for Water Balance Update and Calibration*, which is provided as Attachment A to the 13267 Order. Several of the procedures defined in this guidance document are applicable to the development of this TM, as follows:

<u>Requirements for Water Balance Update and Calibration, Section 4:</u>

> *The normal operations and maintenance of land application areas should be considered. [Operations and Maintenance] O&M Manuals should be referenced as well as historical monitoring data (i.e. percolation rates, observed standing water). Specific conditions of the [WRRs] should also be taken into account. The following should be taken into consideration:*
>
> *A. Recycling area/land application area/disposal system hydraulic loading rates should be distributed monthly in accordance with expected seasonal variations based on crop evapotranspiration rates.*
>
> *B. The distribution of precipitation (i.e. storm intensity, light rain over a lot of days or heavy rain over a few days), as well as other factors such as wind and saturated conditions must be taken into account when determining the number of days a disposal system can be operated each month. The most reliable way to estimate this is based off of historical records from a water year of intensity similar to that which is being modeled.*
>
> *C. It should be specified whether the tailwater is collected, and if so if it is returned to the sprayfields directly or to one of the ponds.*
>
> *D. If applicable, storm water runoff shall be accounted for in the tailwater return calculations.*
>
> *E. Maximum disposal capacity of land application areas should be based on soil studies, cropping plans, percolation studies, and/or operator notes.*

Requirements for Water Balance Update and Calibration, Section 5:

A. All water balances shall start on 1 October and end on 30 September.

…

C. The water balance should include an assessment of the facility's capacity and performance during a normal water year and during a year with a total annual precipitation for a return period of 100 years.

D. Local precipitation data for the 100-year annual return period, distributed monthly in accordance with mean monthly precipitation patterns shall be used. However, periods of high intensity storms should also be considered in the calculations.

E. All water balances should be based on all available data. All data should also be quality controlled and used with discretion.

…

G. For each wastewater treatment, storage, or disposal pond and containment structure, provide the following information:

a. Identification (name) and function of the pond.

b. Surface area, depth, and volumetric capacity at two feet of freeboard.

c. Height (relative to surrounding grade), crest width, interior slope, and exterior slope of each berm or levee.

d. Materials used to construct each berm or levee.

e. Description of engineered liner, if any. Include a copy of the Construction Quality

f. Estimated steady state percolation rate for each unlined pond.

g. Depth to shallow groundwater below the base and pond inverts.

h. Precipitation and evapotranspiration data shall be from recognized stations. The source of this information shall be provided, including a link to the data.

i. Overfilling/overflow prevention features.

j. Operation and maintenance procedures.

Golf Course Demands vs. COWRF Influent Flows

During the COWRF tertiary treatment process, a fraction of the influent to the COWRF is discarded as filter backwash and sent to the City of Ione's Wastewater Treatment Facility (WWTF). The remaining influent to the COWRF is treated to tertiary standards and recycled at the golf course. Therefore, the influent flow to the COWRF needs to be greater than the agronomic water demand of the golf course to accommodate the losses due to filter backwash, and the ARSA water balances need to include the portion of influent sent as filter backwash to the WWTF.

The City is concurrently in the process of preparing a water balance for its WWTF in accordance with a separate 13267 Order. The WWTF water balance will also need to account for the COWRF backwash flows. Accordingly, this TM presents calculations that define both the COWRF influent flows needed to meet the golf course agronomic demands for use in the ARSA water balance and the backwash flow from the COWRF to the WWTF for use in the WWTF water balance.

GOLF COURSE IRRIGABLE ACREAGE

The irrigable acreage of the golf course was determined based on inspection of the golf course irrigation system and discussions with staff. This area was mapped and quantified using GIS mapping and data processing tools. Figure 1 presents the map created. The following areas of the golf course were not included in the calculated irrigable acreage:

- natural, undeveloped areas surrounding Mule Creek and Sutter Creek
- areas abutting residences surrounding the golf course; some of these areas are irrigated by residents while others remain unirrigated
- hardscape and permanent water features

The total irrigable area of the golf course was determined to be 130 acres.

COGC_TM_Fig1: W:\Clients\988 City of Ione\50-23-05 Title 22 Update\GIS\Title 22 Update\Title 22 Update.aprx - aahern - 11/6/2024



City of Ione Boundary

Golf Course Irrigable Area

Lakes

PS Irrigation Pump Station



Prepared by:

WEST YOST

0 800 1,600 US Feet

Prepared for:

City of Ione

Castle Oaks Golf Course

Recycled Water Demands

Castle Oaks Golf Course Irrigable Area

Fig

GOLF COURSE STORAGE PONDS

The golf course has nine ponds that can be filled with recycled water during the irrigation season. The ponds serve as aesthetic features and water hazard obstacles for the golf course and are used to hold recycled water before it is pumped to the golf course. Limited construction information is available for the ponds, but the ponds are understood to be unlined and constructed of native soil material. Estimates of the depth, volume and percolation rates of the ponds are not available. However, it is estimated that on average, the depth of groundwater below the golf course ranges from 8 to 13 feet. The surface area of each pond has been estimated using GIS mapping and data processing tools and is presented in Table 1.

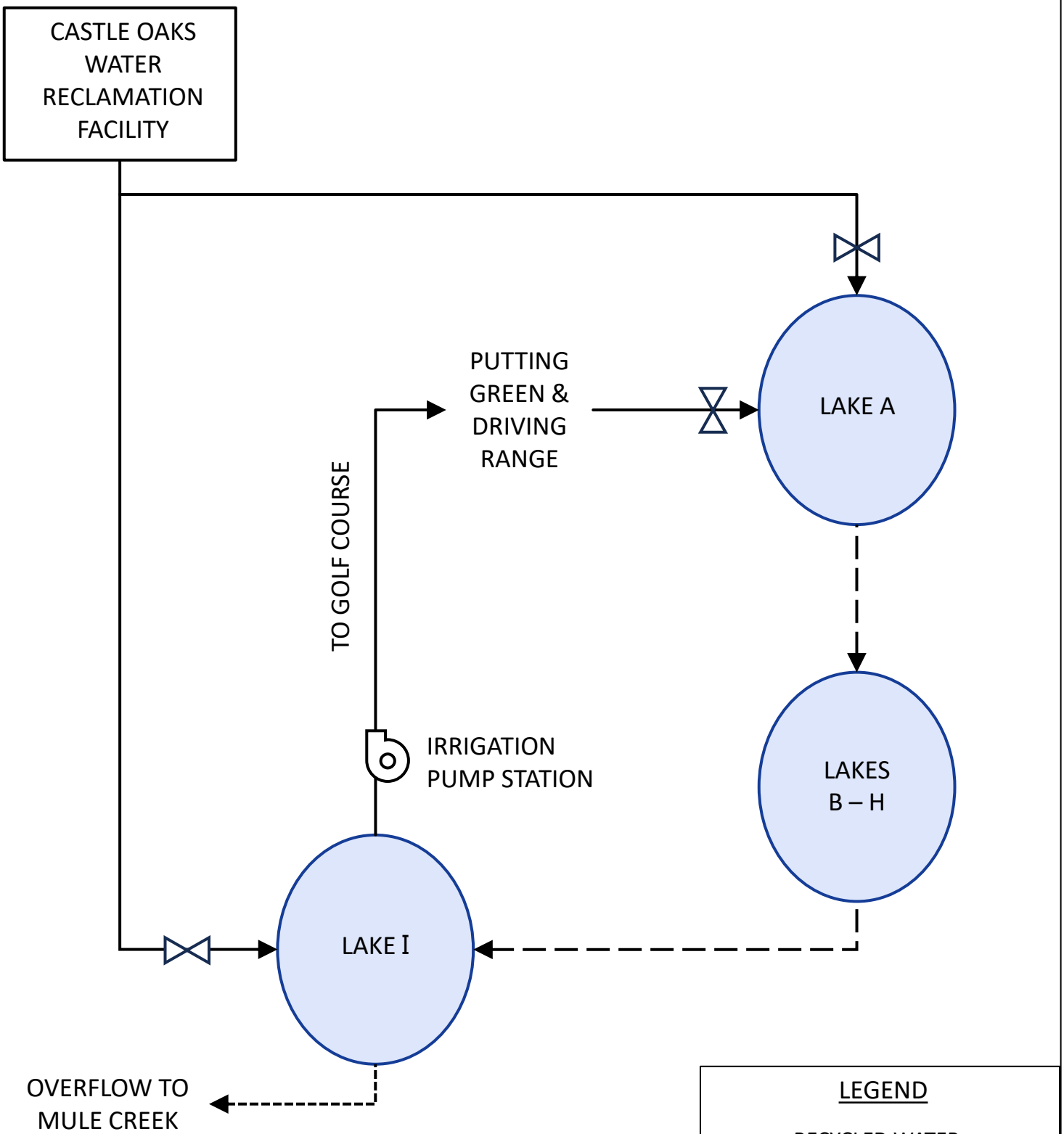
Table 1. Golf Course Storage Pond Surface Area

Pond Name	Surface Area, acres
Lake A	0.8
Lake B	1.2
Lake C	0.4
Lake D	1.1
Lake E	2.2
Lake F	1.1
Lake G	1.6
Lake H	1.4
Lake I	3.1

The ponds are hydraulically connected to each other. The maximum water level of each pond is controlled by a fixed standpipe located in an access port approximately 20 to 100 feet from the lake's edge. Water overflowing the standpipe of the upstream lake is conveyed by to the following lake downstream, with Lake A being the furthest upstream lake, and Lake I being the furthest downstream lake. The Lake I overflow standpipe connects to a wetlands area that is tributary to the nearby surface water body Mule Creek. Figure 2 presents a schematic of the recycled water irrigation system.

Recycled water from the COWRF can be pumped directly to either Lake I or Lake A. Recycled water is then pumped from Lake I to the golf course irrigation system. Under current operations, recycled water is sent by default to Lake I. Golf course staff relate that recycled water is only pumped to Lake A for short periods during the irrigation season, when golf course demands are not keeping up with flows from the COWRF and Lake I is at risk of overflowing. Typically, recycled water that is directed to Lake A will remain in the Lake until it has percolated or evaporated. However, recycled water can discharge from Lake A to the downstream lakes if Lake A overflows. However, golf course staff indicate that the amount of recycled water flow sent to Lake A is not enough to result in overflows.

Figure 2. Castle Oaks Golf Course Recycled Water Storage and Irrigation System Schematic



The ponds also serve as catchment for stormwater runoff the golf course. During the winter rainfall season, stormwater runoff will fill the nine ponds, and they will eventually overflow to Mule Creek. To prevent the discharge of recycled water to Mule Creek, recycled water is only delivered to the golf course during the irrigation season (typically between April and October). This allows for water in Lake I to percolate and evaporate before the rainy season begins. In addition, the recycled water remaining in Lake I at the end of the irrigation season is diluted with 1.2 million gallons of potable water. Golf course staff reported that this practice was developed in partnership with the California Department of Health Services1 to minimize the potential for discharge of recycled water to surface waters.

GOLF COURSE AGRONOMIC WATER DEMANDS

Calculation Procedures

The steps and major assumptions used to determine the rate at which recycled water can be supplied to the golf course are described below.

Climate Data

Rainfall data reported by the Ione National Climate Data Center (NCDC) weather station #0442832 was used to define the average annual rainfall, 1-in-100-year annual rainfall, and the monthly distributions of rainfall, as follows:

- The average rainfall year was defined as having a total rainfall of 22.0 inches.
- The 1-in-100 rainfall year was defined as having a total rainfall of 41.1 inches.
- The monthly distributions were defined based on the 1906 to 1977 monthly Normal rainfall distribution values, with the Normal values being statistically determined values reported by the California Department of Water Resources (DWR).

DWR defined all of these values. This information on is documented in Attachment A and summarized in Table 2.

Reference evapotranspiration (ET) for each month is based on long-term monthly average ET values for the Plymouth California Irrigation Management Information System (CIMIS) Station #227, located approximately 13 miles northeast of the golf course. This information is documented in Attachment A of this TM and summarized in Table 2, along with the monthly total rainfall values for the average and 1-in-100 rainfall years.

[1] CDPH has since been incorporated into the State Water Board as the Division of Drinking Water (DDW).

Table 2. Applicable Climate Data

Month	Average Rainfall,[(a)] inches	1-in-100 Year Rainfall,[(a)] inches	Reference ET,[(b)] inches
October	1.15	2.15	3.24
November	2.81	5.24	1.68
December	3.54	6.58	1.21
January	5.09	9.48	1.48
February	3.14	5.86	1.95
March	3.20	5.95	3.02
April	1.75	3.26	4.57
May	0.63	1.18	5.97
June	0.23	0.43	7.19
July	0.07	0.13	7.64
August	0.13	0.24	6.98
September	0.33	0.62	4.99
Total	**22.1**	**41.1**	**49.9**

(a) NCDC weather station #044283
(b) Plymouth CIMIS station #227

Crop ET

Monthly crop ET values for the golf course were calculated by multiplying the reference ET values from Table 2 by a representative crop coefficient. Grasses grown on the golf course include:

- perennial rye grass
- poa annua
- creeping bent grass
- tall fescue
- Bermuda grass

Apart from Bermuda grass, all grasses used on the golf course are considered cool season grasses. Meyer and Gibeault at the University of California, Irvine report monthly crop coefficients for cool season grasses (see of Attachment B). The average of these reported monthly crop coefficients for April to October, calculated to be 0.88, was used as a representative crop coefficient for all months.

Pond ET

Monthly ET values for the storage pond Lake I were set equal to the respective monthly reference ET values.

Historical Recycled Water Demands

Evaluation of historical recycled water demands was based on the following:

- To properly maintain the golf course greens, recycled water is delivered to the COWRF and golf course solely based on golf course demands.
- Golf course flow data is tracked by golf course staff, and total monthly and annual flow volumes based on this data are shown in Table 3.
- The historical average volume of recycled water delivered was calculated for each calendar month and was used to calibrate and confirm the theoretical recycled water demand for the golf course.

Table 3. Historical Golf Course Recycled Water Demand

Month	Volume of Recycled Water Used, million gallons (MG)									Average, acre-feet
	2017	2018	2019	2020	2021	2022	2023	2024	Average	
October	16.5	8.4	16.7	14.5	8.2	9.1	11.9	20.3[a]	12.2	37.4
November	0	3.2	13.9	6.1	0	9.1	0	2.6[a]	5.3	16.4
December	0	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0
April	0	0	0	1.1	12.7	8.1	0.9	0	2.9	8.8
May	18.1	19.1	15.1	14.1	25.2	12.1[b]	15.8	17.6	17.9	54.9
June	25.6	26.5	21.1	19.6	21.4	10.8[b]	22.0	28.3	23.5	72.2
July	29.4	29.0	27.2	26.6	31.7	20.4	25.1	28.3	27.2	83.6
August	29.1	29.8	26.5	25.8	23.3	21.0	22.0	26.1	25.5	78.1
September	23.0	24.1	24.1	16.2	9.0[c]	15.7	15.0	24.2	20.3	62.4
Total, MG	**141.7**	**140.2**	**144.6**	**123.9**	**131.5**	**106.3**	**118.1**	**147.5**	**134.8**	**413.8**

(a) Values excluded from average calculation. The COWRF influent flow meter failed on October 9, 2024 and COWRF staff requested that water be sent to the COWRF at a steady rate of 800 gallons per minute until the end of the irrigation season in mid-November. Therefore, during this period, there was less ability to match the effluent flows from the COWRF to golf course agronomic demands and it is not clear these are representative values.

(b) Values excluded from average calculation. There was limited recycled water supply available from ARSA during the period of May to June 2022 and the golf course was under-irrigated.

(b) Value is excluded from average because it is anomalous when compared with September recycled water use volumes of other years. Operations staff responsible for this data are not available to confirm its accuracy.

Theoretical Recycled Water Demands

Theoretical recycled water demands for the golf course were developed based on the following:

- Theoretical agronomic demands are calculated by multiplying the difference between the calculated monthly crop ET and monthly rainfall values by the total area of the golf course (130 acres) and dividing by an irrigation efficiency factor. For months with more precipitation than ET, the irrigation demand was set equal to zero.

- Irrigation efficiencies for solid set spray irrigation systems like that used on the golf course can range from 60 to 85 percent (see Attachment C, Table 8.2b). A calibration process, described in the next section, has been used to define the irrigation efficiency for this site.
- Theoretical evaporative losses from the storage ponds are calculated by multiplying the difference between the reference ET and monthly rainfall values by the total area of the impoundment.
- As noted previously, recycled water is only sent to and pumped from Lake I. Therefore, evaporative losses from only Lake I (3.1 acres) are included.
- Losses are calculated for months only when recycled water is delivered to the golf course.
- There have been no attempts to quantify percolation losses from Lake I. Therefore, percolation losses are assumed to be zero.
- Total theoretical recycled water demands are the sum of the theoretical monthly golf course agronomic demands and the theoretical monthly evaporative losses from Lake I.

Average Year Theoretical Recycled Water Demand Calibration

The site-specific irrigation efficiency factor used to calculate the theoretical irrigation demand is determined by adjusting the irrigation efficiency value used in the calculation of the average-year theoretical recycled water demand until the demand matches the historical recycled water supplied.

The resulting irrigation efficiency is 84 percent, on the upper end of the typical range for spray irrigation cited above. ***This calibration process demonstrates that the golf course irrigation system is very efficient and experiences limited losses.***

1-in-100 Year Recycled Water Demand

The 100-year theoretical recycled water demand is calculated using the procedures described above but applying 1-in-100-year rainfall values and retaining the 84 percent irrigation efficiency determined from the average year water balance.

Agronomic Water Demands

The calculated average rainfall year theoretical demand to be used in the water balance analysis is shown in Table 4. The calculated average 1-in-100-year theoretical demand to be used in the water balance analysis is shown in Table 5.

The historical data show irrigation demands in November, but the theoretical demands do not indicate a need for irrigation water in this month. This discrepancy likely reflects the fact that rainfall typically does not begin until late November in this area, while there are still irrigation demands earlier in the month. Despite this discrepancy, the annual theorical demand matches closely to the historical values for the average year. Therefore, the methodology applied provides an accurate estimate for purposes of developing an annual water balance for COWRF.

Table 4. Monthly Golf Course Recycled Water Demand for an Average Rainfall Year

Month	(1) Climate Values, inches: Rainfall	(2) Climate Values, inches: Reference ET	(3) Historical Demand, acre-feet	(4) Theoretical Average-Year Demand, acre-feet: Irrigation Demand	(5) Theoretical Average-Year Demand, acre-feet: Pond Losses	(6) Theoretical Average-Year Demand, acre-feet: Total Demand
October	1.15	3.24	37.4	21.9	0.5	22.4
November	2.81	1.68	16.4	0	0	0
December	3.54	1.21	0	0	0	0
January	5.09	1.48	0	0	0	0
February	3.14	1.95	0	0	0	0
March	3.20	3.02	0	0	0	0
April	1.75	4.57	8.8	29.3	0.7	30.0
May	0.63	5.97	54.9	59.6	1.4	61.0
June	0.23	7.19	72.2	78.6	1.8	80.4
July	0.07	7.64	83.6	85.8	2.0	87.8
August	0.13	6.98	78.1	77.5	1.8	79.3
September	0.33	4.99	62.4	52.4	1.2	53.6
Total, acre-feet per year (AFY)	**22.0**	**49.9**	**413.8**	**405.1**	**9.4**	**414.5**

Notes:
(1) 1906-1977 monthly rainfall normals for Ione NCDC weather station #044283
(2) Long-term monthly average reference ET from Plymouth CIMIS station #227
(3) Average of monthly irrigation volumes applied to the golf course from 2017 to 2024 from Table 3
(4) = (irrigated area of 130 acres) x [Column 2 x (crop coefficient of 0.88) - Column 1] / (irrigation efficiency of 0.84) / 12 inches/foot
(5) = (storage pond area of 3.1 acres) x (Column 2 - Column 1) / 12 inches per foot
(6) = Column 4 + Column 5

Table 5. Monthly Golf Course Recycled Water Demand for a 1-in-100 Rainfall Year

	(1)	(2)	(3)	(4)	(5)
	Climate Values, inches		Theoretical 100-Year Demand, acre-feet		
Month	Rainfall	Reference ET	Irrigation Demand	Pond Losses	Total Demand
October	2.15	3.24	9.0	0.3	9.3
November	5.24	1.68	0	0	0
December	6.58	1.21	0	0	0
January	9.48	1.48	0	0	0
February	5.86	1.95	0	0	0
March	5.95	3.02	0	0	0
April	3.26	4.57	9.8	0.3	10.1
May	1.18	5.97	52.5	1.2	53.7
June	0.43	7.19	76.1	1.7	77.8
July	0.13	7.64	85.0	1.9	86.9
August	0.24	6.98	76.1	1.7	77.8
September	0.62	4.99	48.6	1.1	49.7
Total, AFY	**41.1**	**49.9**	**357.1**	**8.2**	**365.3**

Notes:

(1) = 100-year return period annual total distributed monthly in proportion to 1906-1997 monthly Normals for Ione NCDC weather station #044283

(2) Long-term monthly average reference ET from Plymouth CIMIS station #227

(3) = (irrigated area of 130 acres) x [Column 2 x (crop coefficient of 0.88) - Column 1] / (irrigation efficiency of 0.84) / 12 inches per foot

(4) = (storage pond area of 3.1 acres) x (Column 2 - Column 1) / 12 inches/foot

(5) = Column 4 + Column 5

COWRF INFLUENT FLOWS

Calculation Procedures

The theoretical influent flow to the COWRF is calculated for each month using the following formula:

Golf Course Irrigation Demand/(1-backwash percentage)

The Golf Course Irrigation Demands were discussed in the previous section. The backwash percentages are calculated based on historical COWRF influent and backwash flow data, as described in the sections below.

Historical COWRF Influent Flows

Historical monthly influent flows to the COWRF are shown in Table 6. Influent flows beginning in April 2022 are reported in the monthly COWRF discharge monitoring reports (DMRs). Prior to 2022, COWRF DMRs did not present influent flows. However, the influent flows were determined from available golf course demand data and backwash flow data.[2]

Table 6. Historical COWRF Influent Flows

Month	Volume of COWRF Influent Flow, MG								
	2017	2018	2019	2020	2021	2022	2023	2024	Average
October	19.5	10.3	20.7	17.9	10.5	10.9	19.2	27.7[(a)]	17.1
November	0	4.8	15.8	7.8	0	11.3	9.3	4.0[(a)]	8.8
December	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	2.0	0	0	2.0
April	0	0	0	0.9	14.4	12.7	2.1	0	7.5
May	20.4	21.6	17.1	16.8	29.1	14.0[(b)]	18.8	19.8	19.7
June	29.1	30.1	23.7	23.0	24.7	13.1[(b)]	25.8	32.0	25.2
July	34.1	33.5	31.2	30.2	35.7	23.1	29.5	32.1	31.2
August	33.3	36.9	33.3	30.1	27.0	23.2	27.4	32.3	30.3
September	27.1	27.7	28.1	20.2	11.2[(b)]	18.5	21.4	28.0	22.8
Total, MG	**163.4**	**164.9**	**169.7**	**146.7**	**152.7**	**128.8**	**153.5**	**174.7**	**164.5**

(a) Values excluded from this evaluation. The COWRF influent flow meter failed on October 9, 2024. Reported influent is an estimate of the actual flow received during this period.

(b) Although values reported in these months are not representative of typical influent flows (and thus irrigation demands), they are useful in determining the percentage of backwash flow generated. Therefore, these values are not excluded from this portion of the analysis.

[2] To determine influent flows prior to April 2022, monthly COWRF effluent flows from the DMRs were compared to golf course flows and filter backwash flows. If the reported COWRF effluent flow was larger than the golf course flow, it was confirmed to be actual influent flow by verifying that it was equal to the sum of the golf course influent flow and the filter backwash flow. If the reported COWRF effluent flow was equivalent to the golf course flow, the COWRF influent flow was calculated by summing the COWRF effluent flow and filter backwash flow. The 2017 COWRF influent flows were calculated by summing monthly golf course influent flows and filter backwash flows because COWRF DMRs were not available.

Historical COWRF Backwash Flows

Historical monthly filter backwash flows from the COWRF are shown in Table 7 .

Table 7. Historical COWRF Filter Backwash Flows

Month	Volume of COWRF Filter Backwash Flow, MG								
	2017	2018	2019	2020	2021	2022	2023	2024	Average
October	3.0	1.9	4.0	3.4	2.4	1.7	7.3[(a)]	5.0	3.1
November	0	1.1	1.9	1.7	0	2.3	4.1[(a)]	1.7	1.2
December	0	0	0	0	0	0	0	0	0.0
January	0	0	0	0	0	0	0	0	0.0
February	0	0	0	0	0	0	0	0	0.0
March	0	0	0	0	0	0	0	0	0.0
April	0	0	0	0	2.0	2.0	0.1	0	1.4
May	2.2	2.5	1.9	2.7	3.9	1.9	3.0	2.2	2.5
June	3.4	3.6	2.5	3.8	3.4	2.0	3.7	3.6	3.2
July	4.7	4.4	3.9	3.6	4.0	2.7	4.4	3.8	3.9
August	4.2	3.9	3.9	4.3	3.8	2.7	5.4[(a)]	5.1	4.0
September	4.1	3.5	4.0	4.0	2.6	2.2	6.4[(a)]	5.5	3.7
Total, MG	**21.7**	**20.9**	**22.1**	**23.4**	**21.9**	**17.5**	**34.4**	**26.8**	**23.5**

(a) Values were not used in calculated average. Operations staff were performing excessive backwashing of the filters. This practice has since ceased.

Filter Backwash Flow Percentages

The percentage of COWRF influent flow that was discarded as backwash flow to the WWTF each month was calculated by dividing the backwash flow by the influent flow. Table 8 shows the results of this calculation. From the percentages shown, a monthly average was calculated. Monthly average backwash percentages range from 13 to 20 percent.

Table 8. Historical COWRF Filter Backwash Flow Percentage

Month	Filter Backwash Flow as a Percentage of Influent Flow, percent								
	2017	2018	2019	2020	2021	2022	2023	2024	**Average**
October	15	18	19	19	23	16	38[a]	18[b]	**18**
November	-[c]	23	12	22	-	20	44[a]	41[b]	**19**
December	-	-	-	-	-	-	-	-	**-**
January	-	-	-	-	-	-	-	-	**-**
February	-	-	-	-	-	-	-	-	**-**
March	-	-	-	-	-	-	-	-	**-**
April	-	-	-	-	14	16	7[d]	-	**15**
May	11	12	11	16	13	13	16	11	**13**
June	12	12	11	16	14	15	15	11	**13**
July	14	13	13	12	11	12	15	12	**13**
August	13	11	12	14	14	12	20[a]	16	**13**
September	15	13	14	20	23	12	30[a]	20	**17**

(a) Values were not used in calculated average. Operations staff were performing excessive backwashing of the filters. This practice has since ceased.

(b) Values excluded from this evaluation. The COWRF influent flow meter failed on October 9, 2024. Reported influent is an estimate of the actual flow received during this period.

(c) "-" indicate there were no flows to the COWRF during this period.

(d) The backwash percentage during April 2023 was abnormally low. Influent flow to the COWRF began six days before the end of the month and effluent and backwash were only discharged on two of the six days. This value was not used in the calculated average.

Theoretical COWRF Influent Flow

The calculated average rainfall year theoretical flow to the COWRF to be used in the water balance analysis is shown in Table 9. The calculated average 1-in-100-year theoretical flow to the COWRF to be used in the water balance analysis is shown in Table 10.

Table 9. Monthly COWRF Influent Demand for an Average Rainfall Year

Month	Average-Year Golf Course Recycled Water Demand,[(a)] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[(b)] percent	Average-Year COWRF Influent Flow,[(c)] acre-feet
October	22.4	18	27.3
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	30.0	15	35.3
May	61.0	13	70.1
June	80.4	13	92.4
July	87.8	13	100.9
August	79.3	13	91.1
September	53.6	17	64.6
Total, AFY	**414.5**	**-**	**481.7**

(a) From Table 4, Column 6
(b) From Average column in Table 8
(c) = Column 1/(1 - Column 2)

Table 10. Monthly COWRF Influent Capacity for a 1-in-100 Rainfall Year

Month	1-in-100-Year Golf Course Recycled Water Demand,[a] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[b] percent	1-in-100-Year COWRF Influent Flow,[c] acre-feet
October	9.3	18	11.3
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	10.1	15	11.9
May	53.7	13	61.7
June	77.8	13	89.4
July	86.9	13	99.9
August	77.8	13	89.4
September	49.7	17	59.9
Total, AFY	**365.3**	**-**	**423.5**

(a) From Table 5, Column 5
(b) From Average column in Table 8
(c) = Column 1 / (1 - Column 2)

Theoretical COWRF Backwash Percentages and Flows

A calculated theoretical backwash flow from the COWRF to the WWTF will be used in the water balance analysis for the WWTF, based on the influent flows from Table 9 and Table 10 and average historical backwash flow percentages by month from Table 8. The theoretical COWRF backwash flow for an average rainfall year is shown in Table 11. The theoretical COWRF backwash flow for a 1-in-100 rainfall year is shown in Table 12.

Table 11. Monthly COWRF Backwash Flow for an Average Rainfall Year

Month	Average-Year COWRF Influent Flow,[a] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[b] percent	Average-Year COWRF Backwash to WWTF,[c] acre-feet
October	27.3	18	4.9
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	35.3	15	5.3
May	70.1	13	9.1
June	92.4	13	12.0
July	100.9	13	13.1
August	91.1	13	11.8
September	64.6	17	11.0
Total, AFY	**481.7**	**-**	**67.2**

(a) From Table 9
(b) From Table 8
(c) = Column 1 x Column 2

Table 12. Monthly COWRF Backwash Flow for a 1-in-100 Rainfall Year

Month	1-in-100-Year COWRF Influent Flow,[a] acre-feet	COWRF Backwash Flow as a Percentage of Influent Flow,[b] percent	1-in-100-Year COWRF Backwash to WWTF,[c] acre-feet
October	11.3	18	2.0
November	0	19	0
December	0	-	0
January	0	-	0
February	0	-	0
March	0	-	0
April	11.9	15	1.8
May	61.7	13	8.0
June	89.4	13	11.6
July	99.9	13	13.0
August	89.4	13	11.6
September	59.9	17	10.2
Total, AFY	**423.5**	**-**	**58.2**

(a) From Table 10
(b) From Table 8
(c) = Column 1 x Column 2

GOLF COURSE TAILWATER AND OVERSPRAY CONTROL AND MONITORING

This section provides information about Best Management Practices (BMPs) and monitoring for tailwater and overspray control from the golf course. The following topics are addressed:

- Golf Course Field Monitoring
- Golf Course Best Management Practices
- Golf Course Storage Pond Monitoring

Golf Course Field Monitoring

The City, in coordination with the golf course management, is required to perform daily, weekly, and monthly monitoring of the golf course when recycled water is being applied, as outlined in the WRR's Monitoring and Reporting Program (MRP). These requirements are summarized in Table 13. In addition to the elements outlined below, the daily inspections must note any evidence of erosion, field saturation, runoff or the presence of nuisance conditions.

The MRP was adopted December 21, 2021, and did not become effective until after the end of the 2021 irrigation season. Since its adoption, the MRP requirements related to the golf course operations shown in Table 13 have not been satisfied. The City and golf course staff are currently developing the protocols to implement this monitoring and will initiate the program beginning in the 2025 irrigation season.

Table 13. Golf Course Monitoring Requirements				
Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	gallons	Continuous	Daily	Monthly
Rainfall[a]	inches	Measurement		
Acreage Applied[b]	acres	Calculated		
Tailwater Runoff Observation	--	Observation		

(a) As measured at the weather station nearest to the disposal site.
(b) Specific disposal fields shall be identified.

Flow

Currently, golf course staff monitor the daily total flow that is applied to the golf course. This flow is measured from the irrigation pump station and recorded in the golf course's central computer system. The measurement can be reported in up to 15-minute increments. Golf course staff report the daily total flows to the City.

Rainfall

Rainfall collects in a plastic rain gage located at the maintenance yard, and golf course staff manually read the gage daily at approximately the same time of day. That measurement is compared to a reported weather station located in the nearby City of Jackson to confirm its accuracy. The onsite, measured rainfall data is reported to the City.

Acreage Applied

The golf course's central computer system has the ability report the areas that are watered each night. These areas are grouped and reported by area category according to the type of plant that is watered. The area categories are:

- Greens
- Tees
- Fairway
- Perimeter
- Rough
- Club House
- Driving Range
- Putting Green

Irrigation generally occurs on all areas of the golf course simultaneously. In rare instances an area category may be watered alone. Starting with the 2025 irrigation season, golf course staff will report the acreage that is watered daily and include that information in the flow report provided to the City monthly.

Tailwater Runoff Observation Monitoring

Starting with the 2025 irrigation season, City staff will inspect the golf course daily for evidence of runoff and overspray. These inspections will occur in the morning, just after irrigation occurs. During these inspections, special attention will be paid to the following five vulnerable areas, which have the most potential for recycled water to escape the use area:

- Castle Oaks Clubhouse
- Areas abutting Mule Creek
- Spyglass Drive near the Irrigation Pump Station
- Castle Oaks Drive and Shakeley Lane intersection
- Near the bathroom by Vista Lane

Monitoring each location will be done through an observatory drive by each location in the early morning. Evidence of runoff or overspray includes wet areas on hardscape sidewalks and roadways surrounding the extents of the landscaped area. If these areas are wet or water appears to be draining from landscape into the gutters, the irrigation system should be further investigated for problems. Inspection logbook entries for the golf course monitoring will be submitted with the monthly monitoring reports.

Golf Course Best Management Practices

Overspray and runoff of recycled water from the use area is minimized and controlled through the implementation of BMPs. Spray irrigation systems are vulnerable to inefficiencies related to runoff or overspray caused by pressure fluctuations, wind, or equipment malfunction. If any part of the system is not working optimally, the result is a less uniform application of water which increases the likelihood of water escaping the recycled water use area. Even the most efficiently designed system must be maintained and constantly monitored to mitigate system avoid problems.

The COWRF BMP strategies include engineered controls and mechanisms to minimize runoff or overspray and practices to improve the application of water to a use area. Specific BMPs employed to control for runoff or overspray include:

- Irrigation is ceased during extended and extensive windy periods.
- Irrigation is avoided when the soil is saturated to prevent runoff.
- All sprinkler heads are uniform in brand, model and nozzle size to apply water as uniformly across the plant material as possible.
- A minimum four-foot distance from neighboring backyards and buildings is maintained as practical throughout areas of the golf course. This has been done through head removal, spray range or arc reduction or elimination of a zone. In areas where the four-foot buffer cannot be maintained and irrigated turf is desired, such as near a tee, hole or walkways, the irrigation water is applied with lower impact heads with a smaller arc radius.
- Irrigation occurs in the evening or early morning hours to avoid public interaction, reduce evaporative loses, and take advantage of calmer wind patterns.
- Good horticultural practices are performed including, mowing, de-thatching, aeration, and pest control as necessary to increase the plant and soil water absorbance.
- Irrigation is applied as close as practical to match the amount of water lost through ET and the soil needs.

- Duration of water application is applied to match percolation rates to reduce runoff.
- Installation of low angle heads have been installed in areas near residential backyards to reduce mist from wind drift of spray.
- Tall plants are present along edges and perimeters to create a plant buffer.
- Regular maintenance is performed of the irrigation system which includes inspecting and repairing leaks.

Golf Course Storage Pond Monitoring

Monitoring of irrigation storage ponds when they contain recycled water is also required under the MRP. These requirements are summarized in Table 14.

Table 14. Golf Course Storage Pond Monitoring Requirements

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Freeboard	feet	Measurement	Twice Weekly – 3 days apart	Monthly
Odors	--	Observation	Weekly	
Dissolved Oxygen	milligrams per liter	Grab	Weekly	
pH	pH units	Grab	Monthly	

Similar to the irrigation area, the MRP requirements related to the ponds have not been consistently satisfied. The City and golf course staff are currently developing the protocols to implement this monitoring and will initiate the program beginning in the 2025 irrigation season.

Freeboard

The MRP requires the freeboard be monitored as the difference between the top of the bank of the storage pond to the level of the water. This measurement provides the City with confidence that recycled water cannot escape the storage pond containment area. However, as noted previously, each pond is equipped with a standpipe that serves as an overflow structure. Therefore, it is more appropriate to monitor freeboard as the difference between the top of the overflow structure to the top of the water surface.

Currently, the City has the ability to measure the freeboard of Lake A by means of a level monitoring rod. This capability is not set up in Lakes B through I. Lake I is manually kept at a level that is below the 12-inch overflow standpipe that conveys overflow water to a wetland area that eventually flows to Mule Creek. Prior to the start of the 2025 irrigation season, the City will need to install a level monitoring rod in each pond so that freeboard can be measured.

In addition, the City will employ the following monitoring practices in the 2025 irrigation season:

- Twice a week during the irrigation season, each storage pond should be observed, and freeboard monitored.
- For Pond I, it is expected that there will be recycled water present in the pond throughout the irrigation season and this pond should be monitored during each bi-weekly event.

- Recycled water is occasionally directed to Pond A. Therefore, this pond will be inspected as part of the bi-weekly monitoring. If there is standing water present in Pond A, then monitoring of this pond will be completed.
- If there is any evidence that Pond A has overflowed to Pond B (or any downstream pond) via the pond standpipes, then monitoring of the downstream ponds will also be performed.
- City staff will be responsible for making the appropriate observations to determine whether recycled water is being stored in any of the ponds.
- Golf course staff will provide information to the City regarding where COWRF flows are directed. Specifically, the monthly reports provided to the City will include information about which pond was receiving flow on each day.

Odors

The City is required to evaluate if any objectionable odors are being emitted from the storage ponds once every week. This will be needed for each pond that holds recycled water.

Dissolved Oxygen and pH

The City is required to collect and measure the dissolved oxygen and pH in a grab sample collected from each recycled water storage pond weekly. These measurements can be made using field test instruments provided that:

- The operator is trained in proper use and maintenance of the instruments,
- The instruments are field calibrated at the frequency recommended by the manufacturer,
- The instruments are serviced and/or calibrated at the manufacturer's recommended frequency, and
- Field calibration reports are maintained and a calibration log verifying calibration of all handheld monitoring instruments and devices are submitted with the monthly monitoring report.

Attachment A

Rainfall and Reference ET Data

IONE, CALIFORNIA (044283)

Period of Record Monthly Climate Summary

Period of Record : 03/01/1906 to 06/30/1977

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)					Insuff	icient	Data						
Average Min. Temperature (F)					Insuff	icient	Data						
Average Total Precipitation (in.)	5.08	3.14	3.19	1.75	0.63	0.23	0.07	0.13	0.33	1.15	2.81	3.53	22.04
Average Total SnowFall (in.)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 0% Min. Temp.: 0% Precipitation: 99.9% Snowfall: 99.9% Snow Depth: 99.8%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

D

Rainfall Depth Duration Frequency at Ione

Station Number	Station	County	Latitude	Longitude	Elevation	Years Recorded
B00 4283 00	Ione	Amador	38.348	-120.938	284.0	89

Rainfall Statistics	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	8-Day	10-Day	15-Day	20-Day	30-Day	60-Day	1-Year
Pr=0.5	1.92	2.55	3.01	3.38	3.70	3.99	4.48	4.91	5.79	6.51	7.68	10.19	21.28
Pr=0.2	2.55	3.37	3.98	4.47	4.89	5.27	5.92	6.48	7.64	8.58	10.11	13.39	27.84
Pr=0.1	2.92	3.87	4.55	5.11	5.60	6.02	6.76	7.40	8.71	9.78	11.52	15.23	31.54
Pr=0.04	3.36	4.44	5.22	5.86	6.40	6.89	7.73	8.45	9.94	11.16	13.13	17.32	35.70
Pr=0.02	3.66	4.83	5.67	6.36	6.96	7.48	8.39	9.17	10.78	12.09	14.22	18.74	38.51
Pr=0.01	3.94	5.19	6.10	6.84	7.47	8.04	9.01	9.84	11.57	12.97	15.23	20.06	41.11
Pr=0.005	4.21	5.54	6.51	7.29	7.96	8.56	9.59	10.48	12.31	13.79	16.19	21.31	43.57
Pr=0.002	4.54	5.97	7.01	7.85	8.58	9.22	10.33	11.28	13.23	14.82	17.40	22.87	46.64
Pr=0.001	4.79	6.29	7.38	8.26	9.02	9.69	10.85	11.85	13.90	15.57	18.26	23.99	48.84
Pr=0.0001	5.53	7.26	8.50	9.52	10.39	11.15	12.48	13.62	15.96	17.87	20.94	27.46	55.66

Annual Maxima	1-Day	2-Day	3-Day	4-Day	5-Day	6-Day	8-Day	10-Day	15-Day	20-Day	30-Day	60-Day	1-Year
2007	---	---	---	---	---	---	---	---	---	---	---	---	---
2006	---	---	---	---	---	---	---	---	---	---	---	---	---
2005	---	---	---	---	---	---	---	---	---	---	---	---	---
2004	---	---	---	---	---	---	---	---	---	---	---	---	---
2003	---	---	---	---	---	---	---	---	---	---	---	---	---
2002	---	---	---	---	---	---	---	---	---	---	---	---	---
2001	---	---	---	---	---	---	---	---	---	---	---	---	---
2000	1.85	2.80	4.29	4.74	4.99	4.99	5.22	5.79	7.52	9.05	10.35	11.82	21.39
1999	2.02	2.44	3.42	3.42	3.42	3.42	3.42	4.17	5.51	5.72	8.41	10.90	15.39
1998	2.37	3.55	4.11	4.36	4.98	5.85	6.61	7.31	8.07	10.05	14.21	21.25	30.46
1997	2.37	3.55	4.11	4.36	4.98	5.85	6.61	7.31	8.07	10.05	14.21	21.25	43.59
1996	3.75	3.85	3.85	3.85	3.85	3.85	3.85	3.85	4.74	5.27	6.16	11.53	22.80
1995	2.90	4.71	5.05	5.33	5.58	5.71	7.45	8.02	9.08	9.83	12.42	16.90	35.50
1994	1.27	1.70	1.95	2.05	2.15	2.42	2.55	2.55	3.45	3.67	5.27	5.87	15.52
1993	1.81	2.26	2.26	2.84	3.18	4.50	4.91	5.13	7.10	7.52	10.16	16.58	29.21
1992	2.30	3.18	3.18	3.24	4.11	5.17	5.97	6.06	6.98	7.16	9.13	10.62	20.43
1991	1.60	2.28	2.88	3.52	3.52	3.52	4.08	5.15	6.28	7.38	10.07	11.94	16.59
1990	1.82	2.35	2.37	2.37	2.37	2.37	2.37	2.37	2.90	2.90	3.33	6.23	17.33
1989	1.05	1.90	2.05	2.06	2.26	2.41	2.52	2.82	3.36	3.75	5.85	7.67	16.85
1988	1.55	1.90	1.90	1.90	1.90	1.90	2.05	2.13	2.75	3.47	4.78	6.57	11.67
1987	1.81	2.43	2.54	2.54	2.87	2.87	3.38	3.62	3.62	5.31	5.31	9.80	13.86
1986	2.75	4.85	5.65	6.65	6.85	6.95	7.90	8.00	8.00	9.45	12.97	18.47	33.02
1985	---	---	---	---	---	---	---	---	---	---	---	---	17.93
1984	---	---	---	---	---	---	---	---	---	---	---	---	23.39
1983	---	---	---	---	---	---	---	---	---	---	---	---	41.81
1982	---	---	---	4.62	5.24	5.24	5.53	5.53	7.29	8.43	9.95	15.59	39.56
1981	2.04	2.94	3.80	4.17	4.32	5.01	6.02	6.02	6.21	6.21	6.62	11.24	17.15
1980	---	---	---	---	---	---	---	---	---	---	---	---	

1979	1.54	2.28	2.83	3.82	3.82	3.82	4.02	4.97	5.49	6.53	7.09		
1978	1.54	2.28	2.83	3.82	3.82	3.82	4.02	4.97	5.49	6.53	7.09	12.65	20.87
1977	0.92	1.03	1.09	1.12	1.12	1.12	1.24	1.26	1.26	1.26	2.18	3.32	8.73
1976	0.78	1.23	1.70	1.70	1.91	2.06	2.06	2.06	2.18	3.21	3.73	5.00	11.87
1975	1.97	2.56	3.14	3.27	3.38	3.52	4.84	6.08	7.82	8.47	8.50	15.06	28.24
1974	---	---	---	---	---	---	---	---	---	---	---	---	33.80
1973	2.48	2.76	3.51	4.54	4.86	4.86	6.09	7.38	8.60	9.26	12.09	19.82	35.95
1972	3.05	3.88	3.92	3.98	3.98	5.03	5.90	5.96	6.05	6.73	7.92	9.62	16.80
1971	3.05	4.40	5.02	5.13	6.25	6.57	6.57	7.61	8.20	8.22	9.81	13.34	21.20
1970	2.94	2.94	3.48	3.48	3.72	3.72	4.97	5.90	6.37	7.01	9.55	12.27	21.13
1969	2.75	3.15	3.15	3.23	3.31	3.54	5.63	6.09	8.33	8.80	9.89	16.66	30.23
1968	1.76	2.12	2.12	2.43	2.43	2.48	2.51	3.20	3.20	3.49	4.61	8.77	17.12
1967	2.52	4.13	4.15	4.63	4.97	4.99	5.38	6.53	7.36	7.36	7.89	11.44	29.07
1966	1.79	1.95	2.46	2.48	3.27	3.74	4.03	4.13	5.17	5.17	5.17	9.69	16.47
1965	---	3.43	---	---	---	---	---	7.18	8.10	---	---	---	25.01
1964	1.98	2.44	2.86	3.06	3.06	3.06	3.25	3.45	5.45	6.58	6.84	9.13	18.12
1963	2.88	3.52	4.20	4.65	4.65	4.65	4.65	4.65	6.07	6.38	6.38	10.35	24.44
1962	1.25	2.08	2.93	3.02	4.05	4.53	6.47	7.17	7.61	7.75	9.09	11.98	18.00
1961	1.38	1.68	2.16	2.16	2.16	2.26	2.40	2.77	2.93	3.23	4.81	6.51	13.82
1960	1.33	1.53	1.86	1.86	2.09	2.42	2.82	3.25	3.67	5.03	6.18	7.86	16.68
1959	1.65	2.09	2.09	2.55	2.88	3.22	3.68	4.01	4.01	4.75	6.13	10.54	13.45
1958	---	---	---	---	---	---	---	---	---	---	---	---	41.69
1957	---	---	---	---	---	---	---	---	---	---	---	---	18.93
1956	---	---	---	---	---	---	---	---	---	---	---	---	28.58
1955	---	---	---	---	---	---	---	---	---	---	---	---	18.28
1954	---	---	---	---	---	---	---	---	---	---	---	---	16.40
1953	---	---	---	---	---	---	---	---	---	---	---	---	15.10
1952	2.21	3.15	3.68	3.77	3.77	3.77	3.77	4.06	4.68	6.56	7.47	13.11	27.05
1951	4.65	5.30	5.30	5.30	5.55	5.70	6.24	6.25	6.25	8.87	10.85	14.60	28.76
1950	2.70	2.70	2.70	3.97	3.97	3.97	3.97	5.05	5.05	5.55	9.52	10.41	18.30
1949	1.76	2.71	3.14	3.14	3.14	3.14	3.72	3.86	4.87	5.45	6.93	10.49	17.23
1948	1.28	1.41	1.70	1.83	2.03	2.03	2.43	2.43	4.08	4.39	6.67	8.68	17.76
1947	2.16	3.12	3.20	3.20	3.91	3.91	3.91	4.13	4.13	4.13	4.82	7.33	14.54
1946	1.90	1.90	3.20	3.38	4.37	4.98	5.16	5.42	5.70	6.31	7.49	11.80	20.14
1945	2.68	3.88	4.78	4.78	4.98	5.27	5.27	5.27	5.66	5.66	5.66	9.58	23.66
1944	2.25	2.41	2.53	2.53	3.23	3.39	3.93	4.28	5.68	5.68	7.47	10.20	19.25
1943	2.05	2.78	3.58	3.81	4.43	4.77	5.38	5.42	7.10	8.03	10.13	15.90	27.61
1942	2.00	3.48	4.20	4.60	5.32	5.81	5.91	5.91	7.68	8.17	8.17	12.92	26.67
1941	1.85	2.40	2.46	3.46	5.46	5.46	4.17	4.52	7.17	8.59	11.13	14.00	25.17
1940	1.65	2.72	3.46	3.76	4.20	4.79	5.24	5.54	5.95	6.00	8.96	16.37	24.86
1939	1.72	2.40	2.55	2.80	2.80	2.80	2.80	2.80	2.80	3.17	3.42	5.93	14.01
1938	2.30	3.65	4.05	4.55	4.80	4.80	5.25	6.95	9.40	10.35	12.10	16.00	27.25
1937	4.40	4.65	5.85	6.15	6.60	6.95	7.70	8.15	8.70	9.50	10.10	19.90	34.99
1936	2.00	2.30	3.50	4.20	4.35	4.50	6.05	6.40	10.33	10.33	13.28	19.99	28.29
1935	2.50	2.72	2.72	2.72	3.25	4.30	4.52	4.52	5.22	5.65	6.35	9.47	23.94
1934	1.70	2.85	2.85	4.05	4.52	4.52	4.52	4.52	4.52	6.40	8.77	9.67	

1933	1.20	1.72	1.72	1.72	2.32	3.12	3.12	3.82	3.82	3.82	5.07		
1932	1.75	1.92	2.59	3.58	3.75	3.80	4.49	4.97	5.58	5.88	6.60	10.05	19.99
1931	1.65	1.65	1.65	2.53	2.53	2.53	2.65	2.65	2.65	2.65	3.92	6.39	12.62
1930	1.39	2.25	2.25	2.57	2.57	2.78	3.35	3.71	5.17	5.33	5.62	10.86	17.07
1929	1.91	2.98	3.49	3.49	3.49	3.49	3.49	3.57	4.07	4.07	4.07	6.57	15.52
1928	1.68	2.60	3.40	4.06	4.79	4.92	4.92	4.92	5.92	6.10	6.27	9.09	18.80
1927	1.50	3.00	3.00	4.25	4.25	4.51	5.46	5.96	6.26	6.91	7.41	10.51	24.11
1926	2.55	2.80	2.90	3.55	3.55	4.55	5.10	5.10	6.48	8.99	10.04	10.29	21.54
1925	1.95	3.05	3.27	3.27	3.52	3.74	4.27	5.79	5.94	7.79	8.41	11.84	28.60
1924	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	2.35	3.00	3.00	4.95	10.50
1923	2.20	3.00	4.30	5.30	5.30	5.30	5.50	6.10	6.70	6.70	9.30	14.15	26.07
1922	2.17	2.52	3.45	3.95	3.95	3.95	3.95	4.44	7.09	7.16	9.46	14.80	24.30
1921	3.85	3.95	4.50	4.72	4.72	4.72	4.72	5.72	6.62	7.02	7.72	13.51	26.57
1920	2.10	3.55	3.90	4.05	4.20	4.20	4.20	4.31	4.82	5.19	7.04	9.26	15.46
1919	2.25	3.55	3.90	4.00	4.05	4.40	4.60	4.70	5.00	6.45	8.15	10.35	18.75
1918	1.60	2.35	2.35	2.35	3.45	4.25	4.70	4.70	6.50	6.50	8.10	11.30	15.50
1917	1.30	2.30	2.60	2.90	3.25	3.55	4.10	4.35	4.55	4.55	5.35	7.25	17.70
1916	---	---	---	---	---	---	---	---	---	---	---	---	20.00
1915	1.50	1.95	2.15	2.30	2.83	3.03	3.88	4.20	5.88	6.20	7.77	10.87	22.80
1914	2.26	3.11	3.49	3.61	3.99	3.99	3.99	4.48	5.47	6.96	9.81	13.52	22.90
1913	1.20	1.84	2.22	2.72	2.95	3.36	3.36	3.55	4.01	4.01	4.01	4.86	14.26
1912	0.69	1.04	1.15	1.22	1.30	1.45	1.86	2.16	2.47	2.86	3.43	5.36	12.68
1911	2.17	3.57	5.27	6.12	6.45	7.30	7.80	8.42	10.82	15.51	18.06	24.30	30.46
1910	2.00	3.00	3.00	3.45	3.88	3.88	3.93	3.93	4.00	4.69	5.92	8.90	20.89
1909	1.45	2.60	3.80	4.42	4.54	5.07	5.99	6.39	7.99	9.21	12.66	19.24	26.01
1908	1.30	1.60	1.60	1.78	1.78	1.78	1.83	3.03	3.63	3.63	5.51	9.04	14.27
1907	4.37	6.79	7.38	7.53	8.38	8.53	8.53	8.53	8.53	10.60	12.20	18.04	33.82
1906	2.40	2.54	3.22	3.62	3.85	3.85	3.85	5.03	7.47	9.20	10.45	15.43	30.93
1905	2.90	2.90	2.90	3.20	4.20	4.20	4.55	4.85	5.55	5.55	5.50	9.65	25.95
1904	1.51	2.62	3.12	3.15	3.15	3.25	3.75	4.86	6.07	6.42	7.20	12.05	21.42
1903	1.85	2.92	3.58	4.10	5.01	5.03	5.03	5.53	5.53	7.54	9.71	10.34	22.39
1902	1.21	1.79	2.09	2.61	3.01	3.41	3.87	4.41	5.03	6.03	7.72	9.29	20.19
1901	2.05	2.79	3.61	4.03	4.03	4.72	5.54	5.52	5.54	7.35	7.69	11.29	25.48
1900	1.85	2.34	2.41	2.80	2.86	2.86	2.86	3.88	4.82	5.66	6.45	9.69	21.51
1899	1.93	2.56	3.20	3.54	4.04	4.04	4.94	7.17	7.80	7.93	9.00	9.22	20.03
1898	3.60	4.47	4.64	4.64	4.64	4.64	4.64	4.76	5.11	5.11	5.23	7.30	13.77
1897	---	---	---	---	---	---	---	---	---	---	---	---	---
1896	---	---	---	---	---	---	---	---	---	---	---	---	---
1895	---	---	---	---	---	---	---	---	---	---	---	---	---
1894	---	---	---	---	---	---	---	---	---	---	---	---	---
1893	---	---	---	---	---	---	---	---	---	---	---	---	---
1892	---	---	---	---	---	---	---	---	---	---	---	---	---
1891	---	---	---	---	---	---	---	---	---	---	---	---	---
1890	---	---	---	---	---	---	---	---	---	---	---	---	---
1889	---	---	---	---	---	---	---	---	---	---	---	---	---
1888	---	---	---	---	---	---	---	---	---	---	---	---	---

Monthly Average ETo Report

California Irrigation Management Information System (CIMIS)

Rendered in ENGLISH Units.

Printed on Wednesday, August 31, 2022

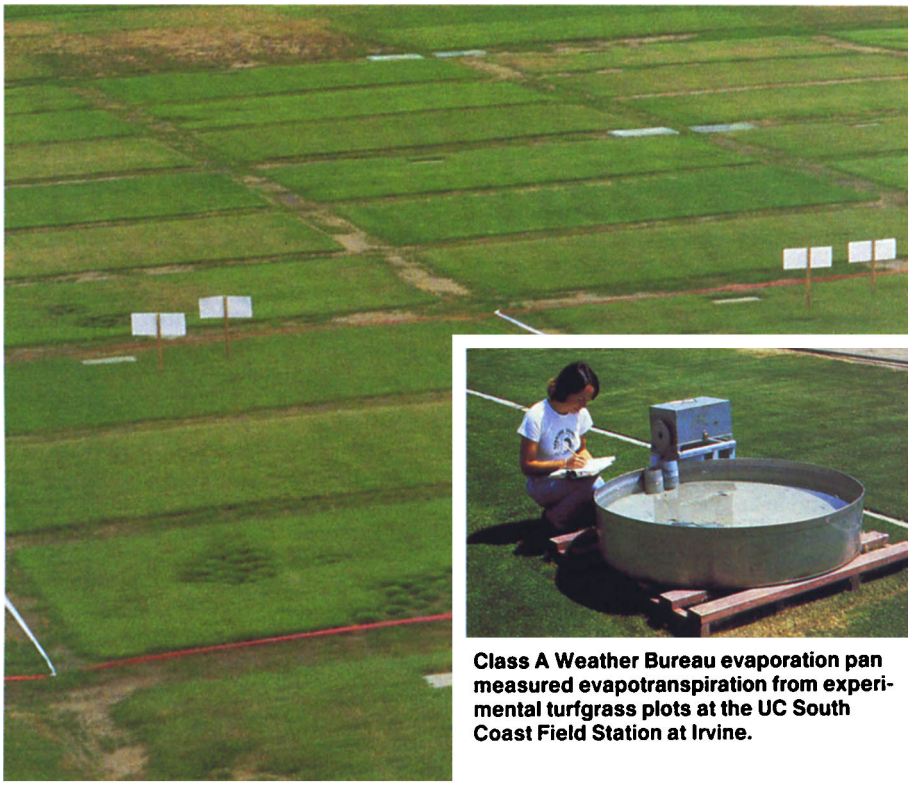
Average ETo Values by Station

Stn Id	Stn Name	CIMIS Region	Jan (in)	Feb (in)	Mar (in)	Apr (in)	May (in)	Jun (in)	Jul (in)	Aug (in)	Sep (in)	Oct (in)	Nov (in)	Dec (in)	Total (in)
227	Plymouth	SFH	1.48	1.95	3.02	4.57	5.97	7.19	7.64	6.98	4.99	3.24	1.68	1.21	49.92

CIMIS Region Abbreviations		
BIS - Bishop	CCV - Central Coast Valleys	ICV - Imperial/Coachella Valley
LAB - Los Angeles Basin	MBY - Monterey Bay	NCV - North Coast Valleys
NEP - Northeast Plateau	SAV - Sacramento Valley	SBE - San Bernardino
SFB - San Francisco Bay	SJV - San Joaquin Valley	SFH - Sierra Foothill
SCV - South Coast Valleys		

Attachment B

Turfgrass Performance Under Reduced Irrigation
Meyer and Gibeault



Class A Weather Bureau evaporation pan measured evapotranspiration from experimental turfgrass plots at the UC South Coast Field Station at Irvine.

Turfgrass performance under reduced irrigation

Jewell L. Meyer □ Victor A. Gibeault

Turfgrass in California requires irrigation during all or most of the year. Water restrictions imposed during the drought in 1976 and 1977 forced turf managers to reexamine many concepts about irrigation. Turfgrass managers had to make drastic cuts in water use and hope that the turf would survive. One significant result of the drought was the realization that lower levels of turf quality were acceptable in many situations and that large water savings could be achieved. No information was available, however, on the best conservation practices or on the minimum amounts of water needed to keep the turf alive.

Research was begun in 1979 to produce irrigation methodology that could be used to develop water-saving irrigation practices anywhere in California and in other arid and semiarid regions. The three-year study showed that major savings of water can be achieved, especially with warm-season grasses, with no appreciable loss of turf quality.

Turf-irrigation study

Specifically, the objectives of the research were to: (1) investigate the effects of applying reduced amounts of irrigation water calculated as a percentage of evapotranspiration of applied water on cool-season and warm-season turfgrasses; (2) evaluate a below-ground system as a potentially more efficient method of turf irrigation than standard sprinkler application; and (3) develop a set of crop coefficients that California turfgrass managers can use to determine on-site water use by both cool- and warm-season turfgrasses.

The study was conducted at the University of California South Coast Field Station, Irvine. The variables tested included: two irrigation methods, sprinkler application of water and a subterranean or buried trickle/drip water application (8-inch depth, 23-inch spacing); three irrigation regimes, 100, 80, and 60 percent of calculated evapotranspiration; and six commonly used turfgrasses, three cool-season varieties (Kentucky bluegrass, perennial ryegrass, and tall fescue) and three warm-season types (hybrid bermudagrass, zoysiagrass, and Seashore Paspalum).

The field plot was a randomized split-block design. The area was divided into two turf blocks, one for cool-season grasses and the other for warm-season grasses. Each block consisted of four replications, and within each replication were six randomized irrigation plots measuring 15 by 24 feet. Irrigation plots were divided into three turf subplots of 8 by 15 feet. The three sprinkler and three subterranean irrigation plots per replication were installed in September 1979 for above- and below-ground water application. Each sprinkler irrigation plot contained six high-pop brass sprinkler heads designed to apply 10 gallons of water per minute at a pressure of 35 pounds per square inch. The coefficient of uniformity was 87 percent.

Tensiometers at 3- and 6-inch depths in the cool-season grasses and 8- and 12-inch depths in the warm-season grasses indicated soil water status; neutron probe access tubes were installed in plots to a depth of 4 feet in the cool-season and 6 feet in the warm-season grasses. Scheduling was by the water budget technique calculated weekly using wind-modified pan evaporation data. State-of-the-art controllers were programmed with this irrigation scheduling information. The amount of irrigation was modified so that water did not pass below the 4-foot and 6-foot depths of the neutron probe access tubes during the irrigation season.

Annual crop coefficients, determined from previous research using applied water and evaporation pan data, were 0.7 annually for warm-season grasses and 0.8 for cool-season grasses. Monthly crop coefficients were developed in this experiment to evaluate responses of the six turfgrass species to 60 percent and 80 percent of replacement evapotranspiration for water conservation.

Turf performance

Overhead sprinkler irrigation provided acceptable performance of some turfgrass species, even when less than the optimum amount of water was applied. Subterranean irrigation did not provide acceptable turf with the shallow-rooted cool-season species, at the system depth and spacing used in this study. The very deeply rooted hybrid bermudagrass was the best-performing species with subterranean irrigation.

Under sprinkler irrigation, there was no significant difference in cool-season grass performance between the 100 percent and 80 percent regimes (table 1). This could be described as a potential level of water conservation amounting to 21.1 percent savings (77.2 inches versus 61 inches). The savings could be tenuous, however, because of more weed and disease activity (such as Gerlachia patch on Kentucky bluegrass) when irrigated with less than the optimum amount of water. The 60 percent regime significantly reduced the turf quality of the three cool-season grasses tested.

In the warm-season grasses, the appearance of hybrid bermudagrass and Seashore Paspalum was not significantly different under any of the irrigation regimes. As irrigation amounts were reduced, zoysiagrass appearance ratings declined because of nematode activity ob-

served on the roots. Both Santa Ana hybrid bermudagrass and Adalayd (Excalibre) Seashore Paspalum had very good color, density, texture, uniformity, and freedom from weeds and diseases, irrespective of irrigation regimes. Clearly there is potential for considerable water savings with these grasses. This study showed a 40 percent reduction in actual water applied between the optimum and lowest irrigation regime (65.5 versus 39 inches).

Because of the field plot design necessary for this study, it wasn't possible to compare statistically the turf performance results between the warm- and cool-season grasses. Hybrid bermuda and Seashore Paspalum performed very well, however, with 52.7 inches of water applied (60 percent irrigation regime), whereas the cool-season grasses needed at least 82.4 inches (80 percent irrigation regime). Thirty-six percent less water was applied to the warm-season species than to the cool-season species for acceptable turf quality. If applied water in the 60 percent irrigation treatment in warm-season grasses (52.7 inches) is compared with that in the 100 percent treatment in cool-season grasses (104.4 inches), the saving in water is 49.5 percent.

Water application

The cool-season grass in the 100 percent regime received 43 inches of water in 1982 (table 2). Warm-season grasses received only 34 inches. Rainfall of 18.45 inches occurred primarily from November to March. The soil profile held about 10 inches depth of water in the top 6 feet. Rainfall did not appreciably affect the applied water during the primary growing season, April through November. Likewise, the 34 inches applied to the warm-season grasses was not appreciably affected by, nor was there evidence of, deep percolation during the primary growing season, when only 4 inches of rain fell. The rainfall is subtracted from the original evaporation pan reading and is therefore reasonably accounted for in the calculated applications.

In 1983, a higher than normal rainfall of 32 inches occurred. The soil profile was filled during the winter, however, and only 9 inches of rain fell from April to October 30, of which 4 inches occurred in early April. Water moved below the root zone only on June 29, August 29, October 5, and October 17 in all plots of 100 and 80 percent irrigation in 1983. Even during a season of higher than normal rainfall, the applied water, 38.7 inches in cool-season grasses (1983), was similar to that of the drier year (1982) with 43 inches applied. Most of the 5 inches of implied higher use by cool-season grasses may have moved through deep percolation.

The water applied to warm-season grasses was 34 inches in 1982 and 33 inches in 1983. This small difference indicates that managers can schedule carefully and conserve water in a wet or dry season.

TABLE 1. Cool- and warm-season turfgrass appearance ratings and water applied for the duration of the study (August 1981 to December 1983).

Irrigation regime	Turf appearance 8/81 - 12/83*			Water application (actual)	ET_{grass}†
% of ET				*in.*	
Cool season	Ken. blue	Per. rye	Tall fesc.		
100	5.5 y	6.2 y	5.8 y	104.4	77.3
80	5.3 y	5.9 y	5.7 yz	82.4	61.0
60	4.8 z	5.0 z	5.3 z	62.7	46.4
Warm season	Bermuda	Paspalum	Zoysia		
100	6.5 ns‡	5.8 ns	5.6 x	88.4	65.5
80	6.5	5.8	4.8 y	69.4	51.4
60	6.4	5.4	4.2 z	52.7	39.0

* Rated on a scale of 1 to 9, with 1 indicating worst appearance and 9 best. Values followed by common letters are not significantly different at the 5% level of probability.
† ET_{grass} equals the actual applied water divided by the extra water factor (EWF_{90}), which is 1.35.
‡ No significant difference.

TABLE 2. Actual water applied in 1982 (1/1/82 to 12/31/82) and 1983 (1/1/83 to 12/31/83)

Sprinkler plots	1982		1983	
	Water applied*	Rainfall	Water applied†	Rainfall
% of ET	*inches*			
Cool season				
100	43.2	18.45	38.7	31.78
80	35.0		31.9	
60	26.6		24.5	
Warm season				
100	34.0		33.0	
80	27.4		25.8	
60	21.6		19.6	

* Class A pan evaporation 55.0 inches for 1982.
† Class A pan evaporation 55.63 inches for 1983.

TABLE 3. Turfgrass crop coefficients (Kp and Kc) of warm- and cool-season grasses.

Month	Kp*		Kc†	
	Warm	Cool	Warm	Cool
J	.44	.49	.55	.61
F	.43	.51	.54	.64
M	.61	.60	.76	.75
A	.58	.83	.72	1.04
M	.63	.76	.79	.95
J	.54	.70	.68	.88
J	.57	.75	.71	.94
A	.57	.69	.71	.86
S	.50	.59	.62	.74
O	.43	.60	.54	.75
N	.46	.55	.58	.69
D	.44	.48	.55	.60

* Monthly crop coefficient (Kp) is used with a Class A Weather Bureau evaporation pan with the equation $ET_{grass} = ET_{pan} \times Kp$
† The crop coefficient Kc is used with reference evapotranspiration (ETo) from a CIMIS weather station with the equation $ET_{grass} = ETo \times Kc$.

Conclusions

The monthly crop coefficients (table 3) calculated and used for nearly three years proved to be very accurate for both warm- and cool-season turfgrasses. Crop coefficients can be used with reference evapotranspiration from the Department of Water Resources California Irrigation Management Information System (CIMIS) program. Turfgrass managers can use these crop coefficients to determine on-site water use by turfgrasses from either a Class A Weather Bureau evaporation pan or from a computerized weather station that gives reference evapotranspiration with the equation given in table 3.

In conclusion, warm-season turfgrasses have a greater potential for water conservation than do cool-season turfgrasses. Under the conditions of this study, sprinkler irrigation was superior to subterranean irrigation for water conservation and turfgrass performance. And lastly, a well-designed, uniform irrigation system is necessary to maximize water conservation in turfgrass management.

Jewell L. Meyer is Irrigation and Soils Specialist and Victor A. Gibeault is Environmental Horticulturist, Cooperative Extension, University of California, Riverside. *Financial support for this study was granted by the Metropolitan Water District of Southern California, City of Los Angeles Department of Water and Power, Municipal Water District of Orange County, and the San Diego County Water Authority. Also the support of the Southern California Turfgrass Council, the Lloyd Foundation, and the Golf Course Superintendent's Association of Southern California is appreciated. The authors acknowledge the assistance of Ralph Strohman and Mark Mahody, Staff Research Associates, UC Riverside.*

Attachment C

Water Application Efficiency,
Bill Kranz, University of Nebraska Lincoln Extension
Irrigation Specialist,
Northeast Research and Extension Center

Irrigation Chapter 8 - Irrigation Efficiencies

Author: Bill Kranz, University of Nebraska Lincoln Extension Irrigation Specialist, Northeast Research and Extension Center, Norfolk, NE.

Water Application **Efficiency**

The ability to manage an irrigation system is contingent on an accurate estimate of the percentage of water pumped that becomes available for crop use. No irrigation system delivers water at 100 percent efficiency. Water may be lost through delivery systems or pipelines and some water may remain in the **soil**, but not be used by the crop. Some water may run off the soil surface into lowland areas. Still other water may be lost to evaporation in the air, or from the soil and plant surfaces. *Figures 8.1a* and *8.1b* show the major losses for sprinkler and surface irrigation systems. To know how much water to pump, these losses must be totaled and added to the amount of water needed by the crop.

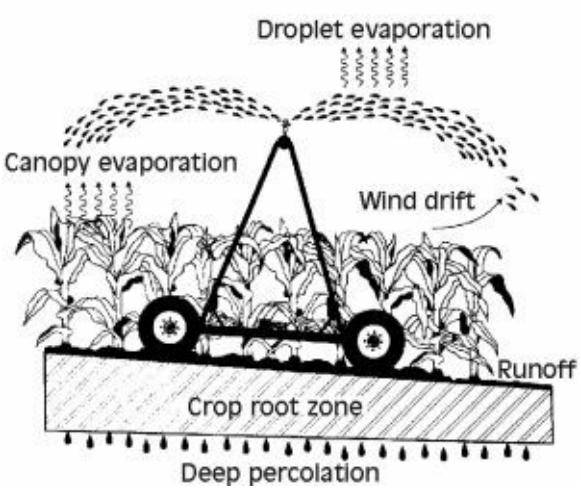


Figure 8.1. a) Potential water losses during irrigation with a center pivot. b) Potential water losses during irrigation with a **furrow irrigation** system.

In most cases, the goal is to insure that all areas of the field receive a **set** amount of uniformly applied water. Consider the catch can test data shown in *Figure 8.2.* The cans recording application depths below the horizontal line are not receiving enough water — catches are less than the desired 0.85 inches. Another application will be needed to insure that the entire field receives at least 0.85 inches of water. This will require using more water and energy than is necessary. If this pattern occurs during each irrigation, plants in the areas receiving less than 0.85 inches eventually could experience water stress. The cans recording application depths above the line receive at least 0.85 inches of water. Any extra water applied could lead to surface **runoff** or deep **percolation**.

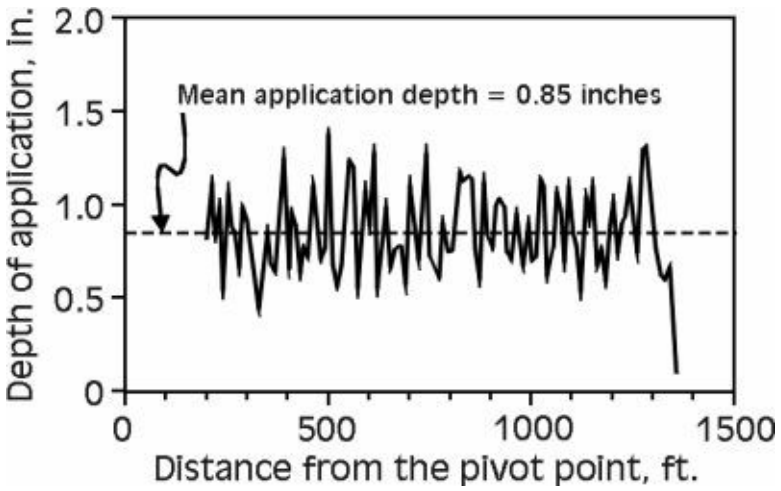


Figure 8.2. Example of catch-can data from a center pivot with low pressure spray nozzle, mounted at 10 foot intervals and 7 feet above the soil surface.

Water application efficiency accounts for how uniformly the water is applied and can be used for other assessments. If the center pivot owner is trying to decide whether switching to a new sprinkler package would be economical, the change in water application efficiency could be a major factor. If water becomes limited, changing to a system with a higher water application efficiency will provide more useable water to the crop and reduce pumping costs.

To maximize irrigation water use, it must be uniformly applied in the right amount and at the right time. Reaching these objectives requires knowledge of water delivery characteristics, field soils and slopes, and the expected crop water use rates.

Mathematical relationships have been developed to help quantify the amount of applied water that becomes available for plant use.

Water application efficiency refers to the amount of water applied that is stored in the crop root zone. This value is determined by water distribution characteristics, system management, soil conditions, the crop, and weather conditions. Water application efficiency pertains to an individual irrigation event.

Equation 8.1 is used to determine water application efficiency.

Equation 8.1 $E_a = [\frac{\text{Depth of water stored in the rootzone } (d_s) \times 100}{\text{Depth of water pumped } (d_p)}]$

where:

E_a = Average water application efficiency, %

Depth of water stored in the rootzone (d_s) = Average depth of water stored in the rootzone, inches

Depth of water pumped (d_p) = Average depth of water delivered from source, inches

Irrigation efficiency refers to the amount of water removed from the water source that is used by the crop. This value is determined by irrigation system management, water distribution characteristics, crop water use rates, weather and soil conditions. Irrigation efficiency pertains to the use of water for an entire growing season.

Depth Stored

The depth of water stored in the root zone can be estimated based on field observation of what happens to the water during an application event. Field observation reports should note if runoff occurs and estimate the amount of runoff. With experience, you'll begin to know where and when runoff is likely to occur. For example, runoff from center pivot systems will likely occur first near the outside edge of the irrigated area because the water application rate is greatest there. Other factors include low **infiltration** rate soils, steep slopes and lack of plant residue cover.

Another more accurate method is to record the **soil water** content before and after an irrigation event using one of the methods discussed in *Chapter 3, Soil Water*. If the hand-feel method is used, the **soil water content** will need to be recorded at enough locations to develop accurate estimates of the water stored in the crop root zone. The depth of water applied is found by subtracting the reading taken before the irrigation.

Equation 8.2 d_s = *["After" reading – "Before" reading]*

Where:

d_s = Depth of water stored in the rootzone

Example 8.1

A center pivot irrigation system is supplied with enough water to apply 1.1 inches of water to an irrigated area. Soil water content readings recorded before the irrigation event showed an average water content of 3.5 inches in the top 3 feet of soil. Soil water content readings after the irrigation showed an average of 4.4 inches in the top 3 feet of soil. To find the average depth of water stored in the crop rootzone we subtract the before irrigation reading from the after irrigation reading.

Using *Equation 8.2* d_s = ["After" reading – "Before" reading]

d_s = [4.4 inches – 3.5 inches]

d_s = 0.9 inches

Depth Pumped

The depth of water pumped can be determined using the procedures presented in *Chapter 7, Flow Measurements and Basic Water Calculations*. The information needed includes an accurate estimate of the pumping rate in gallons per minute. This information can be recorded using a flow meter installed as part of the system or periodically using an attached flow meter (ultrasonic flow meter, pilot tube type meter, etc.).

The average flow rate can be determined by recording the accumulator reading prior to and after each irrigation event. Subtracting the reading recorded prior to the irrigation from the reading after the irrigation event will result in the total volume of water pumped. Taking the total volume and dividing by the irrigation time will give the average pumping rate. For this estimate to be accurate, the irrigation time must be accurate to the nearest hour if possible. A more precise record of the total irrigation time will improve the estimate of the pumping flow rate. (The hour meter on the motor or center pivot is accurate enough to estimate the pumping time.) *Equations 8.3* and *8.4* are used to make these calculations. The following example shows how to incorporate field data into the equations.

Equation 8.3 ***Pumping rate = [Reading 2 – Reading 1] / [Time]***

where:

Pumping rate = Water deliver rate, gallons per minute or acre-inches per minute

Reading 1 = Totalizer reading before the irrigation event, gallons or acre-inches

Reading 2 = Totalizer reading after the irrigation event, gallons or acre-inches

Time = Time required to complete the irrigation event, minutes

Example 8.2

The meter also has an accumulator at the bottom that registers total gallons pumped. Before the irrigation event, the accumulator reading was 6,553,300 gallons, and after the irrigation event the meter read 10,167,500 gallons. The irrigation event required 77 hours and 15 minutes.

Using *Equation 8.3*

Pumping rate = [Reading 2-Reading 1] / [Time]

Pumping rate = [10,167,500 - 6,553,300] gallons [(77 hr x 60 min/hr) + 15 min]

Pumping rate = [3,614,200] gallons / [4620 + 15] minutes

Pumping rate = 780 gallons per minute

If the accumulator records flow in acre-inches, the same process is used unless the desire is to determine the flow rate in gallons per minute. To convert acre-inches per minute to gallons per minute, multiply the result from *Equation 8.3* in acre-inches per minute by 27,154 gallons per acre-inch.

To convert the flow rate in gallons per minute to the gross depth of water pumped, we use *Equation 8.4.* If the result from *Equation 8.3* is in acre-inches per minute, the constant 27,154 gallons per acre-inch is not used.

Equation 8.4 $d_p = [\text{flow rate} \times \text{time}] / [\text{area irrigated} \times 27{,}154]$

where:

d_p = Depth pumped = Average depth of water pumped, *inches*

Flow rate = Average water delivery rate, *gallons per minute*

Time = Total irrigation time, *minutes*

Area irrigated = Total irrigated area, *acres*

27,154 = Conversion factor, *gallons per acre-inch or gal / ac-in*

Example 8.3

Let's assume that the field area for Example 8.2 was 123 acres. We calculated the flow rate at 780 gallons per minute and the total irrigation time at 4635 minutes. Using *Equation 8.3*:

Depth pumped (d_p) = [Flow rate x time] / [Area irrigated x 27,154]

Depth pumped (d_p) = [780 *gal/min* x 4635 *minutes*] [123 *acres* x 27154 *gal / ac-in*]

Depth pumped (d_p) = [3,615,300]*gallons* / [3,339,942] *gallons / inch*

Depth pumped (d_p) = 1.08 inches

To complete the calculation of the water application efficiency, use *Equation 8.1* to compare the amount of water pumped with the increase in water stored in the crop rootzone.

Example 8.4

From Example 8.1 we found that 0.9 inches of water was stored in the three-foot crop rootzone. From Example 8.3 we found that 1.08 inches of water was pumped from the water source into the center pivot. To find the application efficiency we use *Equation 8.1.*

$$E_a = \left[\frac{\text{Depth of water stored in the rootzone } (d_s) \times 100}{\text{Depth of water pumped } (d_p)} \right]$$

$$E_a = [\ 0.9 \text{ inches} / 1.08 \text{ inches}\ ] \times 100$$

$$E_a = 83\%$$

In these examples it was determined that only 83 percent of the water pumped from the irrigation source reached the soil and was usable by the crop. That means that 17 percent of the water was lost during application.

Potential Delivery Losses

The amount of water loss due to irrigation depends of the type of irrigation system — sprinkler or surface. In addition, the magnitude of each type of loss may be different. Let's begin by listing some major sources of water loss during irrigation. To keep the losses for surface and sprinkler irrigation separate, *Table 8.1* lists the potential losses for each type of system.

Table 8.1. Potential sources of water loss during an irrigation event for surface and sprinkler irrigation systems.

Sources of water losses	Surface Irrigation	Sprinkler irrigation
Distribution system	Yes	Yes
Air evaporation	No	Yes
Plant interception	No	Yes
Soil evaporation	Yes	Yes
Deep percolation	Yes	Yes
Runoff	Yes	Yes

Surface Irrigation Systems

The major losses for surface irrigation systems are deep percolation and surface runoff. These two losses could cause the water application efficiency to be reduced to less than 50 percent if the system is not managed properly. Ways to minimize these losses are discussed in *Chapter 11, Furrow Irrigation Management* (https://passel2.unl.edu/view/lesson/bda727eb8a5a/11).

Another source of water loss is in the distribution system. If the water flows across the head of the field in an open ditch, each foot of ditch loses water to soil infiltration and water surface evaporation. The best way to eliminate these losses is to transport the water through an enclosed pipeline. For many furrow irrigated fields this will require a small pumping plant to overcome the friction loss associated with forcing water through the pipeline.

Surface irrigation implies that surface evaporation will contribute to water loss. One way to limit soil evaporation loss is to wet less of the soil surface. For fields with slopes less than 1 percent, irrigating every other furrow is a viable option. This effectively cuts surface evaporation losses by nearly 50 percent without sacrificing crop production. Irrigating every other furrow also will reduce the amount of water lost to deep percolation and surface runoff.

Pipelines can have losses too. Worn gaskets or loose fitting pipeline connections could produce leaks at each joint. These losses are usually small in comparison to other losses, but by their sheer number could add up to substantial water losses. This kind of loss is the easiest to eliminate by replacing gaskets.

Sprinkler Irrigation Systems

Sprinkler irrigation systems, especially center pivots, typically have greater water application efficiencies than surface systems. While they may have more potential sources of loss, the magnitude of each loss is generally quite low. *Table 8.1* shows that sprinkler irrigation systems may experience loss from all six of the potential water loss sources while surface irrigation systems lose water from only four. This is because most sprinkler irrigation systems spray water into the air to deliver water to the entire soil surface with an upright crop canopy located between the sprinkler and soil.

Developments in sprinkler technology have reduced the amount of water lost between the sprinkler/nozzle and soil surface. The irrigation time or the accumulated time that water is applied to the crop canopy causes the major loss during sprinkler irrigation events. Applied water evaporates off the leaves of the crop canopy. Thus, the longer water droplets are delivered to the crop, the greater the total evaporation loss. Lowering the sprinkler/nozzle pressure reduces the wetted diameter of the sprinkler/nozzle thus reducing irrigation time and total canopy evaporation losses. In addition, lower wetted diameters reduce water evaporation losses in the air and wind drift losses.

Proper management of sprinkler irrigation systems can greatly reduce deep percolation losses. An irrigation system managed to keep the soil profile completely full at all times will experience some deep percolation losses. This is because the system does not apply water at 100 percent uniformity. Some areas will receive more water than others due to sprinkler pressure differences caused by soil elevation differences. Pressure regulators or flow control nozzles help insure that water delivered to the soil surface is as uniform as possible. Other portions of the field could be affected when wind distorts the water application pattern. Such distortion can be reduced by avoiding operation when winds exceed 10 mph.

How do I Evaluate Losses?

There are two main ways to evaluate water loss during irrigation: 1) take detailed field measurements; and 2) visually estimate losses. In some cases it may be necessary to combine these methods to develop an accurate estimate of where losses occur and how significant they are to the system’s application efficiency. For example, to estimate water losses during irrigation, measure the flow rate of water entering the system with a flow meter. Visually estimate how much of the water is lost to runoff. This amount, however, will not account for other potential losses. *Table 8.2* presents the potential magnitude of some of these losses for different irrigation systems. For furrow irrigation systems record how long it takes for the water to reach a certain point in the field or record flow rates into the furrow and how long it takes water to reach the end of the furrow. When coupled with soil types and furrow slopes, a computer model can be used to estimate how efficiently the water is being applied.

Table 8.2a. Percent irrigation water losses for different furrow irrigation systems.

Type of irrigation system	Distribution system	Air evaporation	Soil evaporation	Canopy evaporation	Deep percolation	Surface runoff	efficiency
Every row	1-5	<1.0	1--5	0.0	10-20	10-35	40-75
W/Surge valve	1-5	<1.0	1-5	0.0	5-15	5-15	60-85
W/Reuse	1-5	1-2	1-5	0.0	10-20	0	55-90
Siphon tube	5-10	1-2	1-5	0.0	15-25	15-25	40-75
Alternate row	1-5	<0.5	1-5	0.0	5-15	10-20	60-85

Table 8.2b. Percent irrigation water losses for different Sprinkler Irrigation systems.

Type of irrigation system	Distribution system	Air evaporation	Soil evaporation	Canopy evaporation	Deep percolation	Surface runoff	Overall efficiency
Handmove	<1.0	3-5	1-5	10-15	5-10	0-5	60-80
Solid set	<1.0	3-5	1-5	10-15	0-10	0-5	60-85
Traveler	<1.0	1-3	1-5	1-5	0-5	5-10	55-75
High pressure impact	<0.5	1-3	0-1	1-5	0-5	0-5	70-80
Low pressure impact	<0.5	1-3	0-1	1-3	0.5	0-10	75-85
Low pressure spray	<0.5	1-3	0-1	1-3	0-5	0-20	70-90
Low pressure bubble	<0.5	0.0	0-0.5	0.0	0-5	20-40	60-95
Drip irrigation	<0.5	0.0	0.0	0.0	5-30	0.0	70-95

Attachment E

Irrigation Efficiency

Irrigation Chapter 8 - Irrigation Efficiencies

Author: Bill Kranz, University of Nebraska Lincoln Extension Irrigation Specialist, Northeast Research and Extension Center, Norfolk, NE.

Water Application **Efficiency**

The ability to manage an irrigation system is contingent on an accurate estimate of the percentage of water pumped that becomes available for crop use. No irrigation system delivers water at 100 percent efficiency. Water may be lost through delivery systems or pipelines and some water may remain in the **soil**, but not be used by the crop. Some water may run off the soil surface into lowland areas. Still other water may be lost to evaporation in the air, or from the soil and plant surfaces. *Figures 8.1a* and *8.1b* show the major losses for sprinkler and surface irrigation systems. To know how much water to pump, these losses must be totaled and added to the amount of water needed by the crop.

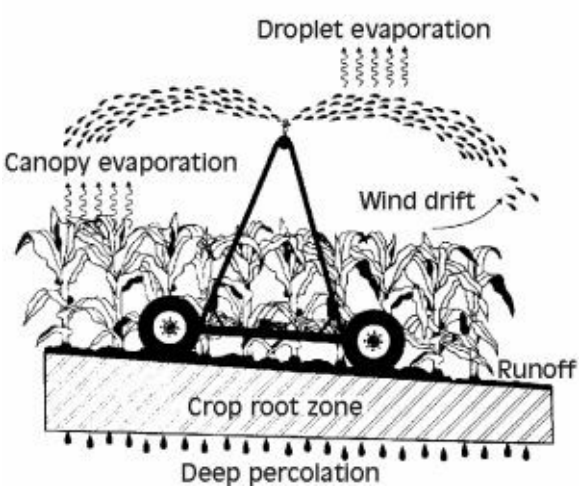


Figure 8.1. a) Potential water losses during irrigation with a center pivot. b) Potential water losses during irrigation with a **furrow irrigation** system.

In most cases, the goal is to insure that all areas of the field receive a **set** amount of uniformly applied water. Consider the catch can test data shown in *Figure 8.2.* The cans recording application depths below the horizontal line are not receiving enough water — catches are less than the desired 0.85 inches. Another application will be needed to insure that the entire field receives at least 0.85 inches of water. This will require using more water and energy than is necessary. If this pattern occurs during each irrigation, plants in the areas receiving less than 0.85 inches eventually could experience water stress. The cans recording application depths above the line receive at least 0.85 inches of water. Any extra water applied could lead to surface **runoff** or deep **percolation**.

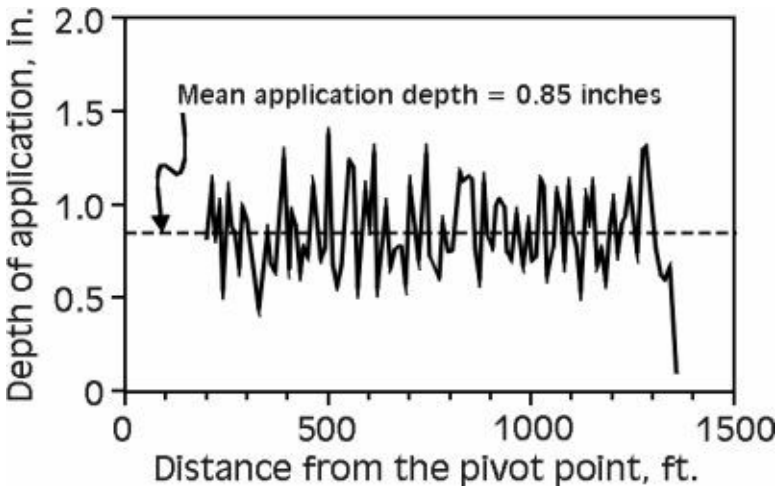


Figure 8.2. Example of catch-can data from a center pivot with low pressure spray nozzle, mounted at 10 foot intervals and 7 feet above the soil surface.

Water application efficiency accounts for how uniformly the water is applied and can be used for other assessments. If the center pivot owner is trying to decide whether switching to a new sprinkler package would be economical, the change in water application efficiency could be a major factor. If water becomes limited, changing to a system with a higher water application efficiency will provide more useable water to the crop and reduce pumping costs.

To maximize irrigation water use, it must be uniformly applied in the right amount and at the right time. Reaching these objectives requires knowledge of water delivery characteristics, field soils and slopes, and the expected crop water use rates.

Mathematical relationships have been developed to help quantify the amount of applied water that becomes available for plant use.

Water application efficiency refers to the amount of water applied that is stored in the crop root zone. This value is determined by water distribution characteristics, system management, soil conditions, the crop, and weather conditions. Water application efficiency pertains to an individual irrigation event.

Equation 8.1 is used to determine water application efficiency.

Equation 8.1 $E_a = [\frac{\text{Depth of water stored in the rootzone } (d_s) \times 100}{\text{Depth of water pumped } (d_p)}]$

where:

E_a = Average water application efficiency, %

Depth of water stored in the rootzone (d_s) = Average depth of water stored in the rootzone, inches

Depth of water pumped (d_p) = Average depth of water delivered from source, inches

Irrigation efficiency refers to the amount of water removed from the water source that is used by the crop. This value is determined by irrigation system management, water distribution characteristics, crop water use rates, weather and soil conditions. Irrigation efficiency pertains to the use of water for an entire growing season.

Depth Stored

The depth of water stored in the root zone can be estimated based on field observation of what happens to the water during an application event. Field observation reports should note if runoff occurs and estimate the amount of runoff. With experience, you'll begin to know where and when runoff is likely to occur. For example, runoff from center pivot systems will likely occur first near the outside edge of the irrigated area because the water application rate is greatest there. Other factors include low **infiltration** rate soils, steep slopes and lack of plant residue cover.

Another more accurate method is to record the **soil water** content before and after an irrigation event using one of the methods discussed in *Chapter 3, Soil Water*. If the hand-feel method is used, the **soil water content** will need to be recorded at enough locations to develop accurate estimates of the water stored in the crop root zone. The depth of water applied is found by subtracting the reading taken before the irrigation.

Equation 8.2 d_s = *["After" reading – "Before" reading]*

Where:

d_s = Depth of water stored in the rootzone

Example 8.1

A center pivot irrigation system is supplied with enough water to apply 1.1 inches of water to an irrigated area. Soil water content readings recorded before the irrigation event showed an average water content of 3.5 inches in the top 3 feet of soil. Soil water content readings after the irrigation showed an average of 4.4 inches in the top 3 feet of soil. To find the average depth of water stored in the crop rootzone we subtract the before irrigation reading from the after irrigation reading.

Using *Equation 8.2* d_s = ["After" reading – "Before" reading]

d_s = [4.4 inches – 3.5 inches]

d_s = 0.9 inches

Depth Pumped

The depth of water pumped can be determined using the procedures presented in *Chapter 7, Flow Measurements and Basic Water Calculations*. The information needed includes an accurate estimate of the pumping rate in gallons per minute. This information can be recorded using a flow meter installed as part of the system or periodically using an attached flow meter (ultrasonic flow meter, pilot tube type meter, etc.).

The average flow rate can be determined by recording the accumulator reading prior to and after each irrigation event. Subtracting the reading recorded prior to the irrigation from the reading after the irrigation event will result in the total volume of water pumped. Taking the total volume and dividing by the irrigation time will give the average pumping rate. For this estimate to be accurate, the irrigation time must be accurate to the nearest hour if possible. A more precise record of the total irrigation time will improve the estimate of the pumping flow rate. (The hour meter on the motor or center pivot is accurate enough to estimate the pumping time.) *Equations 8.3* and *8.4* are used to make these calculations. The following example shows how to incorporate field data into the equations.

Equation 8.3 ***Pumping rate = [Reading 2 – Reading 1] / [Time]***

where:

Pumping rate = Water deliver rate, gallons per minute or acre-inches per minute

Reading 1 = Totalizer reading before the irrigation event, gallons or acre-inches

Reading 2 = Totalizer reading after the irrigation event, gallons or acre-inches

Time = Time required to complete the irrigation event, minutes

Example 8.2

The meter also has an accumulator at the bottom that registers total gallons pumped. Before the irrigation event, the accumulator reading was 6,553,300 gallons, and after the irrigation event the meter read 10,167,500 gallons. The irrigation event required 77 hours and 15 minutes.

Using *Equation 8.3*

Pumping rate = [Reading 2-Reading 1] / [Time]

Pumping rate = [10,167,500 - 6,553,300] gallons [(77 hr x 60 min/hr) + 15 min]

Pumping rate = [3,614,200] gallons / [4620 + 15] minutes

Pumping rate = 780 gallons per minute

If the accumulator records flow in acre-inches, the same process is used unless the desire is to determine the flow rate in gallons per minute. To convert acre-inches per minute to gallons per minute, multiply the result from *Equation 8.3* in acre-inches per minute by 27,154 gallons per acre-inch.

To convert the flow rate in gallons per minute to the gross depth of water pumped, we use *Equation 8.4.* If the result from *Equation 8.3* is in acre-inches per minute, the constant 27,154 gallons per acre-inch is not used.

***Equation 8.4* d_p = [flow rate x time] / [area irrigated x 27,154]**

where:

d_p = Depth pumped = Average depth of water pumped, *inches*

Flow rate = Average water delivery rate, *gallons per minute*

Time = Total irrigation time, *minutes*

Area irrigated = Total irrigated area, *acres*

27,154 = Conversion factor, *gallons per acre-inch or gal / ac-in*

Example 8.3

Let's assume that the field area for Example 8.2 was 123 acres. We calculated the flow rate at 780 gallons per minute and the total irrigation time at 4635 minutes. Using *Equation 8.3*:

Depth pumped (d_p) = [Flow rate x time] / [Area irrigated x 27,154]

Depth pumped (d_p) = [780 *gal/min* x 4635 *minutes*] [123 *acres* x 27154 *gal / ac-in*]

Depth pumped (d_p) = [3,615,300]*gallons* / [3,339,942] *gallons / inch*

Depth pumped (d_p) = 1.08 inches

To complete the calculation of the water application efficiency, use *Equation 8.1* to compare the amount of water pumped with the increase in water stored in the crop rootzone.

Example 8.4

From Example 8.1 we found that 0.9 inches of water was stored in the three-foot crop rootzone. From Example 8.3 we found that 1.08 inches of water was pumped from the water source into the center pivot. To find the application efficiency we use *Equation 8.1.*

$$E_a = \left[\frac{\text{Depth of water stored in the rootzone } (d_s) \times 100}{\text{Depth of water pumped } (d_p)} \right]$$

$$E_a = [\ 0.9 \text{ inches} / 1.08 \text{ inches}\ ] \times 100$$

$$E_a = 83\%$$

In these examples it was determined that only 83 percent of the water pumped from the irrigation source reached the soil and was usable by the crop. That means that 17 percent of the water was lost during application.

Potential Delivery Losses

The amount of water loss due to irrigation depends of the type of irrigation system — sprinkler or surface. In addition, the magnitude of each type of loss may be different. Let's begin by listing some major sources of water loss during irrigation. To keep the losses for surface and sprinkler irrigation separate, *Table 8.1* lists the potential losses for each type of system.

Table 8.1. Potential sources of water loss during an irrigation event for surface and sprinkler irrigation systems.

Sources of water losses	Surface Irrigation	Sprinkler irrigation
Distribution system	Yes	Yes
Air evaporation	No	Yes
Plant interception	No	Yes
Soil evaporation	Yes	Yes
Deep percolation	Yes	Yes
Runoff	Yes	Yes

Surface Irrigation Systems

The major losses for surface irrigation systems are deep percolation and surface runoff. These two losses could cause the water application efficiency to be reduced to less than 50 percent if the system is not managed properly. Ways to minimize these losses are discussed in *Chapter 11, Furrow Irrigation Management* (https://passel2.unl.edu/view/lesson/bda727eb8a5a/11).

Another source of water loss is in the distribution system. If the water flows across the head of the field in an open ditch, each foot of ditch loses water to soil infiltration and water surface evaporation. The best way to eliminate these losses is to transport the water through an enclosed pipeline. For many furrow irrigated fields this will require a small pumping plant to overcome the friction loss associated with forcing water through the pipeline.

Surface irrigation implies that surface evaporation will contribute to water loss. One way to limit soil evaporation loss is to wet less of the soil surface. For fields with slopes less than 1 percent, irrigating every other furrow is a viable option. This effectively cuts surface evaporation losses by nearly 50 percent without sacrificing crop production. Irrigating every other furrow also will reduce the amount of water lost to deep percolation and surface runoff.

Pipelines can have losses too. Worn gaskets or loose fitting pipeline connections could produce leaks at each joint. These losses are usually small in comparison to other losses, but by their sheer number could add up to substantial water losses. This kind of loss is the easiest to eliminate by replacing gaskets.

Sprinkler Irrigation Systems

Sprinkler irrigation systems, especially center pivots, typically have greater water application efficiencies than surface systems. While they may have more potential sources of loss, the magnitude of each loss is generally quite low. *Table 8.1* shows that sprinkler irrigation systems may experience loss from all six of the potential water loss sources while surface irrigation systems lose water from only four. This is because most sprinkler irrigation systems spray water into the air to deliver water to the entire soil surface with an upright crop canopy located between the sprinkler and soil.

Developments in sprinkler technology have reduced the amount of water lost between the sprinkler/nozzle and soil surface. The irrigation time or the accumulated time that water is applied to the crop canopy causes the major loss during sprinkler irrigation events. Applied water evaporates off the leaves of the crop canopy. Thus, the longer water droplets are delivered to the crop, the greater the total evaporation loss. Lowering the sprinkler/nozzle pressure reduces the wetted diameter of the sprinkler/nozzle thus reducing irrigation time and total canopy evaporation losses. In addition, lower wetted diameters reduce water evaporation losses in the air and wind drift losses.

Proper management of sprinkler irrigation systems can greatly reduce deep percolation losses. An irrigation system managed to keep the soil profile completely full at all times will experience some deep percolation losses. This is because the system does not apply water at 100 percent uniformity. Some areas will receive more water than others due to sprinkler pressure differences caused by soil elevation differences. Pressure regulators or flow control nozzles help insure that water delivered to the soil surface is as uniform as possible. Other portions of the field could be affected when wind distorts the water application pattern. Such distortion can be reduced by avoiding operation when winds exceed 10 mph.

How do I Evaluate Losses?

There are two main ways to evaluate water loss during irrigation: 1) take detailed field measurements; and 2) visually estimate losses. In some cases it may be necessary to combine these methods to develop an accurate estimate of where losses occur and how significant they are to the system’s application efficiency. For example, to estimate water losses during irrigation, measure the flow rate of water entering the system with a flow meter. Visually estimate how much of the water is lost to runoff. This amount, however, will not account for other potential losses. *Table 8.2* presents the potential magnitude of some of these losses for different irrigation systems. For furrow irrigation systems record how long it takes for the water to reach a certain point in the field or record flow rates into the furrow and how long it takes water to reach the end of the furrow. When coupled with soil types and furrow slopes, a computer model can be used to estimate how efficiently the water is being applied.

Table 8.2a. Percent irrigation water losses for different furrow irrigation systems.

Type of irrigation system	Distribution system	Air evaporation	Soil evaporation	Canopy evaporation	Deep percolation	Surface runoff	efficiency
Every row	1-5	<1.0	1--5	0.0	10-20	10-35	40-75
W/Surge valve	1-5	<1.0	1-5	0.0	5-15	5-15	60-85
W/Reuse	1-5	1-2	1-5	0.0	10-20	0	55-90
Siphon tube	5-10	1-2	1-5	0.0	15-25	15-25	40-75
Alternate row	1-5	<0.5	1-5	0.0	5-15	10-20	60-85

Table 8.2b. Percent irrigation water losses for different Sprinkler Irrigation systems.

Type of irrigation system	Distribution system	Air evaporation	Soil evaporation	Canopy evaporation	Deep percolation	Surface runoff	Overall efficiency
Handmove	<1.0	3-5	1-5	10-15	5-10	0-5	60-80
Solid set	<1.0	3-5	1-5	10-15	0-10	0-5	60-85
Traveler	<1.0	1-3	1-5	1-5	0-5	5-10	55-75
High pressure impact	<0.5	1-3	0-1	1-5	0-5	0-5	70-80
Low pressure impact	<0.5	1-3	0-1	1-3	0.5	0-10	75-85
Low pressure spray	<0.5	1-3	0-1	1-3	0-5	0-20	70-90
Low pressure bubble	<0.5	0.0	0-0.5	0.0	0-5	20-40	60-95
Drip irrigation	<0.5	0.0	0.0	0.0	5-30	0.0	70-95

Attachment F

Water Balance Model Results

Current Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	1.2	3.24	39.0	1.9	0.0	4.9	0.71		27.3	0.5	(1.5)	45.5	0.4	(1.1)	5.4	37.6	37.1	37.4	21.9	0.5	22.4	22.4	0.0	22.4
Nov.	2.8	1.68	37.8	4.6	0.0	0.0	0.52		0.0	1.3	(0.8)	43.5	1.0	(0.6)	(6.1)	31.5	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	3.5	1.21	39.0	5.8	0.0	0.0	0.52		0.0	1.7	(0.6)	46.4	1.2	(0.4)	(2.8)	28.7	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	5.1	1.48	39.0	8.4	3.5	0.0	0.37		0.0	2.4	(0.7)	53.0	1.8	(0.5)	4.2	33.0	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	3.1	1.95	35.2	5.2	0.0	0.0	0.46		0.0	1.5	(0.9)	41.4	1.1	(0.7)	1.8	34.8	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	3.2	3.02	39.0	5.2	0.0	0.0	0.37		0.0	1.5	(1.4)	44.7	1.1	(1.1)	0.7	35.5	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	1.8	4.57	37.8	2.9	0.0	5.3	0.58		35.3	0.8	(2.2)	45.2	0.6	(1.6)	3.4	38.9	38.2	8.8	29.3	0.7	30.0	30.0	0.0	30.0
May	0.6	5.97	39.0	1.0	0.0	9.1	0.55		70.1	0.3	(2.8)	47.1	0.2	(2.1)	(0.9)	38.0	38.3	54.9	59.6	1.4	61.0	61.0	0.0	61.0
Jun.	0.2	7.19	37.8	0.3	0.0	12.0	0.25		92.4	0.1	(3.4)	47.0	0.1	(2.5)	(7.9)	30.1	30.4	71.8	78.6	1.8	80.4	80.4	0.0	80.4
Jul.	0.1	7.64	39.0	0.1	0.0	13.1	0.58		100.9	0.0	(3.6)	49.2	0.0	(2.7)	(3.3)	26.8	26.9	83.4	85.8	2.0	87.8	87.8	0.0	87.8
Aug.	0.1	6.98	37.8	0.2	0.0	11.8	0.49		91.1	0.1	(3.3)	47.0	0.0	(2.4)	0.3	27.1	27.7	78.1	77.5	1.8	79.3	79.3	0.0	79.3
Sep.	0.3	4.99	39.0	0.5	0.0	11.0	0.43		64.6	0.2	(2.4)	48.7	0.1	(1.7)	4.4	32.2	32.2	62.4	52.4	1.2	53.6	53.6	0.0	53.6
Total, AFY	**22.0**	**49.9**	**459**	**36.1**	**3.5**	**67.2**	**5.83**		**481.7**	**10.5**	**(23.7)**	**558.8**	**7.7**	**(17.5)**	**(0.7)**			**413.2**	**405.1**	**9.4**	**414.5**	**414.5**	**0**	**414.5**

Base City Flow	0.410 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	0.32	0.32	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment 1	2	3	4	Storage 5	Percolation 6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) Average year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In August, Column 16 is set to 22.9 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

Current Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/ Store Elsewhere
Oct.	77.0	4.3	4.0	4.0	73.0	0.3	0.4	0.4	0.0	35	35.0	0.5	(1.4)	0.0	(25.9)	0.0	60	60.0	0.4	(1.1)	0.0	(25.2)	0.0	OK	84.5
Nov.	81.5	1.2	0.0	0.0	81.5	0.0	0.0	0.0	0.0	50	50.0	1.2	(0.7)	0.0	50.5	25.8		24.7	0.9	(0.5)	0.0	25.1	25.1	OK	0.0
Dec.	78.7	0.0	0.0	0.0	78.7	0.0	0.0	0.0	0.0	50	50.0	1.6	(0.5)	0.0	51.0	25.8		51.0	1.1	(0.4)	0.0	(0.0)	25.0	OK	51.8
Jan.	83.0	0.0	0.0	0.0	83.0	0.0	0.0	0.0	0.0	50	50.0	2.2	(0.7)	0.0	51.6	25.8		51.6	1.7	(0.5)	0.0	(0.0)	25.0	OK	52.8
Feb.	74.8	0.0	0.0	0.0	74.8	0.0	0.0	0.0	0.0	40	40.0	1.4	(0.9)	0.0	40.5	25.8		40.5	1.0	(0.6)	0.0	0.0	25.0	OK	40.9
Mar.	79.5	0.0	0.0	0.0	79.5	0.0	0.0	0.0	0.0	44	44.0	1.4	(1.3)	0.0	44.1	25.8		44.1	1.0	(1.0)	0.0	0.0	25.0	OK	44.1
Apr.	79.8	1.8	5.4	5.4	74.4	0.0	0.5	0.5	0.0	35	35.0	0.8	(2.0)	0.0	33.8	25.8		33.8	0.6	(1.5)	0.0	0.0	25.1	OK	32.8
May	84.1	0.6	10.1	10.1	74.0	0.3	1.0	1.0	0.0	35	35.0	0.3	(2.6)	0.0	32.6	25.8		32.6	0.2	(1.9)	0.0	0.0	25.1	OK	30.9
Jun.	82.6	15.4	13.2	13.2	69.4	1.2	1.3	1.3	0.0	38	38.0	0.1	(3.2)	0.0	34.9	25.8		34.9	0.1	(2.3)	0.0	(0.0)	25.1	OK	32.7
Jul.	76.6	13.5	14.4	14.4	62.2	1.2	1.4	1.4	0.0	34	34.0	0.0	(3.4)	0.0	30.7	25.8		30.7	0.0	(2.5)	0.0	(0.0)	25.1	OK	28.2
Aug.	71.4	21.2	13.0	13.0	58.4	1.8	1.3	1.3	0.0	30	30.0	0.1	(3.1)	0.0	27.0	25.8		27.0	0.0	(2.3)	0.0	0.0	25.1	OK	24.7
Sep.	74.2	11.7	8.9	8.9	65.4	1.8	0.9	0.9	0.0	33	33.0	0.1	(2.2)	0.0	30.9	25.8		30.9	0.1	(1.6)	0.0	0.0	25.1	OK	29.4
Total, AFY	**943.1**	**69.7**	**69.0**	**69.0**	**874.2**	**6.8**	**6.8**	**6.8**	**0.0**	**474**	**474.0**	**9.7**	**(22.0)**	**0.0**	**401.7**		**60**	**462**	**7.2**	**(16.2)**	**0.0**	**(0.1)**			**453**
									Total Inflows:		**474**					**Total Inflows:**		**462**					**Total Excess Water:**		**453**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

Current Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	1.2	3.24	39.0	1.9	0.0	4.9	0.71		27.3	0.5	(1.5)	45.5	0.4	(1.1)	5.2	37.4	37.1	37.4	21.9	0.5	22.4	22.4	0.0	22.4
Nov.	2.8	1.68	37.8	4.6	0.0	0.0	0.52		0.0	1.3	(0.8)	43.5	1.0	(0.6)	(6.1)	31.2	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	3.5	1.21	39.0	5.8	0.0	0.0	0.52		0.0	1.7	(0.6)	46.4	1.2	(0.4)	(2.8)	28.4	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	5.1	1.48	39.0	8.4	3.5	0.0	0.37		0.0	2.4	(0.7)	53.0	1.8	(0.5)	4.2	32.7	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	3.1	1.95	35.2	5.2	0.0	0.0	0.46		0.0	1.5	(0.9)	41.4	1.1	(0.7)	1.8	34.5	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	3.2	3.02	39.0	5.2	0.0	0.0	0.37		0.0	1.5	(1.4)	44.7	1.1	(1.1)	0.7	35.2	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	1.8	4.57	37.8	2.9	0.0	5.3	0.58		35.3	0.8	(2.2)	45.2	0.6	(1.6)	2.9	38.1	38.2	8.8	29.3	0.7	30.0	30.0	0.0	30.0
May	0.6	5.97	39.0	1.0	0.0	9.1	0.55		70.1	0.3	(2.8)	47.1	0.2	(2.1)	0.4	38.5	38.3	54.9	59.6	1.4	61.0	61.0	0.0	61.0
Jun.	0.2	7.19	37.8	0.3	0.0	12.0	0.25		92.4	0.1	(3.4)	47.0	0.1	(2.5)	(7.8)	30.7	30.4	71.8	78.6	1.8	80.4	80.4	0.0	80.4
Jul.	0.1	7.64	39.0	0.1	0.0	13.1	0.58		100.9	0.0	(3.6)	49.2	0.0	(2.7)	(3.8)	26.9	26.9	83.4	85.8	2.0	87.8	87.8	0.0	87.8
Aug.	0.1	6.98	37.8	0.2	0.0	11.8	0.49		91.1	0.1	(3.3)	47.0	0.0	(2.4)	(0.0)	26.9	27.7	78.1	77.5	1.8	79.3	79.3	0.0	79.3
Sep.	0.3	4.99	39.0	0.5	0.0	11.0	0.43		64.6	0.2	(2.4)	48.7	0.1	(1.7)	4.7	32.2	32.2	62.4	52.4	1.2	53.6	53.6	0.0	53.6
Total, AFY	**22.0**	**49.9**	**459**	**36.1**	**3.5**	**67.2**	**5.83**		**481.7**	**10.5**	**(23.7)**	**558.8**	**7.7**	**(17.5)**	**(0.6)**			**413.2**	**405.1**	**9.4**	**414.5**	**414.5**	**0**	**414.5**

Base City Flow	0.410 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	1.00	1.00	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment				Storage	Percolation	
	1	2	3	4	5	6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) Average year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In September, Column 16 is set to 0 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

Current Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/Store Elsewhere
Oct.	77.0	4.3	12.4	12.4	64.6	0.3	1.2	1.2	0.0	26	26.0	0.5	(1.4)	0.0	(25.9)	0.0	51	51.0	0.4	(1.1)	0.0	(23.9)	0.0	OK	74.2
Nov.	81.2	1.2	0.0	0.0	81.2	0.0	0.0	0.0	0.0	50	50.0	1.2	(0.7)	0.0	50.5	25.8		24.7	0.9	(0.5)	0.0	25.1	25.1	OK	0.0
Dec.	78.4	0.0	0.0	0.0	78.4	0.0	0.0	0.0	0.0	50	50.0	1.6	(0.5)	0.0	51.0	25.8		51.0	1.1	(0.4)	0.0	0.1	25.1	OK	51.7
Jan.	82.7	0.0	0.0	0.0	82.7	0.0	0.0	0.0	0.0	50	50.0	2.2	(0.7)	0.0	51.6	25.8		51.6	1.7	(0.5)	0.0	(0.0)	25.1	OK	52.8
Feb.	74.5	0.0	0.0	0.0	74.5	0.0	0.0	0.0	0.0	40	40.0	1.4	(0.9)	0.0	40.5	25.8		40.5	1.0	(0.6)	0.0	0.0	25.1	OK	40.9
Mar.	79.2	0.0	0.0	0.0	79.2	0.0	0.0	0.0	0.0	44	44.0	1.4	(1.3)	0.0	44.1	25.8		44.1	1.0	(1.0)	0.0	0.0	25.1	OK	44.1
Apr.	79.5	1.8	16.7	16.7	62.7	0.0	1.6	1.6	0.0	23	23.0	0.8	(2.0)	0.0	21.8	25.8		21.8	0.6	(1.5)	0.0	0.0	25.2	OK	20.8
May	83.3	0.6	31.7	31.7	51.6	0.3	3.1	3.1	0.0	10	10.0	0.3	(2.6)	0.0	7.6	25.8		7.6	0.2	(1.9)	0.0	0.0	25.2	OK	5.9
Jun.	83.1	15.4	41.3	41.3	41.8	1.2	4.1	4.1	0.0	7	7.0	0.1	(3.2)	0.0	3.9	25.8		3.9	0.1	(2.3)	0.0	(0.0)	25.2	OK	1.7
Jul.	77.3	13.5	44.9	44.9	32.3	1.2	4.4	4.4	0.0	1	1.0	0.0	(3.4)	0.0	(2.3)	23.5		0.0	0.0	(2.5)	0.0	(2.5)	22.7	OK	0.0
Aug.	71.6	21.2	40.7	40.7	30.9	1.8	4.0	4.0	0.0	0	0.0	0.1	(3.1)	0.0	(3.0)	20.4		0.0	0.0	(2.3)	0.0	(2.2)	20.5	OK	0.0
Sep.	74.0	11.7	27.7	27.7	46.3	1.8	2.7	2.7	0.0	12	12.0	0.1	(2.2)	0.0	9.9	25.8		4.6	0.1	(1.6)	0.0	3.1	23.5	OK	0.0
Total, AFY	**941.9**	**69.7**	**215.5**	**215.5**	**726.4**	**6.8**	**21.2**	**21.2**	**0.0**	**313**	**313.0**	**9.7**	**(22.0)**	**0.0**	**249.7**		**51**	**301**	**7.2**	**(16.2)**	**0.0**	**(0.4)**			**292**
									Total Inflows:		**313**					**Total Inflows:**		**301**					**Total Excess Water:**		**292**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

Current Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	2.2	3.24	39.0	3.5	0.0	2.0	0.71		11.3	1.0	(1.5)	44.7	0.8	(1.1)	5.0	37.2	37.1	37.4	9.0	0.3	9.3	9.3	0.0	9.3
Nov.	5.2	1.68	37.8	8.6	3.3	0.0	0.52		0.0	2.5	(0.8)	51.9	1.8	(0.6)	(5.8)	31.4	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	6.6	1.21	39.0	10.8	20.7	0.0	0.52		0.0	3.1	(0.6)	73.6	2.3	(0.4)	(2.5)	28.8	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	9.5	1.48	39.0	15.7	43.7	0.0	0.37		0.0	4.5	(0.7)	102.6	3.3	(0.5)	4.4	33.2	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	5.9	1.95	35.2	9.7	8.0	0.0	0.46		0.0	2.8	(0.9)	55.2	2.1	(0.7)	1.6	34.8	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	6.0	3.02	39.0	9.8	0.0	0.0	0.37		0.0	2.8	(1.4)	50.6	2.1	(1.1)	0.6	35.4	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	3.3	4.57	37.8	5.4	0.0	1.8	0.58		11.9	1.5	(2.2)	45.0	1.1	(1.6)	2.8	38.2	38.2	8.8	9.8	0.3	10.1	10.1	0.0	10.1
May	1.2	5.97	39.0	1.9	0.0	8.0	0.55		61.7	0.6	(2.8)	47.2	0.4	(2.1)	0.5	38.7	38.3	54.9	52.5	1.2	53.7	53.7	0.0	53.7
Jun.	0.4	7.19	37.8	0.7	0.0	11.6	0.25		89.4	0.2	(3.4)	47.1	0.2	(2.5)	(8.3)	30.3	30.4	71.8	76.1	1.7	77.8	77.8	0.0	77.8
Jul.	0.1	7.64	39.0	0.2	0.0	13.0	0.58		99.9	0.1	(3.6)	49.2	0.0	(2.7)	(4.1)	26.2	26.9	83.4	85.0	1.9	86.9	86.9	0.0	86.9
Aug.	0.2	6.98	37.8	0.4	0.0	11.6	0.49		89.4	0.1	(3.3)	47.1	0.1	(2.4)	1.7	27.9	27.7	78.1	76.1	1.7	77.8	77.8	0.0	77.8
Sep.	0.6	4.99	39.0	1.0	0.0	10.2	0.43		59.9	0.3	(2.4)	48.6	0.2	(1.7)	(4.1)	32.2	32.2	62.4	48.6	1.1	49.7	49.7	0.0	49.7
Total, AFY	**41.1**	**49.9**	**459**	**67.7**	**75.7**	**58.2**	**5.83**		**423.5**	**19.5**	**(23.7)**	**662.7**	**14.4**	**(17.5)**	**(8.4)**			**413.2**	**357.1**	**8.2**	**365.3**	**365.3**	**0**	**365.3**

Base City Flow	0.410 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	0.32	0.32	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment 1	2	3	4	Storage 5	Percolation 6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) 1-in-100 year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In August, Column 16 is set to 21.2 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

Current Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/ Store Elsewhere
Oct.	76.5	4.3	2.1	2.1	74.4	0.3	0.2	0.2	0.0	37	37.0	0.9	(1.4)	0.0	(26.5)	0.0	63	63.0	0.7	(1.1)	0.0	(25.3)	0.0	OK	87.9
Nov.	90.4	1.2	0.0	0.0	90.4	0.0	0.0	0.0	0.0	59	59.0	2.3	(0.7)	0.0	60.6	25.8		34.8	1.7	(0.5)	0.0	25.1	25.1	OK	10.8
Dec.	106.8	0.0	0.0	0.0	106.8	0.0	0.0	0.0	0.0	78	78.0	2.9	(0.5)	0.0	80.4	25.8		80.4	2.1	(0.4)	0.0	0.0	25.1	OK	82.1
Jan.	134.2	0.0	0.0	0.0	134.2	0.0	0.0	0.0	0.0	101	101.0	4.2	(0.7)	0.0	104.5	25.8		104.5	3.1	(0.5)	0.0	0.0	25.2	OK	107.1
Feb.	89.8	0.0	0.0	0.0	89.8	0.0	0.0	0.0	0.0	55	55.0	2.6	(0.9)	0.0	56.7	25.8		56.7	1.9	(0.6)	0.0	(0.0)	25.2	OK	58.0
Mar.	86.4	0.0	0.0	0.0	86.4	0.0	0.0	0.0	0.0	51	51.0	2.6	(1.3)	0.0	52.3	25.8		52.3	1.9	(1.0)	0.0	(0.1)	25.1	OK	53.3
Apr.	79.9	1.8	2.5	2.5	77.4	0.0	0.2	0.2	0.0	39	39.0	1.4	(2.0)	0.0	38.4	25.8		38.4	1.1	(1.5)	0.0	(0.0)	25.1	OK	38.0
May	83.7	0.6	9.1	9.1	74.5	0.3	0.9	0.9	0.0	35	35.0	0.5	(2.6)	0.0	32.9	25.8		32.9	0.4	(1.9)	0.0	0.0	25.1	OK	31.3
Jun.	83.4	15.4	12.8	12.8	70.6	1.2	1.3	1.3	0.0	39	39.0	0.2	(3.2)	0.0	36.0	25.8		36.0	0.1	(2.3)	0.0	0.0	25.2	OK	33.8
Jul.	76.9	13.5	14.3	14.3	62.6	1.2	1.4	1.4	0.0	35	35.0	0.1	(3.4)	0.0	31.7	25.8		31.7	0.0	(2.5)	0.0	(0.1)	25.1	OK	29.3
Aug.	71.0	21.2	12.8	12.8	58.2	1.8	1.3	1.3	0.0	29	29.0	0.1	(3.1)	0.0	26.0	25.8		26.0	0.1	(2.3)	0.0	0.0	25.1	OK	23.8
Sep.	74.9	11.7	8.3	8.3	66.6	1.8	0.8	0.8	0.0	42	42.0	0.3	(2.2)	0.0	40.1	25.8		40.1	0.2	(1.6)	0.0	0.0	25.2	OK	38.6
Total, AFY	**1053.9**	**69.7**	**61.9**	**61.9**	**992.0**	**6.8**	**6.1**	**6.1**	**0.0**	**600**	**600.0**	**18.2**	**(22.0)**	**0.0**	**533.1**		**63**	**597**	**13.4**	**(16.2)**	**0.0**	**(0.1)**			**594**
									Total Inflows:		**600**					**Total Inflows:**		**597**					**Total Excess Water:**		**594**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

Current Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	2.2	3.24	39.0	3.5	0.0	2.0	0.71		11.3	1.0	(1.5)	44.7	0.8	(1.1)	5.2	37.4	37.1	37.4	9.0	0.3	9.3	9.3	0.0	9.3
Nov.	5.2	1.68	37.8	8.6	3.3	0.0	0.52		0.0	2.5	(0.8)	51.9	1.8	(0.6)	(5.8)	31.6	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	6.6	1.21	39.0	10.8	20.7	0.0	0.52		0.0	3.1	(0.6)	73.6	2.3	(0.4)	(2.5)	29.0	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	9.5	1.48	39.0	15.7	43.7	0.0	0.37		0.0	4.5	(0.7)	102.6	3.3	(0.5)	4.4	33.4	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	5.9	1.95	35.2	9.7	8.0	0.0	0.46		0.0	2.8	(0.9)	55.2	2.1	(0.7)	1.6	35.0	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	6.0	3.02	39.0	9.8	0.0	0.0	0.37		0.0	2.8	(1.4)	50.6	2.1	(1.1)	0.6	35.6	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	3.3	4.57	37.8	5.4	0.0	1.8	0.58		11.9	1.5	(2.2)	45.0	1.1	(1.6)	3.0	38.5	38.2	8.8	9.8	0.3	10.1	10.1	0.0	10.1
May	1.2	5.97	39.0	1.9	0.0	8.0	0.55		61.7	0.6	(2.8)	47.2	0.4	(2.1)	0.3	38.8	38.3	54.9	52.5	1.2	53.7	53.7	0.0	53.7
Jun.	0.4	7.19	37.8	0.7	0.0	11.6	0.25		89.4	0.2	(3.4)	47.1	0.2	(2.5)	(8.3)	30.5	30.4	71.8	76.1	1.7	77.8	77.8	0.0	77.8
Jul.	0.1	7.64	39.0	0.2	0.0	13.0	0.58		99.9	0.1	(3.6)	49.2	0.0	(2.7)	(4.4)	26.1	26.9	83.4	85.0	1.9	86.9	86.9	0.0	86.9
Aug.	0.2	6.98	37.8	0.4	0.0	11.6	0.49		89.4	0.1	(3.3)	47.1	0.1	(2.4)	0.8	26.9	27.7	78.1	76.1	1.7	77.8	77.8	0.0	77.8
Sep.	0.6	4.99	39.0	1.0	0.0	10.2	0.43		59.9	0.3	(2.4)	48.6	0.2	(1.7)	(4.5)	32.2	32.2	62.4	48.6	1.1	49.7	49.7	0.0	49.7
Total, AFY	**41.1**	**49.9**	**459**	**67.7**	**75.7**	**58.2**	**5.83**		**423.5**	**19.5**	**(23.7)**	**662.7**	**14.4**	**(17.5)**				**413.2**	**357.1**	**8.2**	**365.3**	**365.3**	**0**	**365.3**

Base City Flow	0.410 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	1.00	1.00	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment 1	2	3	4	Storage 5	Percolation 6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) 1-in-100 year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In September, Column 16 is set to 0 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

Current Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/ Store Elsewhere
Oct.	76.5	4.3	6.5	6.5	70.0	0.3	0.6	0.6	0.0	32	32.0	0.9	(1.4)	0.0	(26.5)	0.0	58	58.0	0.7	(1.1)	0.0	(25.4)	0.0	OK	83.0
Nov.	90.6	1.2	0.0	0.0	90.6	0.0	0.0	0.0	0.0	59	59.0	2.3	(0.7)	0.0	60.6	25.8		34.8	1.7	(0.5)	0.0	25.1	25.1	OK	10.8
Dec.	107.0	0.0	0.0	0.0	107.0	0.0	0.0	0.0	0.0	78	78.0	2.9	(0.5)	0.0	80.4	25.8		80.4	2.1	(0.4)	0.0	0.0	25.1	OK	82.1
Jan.	134.4	0.0	0.0	0.0	134.4	0.0	0.0	0.0	0.0	101	101.0	4.2	(0.7)	0.0	104.5	25.8		104.5	3.1	(0.5)	0.0	0.0	25.2	OK	107.1
Feb.	90.0	0.0	0.0	0.0	90.0	0.0	0.0	0.0	0.0	55	55.0	2.6	(0.9)	0.0	56.7	25.8		56.7	1.9	(0.6)	0.0	(0.0)	25.2	OK	58.0
Mar.	86.6	0.0	0.0	0.0	86.6	0.0	0.0	0.0	0.0	51	51.0	2.6	(1.3)	0.0	52.3	25.8		52.3	1.9	(1.0)	0.0	(0.1)	25.1	OK	53.3
Apr.	80.1	1.8	7.8	7.8	72.3	0.0	0.8	0.8	0.0	33	33.0	1.4	(2.0)	0.0	32.4	25.8		32.4	1.1	(1.5)	0.0	(0.0)	25.1	OK	32.0
May	84.0	0.6	28.4	28.4	55.6	0.3	2.8	2.8	0.0	14	14.0	0.5	(2.6)	0.0	11.9	25.8		11.9	0.4	(1.9)	0.0	0.0	25.1	OK	10.3
Jun.	83.5	15.4	40.1	40.1	43.4	1.2	3.9	3.9	0.0	9	9.0	0.2	(3.2)	0.0	6.0	25.8		6.0	0.1	(2.3)	0.0	0.0	25.2	OK	3.8
Jul.	77.1	13.5	44.6	44.6	32.5	1.2	4.4	4.4	0.0	2	2.0	0.1	(3.4)	0.0	(1.3)	24.5		0.0	0.0	(2.5)	0.0	(2.4)	22.7	OK	0.0
Aug.	70.8	21.2	40.0	40.0	30.8	1.8	3.9	3.9	0.0	0	0.0	0.1	(3.1)	0.0	(3.0)	21.5		0.0	0.1	(2.3)	0.0	(2.2)	20.5	OK	0.0
Sep.	73.9	11.7	25.9	25.9	47.9	1.8	2.5	2.5	0.0	23	23.0	0.3	(2.2)	0.0	21.1	25.8		16.8	0.2	(1.6)	0.0	4.7	25.2	OK	10.7
Total, AFY	**1054.3**	**69.7**	**193.4**	**193.4**	**860.9**	**6.8**	**19.0**	**19.0**	**0.0**	**457**	**457.0**	**18.2**	**(22.0)**	**0.0**	**395.1**		**58**	**454**	**13.4**	**(16.2)**	**0.0**	**(0.2)**			**451**
									Total Inflows:		**457**					**Total Inflows:**		**454**					**Total Excess Water:**		**451**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

2030 Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	1.2	3.24	48.5	1.9	0.0	4.9	0.71		27.3	0.5	(1.5)	55.0	0.4	(1.1)	4.9	37.1	37.1	37.4	21.9	0.5	22.4	22.4	0.0	22.4
Nov.	2.8	1.68	47.0	4.6	0.0	0.0	0.52		0.0	1.3	(0.8)	52.7	1.0	(0.6)	(5.9)	31.2	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	3.5	1.21	48.5	5.8	0.0	0.0	0.52		0.0	1.7	(0.6)	55.9	1.2	(0.4)	(2.3)	28.9	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	5.1	1.48	48.5	8.4	3.5	0.0	0.37		0.0	2.4	(0.7)	62.5	1.8	(0.5)	3.7	32.7	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	3.1	1.95	43.8	5.2	0.0	0.0	0.46		0.0	1.5	(0.9)	50.0	1.1	(0.7)	1.4	34.1	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	3.2	3.02	48.5	5.2	0.0	0.0	0.37		0.0	1.5	(1.4)	54.2	1.1	(1.1)	1.2	35.3	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	1.8	4.57	47.0	2.9	0.0	5.3	0.58		35.3	0.8	(2.2)	54.4	0.6	(1.6)	3.6	38.9	38.2	8.8	29.3	0.7	30.0	30.0	0.0	30.0
May	0.6	5.97	48.5	1.0	0.0	9.1	0.55		70.1	0.3	(2.8)	56.6	0.2	(2.1)	(0.4)	38.5	38.3	54.9	59.6	1.4	61.0	61.0	0.0	61.0
Jun.	0.2	7.19	47.0	0.3	0.0	12.0	0.25		92.4	0.1	(3.4)	56.2	0.1	(2.5)	(7.7)	30.8	30.4	71.8	78.6	1.8	80.4	80.4	0.0	80.4
Jul.	0.1	7.64	48.5	0.1	0.0	13.1	0.58		100.9	0.0	(3.6)	58.7	0.0	(2.7)	(3.8)	27.0	26.9	83.4	85.8	2.0	87.8	87.8	0.0	87.8
Aug.	0.1	6.98	47.0	0.2	0.0	11.8	0.49		91.1	0.1	(3.3)	56.2	0.0	(2.4)	0.5	27.5	27.7	78.1	77.5	1.8	79.3	79.3	0.0	79.3
Sep.	0.3	4.99	48.5	0.5	0.0	11.0	0.43		64.6	0.2	(2.4)	58.2	0.1	(1.7)	3.9	32.2	32.2	62.4	52.4	1.2	53.6	53.6	0.0	53.6
Total, AFY	**22.0**	**49.9**	**571**	**36.1**	**3.5**	**67.2**	**5.83**		**481.7**	**10.5**	**(23.7)**	**670.7**	**7.7**	**(17.5)**	**(0.8)**			**413.2**	**405.1**	**9.4**	**414.5**	**414.5**	**0**	**414.5**

Base City Flow	0.510 mgd					
Town Field Runoff Calculation Parameters		LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Soil Interception, inches	3					
Percent Infiltration, saturated soil	0.4					
Percent Infiltration, unsaturated soil	0.6	Area, acres	57	5.6	130	3.1
Min 2-month Rainfall for Saturation, inches	10	Crop Coefficient	0.32	0.32	0.88	--
Max Precip Before Runoff Capture, inches	20	Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment				Storage	Percolation	
	1	2	3	4	5	6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) Average year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In August, Column 16 is set to 22.9 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

2030 Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/ Store Elsewhere
Oct.	86.5	4.3	4.0	4.0	82.5	0.3	0.4	0.4	0.0	45	45.0	0.5	(1.4)	0.0	(25.9)	0.0	70	70.0	0.4	(1.1)	0.0	(25.2)	0.0	OK	94.5
Nov.	90.2	1.2	0.0	0.0	90.2	0.0	0.0	0.0	0.0	59	59.0	1.2	(0.7)	0.0	59.5	25.8		33.7	0.9	(0.5)	0.0	25.2	25.2	OK	8.9
Dec.	87.9	0.0	0.0	0.0	87.9	0.0	0.0	0.0	0.0	59	59.0	1.6	(0.5)	0.0	60.0	25.8		60.0	1.1	(0.4)	0.0	(0.0)	25.1	OK	60.8
Jan.	92.7	0.0	0.0	0.0	92.7	0.0	0.0	0.0	0.0	60	60.0	2.2	(0.7)	0.0	61.6	25.8		61.6	1.7	(0.5)	0.0	(0.0)	25.1	OK	62.8
Feb.	83.1	0.0	0.0	0.0	83.1	0.0	0.0	0.0	0.0	49	49.0	1.4	(0.9)	0.0	49.5	25.8		49.5	1.0	(0.6)	0.0	0.0	25.1	OK	49.9
Mar.	88.3	0.0	0.0	0.0	88.3	0.0	0.0	0.0	0.0	53	53.0	1.4	(1.3)	0.0	53.1	25.8		53.1	1.0	(1.0)	0.0	0.0	25.1	OK	53.1
Apr.	88.8	1.8	5.4	5.4	83.4	0.0	0.5	0.5	0.0	44	44.0	0.8	(2.0)	0.0	42.8	25.8		42.8	0.6	(1.5)	0.0	0.0	25.2	OK	41.8
May	93.6	0.6	10.1	10.1	83.5	0.3	1.0	1.0	0.0	44	44.0	0.3	(2.6)	0.0	41.6	25.8		41.6	0.2	(1.9)	0.0	0.0	25.2	OK	39.9
Jun.	92.3	15.4	13.2	13.2	79.1	1.2	1.3	1.3	0.0	47	47.0	0.1	(3.2)	0.0	43.9	25.8		43.9	0.1	(2.3)	0.0	(0.0)	25.2	OK	41.7
Jul.	86.8	13.5	14.4	14.4	72.4	1.2	1.4	1.4	0.0	44	44.0	0.0	(3.4)	0.0	40.7	25.8		40.7	0.0	(2.5)	0.0	(0.0)	25.2	OK	38.2
Aug.	80.8	21.2	13.0	13.0	67.8	1.8	1.3	1.3	0.0	39	39.0	0.1	(3.1)	0.0	36.0	25.8		36.0	0.0	(2.3)	0.0	(0.1)	25.1	OK	33.8
Sep.	84.1	11.7	8.9	8.9	75.3	1.8	0.9	0.9	0.0	43	43.0	0.1	(2.2)	0.0	40.9	25.8		40.9	0.1	(1.6)	0.0	0.0	25.1	OK	39.4
Total, AFY	**1055.0**	**69.7**	**69.0**	**69.0**	**986.1**	**6.8**	**6.8**	**6.8**	**0.0**	**586**	**586.0**	**9.7**	**(22.0)**	**0.0**	**503.7**		**70**	**574**	**7.2**	**(16.2)**	**0.0**	**(0.1)**			**565**
									Total Inflows:		**586**					**Total Inflows:**		**574**					**Total Excess Water:**		**565**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

2030 Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	1.2	3.24	48.5	1.9	0.0	4.9	0.71		27.3	0.5	(1.5)	55.0	0.4	(1.1)	5.7	37.9	37.1	37.4	21.9	0.5	22.4	22.4	0.0	22.4
Nov.	2.8	1.68	47.0	4.6	0.0	0.0	0.52		0.0	1.3	(0.8)	52.7	1.0	(0.6)	(5.9)	31.9	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	3.5	1.21	48.5	5.8	0.0	0.0	0.52		0.0	1.7	(0.6)	55.9	1.2	(0.4)	(3.3)	28.6	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	5.1	1.48	48.5	8.4	3.5	0.0	0.37		0.0	2.4	(0.7)	62.5	1.8	(0.5)	4.7	33.4	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	3.1	1.95	43.8	5.2	0.0	0.0	0.46		0.0	1.5	(0.9)	50.0	1.1	(0.7)	1.4	34.8	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	3.2	3.02	48.5	5.2	0.0	0.0	0.37		0.0	1.5	(1.4)	54.2	1.1	(1.1)	0.2	35.0	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	1.8	4.57	47.0	2.9	0.0	5.3	0.58		35.3	0.8	(2.2)	54.4	0.6	(1.6)	3.1	38.1	38.2	8.8	29.3	0.7	30.0	30.0	0.0	30.0
May	0.6	5.97	48.5	1.0	0.0	9.1	0.55		70.1	0.3	(2.8)	56.6	0.2	(2.1)	(0.1)	38.0	38.3	54.9	59.6	1.4	61.0	61.0	0.0	61.0
Jun.	0.2	7.19	47.0	0.3	0.0	12.0	0.25		92.4	0.1	(3.4)	56.2	0.1	(2.5)	(7.6)	30.4	30.4	71.8	78.6	1.8	80.4	80.4	0.0	80.4
Jul.	0.1	7.64	48.5	0.1	0.0	13.1	0.58		100.9	0.0	(3.6)	58.7	0.0	(2.7)	(3.3)	27.1	26.9	83.4	85.8	2.0	87.8	87.8	0.0	87.8
Aug.	0.1	6.98	47.0	0.2	0.0	11.8	0.49		91.1	0.1	(3.3)	56.2	0.0	(2.4)	0.2	27.3	27.7	78.1	77.5	1.8	79.3	79.3	0.0	79.3
Sep.	0.3	4.99	48.5	0.5	0.0	11.0	0.43		64.6	0.2	(2.4)	58.2	0.1	(1.7)	4.2	32.2	32.2	62.4	52.4	1.2	53.6	53.6	0.0	53.6
Total, AFY	**22.0**	**49.9**	**571**	**36.1**	**3.5**	**67.2**	**5.83**		**481.7**	**10.5**	**(23.7)**	**670.7**	**7.7**	**(17.5)**	**(0.7)**			**413.2**	**405.1**	**9.4**	**414.5**	**414.5**	**0**	**414.5**

Base City Flow	0.510 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	1.00	1.00	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment				Storage	Percolation	
	1	2	3	4	5	6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) Average year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In September, Column 16 is set to 0 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

2030 Flows: Average Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/Store Elsewhere
Oct.	86.5	4.3	12.4	12.4	74.1	0.3	1.2	1.2	0.0	35	35.0	0.5	(1.4)	0.0	(25.9)	0.0	60	60.0	0.4	(1.1)	0.0	(24.9)	0.0	OK	84.2
Nov.	90.9	1.2	0.0	0.0	90.9	0.0	0.0	0.0	0.0	59	59.0	1.2	(0.7)	0.0	59.5	25.8		33.7	0.9	(0.5)	0.0	24.8	24.8	OK	9.3
Dec.	88.6	0.0	0.0	0.0	88.6	0.0	0.0	0.0	0.0	60	60.0	1.6	(0.5)	0.0	61.0	25.8		61.0	1.1	(0.4)	0.0	(0.0)	24.7	OK	61.8
Jan.	92.4	0.0	0.0	0.0	92.4	0.0	0.0	0.0	0.0	59	59.0	2.2	(0.7)	0.0	60.6	25.8		60.6	1.7	(0.5)	0.0	(0.0)	24.7	OK	61.8
Feb.	83.8	0.0	0.0	0.0	83.8	0.0	0.0	0.0	0.0	49	49.0	1.4	(0.9)	0.0	49.5	25.8		49.5	1.0	(0.6)	0.0	0.0	24.7	OK	49.9
Mar.	89.0	0.0	0.0	0.0	89.0	0.0	0.0	0.0	0.0	54	54.0	1.4	(1.3)	0.0	54.1	25.8		54.1	1.0	(1.0)	0.0	0.0	24.7	OK	54.1
Apr.	88.5	1.8	16.7	16.7	71.7	0.0	1.6	1.6	0.0	32	32.0	0.8	(2.0)	0.0	30.8	25.8		30.8	0.6	(1.5)	0.0	0.0	24.8	OK	29.8
May	92.8	0.6	31.7	31.7	61.1	0.3	3.1	3.1	0.0	20	20.0	0.3	(2.6)	0.0	17.6	25.8		17.6	0.2	(1.9)	0.0	0.0	24.8	OK	15.9
Jun.	91.8	15.4	41.3	41.3	50.5	1.2	4.1	4.1	0.0	16	16.0	0.1	(3.2)	0.0	12.9	25.8		12.9	0.1	(2.3)	0.0	(0.0)	24.8	OK	10.7
Jul.	86.5	13.5	44.9	44.9	41.5	1.2	4.4	4.4	0.0	10	10.0	0.0	(3.4)	0.0	6.7	25.8		6.7	0.0	(2.5)	0.0	(0.0)	24.8	OK	4.2
Aug.	81.0	21.2	40.7	40.7	40.3	1.8	4.0	4.0	0.0	9	9.0	0.1	(3.1)	0.0	6.0	25.8		6.0	0.0	(2.3)	0.0	0.0	24.8	OK	3.7
Sep.	83.9	11.7	27.7	27.7	56.2	1.8	2.7	2.7	0.0	22	22.0	0.1	(2.2)	0.0	19.9	25.8		19.9	0.1	(1.6)	0.0	0.0	24.8	OK	18.4
Total, AFY	**1055.8**	**69.7**	**215.5**	**215.5**	**840.3**	**6.8**	**21.2**	**21.2**	**0.0**	**425**	**425.0**	**9.7**	**(22.0)**	**0.0**	**352.7**		**60**	**413**	**7.2**	**(16.2)**	**0.0**	**(0.1)**			**404**
									Total Inflows:		**425**					**Total Inflows:**		**413**					**Total Excess Water:**		**404**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

2030 Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	2.2	3.24	48.5	3.5	0.0	2.0	0.71		11.3	1.0	(1.5)	54.2	0.8	(1.1)	4.5	36.7	37.1	37.4	9.0	0.3	9.3	9.3	0.0	9.3
Nov.	5.2	1.68	47.0	8.6	3.3	0.0	0.52		0.0	2.5	(0.8)	61.1	1.8	(0.6)	(5.6)	31.1	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	6.6	1.21	48.5	10.8	20.7	0.0	0.52		0.0	3.1	(0.6)	83.1	2.3	(0.4)	(3.0)	28.0	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	9.5	1.48	48.5	15.7	43.7	0.0	0.37		0.0	4.5	(0.7)	112.1	3.3	(0.5)	4.9	32.9	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	5.9	1.95	43.8	9.7	8.0	0.0	0.46		0.0	2.8	(0.9)	63.8	2.1	(0.7)	1.2	34.1	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	6.0	3.02	48.5	9.8	0.0	0.0	0.37		0.0	2.8	(1.4)	60.1	2.1	(1.1)	1.1	35.2	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	3.3	4.57	47.0	5.4	0.0	1.8	0.58		11.9	1.5	(2.2)	54.2	1.1	(1.6)	3.0	38.2	38.2	8.8	9.8	0.3	10.1	10.1	0.0	10.1
May	1.2	5.97	48.5	1.9	0.0	8.0	0.55		61.7	0.6	(2.8)	56.7	0.4	(2.1)	0.0	38.2	38.3	54.9	52.5	1.2	53.7	53.7	0.0	53.7
Jun.	0.4	7.19	47.0	0.7	0.0	11.6	0.25		89.4	0.2	(3.4)	56.3	0.2	(2.5)	(8.1)	30.0	30.4	71.8	76.1	1.7	77.8	77.8	0.0	77.8
Jul.	0.1	7.64	48.5	0.2	0.0	13.0	0.58		99.9	0.1	(3.6)	58.7	0.0	(2.7)	(3.6)	26.4	26.9	83.4	85.0	1.9	86.9	86.9	0.0	86.9
Aug.	0.2	6.98	47.0	0.4	0.0	11.6	0.49		89.4	0.1	(3.3)	56.3	0.1	(2.4)	0.9	27.3	27.7	78.1	76.1	1.7	77.8	77.8	0.0	77.8
Sep.	0.6	4.99	48.5	1.0	0.0	10.2	0.43		59.9	0.3	(2.4)	58.1	0.2	(1.7)	5.4	32.2	32.2	62.4	48.6	1.1	49.7	49.7	0.0	49.7
Total, AFY	**41.1**	**49.9**	**571**	**67.7**	**75.7**	**58.2**	**5.83**		**423.5**	**19.5**	**(23.7)**	**774.6**	**14.4**	**(17.5)**	**0.5**			**413.2**	**357.1**	**8.2**	**365.3**	**365.3**	**0**	**365.3**

Base City Flow	0.510 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	0.32	0.32	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment 1	2	3	4	Storage 5	Percolation 6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) 1-in-100 year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In August, Column 16 is set to 21.2 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

2030 Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 0.32

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/ Store Elsewhere
Oct.	86.0	4.3	2.1	2.1	83.9	0.3	0.2	0.2	0.0	47	47.0	0.9	(1.4)	0.0	(26.5)	0.0	73	73.0	0.7	(1.1)	0.0	(25.3)	0.0	OK	97.9
Nov.	99.1	1.2	0.0	0.0	99.1	0.0	0.0	0.0	0.0	68	68.0	2.3	(0.7)	0.0	69.6	25.8		43.8	1.7	(0.5)	0.0	25.1	25.1	OK	19.8
Dec.	116.0	0.0	0.0	0.0	116.0	0.0	0.0	0.0	0.0	88	88.0	2.9	(0.5)	0.0	90.4	25.8		90.4	2.1	(0.4)	0.0	0.0	25.1	OK	92.1
Jan.	142.9	0.0	0.0	0.0	142.9	0.0	0.0	0.0	0.0	110	110.0	4.2	(0.7)	0.0	113.5	25.8		113.5	3.1	(0.5)	0.0	0.0	25.2	OK	116.1
Feb.	98.1	0.0	0.0	0.0	98.1	0.0	0.0	0.0	0.0	64	64.0	2.6	(0.9)	0.0	65.7	25.8		65.7	1.9	(0.6)	0.0	(0.0)	25.2	OK	67.0
Mar.	95.2	0.0	0.0	0.0	95.2	0.0	0.0	0.0	0.0	60	60.0	2.6	(1.3)	0.0	61.3	25.8		61.3	1.9	(1.0)	0.0	(0.1)	25.1	OK	62.3
Apr.	88.9	1.8	2.5	2.5	86.4	0.0	0.2	0.2	0.0	48	48.0	1.4	(2.0)	0.0	47.4	25.8		47.4	1.1	(1.5)	0.0	(0.0)	25.1	OK	47.0
May	93.2	0.6	9.1	9.1	84.0	0.3	0.9	0.9	0.0	45	45.0	0.5	(2.6)	0.0	42.9	25.8		42.9	0.4	(1.9)	0.0	0.0	25.1	OK	41.3
Jun.	92.1	15.4	12.8	12.8	79.3	1.2	1.3	1.3	0.0	48	48.0	0.2	(3.2)	0.0	45.0	25.8		45.0	0.1	(2.3)	0.0	(0.1)	25.1	OK	42.9
Jul.	86.1	13.5	14.3	14.3	71.8	1.2	1.4	1.4	0.0	44	44.0	0.1	(3.4)	0.0	40.7	25.8		40.7	0.0	(2.5)	0.0	0.0	25.1	OK	38.2
Aug.	80.4	21.2	12.8	12.8	67.6	1.8	1.3	1.3	0.0	39	39.0	0.1	(3.1)	0.0	36.0	25.8		36.0	0.1	(2.3)	0.0	0.0	25.1	OK	33.8
Sep.	83.8	11.7	8.3	8.3	75.5	1.8	0.8	0.8	0.0	42	42.0	0.3	(2.2)	0.0	40.1	25.8		40.1	0.2	(1.6)	0.0	0.0	25.2	OK	38.6
Total, AFY	**1161.8**	**69.7**	**61.9**	**61.9**	**1099.9**	**6.8**	**6.1**	**6.1**	**0.0**	**703**	**703.0**	**18.2**	**(22.0)**	**0.0**	**626.1**		**73**	**700**	**13.4**	**(16.2)**	**0.0**	**(0.1)**			**697**
									Total Inflows:		**703**					**Total Inflows:**		**700**					**Total Excess Water:**		**697**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

2030 Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(17)	(16)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	Climate Values, inches		Inflows, ac-ft							Treatment Ponds			Storage Pond 5					Golf Course Irrigation						
Month	Rainfall	Ref. ET	Base City	I&I	Town Field Runoff	COWRF Backwash	AWA Backwash	CDCR	ARSA	Rainfall	Evap.	Total Inflow to Pond 5	Rainfall	Evap.	To/From Storage	Net Storage	Historical Storage	Historical Demand	Theoretical Demand	Theoretical Pond Losses	Total Theoretical Demand	Provided by Partners	Provided by City	Total Provided
Oct.	2.2	3.24	48.5	3.5	0.0	2.0	0.71		11.3	1.0	(1.5)	54.2	0.8	(1.1)	5.7	37.9	37.1	37.4	9.0	0.3	9.3	9.3	0.0	9.3
Nov.	5.2	1.68	47.0	8.6	3.3	0.0	0.52		0.0	2.5	(0.8)	61.1	1.8	(0.6)	(6.6)	31.3	31.8	16.4	0.0	0.0	0.0	0.0	0.0	0.0
Dec.	6.6	1.21	48.5	10.8	20.7	0.0	0.52		0.0	3.1	(0.6)	83.1	2.3	(0.4)	(3.0)	28.2	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jan.	9.5	1.48	48.5	15.7	43.7	0.0	0.37		0.0	4.5	(0.7)	112.1	3.3	(0.5)	4.9	33.1	33.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb.	5.9	1.95	43.8	9.7	8.0	0.0	0.46		0.0	2.8	(0.9)	63.8	2.1	(0.7)	1.2	34.3	34.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar.	6.0	3.02	48.5	9.8	0.0	0.0	0.37		0.0	2.8	(1.4)	60.1	2.1	(1.1)	1.1	35.4	35.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr.	3.3	4.57	47.0	5.4	0.0	1.8	0.58		11.9	1.5	(2.2)	54.2	1.1	(1.6)	3.2	38.5	38.2	8.8	9.8	0.3	10.1	10.1	0.0	10.1
May	1.2	5.97	48.5	1.9	0.0	8.0	0.55		61.7	0.6	(2.8)	56.7	0.4	(2.1)	(0.2)	38.3	38.3	54.9	52.5	1.2	53.7	53.7	0.0	53.7
Jun.	0.4	7.19	47.0	0.7	0.0	11.6	0.25		89.4	0.2	(3.4)	56.3	0.2	(2.5)	(8.1)	30.2	30.4	71.8	76.1	1.7	77.8	77.8	0.0	77.8
Jul.	0.1	7.64	48.5	0.2	0.0	13.0	0.58		99.9	0.1	(3.6)	58.7	0.0	(2.7)	(3.9)	26.3	26.9	83.4	85.0	1.9	86.9	86.9	0.0	86.9
Aug.	0.2	6.98	47.0	0.4	0.0	11.6	0.49		89.4	0.1	(3.3)	56.3	0.1	(2.4)	1.0	27.3	27.7	78.1	76.1	1.7	77.8	77.8	0.0	77.8
Sep.	0.6	4.99	48.5	1.0	0.0	10.2	0.43		59.9	0.3	(2.4)	58.1	0.2	(1.7)	5.0	32.2	32.2	62.4	48.6	1.1	49.7	49.7	0.0	49.7
Total, AFY	**41.1**	**49.9**	**571**	**67.7**	**75.7**	**58.2**	**5.83**		**423.5**	**19.5**	**(23.7)**	**774.6**	**14.4**	**(17.5)**				**413.2**	**357.1**	**8.2**	**365.3**	**365.3**	**0**	**365.3**

Base City Flow	0.510 mgd

Town Field Runoff Calculation Parameters	
Soil Interception, inches	3
Percent Infiltration, saturated soil	0.4
Percent Infiltration, unsaturated soil	0.6
Min 2-month Rainfall for Saturation, inches	10
Max Precip Before Runoff Capture, inches	20

LAA Information	Town Field	City Field	Golf Course	Golf Course Pond
Area, acres	57	5.6	130	3.1
Crop Coefficient	1.00	1.00	0.88	--
Irr. Efficiency	0.80	0.80	0.84	--

Pond Information	Treatment 1	2	3	4	Storage 5	Percolation 6	7
Surface Area, acres	1.5	1.2	1.0	2.0	4.2	3.9	5.3
Storage Volume, ac-ft					41.7	25.2	25.8
Feb.-May. Perc. Rate, in/d						0.0	0.0
Jun.-Jan. Perc. Rate, in/d						0.0	0.0

(1) 1-in-100 year rainfall from Ione NCDC station (#044283)
(2) Reference evapotranspiration from Plymouth CIMIS station (Station 227)
(3) = (Base City Flow) x (number of days in month) x 3.07
(4) = 3.07 x (I&I in million gallons). I&I in million gallons = 0.539 x (rainfall in inches) - 0.012, using linear equation developed in this TM.
(5) = (Column 1 - Column 2 - interception of 3 inches - infiltration in inches)/(12 inches per foot) x (surface area of Town Field, 57 acres). If Column 1 > 8 inches, then set value of Column 1 to 8 inches.
Infiltration in inches = (percent infiltration) x (Column 1 - Column 2 - interception of 3 inches). If the sum of Column 1 in the current and previous month >= 10 inches, percent infiltration is 0.4. Otherwise, percent infiltration is 0.6.
(6) = (Column 9) x (Percentage of monthly COWRF influent flow discarded as backwash as defined in COGC TM) (see Attachment D)
(7) Average monthly AWA backwash flow from 2021 to 2024
(8) = 0. Assume no CDCR flow.
(9) = Column 21 / (1 - COWRF filter backwash percentage as defined in COGC TM) (see Attachment D)
(10) = (Column 1)/12 x (surface area of Ponds 1-4, 5.7 acres)
(11) = (Column 2)/12 x (surface area of Ponds 1-4, 5.7 acres)
(12) = Column 3 + Column 4 + Column 5 + Column 6 + Column 7 + Column 10 + Column 11
(13) = (Column 1)/12 x (surface area of Pond 5, 4.2 acres)
(14) = (Column 2)/12 x (surface area of Pond 5, 4.2 acres)
(15) = Column 12 + Column 13 + Column 14 - (Column 23 + Column 28 + Column 32 + Column 34)
(16) = Column 16 of previous month + Column 15 of current month. If this is greater than the Pond 5 volume of 41.7 acre-feet, Column 16 is set to 41.7.
In September, Column 16 is set to 0 and the value in Column 34 is adjusted so that the formula in Column 15 predicts this value.
(17) Monthly average storage volume in Pond 5 from 2019 to 2024
(18) Historical irrigation demand for COGC, from COGC TM (see Attachment D)
(19) = [Column 1 - (Column 2 x crop coefficient of 0.88)]/12 x (surface area of golf course, 130 acres) x (irrigation efficiency of 0.84). If Column 19 < 0, then set Column 19 to 0.
(20) = (Column 1 - Column 2)/12 x (surface area of golf course pond, 3.1 acres). If Column 20 < 0, then set Column 20 to 0.
(21) = Column 19 + Column 20
(22) = Column 21 - Column 23
(23) = 0. Assume no flow from the City.
(24) = Column 22 + Column 23

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

2030 Flows: 1-in-100 Rainfall Year Water Balance for City of Ione Wastewater Treatment Plant, No Percolation, Crop Coefficient of 1

	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
	Town Field Irrigation				City Field Irrigation				Percolation Pond 7								Percolation Pond 6								
Month	Avail for Town	Historical Demand	Theoretical Demand	Provided by City	Avail for City	Historical Demand	Theoretical Demand	Provided by City	System Excess	Empty Pond 5	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Empty Pond 7	Total Flow to Pond	Rainfall	Evap.	Potential Perc.	To/From Storage	Cum. Storage	Check for System Overflow	Discharge/ Store Elsewhere
Oct.	86.0	4.3	6.5	6.5	79.5	0.3	0.6	0.6	0.0	41	41.0	0.9	(1.4)	0.0	(26.5)	0.0	67	67.0	0.7	(1.1)	0.0	(25.2)	0.0	OK	91.8
Nov.	100.3	1.2	0.0	0.0	100.3	0.0	0.0	0.0	0.0	69	69.0	2.3	(0.7)	0.0	70.6	25.8		44.8	1.7	(0.5)	0.0	25.1	25.1	OK	20.8
Dec.	116.2	0.0	0.0	0.0	116.2	0.0	0.0	0.0	0.0	88	88.0	2.9	(0.5)	0.0	90.4	25.8		90.4	2.1	(0.4)	0.0	0.0	25.1	OK	92.1
Jan.	143.1	0.0	0.0	0.0	143.1	0.0	0.0	0.0	0.0	110	110.0	4.2	(0.7)	0.0	113.5	25.8		113.5	3.1	(0.5)	0.0	0.0	25.2	OK	116.1
Feb.	98.3	0.0	0.0	0.0	98.3	0.0	0.0	0.0	0.0	64	64.0	2.6	(0.9)	0.0	65.7	25.8		65.7	1.9	(0.6)	0.0	(0.0)	25.2	OK	67.0
Mar.	95.4	0.0	0.0	0.0	95.4	0.0	0.0	0.0	0.0	60	60.0	2.6	(1.3)	0.0	61.3	25.8		61.3	1.9	(1.0)	0.0	(0.1)	25.1	OK	62.3
Apr.	89.1	1.8	7.8	7.8	81.3	0.0	0.8	0.8	0.0	42	42.0	1.4	(2.0)	0.0	41.4	25.8		41.4	1.1	(1.5)	0.0	(0.0)	25.1	OK	41.0
May	93.5	0.6	28.4	28.4	65.1	0.3	2.8	2.8	0.0	24	24.0	0.5	(2.6)	0.0	21.9	25.8		21.9	0.4	(1.9)	0.0	0.0	25.1	OK	20.3
Jun.	92.2	15.4	40.1	40.1	52.1	1.2	3.9	3.9	0.0	18	18.0	0.2	(3.2)	0.0	15.0	25.8		15.0	0.1	(2.3)	0.0	0.0	25.2	OK	12.8
Jul.	86.3	13.5	44.6	44.6	41.7	1.2	4.4	4.4	0.0	11	11.0	0.1	(3.4)	0.0	7.7	25.8		7.7	0.0	(2.5)	0.0	(0.1)	25.1	OK	5.3
Aug.	80.2	21.2	40.0	40.0	40.2	1.8	3.9	3.9	0.0	9	9.0	0.1	(3.1)	0.0	6.0	25.8		6.0	0.1	(2.3)	0.0	(0.0)	25.1	OK	3.9
Sep.	83.8	11.7	25.9	25.9	57.8	1.8	2.5	2.5	0.0	23	23.0	0.3	(2.2)	0.0	21.1	25.8		21.1	0.2	(1.6)	0.0	0.0	25.1	OK	19.6
Total, AFY	**1164.2**	**69.7**	**193.4**	**193.4**	**970.8**	**6.8**	**19.0**	**19.0**	**0.0**	**559**	**559.0**	**18.2**	**(22.0)**	**0.0**	**488.1**		**67**	**556**	**13.4**	**(16.2)**	**0.0**	**(0.0)**			**553**
									Total Inflows:		**559**					**Total Inflows:**		**556**					**Total Excess Water:**		**553**
									Total Outflows:		**0**					**Total Outflows:**		**0**							

Legend for Cell Shading
- Value not directly used
- Historical value used as reference
- Independent variable (manual input)

(25) = (Column 16 of previous month) + Column 12 + Column 13 + Column 14 - Column 23. If Column 25 < 0, then set Column 25 to 0.
(26) Monthly average historical irrigation demand for Town Field from 2019 to 2024
(27) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of Town Field, 57 acres) x (irrigation efficiency of 0.8). If Column 27 < 0, then set Column 27 to 0.
(28) If Column 25 < Column 27, Column 25. Otherwise, Column 27.
(29) = Column 25 - Column 28. If Column 29 < 0, then set Column 29 to 0.
(30) Monthly average historical irrigation demand for City Field from 2018 to 2023.
(31) = [Column 1 - (Column 2 x crop coefficient of 0.32)]/12 x (surface area of City Field, 5.6 acres) x (irrigation efficiency of 0.8). If Column 31 < 0, then set Column 31 to 0.
(32) If Column 29 < Column 31, Column 29. Otherwise, Column 31.
(33) = (Column 16 from previous month) + Column 15 - (Pond 5 volume, 41.7 acre-feet). If Column 33 < 0, then set Column 33 to 0.
(34) Manually entered to move water between Pond 5 and Pond 7 to approximately match historical Pond 5 volumes. Positive values indicate flow from Pond 5 to Pond 7. Negative values indicate flow from Pond 7 to Town Field/City Field.
(35) = Column 33 + Column 34
(36) = (Column 1)/12 x (surface area of Pond 7, 5.3 acres)
(37) = (Column 2)/12 x (surface area of Pond 7, 5.3 acres)
(38) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 7, 5.3 acres). Percolation rate set to 0 inches per day.
(39) = Column 35 + Column 36 + Column 37 + Column 38 - Column 41
(40) = Column 40 of previous month + Column 39 of current month. If this is greater than the Pond 7 volume of 25.8 acre-feet, Column 40 is set to 25.8. If this is < 0, Column 40 is set to 0. In August, Column 40 must be <= 0 in order for the balance to work.
(41) Manually entered to move water between Pond 7 and Pond 6. Positive values indicate flow from Pond 7 to Pond 6. Negative values indicate flow from Pond 6 to Pond 7.
(42) If Column 40 >= Pond 7 volume of 25.8 acre-feet, Column 42 = (Column 40 of previous month) + Column 39 + Column 41 - 25.8. If Column 40 < 25.8, Column 42 = Column 41.
(43) = (Column 1)/12 x (surface area of Pond 6,3.9 acres)
(44) = (Column 2)/12 x (surface area of Pond 6, 3.9 acres)
(45) = (percolation rate in inches per day)/(12 inches per foot) x (number of days in month) x (surface area of Pond 6, 3.9 acres). Percolation rate set to 0 inches per day.
(46) = Column 42 + Column 43 + Column 44 + Column 45
(47) = Column 47 of previous month + Column 46 of current month. If this is greater than the Pond 6 storage volume of 25.2 acre-feet, Column 47 is set to 25.2. If Column 47 < 0, set to 0. In July, Column 47 must be <= 0 in order for the balance to work.
(48) If (Column 46 of current month) + (Column 47 of previous month) > Pond 6 storage volume of 25.2 acre-feet, Column 48 = "Overflow". Otherwise, Column 48 = "OK".
(49) Manually entered to move water between Pond 6 and New Storage/Disposal Site to ensure pond storage capacity is not exceeded.

Outlook

Gold Rush Ranch specific plan area

From Robin Peters <rpeters010@gmail.com>
Date Wed 3/5/2025 1:01 PM
To Tom DuBois <tdubois@cityofsuttercreek.org>
Cc Claire Gunselman <cgunselman@cityofsuttercreek.org>; Julia Sierk-Zanze <jsierk@cityofsuttercreek.org>; Susan Feist <sfeist@cityofsuttercreek.org>; James Swift <jswift@cityofsuttercreek.org>

Good evening Tom and members of the City Council,

I read with interest the background information for Item 9C on tonight's City Council agenda. I understand the item is agendized for information only – as a way for the applicants to read the community tea leaves - so I thought a few big-picture comments might be of some help.

General comments about the original approvals

Many will recall that the original GRR project split the community into two camps: those who had no interest in nor use for the magnitude of the proposed development and its attendant impacts, and those who accepted certain impacts with the understanding that the way the project was ultimately conditioned would bring badly-needed or at least positive amenities (a new wastewater treatment plant, a golf course community, etc.). The only reason the City Council ultimately approved the project and, later, the referendum was unsuccessful, is that it was clear in the conditions that the project couldn't move forward without providing certain amenities *up front.*

In effect then, there was little risk to the City because the project could never reach the point where impacts were generated without first constructing the amenities. This arrangement was not a result of happenstance, but rather of painstaking work by the City over a period of several years, through countless meetings, to make certain the City would be made whole in the end. Most folks know that a developer's first responsibility to his shareholders is to kick conditions, obligations, infrastructure, etc. forward – to a future phase – to a phase that, alas, is never reached. Today, it is the City Council's responsibility to its constituents to make certain that isn't allowed to happen in this instance.

Consistency with the Gold Rush Ranch Specific Plan (GRR-SP)

The GRR-SP (Attachment J) very specifically delineates conditions that apply to: all projects and activities within the GRR-SP area, to large lot subdivisions within the GRR-SP area, and to subsequent small lot subdivisions within the area. It would appear that this developer is skipping the large-lot approach, at least for the time being, and moving directly to the first small-lot subdivision. In this case then, all of the conditions in Attachment J, Sections 1.0 and 3.0 must be placed on this tentative small lot subdivision map, if approved. Condition 1.14 is of particular interest … compelling construction of a new wastewater treatment plant before the issuance of any residential building permits.

The slide presentation in tonight's packet indicates that the development wishes to proceed by "… following the current specific plan." Yet the phasing is different, proposed roadway alignments are different, the golf course is being pushed to a future phase, and there is no mention at all of constructing a new wastewater treatment plant (only of contributing to a WWTP, and then only in a future phase). No part of those proposals are consistent with the GRR-SP and therefore cannot be approved as presented.

Wastewater capacity

The subdivision proposal currently on the table appears to be moving forward on the assumption that it will be allowed to consume the entirety of our current wastewater treatment plant's capacity – the reason only 150 homes are currently being proposed. This is in stark contrast with the strict language of the GRR-SP, but also with the intent of a number of the wastewater conditions. The GRR-SP was approved by the City Council with the understanding that the project would not only replace its aging wastewater treatment plan with a new

one, but to provide additional capacity beyond its current 0.48 MGD. Any tentative subdivision m application within the GRR-SP area that proposes instead to *consume* the City's remaining treatm capacity, rather than *replace and augment* it as required by the GRR-SP, should be considered dead on arrival.

Golf Course

It's difficult to tell from the slide presentation, but it appears that the 17 acres of community park dedication sits squarely on a portion of the golf course and also on a portion of another village. Say what you want about the viability of golf courses in today's market, but an up-front golf course is baked into the GRR-SP, so any proposal that has the potential to negatively affect implementation of a golf course would be inconsistent with the GRR-SP.

Allen Ranch Road-Ampine Road intersection improvements

The slide presentation indicates that Allen Ranch Road would be extended to SR 104 at Ampine Road. Condition 1.36(a) requires that intersection improvements, possibly including signalization, are required prior to issuance of the first building permit within the GRR-SP area. These improvements don't appear in the slide presentation but are required as a condition of approval of any small lot subdivision map.

Grading

The slide presentation identifies grading as a "Key Consideration." The snippet of grading included in the slide presentation is clearly mass grading, which is not consistent with the GRR-SP for this portion of the specific plan area. Grading and grading limitations occupied a great deal of time and consumed a great deal of energy during the original approval process, and compliance with the GRR-SP grading standards must be demonstrated.

Please send the message to the developer this evening that the City Council expects any development project within the GRR-SP area to demonstrate consistency with the entirety of the adopted GRR-SP. And please enter these comments into the public record for tonight's meeting.

Thank you for your time and consideration.

Robin Peters
146 Badger Road
Sutter Creek

1854
SUTTER CREEK
JEWEL OF THE MOTHER LODE

Tom DuBois
City Manager
City of Sutter Creek
18 Main Street
Sutter Creek, CA 95685

March 4, 2025

John Gedney
Executive Director, ACTC
117 Valley View Way
Sutter Creek, CA 95685

Dear John:

As you know, neither of us were in our current positions when the SR 104- Prospect Drive/Bowers Drive Realignment was constructed. I have been attempting to reconstruct what occurred and who is legally liable for past expenses, if anyone.

I have talked to the Sutter Creek City Attorney, former City Manager Sean Rabe and past City Council members. Construction appears to have occurred after it was known that the Gold Rush Developers were not proceeding with the project. If that is true, it raises the question why was the project prioritized and funded at that time, with no developer involvement? I've been told that it was done primarily to benefit Martell by aligning with Prospect Court. This is all second-hand information, so please correct me if you have a better source.

The City cannot locate any legal agreement or contract that confirms that the City of Sutter Creek owes the funds. When the question was asked at the Feb 18th RTMF Meeting whether the $1,482, 127 was owed by the City, the response was that it is not owed by the City but was a pass through to the previous developer (which was Gold Rush Golf LLC). That developer went bankrupt and no longer exists. No lien was put against the property which was then sold to the current development group.

There was a development agreement with conditions of approval with Gold Rush Golf LLC, but that development agreement expired in 2019. Attachment J, Conditions of Approval had section 1.37, last paragraph, which said the developer would reimburse ACTC if funds were expended.

One would expect that when ACTC spent funds in advance of the project, with the expectation that Gold Rush Golf LLC or another developer would repay them, that contracts and documentation would be put in place at that time. Those contracts would specify in greater detail

than the paragraph in the conditions of approval the project details, timing and repayment schedule with that developer before construction commenced. That does not appear to have occurred.

The new development group, Sutter Creek Land Advisors, has submitted an application for a 150-home subdivision, in accordance with the specific plan. This smaller scale project is more in line with development rates in 2025 than the Gold Rush Golf LLC's first phase which proposed 500 homes, a golf course, a hotel and commercial buildings in its first phase. Sutter Creek Land Advisors are not asking for any zoning exceptions and have agreed to comply with the City's Specific plan in future phases, including road improvements.

In regards to construction from many years ago, they maintain they are not responsible for the old debt, with no lien on the property when they purchased it. I am attaching a letter from them that outline their position. However, in the interest of advancing the project and putting this historic issue behind them, they are proposing to partially repay the fees overtime as the project is developed. The 150 homes are on smaller, 7000 sq ft lots with the expectation this housing will be more affordable market rate housing. Given the smaller project scope, economic analysis suggests its impractical to expect large upfront payments.

I'd ask the board to consider their offer for the following reasons:

- Establishing the legal basis to collect the debt appears murky and potentially not legally defensible
- No one wants to get into a legal battle in any case
- The roadway has depreciated over the years, and collecting more than 2/3 the amount is a good outcome
- If the project is successful and moves on to additional phases, the City and County will benefit from additional roadway improvements

This is an unusual situation for all parties involved. I am hopeful that this issue can be resolved between ACTC and Sutter Creek Land Advisors. The City of Sutter Creek has not yet deemed the application complete; this is one of a few remaining open issues.

Apologies my schedule does not allow me to attend the meeting on March 6th.

Best,

T DuBois

Tom DuBois
City Manager
City of Sutter Creek

CC: ACTC Board
Attachments: 1

Beau Blixseth
Sutter Creek Land Advisors
72380 Tanglewood Lane
Rancho Mirage, CA 92270

March 3, 2025

Tom Dubois
City Manager
City of Sutter Creek
18 Main Street
Sutter Creek, CA 95685

Dear Tom,

I hope this letter finds you well. I am writing to address the matter of the Bowers Road extension in relation to the Amador County Transportation Commission (ACTC) and the development of Sutter Creek Ranch.

The developer of Sutter Creek Ranch maintains that they bear no financial obligation for the Bowers Road extension, as the improvements were completed years prior to their ownership of the property. However, in the spirit of collaboration and to facilitate progress, the developer is willing to contribute to ACTC as a good-faith effort to support local infrastructure. Specifically, the developer agrees to pay a fee of $1,000 per lot at the time of issuance of individual building permits.

This arrangement represents a significant financial commitment over the course of the project, ensuring that ACTC will recover up to $1,000,000—funds that may not have otherwise been realized absent the approval and progression of this development. Given the circumstances, we believe this is a reasonable and equitable solution that benefits all parties involved.

We appreciate your time and consideration of this proposal. The developer looks forward to working cooperatively with ACTC and local stakeholders to ensure a successful project that supports both community growth and responsible development. Please do not hesitate to reach out if further discussion is needed.

Sincerely,

Beau Blixseth