CITY OF SANTA CRUZ
City Hall
809 Center Street
Santa Cruz, California 95060

WATER COMMISSION

Regular Meeting
November 1, 2021

7:00 P.M. GENERAL BUSINESS AND MATTERS OF PUBLIC INTEREST, COUNCIL CHAMBERS/ZOOM

COVID-19 ANNOUNCEMENT: This meeting will be held via teleconference ONLY.

In order to minimize exposure to COVID-19 and to comply with the social distancing suggestion, the Council Chambers will not be open to the public. The meeting may be viewed remotely, using the following sources:

- Online:https://ecm.cityofsantacruz.com/OnBaseAgendaOnline/Meetings/Search?dropid=4&mtids=124
  - Zoom Live (no time delay): https://us06web.zoom.us/j/81174501958
- Facebook: https://www.facebook.com/SantaCruzWaterDepartment/?epa=SEARCH_BOX

PUBLIC COMMENT:
If you wish to comment during on items 1-5 during the meeting, please see information below:

- Call any of the numbers below. If one number is busy, try the next one. Keep trying until connected.

  +1 720 707 2699
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- Enter the meeting ID number: 811 7450 1958
- When prompted for a Participant ID, press #.
- Press *9 on your phone to "raise your hand" when the Chair calls for public comment.
  - It will be your turn to speak when the Chair unmutes you. You will hear an announcement that you have been unmuted. The timer will then be set to three minutes.
  - You may hang up once you have commented on your item of interest.
  - If you wish to speak on another item, two things may occur:
    1) If the number of callers waiting exceeds capacity, you will be disconnected and you will need to call back closer to when the item you wish to comment on will be heard, or
    2) You will be placed back in the queue and you should press *9 to "raise your hand" when you wish to comment on a new item.

NOTE: If you wish to view or listen to the meeting and don't wish to comment on an item, you can do so at any time via the Facebook link or over the phone or online via Zoom.

The City of Santa Cruz does not discriminate against persons with disabilities. Out of consideration for people with chemical sensitivities, please attend the meeting fragrance free. Upon request, the agenda can be provided in a format to accommodate special needs. Additionally, if you wish to attend this public meeting and will require assistance such as an interpreter for American Sign Language, Spanish, or other special equipment, please call Water Administration at 831-420-5200 at least five days in advance so that arrangements can be made. The Cal-Relay system number: 1-800-735-2922.

APPEALS: Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action and the basis upon which the action is considered to be in error, and addressed to the City Council in care of the City Clerk.

Other - Appeals must be received by the City Clerk within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar ($50) filing fee.

Call to Order

Roll Call

Statements of Disqualification - Section 607 of the City Charter states that ...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made. The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

Oral Communications

Announcements

Consent Agenda (Pages 1.1 – 3.3) Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are City Council Items Affecting Water, Water Commission Minutes, Information Items, Documents for Future Meetings, and Items initiated by members for Future Agendas. If one of these categories is not listed on the Consent Agenda then those items are not available for action.

1. City Council Actions Affecting the Water Department (Pages 1.1 - 1.2)

   Accept the City Council actions affecting the Water Department.

2. Water Commission Minutes from October 4, 2021 (Pages 2.1 - 2.5)

   Approve the October 4, 2021 Water Commission Minutes.

3. U.S. Department of the Interior Bureau of Reclamation Funds, Water and

Energy Efficiency Grants – Letter of Support (3.1 – 3.3)

Approve a letter of support for the Water Department's application to the U.S. Department of the Interior Bureau of Reclamation Funds, Water and Energy Efficiency grant program and authorize the Commission Vice-Chair to sign the letter on behalf of the Commission.

Items Removed from the Consent Agenda

General Business (Pages 4.1 – 5.**7**) Any document related to an agenda item for the General Business of this meeting distributed to the Water Commission less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the Water Commission meeting with the display copy at the rear of the Council Chambers.

4. Water Supply Augmentation Strategy (WSAS) Quarterly Report (4.1 – 4.11)

Receive an update regarding the status of the various components of the Water Supply Augmentation Strategy and supporting studies and provide feedback.

5. Commission Update on Pipeline Planning and Design Projects, Main Replacement Model, and Annual Water Loss Assessment (Pages 5.1 – 5.7)

Receive information and a presentation on the progress of pipeline planning efforts and design progress report in advance of Commission receipt of the draft programmatic environmental impact report.

Subcommittee/Advisory Body Oral Reports

6. Santa Cruz Mid-County Groundwater Agency

7. Santa Margarita Groundwater Agency

Director's Oral Report

Information Items

Adjournment

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/27/2021

AGENDA OF: November 1, 2021

TO: Water Commission

FROM: Heidi Luckenbach, Interim Water Director

SUBJECT: City Council Actions Affecting the Water Department

RECOMMENDATION: That the Water Commission accept the City Council actions affecting the Water Department.

BACKGROUND/DISCUSSION:

October 14, 2021

2nd Quarter FY22 Water Department CIP Transfer – Budget Adjustment (WT)

Resolution No. NS-29,880 was adopted amending the FY 2022 budget and transferring budget appropriations within the Water Department Capital Investment Program (CIP) to update various project budgets to current cost forecasts.

October 26, 2021

FY 2022 Budget Appropriation for Water Conservation Rebates - Budget Adjustment (WT)

Resolution was adopted appropriating $100,000 from Water System Development Charges, Fund 715, and amending the Water Department's FY 2022 budget to fund additional water conservation rebates.

Water Supply Augmentation Strategy, Aquifer Storage and Recovery Demonstration Study in Beltz Well 12, Pueblo Water Resources Professional Service Contract (WT)

Motion passed authorizing the City Manager to execute an agreement in the amount of $262,744 with Pueblo Water Resources of Ventura, CA for Aquifer Storage and Recovery Demonstration Study in Beltz Well 12 in a form to be approved by the City Attorney and authorizing the Water Director to execute amendments within the approved project budget.

Meter Replacement Project - Resolution to Apply for a U.S. Department of the Interior Bureau of Reclamation Grant (WT)

Resolution No. NS-29,833 was adopted authorizing the submittal, acceptance, and appropriation of a U.S. Department of the Interior Bureau of Reclamation grant under the WaterSMART Grants: Water and Energy Efficiency Grants for FY 2022 Funding Opportunity and authorize the City Manager to accept and appropriate any changes to the final grant award.

PROPOSED MOTION: Motion to accept the City Council actions affecting the Water Department.

ATTACHMENTS: None.

Water Commission
7:00 p.m. – October 4, 2021
Council Chambers/Zoom Teleconference
809 Center Street, Santa Cruz

Water Department

Summary of a Water Commission Meeting

Call to Order: 7:00 PM

Roll Call

Present: J. Burks (via Zoom), T. Burns (Via Zoom), D. Engfer (via Zoom), S. Ryan (Chair) (via Zoom), A. Páramo (via Zoom), D. Schwarm (via Zoom), W. Wadlow (Vice-Chair) (via Zoom)

Absent: None

Staff: H. Luckenbach, Interim Water Director (via Zoom); D. Baum, Water Chief Financial Officer (via Zoom); C. Berry, Watershed Compliance Manager (via Zoom); C. Coburn, Deputy Director/Operations Manager (via Zoom); K. Crossley, Interim Deputy Director/Engineering Manager (via Zoom); R. Menard, Interim City Manager; S. Perez, Principal Planner (via Zoom); K. Petersen, Customer Service Manager (via Zoom); B. Pink, Environmental Programs Analyst II (via Zoom); M. Zeman; Associate Professional Engineer (via Zoom); K. Fitzgerald, Administrative Assistant III (via Zoom)

Others: Two members of the public (via Zoom)

Presentation: None.

Statements of Disqualification: None.

Oral Communications: None.

Announcements: Commissioner Engfer announced that he spoke before the Santa Cruz County Grand Jury on September 14th on topics related to water supply in Santa Cruz county.

Chair Ryan announced that the public hearing notice for the Proposed Rate Structure was sent via mail this week.

Consent Agenda

1. City Council Items Affecting the Water Department

2. Water Commission Minutes From August 23, 2021

3. Revised Water Commission Bylaws

No public comments were received.

Commissioner Engfer moved the Consent Agenda. Commissioner Burns seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
ABSTAIN: D. Schwarm abstained from the August 23, 2021 Water Commission Minutes due to absence.

Items Pulled from the Consent Agenda - None

General Business

4. Request for Water Service - APN 068-17-113, Glen Canyon Road, Santa Cruz, CA 95060

Ms. Luckenbach provided a brief presentation on the Request for Water Service – APN 068-17-113.

What is the appropriate amount of guidance that the Department can provide to property owners that are looking to connect to the City's water system?

- These types of requests are evaluated for consistency with City Council Policy 34.05, the findings and next steps are then shared with the property owner. We cannot provide recommendations for consulting services to property owners.

No public comments were received.

Commissioner Engfer moved the staff recommendation to reject the request for Water Service given that it specifically doesn't meet the criteria that are clearly laid out for extending the city service area boundary and suggest that the property owner go back and get additional consulting help on what direction they might take in order to get water service, including drilling a well, sharing a well with a neighbor or exploring other options that may be available and within the county code. Commissioner Burns seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
ABSTAIN: None

5. Urban Water Management Plan and Water Shortage Contingency Plan

Ms. Luckenbach introduced Ms. Perez for the presentation of the Urban Water Management Plan and Mr. Pink for the presentation of the Water Shortage Contingency Plan.

Is there a trend on the range that residents are going over on their allotments?

- There is no consistent trend but our data shows that customers who are exceeding their allotments are only doing so by one or two units. When we see a customer's usage significantly exceed their allotment it is usually due to an event such as a leak.

How do staff plan to address customers that repeatedly go over their allotments if water supply conditions do not improve by next year?

- If we have another critically dry year and need to declare a Stage 2 Water Shortage, the plan to address customers that go over their allotment would be to continue over-allotment outreach via WaterSmart and we will look into other means such as door hangers and additional phone calls. Stage 2 also includes penalties so there should be more motivation for customers to stay within their allotment.

Can staff share examples of outreach materials that are being circulated to the community?

- Yes. Most of the outreach materials can be found on the city's website: https://www.cityofsantacruz.com/government/city-departments/water/2021-stage-1-warning

Can staff clarify whether the planned infrastructure projects mentioned on page 5.9 include all three elements of the Water Supply Augmentation Strategy (WSAS)?

- Each project addresses a different component of the WSAS Element 2. The Water Rights Draft Environmental Impact Report includes Aquifer Storage and Recovery and other infrastructure components including the facility improvements to the Graham Hill Water Treatment Plant and the replacements of major transmission pipelines.

What is the difference between the groups for Recycled Water for the Pure Water Soquel Project and Recycled Water for groundwater recharge as mentioned in Section6.2.2 of the Urban Water Management Plan (UWMP)?

- The UWMP describes the Projects and Management Actions in the Santa Cruz Mid-County Groundwater Basin's Groundwater Sustainability Plan (GSP). The following was provided via email following the meeting in response to the question: There are three Groups of Project and Management Actions in the Mid County GSP. Group 1 are baseline or existing Projects and Management Actions (e.g., conservation), Group 2 are Projects and Management Actions vetted by the Mid-County Sustainability Agency (e.g., ASR in the Mid-County, Pure Water Soquel) and Group 3 are Identified Projects and Management Actions that may be evaluated in the future (e.g., recycled water for the City of Santa Cruz). An explanation is provided at the following link, starting on page 4 of section 4 of the GSP, with tables on pages 6 and 7.

  https://www.midcountygroundwater.org/sites/default/files/uploads/Section_4.pdf

Would the City be able to institute a service connection moratorium as stated on page 5.11?

- Generally speaking, when we receive service connection requests, we have a two-year willing to serve period but if a shortage emergency is declared and the city council adopts a moratorium, we can rescind any willing to serve agreements.

One public comment was received.

Commissioner Burns moved the staff recommendation on Item 5. Commissioner Páramo seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
ABSTAIN: None

One public comment was received.

6. Watershed Lands Forest Management Update

Ms. Luckenbach introduced Mr. Berry and Mr. Dan Sicular (Sicular Environmental Consulting and Natural Lands Management) for the presentation and discussion of the Watershed Lands Forest Management Update.

What is being done to address fire-related concerns in areas that are located outside the City's watershed land boundaries?

- We are working with other agencies such as the Santa Cruz County Fire Safe Council, Santa Cruz County and other agencies on land use planning; however, we are also working to address other non-wildfire issues such as basin management.

Could the existing timber harvest infrastructure be used for selective timber harvesting now?

- The maintenance for that infrastructure has been done every year since 2002 for reasons other than timber harvest such as fuel breaks and patrols and minor upgrades would be needed to reinitiate timber harvest activities.

Commissioners commented that supporting local timber harvesting is a holistic approach to supporting sustainable land management.

One public comment was received.

Subcommittee/Advisory Body Oral Reports

7. Santa Cruz Mid-County Groundwater Agency (MGA)

Ms. Menard reported that the MGA met on September 9th and released several detailed presentations on the status of the implementation of project management actions that are included in the plan including a presentation from. Ms. Luckenbach on ASR, Melanie Mow Schumacher (Soquel Creek Water District) on the Pure Water Soquel project, and Chair Ryan on groundwater monitoring and gauging, and data management.

8. Santa Margarita Groundwater Agency (SMGWA)

Commissioner Engfer reported that the SMGWA met on September 23rd and that the draft Groundwater Sustainability Plan (GSP) that is out for the public comment period. Two comments were received from two government agencies, the CA Department of Fish and Wildlife and the National Marine Efficiency Fisheries, and several public comments have been received outside of public meetings. There are also approximately twelve public comments that were received outside of the public hearing. SMGWA staff are evaluating all comments to determine if changes need to be made to the GSP before a final version is produced. These comments will be reviewed at the October 28th meeting.

There are three SMGWA meetings scheduled for the remainder of the year: October 28th, November 17th, and December 8th. The SMGWA will be tabling at the Scotts Valley Farmers Market on Saturday, October 16th.

One public comment was received.

Director's Oral Report: None.

Adjournment Meeting adjourned at 9:21 PM.

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/27/2021

AGENDA OF:	November 1, 2021
TO:	Water Commission
FROM:	Heidi Luckenbach, Interim Water Director
SUBJECT:	U.S. Department of the Interior Bureau of Reclamation Funds, Water and Energy Efficiency Grants – Letter of Support

RECOMMENDATION: That the Water Commission approve a letter of support for the Water Department's application to the U.S. Department of the Interior Bureau of Reclamation Funds, Water and Energy Efficiency grant program and authorize the Commission Vice-Chair to sign the letter on behalf of the Commission.

BACKGROUND: The City of Santa Cruz Water Department produces and delivers water to approximately 98,000 people in the City of Santa Cruz, unincorporated Santa Cruz County and parts of the City of Capitola. The Water Department reads and bills over 27,000 meters every month, generating approximately $38 million in annual volumetric water sales. Accurate water metering is a critical asset to the Department.

The Water Department is facing critical challenges related to measuring and billing customer water consumption as a result of stuck, aging and under-performing meters, as well as meter reading devices that are near end-of-life. This has created a host of problems, including lost volumetric water sales revenue, excessive truck-rolls to manually retrieve meter reads, and inequitable water charges between customers.

With City Council authorization, the Water Department has several contracts in place to begin implementation of the Meter Replacement project this calendar year. This 24-month project will restore all meters to fully functioning status, limit the time staff spends manually reading failed or failing meters, and ensure customer usage is accurately metered and billed. In addition, at their October 26, 2021 meeting, City Council authorized the submittal of this grant application.

DISCUSSION: The Water Department applied for a U.S. Department of the Interior Bureau of Reclamation grant under the WaterSMART Grants: Water and Energy Efficiency Grants (WEEG) for Fiscal Year 2021. The Department was not successful at receiving funding under the 2021 WEEG opportunity. However, this is an annual program and because the Meter Replacement project is multi-year, the Water Department has decided to apply once again. Applications are due November 2021 with award notifications being released in early 2022.

FISCAL IMPACT: The Water Department is seeking a WaterSMART Grant in the amount of $500,000. This grant requires a 50% match of Water Department funds.

PROPOSED MOTION: Motion to approve a letter of support for the Water Department's application to the U.S. Department of the Interior Bureau of Reclamation Funds, Water and Energy Efficiency grant program and authorize the Commission Vice-Chair to sign the letter on behalf of the Commission.

ATTACHMENTS:
1. Letter of Support

WATER COMMISSION
212 Locust Street, Suite A, Santa Cruz, CA 95060 ◆ 831-420-5200

November 1, 2021

United States Bureau of Reclamation
WaterSMART Water and Energy Efficiency Grant Program

Re: Support for City of Santa Cruz WaterSMART Water and Energy Efficiency Grant Application, Fiscal Year 2022, Meter Replacement Program

Dear Sir or Madam,

On behalf of the Santa Cruz Water Commission, I am writing to express strong support for the City of Santa Cruz's grant application to the Bureau's WaterSMART Water and Energy Efficiency Grant Program. The Santa Cruz Water Commission acts in an advisory capacity to the Santa Cruz City Council in matters pertaining to the Santa Cruz water system including making recommendations with respect to water conservation and long-term supply reliability.

The City of Santa Cruz water supplies are all locally based with surface waters comprising 95% of the City's drinking water supply. The City is therefore highly susceptible to drought and other threats of a changing climate, particularly increased storm intensity and other variable weather that disrupt precipitation, recharge and evaporation patterns upon which the system was designed. With approximately 100,000 customers depending upon the Santa Cruz Water Department for their drinking water, a drought-resilient water system is a critical priority for the City.

The City of Santa Cruz is actively engaged in efforts to improve their water system by implementing a multi-pronged approach that includes demand management and supply augmentation. Among the lowest water consumers in the state of California (with residential consumption averaging 47 gallons per person per day in 2020), the City of Santa Cruz together with other water agencies in Santa Cruz County rely on demand management as part of their commitment to maintaining supply reliability as well as stewardship of their natural resources.

The City Council-appointed Water Supply Advisory Committee (WSAC) formalized recommendations to City Council in 2015 to include strengthened conservation. As a key component of the WSAC work plan, the 2017 Water Conservation Master Plan lays out the numerous measures to implement to achieve the adopted conservation goals of an additional 200-250 million gallons, out of total annual system demand of approximately 2.5billion gallons. Meter replacement is key to achieving this goal, by enabling more accurate meter reading and empowering its customers to detect leaks and excessive consumption more quickly than is now possible.

On behalf of the Water Commission, I urge the Bureau of Reclamation to award grant funding to the City of Santa Cruz for its WaterSMART Water and Energy Efficiency grant proposal to enhance conservation.

Sincerely,

_____

Walt Wadlow, Vice Chair, Santa Cruz Water Commission

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/27/2021

AGENDA OF: November 1, 2021

TO: Water Commission

FROM: Heidi Luckenbach, Interim Water Director

SUBJECT: Water Supply Augmentation Strategy (WSAS) Quarterly Report

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RECOMMENDATION: Receive an update regarding the status of the various components of the Water Supply Augmentation Strategy and supporting studies and provide feedback.

BACKGROUND and DISCUSSION: Following the completion of the Water Supply Advisory Committee (WSAC) process, the City Council accepted the Final Report on Agreements and Recommendations that included a detailed Implementation Plan and Adaptive Management Strategy. The WSAC work was adopted as part of the 2015 Urban Water Management Plan and is currently referred to as the Water Supply Augmentation Strategy (WSAS) that includes an Implementation Work Plan (Work Plan).

As per the WSAC Final Agreements and Recommendations, the Water Commission shall receive quarterly updates on the status of the various elements of the recommended plan. This is the 23nd quarterly update.

New Items/Highlights:

1. Aquifer Storage and Recovery
   Initial suite of groundwater modeling in the Mid-County Groundwater Basin was completed; Pueblo Water Resources is drafting a final memorandum due early 2022. Beltz Well 8 ASR Cycle 3a Results and Geotechnical Analysis Technical Memorandum was finalized. Planning and permitting is underway for ASR Demonstration Studies at Beltz 8 and Beltz 12. Injection scheduled to begin in January.

2. Santa Cruz Water Rights Project
   The project's Final Environmental Impact Report (EIR) is expected to be completed and presented to the Water Commission at its December meeting. Consideration of certification by City Council is planned for December 14, 2021.

3. Vulnerability Study
   The water system operations model and the weather generator are nearing completion. The University of Massachusetts, Amhearst (UMass) team is tentatively scheduled for a report out to the Water Commission in December.

The Water Supply Augmentation Strategy (WSAS) consists of the following elements as defined by the WSAC:

- Element 0: Demand Management. Implementation of the Long Term Water Conservation Master Plan is foundational to the WSAS.
- Element 1: In Lieu. This alternative could include the sale of water to other agencies with or without the assumption of additional water back to the City during droughts.
- Element 2: Aquifer Storage and Recovery. Evaluations of both the Mid-County and Santa Margarita Groundwater Basins are being conducted.
- Element 3: Advanced Treated Recycled Water or Seawater Desalination.

Progress and status of the various WSAS-related work items are described here in detail.

ELEMENT 0: DEMAND MANAGEMENT

Overview: Element 0 of the City's Water Supply Augmentation Strategy consists of ongoing demand management activities. The primary goal of this element is to generate an additional 200 to 250 million gallons per year in demand reduction by year 2035 from expanded water conservation.

Summary: The Water Conservation section has been actively working on the following during this reporting period.

- Finalizing the Water Shortage Contingency Plan for inclusion in the 2020 Urban Water Management Plan. The final plan was presented to Water Commission in October and will be considered by City Council at their November 9 meeting. Lessons learned during the 2021 shortage implementation have been incorporated into the final plan.

- Continuing to manage the water allocation system during the Stage 1 Water Shortage Warning including:

    - Using WaterSmart Software to store and update customer occupancy.

    - Managing two temporary employees hired to assist with the drought response.

    - Conducting analysis of customer allocations compared to customer usage and then performing outreach to customers who are over allocation. Responding to customer inquiries related to the water allocation system.

    - Developed specific outreach messages and materials related to multi-family residential properties including the new Multi-family Residential Drought Response Guide. Continued outreach to multi-family residential properties that went over allotment and require special assistance with lowering their water consumption. The new multi-family guide is being offered to these properties.

- Working with the City Attorney's office to develop a new leak policy that aligns the two sections in the Municipal Code where this topic is addressed. This policy will help to

streamline enforcement of ongoing leaks regardless of the presence of a water shortage declaration.

- Finalized the 2020 distribution water audit and preparing it for submission to the Department of Water Resources. (To be discussed as part of the pipeline project update item elsewhere on the agenda.)

- Assisted Customer Service staff in the meter replacement program. All contracts related to this program have now been finalized and meter installation work is set to commence in early 2022.

ELEMENT 1: WATER TRANSFERS AND/OR WATER EXCHANGES

Overview: This work is considering the feasibility of sending excess City surface water to neighboring agencies for the purpose of passively recharging the groundwater basin(s). In-Lieu is now described as follows.

- Water Transfers: Selling treated surface water to neighboring agencies for the purpose of augmenting their own water supplies and possibly (passively) recharging the groundwater basin if less groundwater was used by the neighboring agencies.
- Water Exchanges: Negotiating an agreement whereby treated surface water provided to neighboring agencies would, by allowing the groundwater basins to recharge, provide additional groundwater back to the City during water supply shortages.

Summary: The second five-year pilot test period begins November 1, 2021. Staff from Soquel Creek Water District and the City have met to discuss objectives for this next pilot test period. Because the two water systems differ in terms of water source(s), quality, treatment and distribution, the first five years of study focused largely on observing any changes in distribution system water quality as a result of introducing City water into the District's distribution system. With mostly positive outcomes during that first five years with respect to water quality, the next period will focus on other topics, attempting to answer the following questions developed by staff.

- Will we be able to see groundwater levels respond to water transfers? (This is an outstanding question, and while the impacts to the basin from the volumes of water transferred to the District will likely be indiscernible in combination with natural hydrology, groundwater pumping, aquifer storage and recovery, and the Pure Water Soquel project, we will seek to clarify and respond to this.)
- What would be involved in the concept of groundwater trading? For example, if the City transfers water to the District, under what conditions can the City receive water back through increased pumping in the Beltz system?
- What are the operating conditions for transferring water to the District without the Pure Water Soquel project and how will this differ with Pure Water Soquel?
- If applicable, how would disinfection by-products be managed operationally in the District's service area? Will this be fully resolved with implementation of improvements at the Graham Hill Water Treatment Plant?
- Should the current groundwater basin operational agreements be modified to account for ASR, Pure Water Soquel, water transfers, etc.?
- What are the various alternatives for water exchanges?

In addition to these topics, and because of the limited volumes of water transferred during the first pilot term, not all water quality issues may have been revealed and water quality should also be evaluated moving forward.

Contract Update(s)
Purchase Order Agreement with the District for cost-sharing of Water Quality Sampling and Development of Water Quality Results Technical Memorandum (TM). This contract has been closed as complete.

- PO Opened: January 2017 (Phase 1 Bench-scale work)
- Project Partner(s): Soquel Creek Water District
- Engaged Stakeholders: None at this time.
- Original PO Amount: $60,000
- PO Change Order (Phase 2 Water Quality Monitoring/Pilot Test): $45,000
- Amount Spent: $76,349 (unchanged)
- Amount Remaining: $28,651

ELEMENT 2: AQUIFER STORAGE AND RECOVERY

Overview: Aquifer Storage and Recovery (ASR) is being evaluated as a form of actively recharging the groundwater basin(s). Work in this area includes the Mid-County Groundwater Basin (MCGB) and the Santa Margarita Groundwater Basin (SMGWB).

Summary: As defined by the WSAC, this work has three phases: Phase I consists of higher-level feasibility work; i.e., site-specific injection capacity and geochemical analyses, groundwater modeling and development of a pilot test program; Phase II includes the pilot testing; and Phase III would be project implementation.

ASR pilot testing at the Beltz 8 site resumed late March and continued through June 2021 with ASR Cycle 3a. The Cycle 3 test program was split into Cycles 3a and 3b to generate the data needed to validate the geochemical evaluation to understand any risk associated with elevated arsenic concentrations appearing during Cycle 2. Beltz 8 ASR Cycle 3a consisted of two weeks of injection, four weeks of resting, and two weeks of extraction.

Pueblo finalized the Beltz 8 ASR Cycle 3a Results and Geochemical Analysis Technical Memorandum (TM) in September 2021. This analysis indicates that the presence of arsenic in the aquifer matrix initially exposed during ASR Cycles 1 and 2 decreased during ASR Cycle 3a and indicated further arsenic reduction with incremental ASR cycles and longer storage time of the injected water. Based on these findings, Pueblo recommends that rather than continuing with Cycle 3b as originally planned, the City should perform piloting for an extended duration, referred to as an ASR Demonstration Study.

This Demonstration Study is similar to the pilot study in that infrastructure will not be improved or made permanent, and data collection objectives are established to inform a permanent facility, but differs in that the scale (i.e., the seasonal nature of injections and extractions, injection and extraction rates and seasonal volumes) matches that of a full-scale permanent operation. With

respect to data collection objectives, although there is little concern for elevated levels of arsenic based on the pilot study results, the demonstration study will continue to evaluate arsenic concentration as well as other operational characteristics such as sustainable flow rates, plugging characteristics, overall well operations, etc. This will likely be a two-year effort, but the City is contracting with Pueblo one year at a time. The first year is scheduled for the period of January 2022 through December 2023. The ASR water recovered during this study will be placed into the distribution system assuming all drinking water standards are met. This contract will be considered by City Council at their November 9 meeting.

Similar to Beltz 8, an ASR Demonstration Study at Beltz 12 is scheduled for the period of January 2022 through December 2023. City Council approved this contract at their October 26 meeting; an early notice to proceed had been provided to Pueblo for tasks associated with permitting and site setup in an effort to meet the January start date. Current data indicates notable differences in water quality between the native groundwater and water extracted during ASR pilot testing, indicating that ASR could benefit water quality at this well. Therefore, one of the primary objectives of the study is to better understand how ASR affects ammonia and hydrogen sulfide, specifically near the end of the ASR extraction period when the well begins to produce a mixture of ASR injected water and native groundwater.

Next Steps:

- Complete Phase I ASR Groundwater Modeling Final Report – 2022
- Complete contracting, permitting, and begin ASR Demonstration Studies at Beltz 8 and Beltz 12.

Contract Update(s):

Consultant: Pueblo Water Resources – Phase I

- Contract Signed: February 2016
- Project Partners: None at this time.
- Engaged Stakeholders: Soquel Creek Water District, County of Santa Cruz, Scotts Valley Water District, San Lorenzo Valley Water District
- Original Contract Amount: $446,370
- Contract Amendment No. 1: $377,615
- Contract Amendment No. 2: $35,000
- Contract Amendment No. 3: $193,390 (for IPR modeling but funded by Recycled water)
- Amount Spent: $840,649
- Amount Remaining: $211,726

Consultant: Pueblo Water Resources – ASR Phase II – Beltz 12 ASR Pilot Test

- Contract Signed: October 2018
- Project Partners: None at this time.
- Engaged Stakeholders: Soquel Creek Water District, County of Santa Cruz
- Original Contract Amount: $458,085
- Amount Spent: $433,796 (unchanged)
- Amount Remaining: $24,289
- Status: Complete.

Consultant: Pueblo Water Resources (Pueblo) – ASR Phase II – Beltz 8 ASR Pilot Test

- Contract Signed: January 2020
- Project Partners: None at this time.
- Engaged Stakeholders: Soquel Creek Water District, County of Santa Cruz
- Original Contract Amount: $1,051,945
- Contract Amendment No. 1 (Increase in monitoring well depth): $47,172
- Contract Amendment No. 2: $133,104
- Amount Spent: $1,164,014
- Amount Remaining: $68,207
- Status: Cycle 3a pilot testing at Beltz 8 resumed March 2021.

Consultant: Pueblo Water Resources – ASR Phase II – Beltz 8 ASR Demonstration Study

- Contract sign: No
- Proposed Contract Amount: $202,580
- Status: Contract goes to Council November 9, 2021

Consultant: Pueblo Water Resources – ASR Phase II – Beltz 12 ASR Demonstration Study

- Contract sign: In process
- Early notice to proceed - $55,304
- Engaged Stakeholders: Soquel Creek Water District
- Proposed Contract Amount: $ 262,744
- Status: Contract went to City Council October 26, 2021

ELEMENT 3: ADVANCED TREATED RECYCLED WATER AND DESALINATION

Overview: Advanced Treated Recycled Water and Desalination were included within the same Element with the intention that, following feasibility-level work, only one would proceed for further evaluation and preliminary design.

Summary:
Activity in the last quarter has focused on the 6" recycled water line at the City of Santa Cruz Wastewater Treatment Facility (WWTF). The design is complete and the construction contract for the treatment processes of the Pure Water Soquel (PWS) project was awarded to Black and Veatch Construction Inc. by the Soquel Creek Water District Board at their October 5, 2021 meeting. The City is currently negotiating a reimbursement agreement with Soquel Creek Water District for the construction of the 6" recycled water line. Construction is expected to begin in early 2022.

The Black and Veatch design meets the original goal of performing all underground work at the WWTF related to the footprint of the PWS project to avoid disturbance of the same footprint when the City decides to proceed with recycled water. Staff is now considering the completion of this tertiary system to include approximately 200 feet of additional below-ground piping and a small pump station. This would allow this system to be put into service once the PWS project is online.

Next Steps:

- Finalize reimbursement agreement with Soquel Creek Water District for the construction of the 6" recycled water pipeline.
- Continue the evaluation of a regional recycled water project in the SMGWB. Temporarily on hold.
- Pursue groundwater modeling of several recycled water options in the Mid-County basin including partnerships with the PWS project, combination with a City ASR project, and/or a seawater intrusion barrier well in the City's portion of the MCGB. Temporarily on hold.
- Negotiating a contract amendment with Kennedy/Jenks to assume a larger role in vetting all water supply alternatives and developing the Water Supply Augmentation Implementation Plan (WSAIP). See below.

Contract Update(s):

Consultant: Kennedy Jenks, Recycled Water Feasibility Study – Phase 2

- Contract Signed: December 20, 2019
- Project Partners: City Public Works
- Engaged Stakeholders: Scotts Valley Water District, Soquel Creek Water District, County of Santa Cruz
- Original Contract Amount: $260,000
- Contract Amendment No. 1: $496,205
- Contract Amendment No. 2: Administrative only
- Amount Spent: $356,193
- Amount Remaining: $400,012
- Schedule: Contract is seeing an ongoing delay due to issues related to groundwater modeling, and overall alignment of all components of the supply augmentation analysis. Once a contract amendment is finalized with Kennedy Jenks (see below for additional details) this schedule will be updated.

OTHER

Water Supply Augmentation Implementation Plan

Dr. Casey Brown provided an update on this work at the August 2, 2021 meeting. Below is a tentative schedule to complete this body of work and a summary of the status.

~~August 2021~~
~~Status update of hydrologic and systems models~~
~~Status of weather generator~~

December 2021 (moved out one month)
Assess vulnerabilities of the current system

February 2022
Analyze adaptation options

May 2022
Establish trigger points

Water System Model and Resilience Assessment: Develop a water system model and identify challenging climate and system demand scenarios. The UMass team has nearly completed this effort and is calibrating the new model against system operational information. This has been a data-intensive effort with the current focus now being accuracy around groundwater production and agricultural demands.

Triple Bottom Line (TBL): Assessment of the relevant water supply enhancement options, applying relevant evaluation criteria. There is a shifting of staff because of (partial) retirements. To back fill some efforts, staff is working with Kennedy Jenks to assume portions of the work previously scoped to Raucher LLC. Kennedy Jenks was already contracted to assist with this work, and has performed similar TBL analyses for the water department in the past, so this is expected to be a relatively seamless transition.

Vulnerability Assessment and Adaption Planning: Integration of decision-scaling analysis of climate change and other critical uncertainties, and associated risks for future water supply reliability. To reiterate what Dr. Brown shared with the Commission at their August meeting, the vulnerability assessment requires a chain of computer simulation models to simulate changes in climate and weather, river flow, and operations of the water system. The UMass/Hydrosystems Research Group's (HRG) scope includes the weather generator and system model. (The hydrology is the existing model developed by Balance Hydrologics, Inc.) The current effort is on the completion of the Weather Generator. To this end, the project team engaged a technical advisory committee (TAC) to review the work of HRG on the Weather Generator. This group met over the course of several weeks and the TAC submitted their final Peer Review memo in mid-September. The committee recommended no major changes. UMass is finalizing the report and working with staff to schedule the next visit with the Commission, currently scheduled for December.

Water Supply Augmentation Implementation Plan (WSAIP): Develop an adaptive management-based plan based on the previous work. As mentioned previously, staff is working with Kennedy Jenks to shift some of the work currently within the Raucher scope of services into the Kennedy Jenks contract. Staff anticipates finalizing the scope of work by the end of the calendar year.

Source Water Monitoring

In 2016, the Water Quality Lab (WQL) expanded the Department's existing source water compliance monitoring program in order to better characterize source water quality and to inform decision making for an appropriate treatment technology for the Graham Hill Water Treatment Plant Facilities Improvement Project (FIP). In the wake of the CZU Lightning Complex Fire that occurred in August 2020, which damaged the upper portions of the San Lorenzo, Laguna and Majors watersheds, source water monitoring became an even more important tool for providing input to post-fire water production operations.

Building on the 2016 Source Water Monitoring Program (SWMP), the WQL developed a compressive source water-sampling plan for the water year (WY) October 2020 - September 2021 that included routine compliance source water quality analysis and key parameters related to fire impacts on water quality.

Summarized below, the updated Source Water Quality Sampling Plan (Plan) was divided into three categories: wet season, dry season and storm monitoring. As part of the post-fire monitoring, additional sites were established on Majors and Laguna Creeks, and upper San Lorenzo River (Highlands Park/Junction Park) that were monitored in conjunction with the City's routine source water locations.

Wet Season (October 2020 – May 2021)

- Eleven sites, including the City's routine source water locations and four new sites, were monitored during the wet season.
- Parameters that affect water treatment processes (for example color, turbidity and dissolved/total organic carbon) were monitored more frequently during the wet season to capture source water quality variations from rain events.
- Fire-related parameters were monitored more frequently to characterize the impact of urban and rural run-off to source waters in fire-impacted watersheds.

Dry Season (June 2021 – September 2021)

- Reduced monitoring occurred during the dry season when historically water quality has been much less variable.

Storm Monitoring

- Storm monitoring was performed primarily at the San Lorenzo River Felton Diversion and the San Lorenzo River Tait intake. These sites were chosen given the nature of the fire's impact on the watershed and considering the importance of the source relative to other sources that have been used much less frequently in recent years. In order to characterize intra-storm variability, samples were collected during the rising limb of the hydrograph, during peak flow, and during the receding limb of the hydrograph.

An overview of the post-CZU wildfire Source Water Quality Sampling Plan and additional information on potential water quality impacts can be found at the following location: https://www.cityofsantacruz.com/government/city-departments/water/water-quality/czu-fire-water-quality

Water Year 2020-21 Summary:
The WQL collected weekly, biweekly, monthly, and quarterly water quality samples from the City's surface water sources and upper watershed locations according to the Wet Season, Dry Season, and Storm monitoring plans. In addition, eight storm events were sampled between October 2020 and May 2021, with the most significant rainfall occurring on January 27, 2021. As expected, elevated color, turbidity, dissolved organic carbon (DOC), total organic carbon (TOC), Total Coliform/E. *coli*, and metals (primarily aluminum, arsenic, iron, lead, and manganese) were observed in the City's source water and upper watershed locations during the storm. Routine follow-up monitoring confirmed that within a few days, once the precipitation and streamflow decreased, water quality results returned to normal baseline levels.

Unregulated contaminants of emerging concern (CEC's) that include pharmaceuticals and personal care products such as caffeine, DEET, and sucralose and per- and polyfluoroalkyl substances (PFAS) were detected in small amounts in the San Lorenzo River throughout the

water year. Fire-related parameters associated with urban and rural run-off such as asbestos, dioxins, and furans were not detected. Radiological compounds including radium 226, radium 228, gross alpha, and uranium) were detected during the January 27, 2021 storm in the San Lorenzo River; all results were below the primary drinking water standards. Treated water leaving the GHWTP continuously met all State and Federal drinking water standards during the water year.

It is difficult to determine if the results reflected impacts from the CZU Lightning Complex Fire when considering that there is limited to no pre-fire data for a number of the parameters analyzed. Continued monitoring of all sources and upper watersheds is planned to help determine if we can tease out long-term effects from the fire.

A full report for the WY 20-21 will be available by the end of the 2021 calendar year or early 2022.

Water Year 2021-22 Update:
The WQL will resume the post-CZU Wildfire Source Water Monitoring Plan for WQ 21-22 to continue to monitor for fire-related water quality impacts to the City's source water and upper watershed locations. The WQL will also continue to inform Department Staff of the source water quality results, and provide recommendations for source water selection at the GHWTP.

Santa Cruz Water Rights Project
This project involves the modification of existing City water rights to increase the flexibility of the water system by improving the City's ability to utilize surface water within existing allocations. In addition to improved flexibility, the success of this project is necessary to facilitate future water supply projects.

The State Water Resources Control Board (SWRCB) noticed the City's change petitions on February 10, 2021, and accepted protests through March 12, 2021. Two protest letters and one letter of support were received during the public noticing. Letters of protest were received from the San Lorenzo Valley Water District (SLWVD) (letter from Nossaman LLP) and the San Andreas Land Conservancy (SALC) (letter from David Kossack), and a letter of support was received from California Department of Fish and Wildlife. On September 8, the City requested that the SWRCB (1) extend the period of time for the City and SLVWD to resolve SLVWD's protest and (2) to request that SALC produce evidence to support their protest, and if SALC does not do so, to cancel SALC's protest. SWRCB granted 60 days from September 8 to resolve the protest with the San Lorenzo Valley Water District, and coordination is ongoing. SWRCB will consider requesting SALC to produce evidence once the City has responded to SALC's comment letter on the Draft EIR through the CEQA process.

As reported out in detail at the July 12, 2021 Water Commission meeting, the project's Draft EIR was released for a 45-day public review period on June 10, 2021. Seven comment letters on the Draft EIR were received. The Final EIR, addressing comments received on the Draft EIR, is expected to be completed and presented to the Water Commission at its December meeting. Consideration of certification by City Council is planned for December 14, 2021.

Outreach and Communication
WSAC-related outreach during this quarter has included the following.

- Monthly Our Water, Our Future email newsletters WSAC email list.
- Lookout Local feature on the Newell Creek Dam Inlet Outlet replacement project and water supply
- Good Times and Sentinel stories on Newell Creek Dam Inlet Outlet replacement project and water supply
- KSBW story on Newell Creek Dam and Water Supply
- Lookout Local "Santa Cruz's Water Supply: Is Growth the Problem?"

Funding Considerations
The Department's quarterly financial report will be provided to the Water Commission at the December 6 meeting and will include an update on the various funding opportunities the Department is pursuing.

FISCAL IMPACT: None.

PROPOSED MOTION: This item is for information and discussion only. No motion is required.

ATTACHMENT(S):
None

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/27/2021

AGENDA OF: November 1, 2021

TO: Water Commission

FROM: Kevin Crossley, Interim Deputy Director/Engineering Manager

SUBJECT: Commission Update on Pipeline Planning and Design Projects, Main Replacement Model, and Annual Water Loss Assessment

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RECOMMENDATION: That the Water Commission receive information and a presentation on the progress of pipeline planning efforts and design progress report in advance of Commission receipt of the draft programmatic environmental impact report.

BACKGROUND: Pipelines are the most common and valuable asset type in the water system. There are over 260 miles of treated water main and 30 miles of raw water main in the system, which equates roughly to the driving distance from Santa Cruz to Ventura California. The 2020 Cost of Service Analysis estimated the replacement value of all pipelines at $615 Million. Pipelines have long been a focus area of asset management by the department. Historically the Department has taken separate approaches for the prioritization and replacement of treated and raw water mains.

The objectives of this report and presentation are:

- Provide the Water Commission a high-level overview and update on planning work related to the raw and treated water mains, and approach to prioritizing, budgeting and implementing these projects.

- Solicit Commissioners' interest in receiving a future detailed briefing on any or all of the projects covered in this report.

- Present key findings of the 2020 Water Audit and discuss the relationship of the audit's findings to the updated main replacement model.

- Provide an early design-phase milestone update to Water Commission for the preliminary design of the Newell Creek Pipeline (NCP) Felton to Graham Hill and Brackney Landslide Risk Reduction Projects and prime the Commission for an upcoming review of

NCP project's draft Environmental Impact Report (EIR) scheduled to be released in mid-November of 2021.

Treated Water Mains

Treated water main projects are from a planning perspective relatively straightforward to define, schedule and estimate. For treated water main, staff historically used a variety of criteria such as age, leak history, water quality, to score and rank mains which fed into a five-year replacement plan. That plan was then updated at five-year intervals and generally organized to balance certain replacement goals (defined as miles per year) against available funding and staffing. A version of the last long-range main replacement plan was presented to the Commission in 2015, and since then the Commission has received updates annually on the progress of the main replacement program in advance of review of the annual budget documents.

In 2019, the City contracted HDR Engineering, Inc. to assist staff with updating the main replacement plan. That work included development of a main replacement model (risk model) that transitioned past planning approaches to industry best practices and planning approaches, as well as harnessing geographic information system data on pipe material and break data to generate a new five-year main replacement project list. On a related front to main replacement, the Department conducts annual water audits that produce an estimate of water losses the occur on the distribution system. The results and findings of the 2020 audit will be summarized below and related to the findings of the updated main replacement model. When taken together, the audit and main replacement model tell a positive story about the current state and performance of the treated water mains as well as offering key indicators of how to monitor the performance of the water mains in the future.

Raw Water Mains

Although there are many areas of overlap, planning and asset management of raw water mains has occurred separately from treated water mains. Raw water main projects come with complex right of way and environmental impact/permit considerations and may require alternative alignment analysis. To support department planning efforts Carollo Engineers was contracted in 2003 to prepare a preliminary engineering report for evaluation of rehabilitation and replacement of the North Coast System. The report ultimately recommended replacement of significant portions of the system and laid out conceptual alignments and cost estimates. Since then, the Department has implemented several North Coast Projects and replaced approximately 30,000 linear feet of new pipe to date, and modernized the Laguna Diversion Dam.

More recently, over the last 18 months, the Water Department has advanced or completed planning efforts on several other pipeline planning studies. The 2017 winter storms highlighted the vulnerability of the Newell Creek Pipeline to damage by landslides and other geologic hazards. In 2019, HDR Engineering, Inc. was contracted and completed a focused planning study on Newell Creek Pipeline. In October 2020, Carollo Engineers was contracted to update the 2003 study for the North Coast System and as summarized below that update will conclude in November 2021.

DISCUSSION: Below is a brief summary of each planning study/project.

Main Replacement Program Planning and Risk Model Development

As noted above, treated water mains are a significant asset class within the water system, totaling over 260 miles in length. In 2020, the City in partnership with HDR Engineering completed a focused effort to inform long-range main replacement planning, cost estimating and predict future levels of service (as measured in predicted main breaks). Underpinning this work is a "risk model" that compiles a large variety of data including a number of historic breaks, pipe attributes (size, pressure, vintage) as well as external considerations like the number of customers impacted, criticality of main location, etc. to assign a relative risk value, and therefore ranking for replacement to all pipes in the system.

Key Findings of the Risk Model development and analysis are:

- 25% of all breaks occurred on less than1% of the entire system length
- 75% of the system has never experienced a break
- Asbestos Concrete Pipe (36%) of water mains is performing better than industry average due to low salt content of native soils in Santa Cruz
- Current City break rates (11 breaks per 100 miles a year) are better than national average (14), and slightly worse than California averages (9.7).

Once the risk modeling was completed, a range of investment scenarios was established to correlate different investment levels/replacement rates (miles of main per year) to expected future levels of service (breaks per year). The investment scenario ultimately adopted as part of the recent long-range financial planning process ($1.9M/year) balances the need to continue investing in main replacement, while at the same time focusing staff and financial resources on other key projects. This investment level also preserves institutional capacity by funding City crews to replace a target of approximately one mile per year of main as well as hiring outside contractors periodically to tackle high priority projects with larger diameter pipe or complex traffic control requirements.

2020 Water Audit

The results of the 2020 AWWA Water Audit are consistent within a range of estimated volumes of water losses (250 MG) that occur on the distribution system on an annual basis. The observed trend in water loss is limited to the period of time since 2016 when achieving Level 1 Validated water audits became a regulatory standard for all urban water suppliers in California. During this time, both the total volume of annual water loss and the respective components, apparent and real losses have remained relatively consistent. While the level of apparent water loss has significant importance as it relates to lost revenue to the Department, monitoring changes in the magnitude of physical leakage and water loss on the distribution system is most relevant to the condition of the distribution system and the ongoing assessment of the need to engage in intervention strategies.

The five-year trend of annual real and apparent losses relative to the volume of Unavoidable Annual Real Loss (UARL) displays how closely our volumes of real losses track a calculated theoretical reference value that is representative of a technical low limit of physical leakage on the distribution system. The calculation of the annual volume of UARL in the water audit is a function of fixed parameters of the distribution system such as length of water mains, number of customer service connections, average system pressure and annual water production. Ultimately, the UARL is used to determine the annual Infrastructure Leakage Index (ILI) for our utility. The ILI is the ratio of the Current Annual Real Losses (Real Losses) to the UARL. Tracking the ILI

water audit metric is a highly effective performance indicator that is used to inform the operational management of real losses. Since 2016, that annual water audit ILI value has ranged from 0.89 to 1.07, with an ILI equal to 1.0 representing a theoretical low level of leakage.

To further support the interpretation that the Department maintains physical losses on the distribution system at an economically low level of leakage, the findings from two acoustic leak detection surveys in 2016 and 2018 provided valuable field verification that we experience a low frequency of unreported leaks on the distribution system. Collectively, the proactive leak detection surveys covered 200 miles of water main along survey transects that were designed to capture the varying water main material types, pressure dynamics and geology that exist within our service area. The combined results of discovered leaks (7) from the surveys are indicative of a well-managed system that is in good condition. Furthermore, due to the distribution of clay and shale geology throughout much of the service area, it is observed that failure events on water mains typically are discovered and repaired in a timely manner, lowering the degree of chronic unreported leakage on the system. Categorically, widespread unreported leakage can have a more dramatic effect on the level of real losses than the highly visible but relatively brief catastrophic water main failure events.

North Coast System Planning Study Update

The North Coast System consists of approximately 19 miles of raw water pipeline which conveys water from three coastal creeks (Laguna, Majors, and Reggiardo Creeks) and one natural spring (Liddell Spring) to the City's Coast Pump Station and ultimately the GHWTP for treatment and distribution into the City of Santa Cruz. The North Coast System accounts for approximately 15 percent of the City's total water supply.

Since the previously mentioned 2003 engineering study was completed and preferred alignments for replacing the pipelines were adopted by City Council, several substantial changes have occurred to the system. Increased frequencies of breaks in the pipeline have led to several emergency repairs and the Majors pipeline being taken out of service indefinitely. Wildfire and slope instability risks have increased, making the existing pipe more likely to be damaged by natural hazards. Additionally, the City has adopted instream flow requirements during habitat conservation planning that restricts the amount of flow available for diversion from the North Coast sources leading to reduced average annual diversions from each of the North Coast sources These changes taken together required a reevaluation of the preferred alignments and system hydraulics, prioritization of segments for replacement and project phasing, and an update of cost/schedule estimates, amongst others. The 2021 Planning Study update focused on the remaining 9.75 miles of pipeline to be replaced when considering these elements.

The 2021 Planning Study update consisted of a series of four technical memorandums (hydraulic analysis update, risk and consequence of failure, alignment validation, and permitting and right-of-way analysis) which provided the basis for a final Implementation Plan. The alignment validation confirmed the proposed pipeline alignments, which generally aligned with the 2003 engineering study with minor modifications to improve accessibility/constructability. The Implementation Plan, which is currently in draft form, provided an estimate of cost and schedule for rehabilitation of the overall system, and recommendations for consolidating the various components of the project into one larger project instead of breaking the project up into several

phases. While greater peaks in spending are expected due to considering replacement of all components of the North Coast System as one project, there are significant advantages to this approach, such as a more streamlined environmental review and permitting process and establishing a consistent project team for the life of the project.

Newell Creek Pipeline Improvement Project

The Newell Creek Pipeline consists of approximately 9.25 miles of pipeline connecting the Newell Creek Dam at Loch Lomond Reservoir, Felton Booster Pump Station (FBPS), and Graham Hill Water Treatment Plant (GHWTP). The pipeline was constructed circa 1960 during the same era of development as the Newell Creek Dam and Graham Hill Water Treatment Plant. In addition to the age of the existing pipeline, development throughout Santa Cruz County over the past 60 years has increased the consequences of pipeline failure and constrained access for repairs. Time has also revealed the geological instability of terrain through certain reaches of the existing alignment. Extreme weather conditions have increasingly threatened the pipeline with extreme storms causing landslides and washouts, while also increasing the City's reliance on the lifeline during increasingly severe droughts. More frequent breaks prompted the City to conduct a pipeline condition assessment, hazards report, segment prioritization study, alternatives analysis and commence with design and construction beginning with the highest risk segments.

The pipeline is segmented into Schedule I (Northern Segment) from Loch Lomond Reservoir to FBPS and Schedule II (Southern Segment) from FBPS to GHWTP. The entirety of Schedule I and Schedule II are identified for replacement as part of four components of the larger Newell Creek Pipeline Improvement Project, each of which will have a corresponding capital improvement project dedicated to it. The Newell Creek Dam Inlet/Outlet Replacement Project has already replaced approximately 1,850 feet of pipeline from the toe of the Newell Creek Dam.

Environmental Review

A draft EIR is under development for the project to meet the requirements of the California Environmental Quality Act (CEQA). Detailed 30% design work will inform the analysis for the Brackney North and Felton/Graham Hill segments, while a conservative disturbance corridor and construction methods are assumed for the remaining segments. Brackney North is included as a discrete project component within Schedule I described previously, while the Felton /Graham Hill segments comprise the entirety of Schedule II. Environmental surveys and studies began in 2020, and the draft EIR is on track to be released for public review and comment in mid-November 2021.

Felton to Graham Hill Road:

General:
The Felton/Graham Hill component of the Newell Creek Pipeline Improvement Project replaces pipeline between FBPS and GHWTP. This project component relocates the pipeline route away from the existing alignment through Henry Cowell State Park, which has the highest risk ranking in terms of both likelihood of failure and consequence of failure of all segments of the Newell Creek Pipeline. The new alignment will follow Graham Hill Road, which has none of the geological hazards, far fewer drainage crossings, and much better accesses for both construction and maintenance.

Technical:
The Felton/Graham Hill segment is approximately 4.5 miles long, with one crossing of Zayante Creek and one crossing of the Roaring Camp Railroad. The last mile of replacement into the GHWTP closely follows the existing alignment in Graham Hill Rd. just as the road gets increasingly narrow and congested with other underground utilities. These challenging conditions will require a portion of the existing pipeline to be removed for it to be replaced in the exact same trench. Timing of this portion of the replacement will be crucial so as not to interrupt our ability to utilize water from Loch Lomond when most needed. The design, which began in fall 2020, is currently 50% complete, and it is expected that construction will start in early 2023 and be completed in 2025.

Financial:
The Department is currently pursuing grant funding through the same FEMA Hazard Mitigation Grant Program funding the Brackney project. In parallel, the Department is pursuing State and Federal low-interest loans. The current cost estimate for the Felton/Graham Hill segment is $29,710,000.

Brackney Area Landslide Risk Reduction Project :

General:
Although a very short segment of the overall pipeline, the Brackney Landslide area poses one of the most threatening hazards and is among the highest-ranked for replacement.

Technical:
Brackney Landslide Area Pipeline Risk Reduction Project replaces approximately 2,000 feet of the pipeline through an area at particular risk of geotechnical hazards. Horizontal Directional Drilling through deep bedrock formation was determined to be the most cost-effective method to avoid landslide hazards. The project will require new easements for realignment. Due to very limited access and construction staging, the project will require close coordination with neighbors and other utilities. The design, which began in fall 2020, is currently 50% complete, and it is expected that construction will start in early 2023 and be complete in 2024.

Financial:
FEMA-funded emergency actions during the 2017 storms provided ample evidence to support the City's successful grant application for funding under FEMA's Hazard Mitigation Grant Program. Design began in fall 2020 with construction to be completed in 2024. The current cost estimate for the Brackney Project is $6,210,000 with 75% funded through a grant.

Newell Creek Pipeline Felton/Loch Lomond (Future Project):
The Felton/Loch Lomond component of the Newell Creek Pipeline Improvement project includes replacement of the remaining Schedule I pipeline along Newell Creek Road, starting where the Inlet/Outlet project left off and continuing to the FBPS with some minor rerouting of pipeline alignment into public streets to avoid private property. Design is scheduled to start in 2025 with construction completed by the end of 2031.

PROPOSED MOTION: This item is for information and discussion only. No motion is required.

ATTACHMENTS:
None.

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