CITY OF NEWPORT, OREGON
CITYWIDE AUTOMATIC METER INTERFACE (AMI)
WATER METER UPGRADE PROJECT

WATERSMART WATER & ENERGY EFFICIENCY
GRANT PROPOSAL FY2015

FOA: R16-FOA-DO-004

City of Newport, OR
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Newport, OR 97365

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TECHNICAL PROPOSAL & EVALUATION CRITERIA

I. Executive Summary

Date: January 19, 2016

Applicant Name: City of Newport, Oregon

City, County, State: Newport, Lincoln County, Oregon

Project Summary:
The City of Newport, Oregon proposes to replace its system of outdated metering equipment with automatic meter interface technology, telemetry equipment, and software. Project funds will be used to purchase and install new, state-of-the-art, digital metering equipment and updated billing software linked to the meters to enable the City to more quickly identify leaks and wasteful water practices. The project will result in water conservation, energy savings, improved water management, improved habitats for threatened species, and a potential new water market. Conserved water will be dedicated for in-stream flow and fish passage to benefit endangered species (95%), with a small portion (5%) available for sale to new markets for the City. Presently, given Newport's current resource constraints, such a project cannot be completed until 2022. Accelerating the implementation through a grant from Reclamation will allow the City to achieve the projected water conservation, energy savings, and habitat protection five to seven years earlier than it could otherwise. Serious long-term drought conditions that persist throughout much of the State of Oregon and which have a detrimental impact on both fish habitat and a significant tribal water source have increased the urgency of water conservation projects such as the one proposed within this application.

Estimated length of time to complete project: 24 months

Estimated Completion date: August 31, 2018

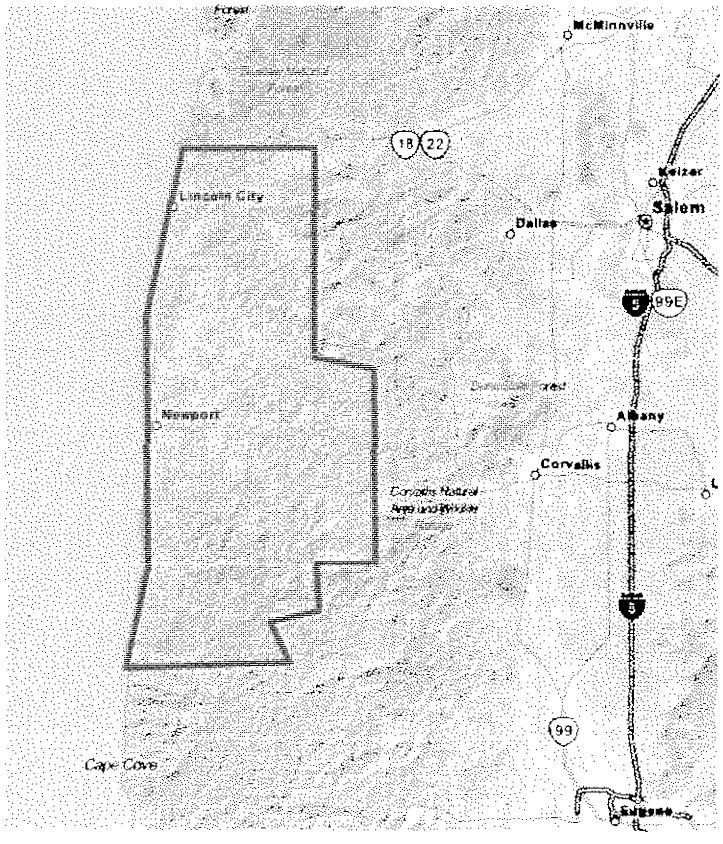
Located on a Federal Facility: No

II. Background Data

The City of Newport is a small, coastal community located approximately 140 miles southwest of Portland, Oregon in Lincoln County. It sits in the center of the county coastline at the mouth of the Yaquina River. ***Figure 1 (below)*** illustrates Newport's location within the state of Oregon and its relationship to major metropolitan areas. ***Figure 2 (following)*** displays the City of Newport within Lincoln County.

Figure 1: Location of Newport, Oregon

Figure 2: Lincoln County, Oregon



Source of Water Supply, Water Rights and Usage Information

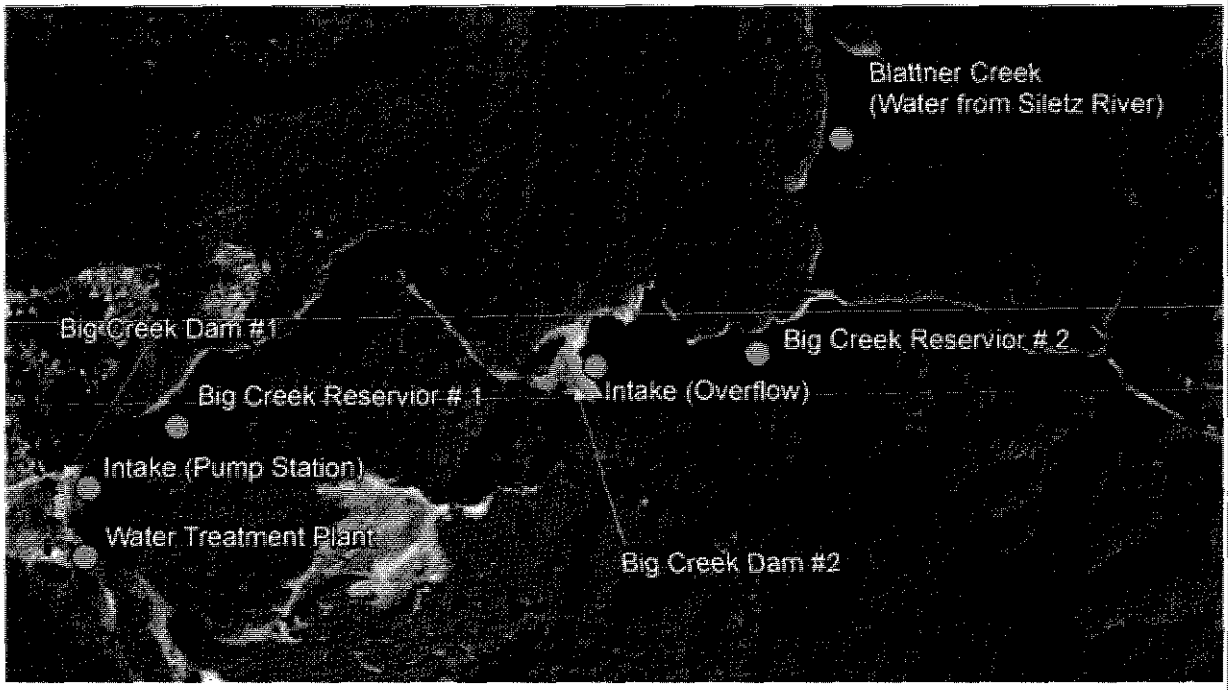
The City of Newport is supplied with water from the Big Creek Reservoir, which is sourced from Big Creek and the Siletz River. Storage rights are held at Big Creek Reservoir #1 (lower) and #2 (upper). Water rights for the City can be traced back to 1909. The following list represents the water rights acquired by the City since its incorporation in 1882:

- 1909 Blattner Creek
- 1923 Nye Creek
- 1923 Hurbert Creek (Section Line Creek)
- 1926 Big Creek
- 1963 Siletz River
- 1968 Jeffries Creek

In 1992, the City of Newport constructed a water intake station to acquire water from the Siletz River when necessary. The station pumps water from the Siletz into the Big Creek watershed above the upper Big Creek Reservoir.

The Big Creek Reservoir system is built over Big Creek, which flows directly into the reservoir system. Water from the Siletz River is pumped into Blattner Creek and then runs by gravity into the Big Creek Reservoir system. Water from the upper reservoir flows into the lower reservoir, where the intake station for the water treatment plant is located at the point of diversion. The upper and lower Big Creek Reservoirs were constructed in 1951 and 1969, respectively, and the upper reservoir was expanded to its current capacity in 1975. A map of the source water flow is provided on the next page in ***Figure 3***.

Figure 3: City of Newport Water Source Flow



Usually water is only drawn from the Siletz River between July and September, primarily due to a simultaneous spike in demand due to summer tourism and the onset of the fishing season. During winter months, no water is drawn from the Siletz because precipitation continually resupplies the reservoirs, and the City relies entirely upon water within the Big Creek Basin. Any initiatives that enable the City to reduce water drawn from the Siletz River will help maintain in-stream flow for critical fish species and tribal use.

Current water uses include residential, commercial industry (such as heavy tourism, beer brewing and spirits distilling, cherry processing, and fish processing), and municipal uses such as water for firefighting, water system flushing, and operation of municipal facilities. The total number of year-round, primary resident water users served is more than 10,100 residents. However, the large tourist economy, which brings 2.5 million visitors to Newport each year, requires Newport to operate like a much larger municipality and vastly increases the number of water users served.

Newport is able to meet its current water demand (2,248.7 AFY), but only because the City can supplement its water supply with water drawn from the Siletz River. Without

this supplemental water source, the City could not meet current demand during the drier summer months that coincide with the higher tourist population. The current water right is 6 CFS on the Siletz River. The City pumps this full right from approximately June through October and still loses elevation in the Big Creek reservoir system. In 2015, the elevation in the upper reservoir dropped by 11 feet, equating to approximately half of the total water storage capacity.

Furthermore, projected residential and commercial growth could further strain existing water resources. Several land developers have submitted plans for development. While they delayed those projects during the lower economy, the City expects these developments will move forward as the economy continues to improve. For example, in 2015, the City had eleven pending applications for development, two of which have proceeded to construction within the last year.

Newport's commercial water users are already expanding their operations. The Rogue Brewery and Distillery, one of the City's top six water users, has expanded its operations twice since 2010 and has plans to expand again soon. The fish processing plants, which are the other five largest water users in Newport, all have expansion plans within the next several years, two of which are currently under construction.

Potential shortfalls in the water supply may arise because of the fact that the greatest demand for water supply occurs during the time of lowest stream flows and reservoir levels. By supplementing its water supply stored in the Big Creek reservoirs with water taken from the Siletz River, the City is presently able to meet this demand. However, a large spike in tourism or increased demand due to development or commercial expansion during a year of particularly extreme drought would likely create a temporary shortfall.

Water Delivery System, Including Current Metering System

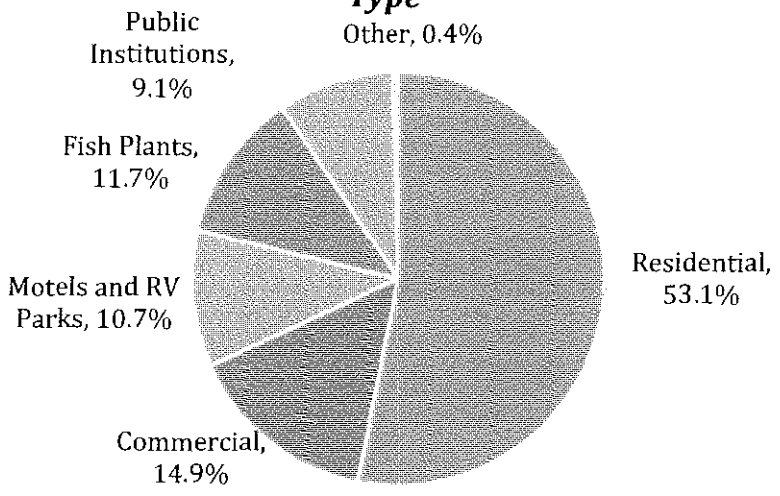
Municipal services in Newport include water treatment and supply, sewage treatment and disposal, parks and trails, and other typical public works and maintenance services. The existing water system includes intake, treatment, distribution, and storage elements.

Within City limits, the City owns and operates more than 90 miles of piping as well as seven storage tanks (five steel and two concrete tanks). The City operates six pumping

stations at different elevations serving different areas of the city. The City's service area is made of up nine pressure zones defined by terrain.

The City's water system includes 3,388 customers: 2,625 residential and 763 commercial. The total number of water users served includes the year-round population of 10,100, plus the seasonal tourist population, which surges to 2.5 million visitors annually. ***Figure 5*** below illustrates the City of Newport's water customers by type.

Figure 5: Water Sales Percentage by Customer Type



Currently, Newport's metering system contains a total of 3,700 meters to track and bill customer water usage. Almost two-thirds of these (2,008) are outdated mechanical meters. The meters vary in age, quality, accuracy, and condition. Most of the meters must be read manually, which requires two full-time personnel and thousands of vehicle miles annually. These meters, many of which are more than 30 years old, are at least a decade past the industry standard useful life for such equipment. The current meters cannot be linked into the City's billing system, nor can they detect low flows (or theft of service). They are often inaccurate due to their extreme age. The many inadequacies of the antiquated meter system contribute to the presence of undetected leaks and unaccounted for water usage and losses. This results in lost revenue, higher usage rates, and poor consumer understanding of actual water usage.

Energy Sources and Current Energy Uses

The project contains minor energy efficiency elements, in that the receiving stations for the new AMI system will be solar powered. The City of Newport obtains electricity from Central Lincoln Public Utilities District (PUD). Central Lincoln PUD buys the electrical power from Bonneville Power Administration (BPA), which operates the hydroelectric system on the Columbia River. Newport's energy costs for municipal purposes from Central Lincoln PUD are approximately $650,000 to $750,000 annually.

Past Relationships with Reclamation

Since July 2014, the City of Newport has worked with program officers in the Denver office to learn more about WaterSMART grant programs, including the Water & Energy Efficiency Grant (WEEG) Program, the Basin Study Program, and the Title XVI Feasibility Study Program.

Reclamation staff members have provided technical assistance to the City related to project eligibility, guidance about the grant application process, and recommendations about environmental compliance. For example, in November 2014, the Public Works Director (Timothy Gross) and the City's Grants Consultant (Tia Cavender from Chase Park Grants, LLC) visited with two Reclamation staff members to discuss this project's eligibility for the WEEG grant program. In June 2015, the City hosted an event at which Carri Hessman, from the Pacific Northwest Reclamation office came to provide a presentation on Reclamation funding.

The City has also met with staff from the Hydraulics Laboratory at the Denver Federal Center while touring the materials laboratory and hydraulics research center. The City has several upcoming studies that could benefit from services provided at the Hydraulics Laboratory, which the City will explore in tandem with this project.

III. Technical Project Description

The City of Newport proposes to cost-share the installation of an integrated Advanced Meter Infrastructure (AMI) system. The project proposed here includes the following three components:

1) replacing more than 2,000 obsolete mechanical meters with "smart" meters with advanced reading capability
2) adding solar-powered receiving stations located throughout the City to receive data from the meters and communicate the data to the utilities office
3) acquiring and installing AMI software

To date, the City has undertaken a pilot effort and has replaced 400 mechanical meters with smart meters. Based on this successful pilot, the City now proposes to replace all remaining outdated meters for Newport's commercial and residential users and to connect all of the new advanced meters to updated billing and reporting software. All three components of the proposed project will result in water and energy savings, as discussed and documented in further detail in later sections. The meter replacement project will be completed within the 24-month project period of the WaterSMART grant.

1) **Meter Replacement** - The project involves replacing meters and meter heads for at least 1,245 residential and 763 commercial/industrial accounts. The majority of water losses in Newport are due to water leaks and waste after the meter (customer side). See Section e under Subcriterion A.1 below (page 17) for a detailed list of the items to be purchased and installed. Meters will be installed by the vendor, with on-site supervision of the installation and documentation of all installations performed by a third-party contractor.

2) **Telemetry Receiver Stations** – Strategically located telemetry receiver stations will receive data produced by the smart meters and forward that data to the water department. This will reduce the need for manual meter reading. Not only will this allow the City to re-assign the two full-time personnel into other short-staffed departments, but it is also projected to conserve up to 1,081 gallons of fuel each year.

3) **AMI Software** – In order to manage the large quantity of data produced by the AMI meters and to fully benefit from the projected water conservation benefits of this project, the City needs to add a new software system that is capable of collecting, managing and reporting upon the data generated by the new meters.

Such a software system will enable the City to improve the accuracy of its billing practices so that customers are billed for true water usage. The software will also enable planned user audits the City will conduct with its largest water users to reduce waste and increase conservation.

This project will be conducted in tandem with a larger, citywide initiative to improve water management. The proposed AMI project will result in significant energy and water savings for the City and is aligned with water management and conservation recommendations included in the City's Water System Master Plan (2008). This plan prioritizes identifying and mitigating water losses due to unaccounted water as part of City conservation efforts (Section 9.2.6). It also includes recommendations for upgrading system meters to more accurate meters with automatic meter reading technology, with a focus on replacing older and poor-quality meters that are inaccurate (Sections 9.4.3 and 9.4.4). It further recommends stepped up efforts at leak detection (Section 9.4.5), which will be made easier by the new meters and real-time data collection. Overall, the proposed project will result in increased conservation of Oregon's precious water resources by reducing water losses due to inaccurate meters, leaks and breaks, and customer waste.

Table 1 below summarizes major project tasks. A project timeline appears as ***Table 7*** in ***Subcriterion F.2*** on page 37.

Table 1: Project Tasks Summary

	Task	Dates	Parties Responsible
1	Project Kick-off, project set-up, establish installation specifications for meters and telemetry units for wide variety of installation sizes and situations	Aug. 2016-Mar. 2017	City Staff (Public Works, Finance, and Water Department), Engineering Consultant, Project Consultant
2	Environmental compliance	Aug. 2016-Feb. 2017	City Staff, Engineering Consultant
3	Procurement of first half of AMI equipment*; procurement and installation of N_Sight software; software training	Oct. 2016-Mar. 2017	City Staff ***NOTE:** The selected metering equipment to be purchased has a long lead-time from order to fulfillment.*
4	Bid phase and selection of contractor for meter installation	Mar. 2017-Jun. 2017	City Staff, Engineering Consultant, Selected Project Vendor
5	Installation of meters and	Jul. 2017-	City Staff, Installation Contractor,

	telemetry system	Mar. 2018	Engineering Consultant
6	Procurement of second half of AMI equipment	Oct. 2017-Dec. 2017	
7	System testing of meters and telemetry system, reporting and customer audits	Mar. 2018-Jun. 2018	City Staff, Engineering Consultant, Project Consultant
8	Final reporting and project close-out	Aug./Sept. 2018	City Staff and Project Consultant

The proposed project addresses all four of the priority Task Areas, as summarized here. More detail is provided about each task area in ***Section V. Evaluation Criteria***.

Task Area A: Water Conservation and Improved Water Management

The project addresses water conservation needs in the City. It will also improve water management processes in Newport, including the use of high-efficiency, digital metering equipment to accurately measure water use for local customers. The improvements in this task area are expected to conserve 571 acre-feet of water per year.

Task B: Energy Water Nexus

The proposed project will help improve water and energy management by reducing the amount of energy consumed to pump, treat and convey the conserved water. The City will also realize energy savings from reduced vehicle miles to manually read nearly 3,700 meters each month.

Task C: Benefits to Endangered Species

The project benefits a number of species classified as endangered or threatened, including Sockeye Salmon, Pacific Eulachon/Smelt, Coastal Coho Salmon, Coastal Cutthroat Trout, and Marbled Murrelet. The majority of water conserved and better managed by this grant (95%) will be left in the Siletz River for in-stream use and in the Big Creek Reservoirs to maintain viable fish passage. Preventing water loss will help maintain healthy and vibrant conditions under which these vulnerable species can thrive.

Task D: Water Marketing

The proposed project will also enable the City to serve a new water market with the remaining portion of the conserved water that is not committed for in-stream flow/fish passage. The Seal Rock Water District, the largest water district on the coast, has requested that Newport sell it water during times of shortage or when they need

emergency access to water (such as during a water main break, storm damage or flooding). The City of Newport will draft and execute an interagency agreement with Seal Rock Water District to outline the conditions and rates by which emergency water may be purchased from Newport when needed. Several other local water providers and one corporation have expressed interest in purchasing water from the City during times when they are low on supply, and these potential additional water markets will be explored during regional planning meetings to be held in 2016.

IV. Evaluation Criteria

Criterion A: Water Conservation

Subcriterion A.1: Quantifiable Water Savings

a) Amount of Water Saved/Conserved as a Direct Result of This Project and How Estimated Savings Were Determined

Based upon the City's evaluation of historical data, this project is expected to conserve a total of 571 acre-feet per year (AFY) of water. These water loss/conservation estimates were derived by conducting a thorough evaluation of average, system-wide water losses, and expected conservation practices resulting from installation of the new system. Using water use data from 2014, the City created a customized algorithm to calculate water loss. The projected savings of 571 AFY includes water saved due to improved leak detection and behavioral changes. The calculations are detailed below.

First, the average monthly water use per customer account was determined, and then a standard usage deviation was calculated. Any water usage in excess of the average plus standard deviation is assumed to be water loss due to a faucet left on, water line break, or other water-wasting event. This analysis yielded an estimate of water loss on the customer side of approximately 525 acre-feet per year, or 23.3% of the average annual water sold. The City realizes it is not possible to save all of this water through early detection of leaks, as repairing leaks on the customer side of the meter are at the customer's discretion. Nonetheless, the City has conservatively estimated that 90% of the total average loss can be recovered, yielding 473 acre-feet of water savings per year through early leak detection.

Second, the City expects behavioral changes in water use as a result of the new AMI system with the accompanying software. Because the new meters will be more accurate, water bills will increase because users will start paying for leaking water that had previously gone undetected by the older meters. Increased billing will yield conservation due to the customer's desire to reduce utility costs at both the household and commercial level and the desire to be a "good environmental citizen." Additionally, usage audits of the City's largest users will contribute to conservation savings. City staff will perform usage audits with up to five large commercial/industrial customers annually, helping those customers understand their water usage patterns and collaborating on strategies to reduce usage. Based on evaluations of neighboring communities that implemented similar automatic metering systems, we anticipate a 4% reduction in overall water use among customers due to behavioral changes. This will yield an additional 98 acre-feet of water conserved as a result of this project.

Table 2 below summarizes these calculated conservation estimates in both annual savings and lifetime savings (over the industry-standard 20-year lifetime of the equipment to be installed).

Table 2: Summary of Water Conservation Calculations (in Acre-Feet)		
Type of Savings	**Annual Water Savings**	**Lifetime Water Savings**
Customer leak/waste detection	473	9,460
Behavioral changes/conservation	98	1,960
Total Water Conserved	**571**	**11,420**

Applicant's Average Annual Acre-Feet of Water Supply

The City's average annual amount of water produced over the past 10 years is 2248.7 acre-feet or 732.7 MG per year.

Where the Water That Will be Conserved is Currently Going

The water that will be conserved through the automatic metering project is largely being lost to leaks "after the meter." Water from such leaks either seeps into the ground or goes into the storm sewer system, if the leak is between the meter and the residence or business or if an outside spigot is left on. If the leak occurs inside a residence or business, the wasted water flows into the sewer system.

Where the Conserved Water Will Go

Upon completion of the proposed project, an estimated 95% of the conserved water will be left in the Big Creek Reservoirs (to preserve fish passage and downstream fish habitats) and in the Siletz River for in-stream use. Both commitments positively impact endangered and threatened species and support tribal water usage. As was mentioned above, a portion of the other 5% not dedicated for endangered species habitat will be sold to the Seal Rock Water District and other local providers, but only during periods when the City has surplus water to share (i.e. not during summer months). Water sales will not be allowed to negatively impact fish passage or Siletz River in-stream flow.

As the City of Newport continues to grow, the remainder of the 5% not sold to new water markets will help absorb future development and help offset or delay the need to acquire additional water supply sources in the future.

Municipal Metering Projects

b) *How Current Distribution System Losses and/or Potential Reductions in Customer Water Use were Determined*

Using 14 months of recent water use data, the City created a customized algorithm to calculate water loss. First, the average monthly water use per account was determined, and then a standard usage deviation was calculated. Any water usage in excess of the average plus standard deviation is assumed to be water loss due to a faucet left on, water line break, or other water-wasting event.

Average water use + standard water use deviation = water loss

With the current manual reading of water meters, total usage is only available on a monthly basis. Thus, leaks or excessive water use can go undetected for several weeks. The implementation of an automatic meter interface system will allow meters

to be read several times per day. When abnormal water usage is detected, the AMI system will alert City staff who can then contact the owner quickly to address the issue. The City recognizes that customers will not repair all leaks and that some time will pass between when a leak is detected and when the correction is made. Therefore the water conservation calculations assume that only 90% of the wasted water will be recovered.

c) *Studies Relevant to Water Use Patterns and the Potential for Reducing Such Use or Other Methods Used to Estimate Water Use Reductions*

The City also expects an estimated 4% reduction in water use across the system as a result of conservation. When calculating the water savings projections, the City validated its projections by evaluating results obtained by other municipalities that have implemented similar automatic meter systems. For example, prior to installing its AMI system, the City of Redmond, Oregon was losing 10-15% of its water to leaks. After installing the new AMI system, Redmond reduced its losses to an average of only 3%.[1] Similarly, the City of Santa Monica, CA reduced water loss from 6% to 2% after they implemented an AMI system, while the City of Santa Maria also reduced its water losses from 6% to 2% in the first year.[2] In another example, the City of Sacramento, California detected leaks through implementation of its AMI system that resulted in 236 million gallons of water savings over two years, after repairing the leaks.[3]

Analysis of these combined sources of local and regional data helped Newport determine the project's potential for reducing its water use in 2017 and beyond.

d) *Distribution Main Meters*

This project will not install any distribution main meters.

e) *Types and Quantity of Devices to Be Installed*

The proposed project will install upgraded meters on 2,088 connections throughout the City. The City has selected the Neptune R900 Fixed Network AMI System for this project. This equipment will be consistent with the pilot group of 400 meters that

[1] http://www.wwdmag.com/metering/advanced-metering-reducing non-revenue-water-loss-redmond

[2] http://www.waterworld.com/articles/print/volume-27/issue-8/editorial-features/special-section-advanced-metering-infrastructure/advanced-metering-infrastructure-drivers-and-benefits-in-the-water-industry.html

[3] California Department of Water Resources, Chapter 3, 2013

have already been installed. ***Table 3*** below lists the type, model, and quantity of devices that will be purchased during the project period. Since every meter in the City is scheduled to be replaced by this project, the City's existing inventory of meters was used to determine the number and sizes of the meters and meter heads to be purchased.

Table 3: AMI Project Devices to be Installed	
Item	**Qty**
Neptune R900i T-10 Meter & Meter Head – ¾"	1,577
Neptune R900i T-10 Meter & Meter Head –1"	209
Neptune R900i T-10 Meter & Meter Head – 1.5"	68
Neptune R900i T-10 Meter & Meter Head –2"	95
Neptune R900i T-10 Meter & Meter Head –3"	14
Neptune R900i Tru/Flo Compound Meter & Meter Head – 4"	14
Neptune R900i Tru/Flo Compound Meter & Meter Head –6"	11
Neptune R900i T-10 Meter Head – 5/8"	100
Neptune R900 Gateway V3 Receiving Station – Solar Powered	32
Neptune R900 Gateway Frequency Antenna for Receiving Stations	32

f) *Verification of Actual Water Savings Upon Project Completion*

Upon completion of the project, the City will prepare a final report that documents the water savings realized during the project period.

The City will also conduct post-project analysis using the same algorithm and method used to calculate baseline water loss. Results will provide a pre-award and post-project comparison, which will help quantify the true impact of Reclamation's WEEG grant to the City of Newport.

Subcriterion A.2: Percentage of Total Supply

Provide the percentage of total water supply conserved: State the applicant's total average annual water supply in acre-feet.

The City's average annual water supply equals 2,248.7 acre-feet. The project is projected to conserve a total of 571 acre-feet, or 25.3% of the total water supply.

Expressed as a formula, this calculation appears as follows:

$$\frac{\text{Estimated Amount of Water Conserved (571 AF)}}{\text{Average Annual Water Supply (2248.7 AF)}} = 25.3\%$$

Criterion B: Energy-Water Nexus

Subcriterion B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

This is not applicable to this project.

Subcriterion B.2: Increasing Energy Efficiency in Water Management

Energy Efficiencies Expected to Result from Implementation of this Project

The City expects to realize energy efficiencies as a result of the proposed water conservation project from reduced energy costs required to pump, treat and convey potable water and to treat wastewater and from reduced vehicle miles driven for meter reading. Some energy savings will also be realized from the use of solar panels to power the AMI system's receiver array.

Energy savings are summarized and calculated as follows:

1) **Energy savings in treating and conveying water.** With less water to treat, pump, and boost, the City will consume less energy by the conserved amount. Considering the estimated 571 AFY of potable water that will be conserved by the proposed project, the City will save an estimated 510,366 kWh of energy or 352 metric tons of carbon emissions (http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator).

   The formula to arrive at this estimate required several steps:

   - Annual energy costs, divided by total kWh used = cost per kWh ($16.76)
   - Total annual energy costs, divided by total annual water production = cost per acre-foot ($53.33)
   - Acre-feet conserved x cost per acre-foot = total value of energy savings ($30,451)

Total energy savings x cost per kWh = total kWh saved (510,366 kWh)

2) **Energy savings in wastewater treatment.** Because most of the water to be conserved by this project presently enters the wastewater treatment system, the City will also realize energy savings from less water requiring wastewater treatment. Energy costs for treating and conveying wastewater are significantly higher than the costs to treat drinking water. Based on a conservative assumption that half of the water wasted after the meter enters the wastewater system, we calculate that 287 fewer AF of water will be required to be treated. This will result in a reduction of 296,309 kWh used annually at the plant, or 204 metric tons of carbon emissions.

   Energy savings at the wastewater treatment plant were calculated using the same method as for initial water treatment, but reflective of the higher energy costs associated with wastewater treatment (10,582 kWh per acre-foot treated).

3) **Energy savings from reduced vehicle miles.** By automating the meter reading process, the City will decrease its energy consumption and fuel use. Presently, two full-time personnel drive every day to read meters manually. Eliminating manual meter reading will reduce annual fuel consumption by 1,081 gallons, for a savings of 9.6 metric tons of greenhouse gasses each year.

In addition, the AMI system for the proposed project utilizes 220-watt solar panels to power the 104 Ah receiving stations. The solar panels provide enough energy to power the receivers and charge a backup battery. Using solar-powered receiving stations will save 49 kWh annually per station, for a total of 490 kWh conserved.

Current Pumping Requirements, Types of Pumps Currently Being Used and How the Project Will Impact Current Pumping Requirements

The pumps currently in use include: 1) Siletz Intake Station and pumps, 2) Big Creek Reservoir Intake Station and pumps, 3) Water Treatment Plant and pumps, and 4) Wastewater Treatment Plant and pumps. The proposed project will reduce the pumping required by all of these stations.

The water treatment process in Newport is comprised of a pump station on the Siletz River with three 200 HP pumps, the intake station pulling water from the reservoir to the treatment plant with two 300 HP pumps, and the water plant with two 350 HP high-

service pumps and all ancillary pumps and water treatment equipment. The water treatment plant treated 2,418 AF of water in FY14-15. If 571 AC of water is conserved, this implies a reduction in pumping of 24%.

The wastewater system is comprised of 28 pump stations and the wastewater treatment plant. The largest pump station is the influent pump station with six pumps totaling 1,200 HP. This station pumps the wastewater up the hill to the wastewater plant. Because the City of Newport is located on both side of Yaquina Bay, the City needs to pump all of the wastewater from the north side to the south side via the Northside pump station that is comprised of three 125HP pumps. The treated effluent is then gravity drained from the wastewater treatment plant from the south side to the north side of the bay, then through the outfall one-half mile off-shore. Under heavy flows, this water is boosted to the outfall via a booster station with six 200 HP pumps. The wastewater treatment plant treated 1,959 AF of water in FY14-15. If half of the conserved water (or 287 AF) was going to the wastewater treatment plant, pumping will be reduced by 15%.

Origin of Energy Savings Estimate

The energy savings estimate originates from the point of diversion.

Inclusion of Energy Required to Treat Water in Calculations

Yes, the calculation includes the energy required to treat the water. These estimates are based on the fiscal year 2014-15 expenditures for the City's water and wastewater treatment plants.

Reduction in Vehicle Miles Driven and Carbon Emissions

Yes, the project will result in reduced vehicle miles driven and reduced carbon emissions. Eliminating the need for on-going manual meter reading will save the City 1,081 gallons of fuel per year, or 9.6 metric tons of carbon emissions. (Calculation based upon actual fuel consumption in the previous calendar year.)

Renewable Energy Components

The telemetry units (antenna and receivers to receive automatic meter data) will be solar-powered units. Adding these units will result in no net increase in annual energy costs. The energy costs related to powering the telemetry units will be covered entirely with the solar power generated by the unit.

Criterion C: Benefits to Endangered Species

Projects that will directly accelerate the recovery of threatened or endangered species or address designated critical habitats

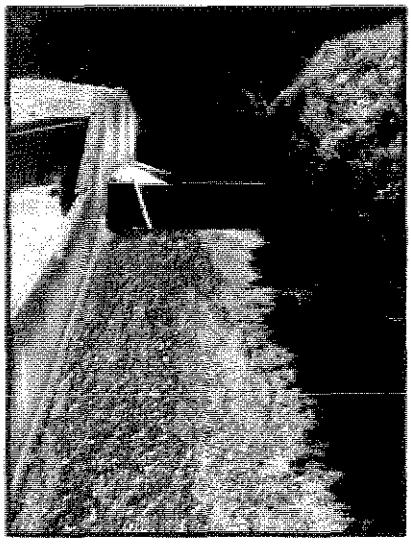
Water conserved by this project will remain in the Siletz River (during summer months) and the Big Creek Reservoir system. Keeping water in these systems will have a direct benefit to species that depend upon these designated critical habitats. **The City commits to dedicating up to 95% of the water conserved by this project to in-stream or in-reservoir use.**

Relationship of species to water supply

These water bodies represent significant habitats for several federally designated threatened or endangered species of fish and one species of bird that depends on fish for its diet. See ***Table 4*** at right.

Table 4: Threatened (T) and Endangered (E) Species Affected by Project	
Species	**Status**
Coastal Coho Salmon	T
Chinook Salmon	T
Coastal Cutthroat Trout	T
Sockeye Salmon	E
Pacific Eulachon/Smelt	E
Steelhead Trout	T
Green Sturgeon	T
Chum Salmon	T
Marbled Murrelet	T
Source: www.fws.gov	

The Oregon Coast Coho Salmon (Oncorhynchus kisutch) is especially affected by this project as Big Creek and the Siletz River are designated critical habitats for the Coastal Coho Salmon. (*See the map that is included as* ***Attachment C.***) In addition, the Siletz River, which has a 41-foot, weir-style fish ladder at Siletz Falls, is home to a variety of native salmonid species including the Chum, Spring Chinook, and Summer Steelhead – the populations of which are severely depressed. Furthermore, the Siletz contains the only Summer Steelhead run native to the Oregon Coast range.



Fish ladder at Big Creek Dam

Both dams at the Big Creek Reservoirs are equipped with fish passage infrastructure, including concrete fish ladders–21 feet high at the lower dam and 56 feet high at the upper. It is important to keep water levels in the reservoirs high enough to keep the fish ladder and spillway working–particularly during periods of drought and during

the summer months when most of the City's water supply is depleted.

Adequate water levels are important to keep fish passage systems working and to keep critical habitats intact so the Coho population can spawn and breed. For example, in 2014, the water level in the upper Big Creek Reservoir dropped by 11 feet and by 14 feet in 2011, threatening the ability to provide adequate water through the fish ladder at both the upper and lower reservoirs.

Taking less water from the reservoir as a result of this project will help keep the fish passage more passable and consistently available for salmon, trout, and other fish. In addition, more in-stream water will be available for downstream habitats.

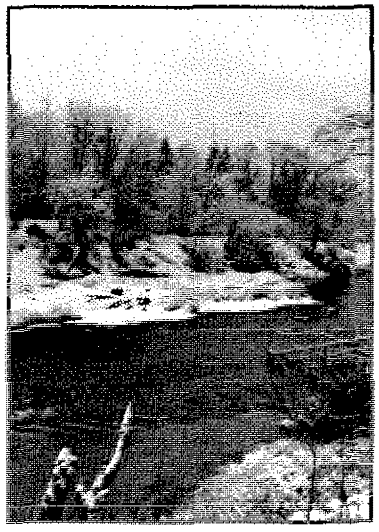
Recovery or Conservation Plans under the Endangered Species Act

Yes, the Coastal Coho Salmon is subject to several recovery documents and conservation plan including the Coastal Salmon Restoration Initiative, which meets ESA requirements and the Oregon Coast Coho Conservation Plan from the Oregon Department of Fish & Wildlife.

Extent Proposed Project May Improve Species Status

Two local fish management plans—the Siletz River Basin Fish Management Plan (1997) and the Yaquina River Basin Management Plan (1991)—specifically identify low stream flow and increased water temperatures as major barriers to a healthy stream and estuary habitat for fish, including the Oregon Coast Coho Salmon.

According to the Oregon Coast Coho Conservation Plan for the State of Oregon, "habitat management and improvement is the key to protecting and enhancing Coastal Coho." Leaving more water in the Siletz for in-stream use and more water in the reservoirs to support fish passage is aligned with current statewide conservation efforts. (*See map of Oregon coastal watersheds managed for Wild Salmon and Steelhead included as* ***Attachment D.***) Wildlife habitats along the Siletz River and Big Creek watersheds will benefit from greater in-stream flow.



Siletz River

Implementation of the AMI project in conjunction with the planned user audits will decrease the amount of water required for public distribution, helping retain habitat for

the Coastal Coho and other critical species, especially during summer months when the water supply levels are low. Every gallon of water that is not removed from Big Creek and the Siletz River is a gallon of water available to support critical habitat for the local population of salmon and other native fish species.

In the short term, the project will increase the in-stream flow of Big Creek and the Siletz River. More in-stream flow contributes to habitat protection and creates an environment where vulnerable species can thrive.

Criterion D: Water Marketing

Water Marketing Elements in the Proposed Project

Up to 5% of the water conserved by this project will be available for sale to water providers that are outside Newport's geographic service area, when the City has sufficient supplies available. We anticipate these sales to be primarily during emergency conditions. For example, the Seal Rock Water District has been requesting water sales from Newport for two years and recently built an intertie facility and dedicated pump station to make water sharing possible. As part of this project, the City of Newport will enter into an interagency agreement with the Seal Rock Water District. As stated above, the City will not be able to respond to such requests during times when it does not have sufficient water available (i.e. during peak season or during times of drought). Water sales will not be permitted to negatively impact in-stream flow or fish passage.

The City intends to use the interagency agreement created for Seal Rock Water District and City of Newport to guide future discussions with area partners in an upcoming place-based planning project. During the second and third quarters of 2016, the City will establish interagency agreements with local water suppliers as part of a planning grant from the Oregon Water Resources Department. In 2015 alone, five different water providers requested water sales from the City.

Estimated Amount of Water to be Marketed

The annual amount of water estimated to be marketed to the Seal Rock Water District is 4.4 AF. Based on the capacity of a newly-constructed intertie pump station, this calculation was based on the assumption that the intertie pump station will operate for four days per year at 250 GPM. This yields 1.44MG or 4.4 AF.

Mechanism Through Which Water will be Marketed

Selling water to the Seal Rock Water District will be the creation of a new market for the City of Newport. Presently, the City does not sell nor does it have water available to be sold to this market. Since the pump station was only completed last year, this market did not previously exist for the City.

Number of Users and Types of Water Use in the Water Market

The Seal Rock Water District serves a long, narrow band of coastal land between the cities of Newport and Waldport. The District serves residential and small commercial customers through approximately 2,400 water meters. The District's current population is approximately 4,000 persons. The District has no water treatment facilities of its own and currently purchases finished water from the City of Toledo. (*Source: Seal Rock Water District Water Management Plan).*

Legal Issues Related to Water Marketing

The City is currently unaware of any potential legal issues pertaining to water marketing.

Estimated Duration of the Water Market

The City anticipates this new water market will be available indefinitely. Once established, this water market will remain a permanent addition to the City's customer base during non-summer months.

Criterion E: Other Contributions to Water Supply Sustainability

Subcriterion E.1: Adaptation Strategies in a WaterSMART Basin Study

There is no completed WaterSMART Basin Study anywhere on the Oregon Coast. The City will submit an application to the Basin Study WaterSMART program, and will submit a letter of intent during the 2016 application cycle.

Studying more about the local and regional water needs in central west Oregon (i.e., Mid-coast Basin, the Siletz sub-basin, and the Yaquina Basin) could prove informative and beneficial for a number or coastal communities facing similar water challenges in the future.

Subcriterion E.2: Expediting Future On-farm Irrigation Improvements

On-farm irrigation improvements are not applicable to this project.

Subcriterion E.3: Other Water Supply Sustainability Benefits

The City's proposed AMI project will generate additional benefits not already discussed above. These include almost all of the other benefits under this subcriterion identified by the FOA:

a) Drought resilience
b) Specific concerns
c) Increasing water available to Indian tribes
d) Making water available for rural or economically disadvantaged communities
e) Promoting collaboration
f) Increasing awareness of water conservation and efficiency efforts

a) Drought Resilience

a.1) Drought Conditions in the Project Area and Current or Expected Impacts

The City of Newport and surrounding vicinity are designated as high risk for drought. In 2015, Oregon experienced unprecedented drought. By October 2015, 25 of Oregon's 36 counties had a Governor-declared drought, while even more had a federally declared drought. Almost all of Lincoln County, where Newport is located, was declared to be in a condition of Extreme Drought (*Source:* US Drought Monitor–Oregon, Sept. 30, 2015). Drought conditions had many impacts in the region, including severe water reductions for irrigated agriculture, increased risk of wildfire, low reservoir levels that reduced access for recreation, water restrictions and shortages for communities, and low stream flows and higher water temperatures that harmed fish and restricted angling.[4]

In Lincoln County, several water providers and users were unable to meet demand in 2015. For example, Otter Rock Water District approached the City of Newport in an attempt to purchase raw water to transport by truck back to their district to meet their current needs; the City of Yachats imposed severe water

[4] *http://www.oregon.gov/gov/Documents/executive_orders/eo_15-09.pdf*

restrictions in 2015 due to water shortages; and Georgia-Pacific was recently in danger of shutting down operations at its Toledo plant (which employs nearly 400 workers) because it could not draw enough water from the Siletz River to meet current demand.

Fishing restrictions were also imposed due to threats to fish (low in-stream flow and high temperatures) in the Siletz River. This is very significant because many tribal members depend on subsistence fishing to feed their families.

a.2) Severity and Duration of Drought Conditions in the Project Area

According to the U.S. Drought Monitor released on October 1, 2015, most of Lincoln County was declared to be in a condition of Extreme Drought. This is just one level short of the direst condition: Exceptional Drought.

In 2015, the Extreme Drought conditions persisted for 13 weeks. According to the U.S. Drought Monitor weekly data, Lincoln County experienced some level of drought for a total of 30 weeks in 2015. Drought conditions began as early as April and persisted until unusually heavy storms in early December. The duration of drought conditions by category in Lincoln County in 2015 are summarized in ***Table 5*** below:

Table 5: Drought Conditions, Lincoln County, OR 2015	
Drought Level	**Total Duration**
D0-D4 Abnormally Dry	6 weeks
D1-D4 Moderate Drought	4 weeks
D2-D4 Severe Drought	7 weeks
D3-D4 Extreme Drought	13 weeks
Source: U.S. Drought Monitor Data Tables, 2015	

According to Oregon's Draft 2015 Hazard Mitigation Plan, virtually all climate models project warmer drier summers and a decline in mean summer precipitation through Oregon (including Region 1—where the City of Newport is located). Coupled with projected decreases in mountain snowpack due to warmer winter temperatures, the entire state is expected to be affected by an increased incidence of drought.

a.3) How the Water Sources Impacted by this Project are Impacted by Drought

Drought impacts Big Creek, the two Big Creek Reservoirs, and the Siletz River in two important ways: by reducing in-stream flow or reservoir levels and by contributing to higher water temperatures. For example, in 2015, fishing restrictions were imposed on the Siletz River due to low in-stream flow and higher water temperatures. In 2014 and 2011, the water level in the upper Big Creek Reservoir dropped significantly (by 11 feet in 2014 and 14 feet in 2011), threatening the ability to provide adequate water through the upper reservoir fish ladder and severely reducing in-stream flow downstream from the reservoirs. Drops of 11 to 14 feet represent approximately half of the City's water supply, and therefore, are significant.

Reduced in-stream flow, reduced water available for fish passage at the reservoirs and on the Siletz, and increased water temperatures all exert a negative impact on the habitat of endangered species (see discussion of these species in Criterion C, that begins on page 21 above).

a.4) How the Proposed Project Will Improve Water Reliability During Times of Drought

The proposed project will improve water reliability during times of drought by reducing the water it draws from the Big Creek reservoirs and the Siletz River by 543 acre-feet. In the case of the Siletz River, the City needs to draw it supplementary water from the Siletz during the most critical time of the year—when municipal and ecological water demands are their highest and water supplies are at their lowest. Water conserved (and not withdrawn from the reservoirs or the river) is water that will be available to meet water needs during times of high demand.

b) Addressing Specific Concerns

b.1) Addressing Heightened Competition for Finite Water Supplies

By reducing the amount of water the City of Newport draws from the Siletz River, the river will better support its other users, such as the Siletz Tribe. While there have not yet been serious disputes over Siletz River water rights, because of lower water flows in general, other users with rights junior to Newport's (such as the City of Toledo and Georgia Pacific) are beginning to express concern about the impact on the river during years when all users take

their full allotment. For this reason, we see the proposed project as one way to address possible future conflicts over finite water supplies. The project will also help address heightened competition in that it will build a replicable model of water conservation that other coastal communities can adopt.

b.2) Water Available to Address Impacts of Climate Variation on the Water Sources Impacted by this Project

The Big Creek and Siletz River are impacted by variations in climate, such as changes in rain and snow, which affect the amount of water in the watershed. In general, wet winters, relatively dry summers, and mild temperatures throughout the year characterize the coastal zone. However, as has been discussed above, climate models predict years of worsening summer droughts and, paradoxically, sometimes more severe winter storms. While periods of heavy winter rain may seem as if they should mitigate the summertime drought conditions, this is rarely the case. Heavy rain runs off quickly instead of contributing to long-term in-stream flow of rivers and streams. Newport's storage tanks and reservoirs are already filled to their capacity through normal winter precipitation. They cannot store additional water as a buffer against summertime drought. Thus, severe winter storms can erode critical habitat, cause disastrous flooding and property damage, while failing to relieve the drought conditions that develop each year during the drier months.

Warming conditions also negatively affect mountain snow packs. When snow packs are low, or when the snow melts too early in the season, that negatively affects the amount of water available in streams during the months of highest demand.

Lengthier periods of more severe drought caused by climate change also increase the risk of larger and more severe fires. Larger or more frequent fires require more water to be drawn from the already stressed water sources for fire suppression purposes. More frequent wild fires also negatively affect the quality of the water, sometimes rendering it unusable. In times of severe turbidity, the City must turn off its intake stations and avoid taking new water. The conserved water that is left in the reservoirs and river will help alleviate these impacts of climate variations.

b.3) How the Project Addresses Issues that Could Potentially Result in an Interruption to the Water Supply if Left Unresolved

If water conservation measures like this project are not taken, a potential for interruption to water supplies in surrounding communities is very likely, as described above.

c) Increasing Water Available to Indian Tribes

The proposed project will create additional water available for the areas served by the Confederated Tribes of Siletz Indians of Oregon (Siletz Tribe), including the City of Siletz and the Siletz Reservation. This reservation is located along the Siletz River.

As a result of this project, the areas that serve the Siletz Tribe will have more water available for their use because the City of Newport will not need to draw on its full Siletz River water right. As stated above, the City will dedicate 95% of the conserved water to in-stream flow. This project directly benefits the Siletz tribe because it will protect Coho salmon and other native fish species in the Siletz. Not only do many members of the Siletz tribe depend upon subsistence fishing as a source of food, the fish also play an integral role in Tribal heritage (i.e., traditional tribal fishing harvest in Rock Creek).

d) Making Water Available for Rural or Economically Disadvantaged Communities

This project will make water available for rural and economically disadvantaged communities by leaving conserved water in the Siletz River, which serves Siletz City and the surrounding rural areas. With its population of only 1,284 residents, the City of Siletz is considered a rural community. The community is also economically disadvantaged. Less than 6% of the adult population holds a bachelor's degree (compared with 30.1% statewide), and the percent of families living in poverty (21.1%) is almost double the state rate. Median household incomes of $39,063 fall far short of the state median of more than $50,000. Almost one-third (31%) of Siletz City residents receive SNAP benefits (Supplemental Nutrition Assistance Program - formerly food stamps), compared with less than 20% of all Oregon residents.[5]

e) Promoting and Encouraging Collaboration Among Parties

e.1) Widespread Support for the Project

There is widespread support to advance this project, especially among fellow

[5] *U.S. Census American Community Survey, 2014, tables DP02 and DP03*

water intake users from the Siletz River. These users are listed in ***Table 6***. The Confederated Tribes of Siletz Indians have a particular interest in increasing in-stream flow in the Siletz River.

Seal Rock Water District (SRWD) also supports this water conservation project, especially since the project will enable the City to sell water to this new market.

Table 6: Siletz River Water Rights	
Rights Holder	**Total Quantity**
Georgia-Pacific Corp.	15 cfs
City of Toledo	9.75 cfs
City of Newport	6 cfs
Seal Rock Water District	2.6 cfs
City of Siletz	1.25 cfs
Georgia-Pacific Corp.	15 cfs

Other entities that support this water conservation project include project partners from the Mid-Coast Integrated Water Resources Planning group. These include the following:

- City of Toledo, Oregon
- Confederated Tribes of Siletz Indians
- Oregon Department of Environmental Quality
- Oregon Water Resources Department
- Surfrider Foundation – Newport Chapter
- Lincoln Soil and Water Conservation District
- Mid-Coast Watershed Council

Representative letters of support from project partners and legislative officials are included with this application as ***Attachment A***.

e.2) Significance of the Support

The widespread support of this project is important because it generates good will and trust for future planning projects and potential future joint conservation efforts. The City of Newport is presently pursuing state funding in support of a place-based integrated water resources planning study. The Mid-Coast Planning Group to be convened by the City of Newport and the Oregon Water Resources Department includes a variety of stakeholders within the watersheds including local municipalities, water districts, tribes, state and federal agencies, non-profit and other environmental organizations. The study

will examine the water supply and demand needs within the Lower Siletz, Lower Yaquina, and Devils Lake-Moolack Frontal watersheds.

Newport's commitment to leave water conserved as a result of this project in the Siletz River for in-stream use demonstrates its commitment to improving the health and in-stream flow of the Siletz River and its interest in being a "team player" when competition for limited water resources increases.

e.3) Ability of Project to Help Prevent a Water-Related Crisis or Conflict

The most likely way in which the project could help prevent a future water-related crisis or conflict is in the reduction of stress placed on the Siletz River during times of drought. While the amount of water to be conserved and left for in-stream flow and left in the reservoirs is significant to the City of Newport as a percentage of its total water production, it is also very significant for the city of Siletz, which depends upon the river for its primary water source.

In addition, this grant project will make possible the formalizing of an interagency agreement with Seal Rock Water District for Newport and the District to share water during times of need. Without the agreement in place that will be developed as part of this project, the two agencies cannot formalize the selling and purchasing of water.

e.4) Tension or Litigation over Water

Presently, there is not frequently litigation over water in the project area. Reduced water levels in the Siletz River are starting to contribute to tension among the multiple rights holders to this water. By committing to leaving conserved water in the Siletz River for improved in-stream flow, the City of Newport is demonstrating its commitment to cooperating with area water users and its commitment to helping ensure the Siletz Tribe and the City of Siletz have sufficient water in the river to meet their needs.

e.5) Future Water Conservation Improvements Enhanced by Completion of this Project

The possibility of future water conservation by other water users could be enhanced by the completion of this project. In fact, this project could serve as a replicable model for other coastal municipalities. For instance, the planning process for this grant has precipitated meetings with the Seal Rock Water

District to explore ways to partner together and create efficiencies in their AMI infrastructure, since the District owns the same brand of meters to be installed by this project and could potentially select the same vendor Newport selects for the development of the customer portal that is tied to the N_Sight software. Similarly, the City of Toledo has strong potential to conduct a similar project, so they might consider replicating this project if Newport's is successful and cost effective.

f) Increasing Awareness of Water and Energy Conservation and Efficiency Efforts

The proposed project will increase awareness about water conservation among Newport's commercial and residential customers and also among other water districts (discussed in subsequent sections below).

First, the City will notify customers of the impending work to be performed on their property to change the meters and the changes customers can expect in their bills. This notification process is an important first step in the larger effort to increase awareness of water and energy conservation and efficiency efforts that customers can undertake.

Second, the improved accuracy of the meters and the real-time data production will enable the City to identify possible water leaks, breaks, or overuse among customers. The City can then reach out to these customers to offer assistance and to encourage customers to repair leaks or modify wasteful habits.

Third, the updated utility software that receives and processes data from the new meters will serve as a valuable tool to enable the City to identify water usage patterns and reach out to encourage and empower customers to take a proactive role in managing their own water use and conserving water. While the City has installed a small pilot of 400 advanced meters and meter heads, the existing billing software does not have the capability to link to the updated meters. The proposed project will enable the City to purchase updated software that takes full advantage of the advanced metering capabilities of the meters to be installed.

Finally, the City plans to collect qualitative feedback from water users about audit reports performed during the pilot testing and initial roll-out phases of the metering and software system. While the purpose of this information-gathering is primarily to

enable the City to improve customer reports and identify the best approaches to engaging customers in water conservation behavior, it will also impact those customers with whom the City engages and will bring water conservation to the forefront of their conversations with the City.

f.1) Project as an Example of Water and/or Energy Conservation and Efficiency within the Community

This project will serve as an example of water conservation to the Newport community, as well as other coastal communities on the Oregon Coast. First, Newport will be the first mid-coast community to install automatic metering technology, so the data collected will be informative to other local coastal communities to the north and south of Newport.

Like Newport, these communities are challenged by overburdened water and sewer infrastructure from serving a greater number of tourists than residents throughout the year. If other communities could learn from the City's experience of upgrading to an automatic meter system, the communities might be more likely to embrace the concept and install AMI equipment in their jurisdiction.

Second, the energy efficiency data collected from this project will help inform other municipal users about the project costs, potential impact, and cost effectiveness. Other communities are likely to embrace automatic metering technologies if they have already been proven effective in similar communities. Ultimately, results from this project could help spread the use of AMI equipment in coastal communities serving a tourist population in addition to the resident population.

f.2) Impact on the Capability of Future Water Conservation or Energy Efficiency Efforts for Use by Others

This project will impact the capability of future water conservation and energy efficiency efforts for use by others by providing measurable data that could encourage other coastal communities to adopt similar technology in order to conserve water and energy within their systems. The City of Newport is currently in the process of co-convening a place-based planning effort with a number of neighboring municipalities and water districts (described above on page 30). This effort uniquely positions Newport to promote the importance of water

conservation in meeting regional water supply needs, share their successes, and encourage others to implement similar systems.

f.3) Integration of Water and Energy Components

The project integrates water and energy components in a few ways. First, it enables the City to collect data specific to reduced water production and the associated energy savings. These results will help the City build the case to support future water conservation projects, especially if it can realize a short-term return on investment.

Second, the project helps educate end users about the relationship between energy use and water costs. The general public is lacking knowledge about the correlation between energy use, water costs, and conservation improvements. When users learn more about their water use, they are more likely to take advantage of water-savings incentives the City currently offers, such as free low-flow faucet heads). This project will help educate local residents about these and other water conservation topics.

Criterion F: Implementation and Results

Subcriterion F.1: Project Planning

Planning That Provides Support for the Proposed Project

The proposed project is in direct alignment with *Section 9.3: Water Conservation* of the City of Newport's Water Management and Conservation Plan that is part of the 2008 Water System Master Plan. The entire plan is publicly available on the City of Newport's website at http://newportoregon.gov/dept/pwk/mwp.asp. (It is too long to include as an attachment to this application.)

The project is also supported by other sections of the Plan. For example, the plan prioritizes identifying and mitigating water losses due to unaccounted water as part of City conservation efforts (Section 9.2.6). It also recommends the exact activity undertaken by this proposed project—upgrading system meters to more accurate meters with automatic meter reading technology, with a focus on replacing older and poor-quality meters that are inaccurate (Sections 9.4.3 and 9.4.4). It further recommends stepped up efforts at leak detection (Section 9.4.5), which will be made easier by the new

meters and real-time data collection. The proposed project is aligned with or supported by the following sections of the Master Water Plan:

9.2.6 Unaccounted Water
9.2.7 Adequacy and Reliability of Supply Sources
9.3.5 Water Conservation Planning Strategy
9.4.3 System Metering Program
9.4.5 Leak Detection and Repair Program
9.4.6 Public Education Program

Furthermore, the proposed AMI project is directly aligned with several other planning documents, including: a) City of Newport Water System Master Plan Update (1988), b) Long-Range Water Supply Plan (1997); c) State of Oregon Natural Hazard Mitigation Plan (2012); and d) State of Oregon Water Resources Department's Integrated Water Resources Strategy (2012) (Recommended Action 4.C *Promote Strategies That Increase/ Integrate Energy and Water Savings*; Recommended Action 5.B *Assist with Climate Change Adaptation and Resiliency Strategies*; Recommended Action 7.A *Develop and Upgrade Water & Wastewater Infrastructure*; and Recommended Action 10.A *Improve Water-Use Efficiency and Water Conservation*).[6]

Project's Alignment with Planning Goals

There are several ways in which the proposed project will help address the Water Management and Conservation Plan as outlined in the Water System Master Plan.

As has already been discussed, the plan recommends in Section 9.2.6 that Newport attempt to reduce the amount of unaccounted water in its system. The proposed project will contribute to reducing the amount of unaccounted water by installing more accurate meters. Dedicating a portion of the conserved water to maintain in-stream flow and/or reservoir levels helps to address the concerns raised in Section 9.2.7 about the adequacy and reliability of the City's water sources.

Section 9.3.5 of the Plan states that "a conservation measure is understood to be an action or procedure intended to reduce unnecessary water consumption." Under the Environmental Protection Agency's guidelines for water supplier conservation programs (cited in Section 9.3.5), recommended Level 1 measures for water systems the size of

[6] http://www.oregon.gov/owrd/LAW/docs/IWRS_Final_2.pdf

Newport's system include the following: 1) analyzing the accuracy of meters and repairing or replacing meters, 2) analyzing unaccounted water, 3) employing leak detection and repair strategies, 4) utilizing automated sensors and/or telemetry (as part of water accounting and loss control), and 5) providing informative water bills to educate water customers.

The plan's Section 9.4.3 is dedicated to system metering and recommends that Newport install "improved accuracy, newer meters" that are "supplemented with automatic meter reading (AMR) technology," such as those proposed by this project.

Finally, the plan recommends the City continue to engage in public education efforts (Section 9.4.6) to "cultivate an awareness of limitations on water resources and to develop a conservation ethic concerning water consumption" for the specific purpose of influencing "usage practices and patterns." The planned notification of customers, more accurate bills, and customer audits align with this recommendation. Providing customers with information that compares their usage to the average usage of other customers has been demonstrated to result in reduced consumption of up to 4.8%.[7]

Subcriterion F.2: Readiness to Proceed

Project's Implementation Plan

The proposed project is ready to proceed immediately. An initial pilot phase (installing 400 new meters) has been completed and has allowed the City to develop and refine its installation protocol and test the new equipment. The City has also completed a propagation study, which identified where receiving stations needed to be located to receive signals from all of the meter heads. Assuming the grant agreement is executed in August or September 2016, the City can obtain and install the billing software immediately to connect it to the 400 advanced meters already installed. The City can also begin the procurement process for the supplies and materials to be used to upgrade the remaining meters, as our experience has demonstrated there are long-lead times required for orders to be fulfilled. Once project start-up tasks are completed, the City can begin the process of letting bids for the installation contractor. The entire project will be completed within 24 months of signing the grant agreement. The schedule is summarized in ***Table 7*** on the following page. (*See also* ***Table 1*** *on page 11.*) Note that the calendar is based on the Bureau of Reclamation's fiscal year.

[7] Paul Ferraro & Michael Price, 2011. "Using Non-Pecuniary Strategies to Influence Behavior: Evidence from a Large Scale Field Experiment, " NBER Working Papers 17189, National Bureau of Economic Research, Inc.

Table 7: Project Implementation Timeline - Based on Bureau's Fiscal Calendar									
	FY 16	ARC FY 17				ARC FY 18			
Task	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Task 1. Project Kick-off, set-up, prep. for bidding process									
Task 2. Environmental compliance									
Task 3. Procurement of half of AMI equipment and N_Sight software									
Task 4. Bid phase and installation contractor									
Task 5. Install AMI equipment									
Task 6. Procurement of second half of AMI equipment									
Task 7. Test meters and telemetry system, reporting, user audits									
Task 8. Prepare final report and close-out project									

The proposed project will involve minimal ground-disturbing activities. The City anticipates the environmental compliance process will take less than six months. The process will be expedited if Reclamation determines the project meets criteria for categorical exclusion and if the City has a consultant dedicated to guiding the environmental compliance phase.

No other permits will be required to proceed. All meters will be installed in the place of existing meter boxes. Control towers will be installed on City property and will not require specialty permits. No additional engineering work or design work is required, other than the materials already prepared.

Subcriterion F.3: Performance Measures

Performance Measures that will Quantify Project Benefits

The City will quantify actual project benefits by measuring several key indicators. These performance measures include the following:

- **Amount of water conserved (Before and After Consumption Data).**

The City will compare annual water usage data before and after the installation of the AMI meter system to document changes in consumption. Results will provide an estimate of the number of acre-feet per year conserved as a direct impact of implementing this project.

- **Amount of energy conserved.** The City will review energy consumption at its pumping, treatment and boosting facilities and at the wastewater treatment plant after the completion of the AMI system and compare it with the energy consumption for a comparable year.

- **Reduction in vehicle miles driven/fuel consumed.** The City will compare vehicle miles driven and gallons of fuel consumed post-project with the miles driven and gallons consumed for meter reading in the year preceding the project to document reduced carbon emissions attributable to the AMI project.

- **Amount of water marketed to new customers.** The City will monitor the amount of any conserved water sold to new users to measure the water marketing impact of the WEEG grant.

The City will monitor its adherence to the planned timeline and budget regularly throughout the project period, submitting semi-annual reports as required. The above performance indicators will be analyzed either pre- and post-activity or annually. A final report will be provided to Reclamation upon completion of the project.

Subcriterion F.4: Reasonableness of Cost

Total Project Cost, Annual Acre-Feet and Energy Conserved, and the Expected Life of the Improvement(s)

Using the services of an engineering consultant, in 2010 the City conducted a cost-benefit analysis of installing an AMI system. The study found that the water and energy conservation benefits that will be realized from the completed project far outweigh the initial investment in the system. In addition, the study indicated that the new AMI system should yield a return on investment within five to six years through increased revenue from more accurate billing and through energy savings.

The following formula was used to quantify the cost-benefit comparison:

Total Project Cost divided by (Acre-Feet Conserved x Improvement Life)

$$\frac{\$1,209,675}{11,420\ AF} = \$105.93/AF$$

Total Project Cost: $1,209,675
Estimated water conserved: 571 AFY
Life of improvements: 20 years
571 AFY x 20 years = 11,420 AF

This project is estimated to cost $105.93 per acre-foot of water conserved over a 20-year project useful life.

Criterion G: Additional Non-Federal Funding

Non-federal funding of $909,675 for this project will cover 75.2% of project costs (See ***Budget Table 1: Summary of Non-Federal and Federal Funding Sources***) on page 47. The total project cost is $1,209,675.

$$\frac{\$909,675 (\text{non-federal funding})}{\$1,209,675\ (\text{total project cost}} = 75.2\%$$

Criterion H: Connection to Reclamation Project Activities

How is the proposed project connected to Reclamation project activities?

The project is not connected to a Reclamation project.

Does the applicant receive Reclamation project water?

No, the City does not receive Reclamation water.

Is the project on Reclamation project lands or involving Reclamation facilities?

No, the project is not on Reclamation lands and does not involve a Reclamation facility.

Is the project in the same basin as a Reclamation project or activity?

No, the project is not in the same basin as a Reclamation project.

Currently, the City plans to submit a letter of intent to Reclamation to be considered as a candidate for its Basin Study technical assistance program. Based on initial research, it appears as if the City would be eligible for technical assistance under this program, and could contribute new knowledge to help address the impacts of climate change on water supply and demand imbalances on the Oregon Coast.

Will the proposed work contribute water to a basin where a Reclamation project is located?

No, the project will not contribute water to a basin where a Reclamation project is located.

Will the project help Reclamation meet trust responsibilities to Tribes?

Yes, the project could help meet trust responsibilities to Tribes because it will make more water available to tribe members of a federally-recognized tribe—the Confederated Tribes of Siletz Indians. The tribe has communicated to the City that it is a high priority to reduce water being taken from the Siletz River and to increase in-stream flow.

The Confederated Tribes of Siletz Indians in the United States is a federally-recognized confederation of 27 Native American tribal bands that once inhabited a range from northern California to Southwest Washington. An estimated 4,984 tribe members live in the state of Oregon, of which approximately 1,170 live near or adjacent to the Siletz River. The sub-group of tribe members impacted most by the water conserved in the Siletz River includes the 728 tribe members who live in the City of Siletz, where the river is the sole water source.

By decreasing the City of Newport's reliance upon the Siletz River as a secondary water source, more of the Siletz water can be available for local use. This is especially important for Siletz tribe members living adjacent to or near the river, and who use the river as a primary water source and food supply.

This project is aligned with Reclamation's Native American Program and its mission to make Reclamation's resources available to assist tribes to protect, manage, and develop their water resources. By financially supporting this project, Reclamation will help protect and manage water resources available to the Confederated Tribes of Siletz Indians.

Environmental and Cultural Resources Compliance

Based on the City's initial assessment (which also includes input from Reclamation staff), we expect the proposed project will meet categorical exclusion from NEPA, ESA, and NHPA requirements. The City and its Project Consultant will work with Reclamation during the two-step environmental compliance review process to determine its categorical exclusion status.

To allow the grant review committee to assess the probable environmental and cultural resources impacts and costs associated with the proposed project, the City has responded to the list of questions below specific to the NEPA, ESA, and NHPA requirements. Additional information will be provided upon request.

Will the project impact the surrounding environment?

No, the project will not impact the surrounding environment.

Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area.

The project does not involve ground-disturbing activities.

Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The project does not involve ground-disturbing activities, and therefore does not require any steps to minimize impacts.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area?

The following species are listed as Federal threatened or endangered species in the project area. Threatened: Coastal Coho Salmon, Chinook Salmon, Coastal Cutthroat Trout, Steelhead Trout, Green Sturgeon, Chum Salmon and Marbled Murrelet. Endangered: Sockeye Salmon, Pacific Eulachon/Smelt.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States?"

No, there are no wetlands or other surface waters inside the project boundaries that fall under CWA jurisdiction as "waters of the U.S."

When was the water delivery system constructed?

The City of Newport was incorporated in 1882 and has had a municipal water system at some level ever since. The City's two shop tanks totaling 1.5 MG were constructed around 1910. The City's first water right was acquired on Blattner Creek in 1909 and the necessary waterworks to divert this water to the City's waterworks was completed by 1915. The City has continued to expand and upgrade the water system annually thereafter.

Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?

No, this project does not involve any aspects of an irrigation system.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

No, this project does not involve any buildings listed on the National Register of Historic Places.

Are there any known archeological sites in the proposed project area?

No, there are no known archeological sites in the proposed project area.

Will the project have a disproportionately high and adverse effect on low income or minority populations?

No, the project will not have an adverse effect on low income or minority populations.

Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

No, the project will not limit access to and ceremonial use of Indian sacred sites, or result in other impacts on tribal lands.

Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No, the project will not contribute to the introduction, continued existence, or spread of noxious weeks or non-native invasive species.

Based on the City's assessment of environmental compliance required, including initial conversations with Reclamation staff members, we expect the project to meet criteria for Categorical Exclusion (CE) to NEPA.

The City understands the best source of information concerning the potentially significant issues in a project area are the regional Reclamation staff members who have experience in evaluating effects in context and by intensity. While preparing grant applications in 2015 and 2016, the City had several conversations with staff in the national office, who provided guidance about the process for meeting criteria for categorical exclusion.

Required Permits and Approvals

The City does not anticipate that any permits or approvals will be required for this project.

This is primarily due to the fact that all meters to be installed are replacing existing water meter equipment.

Also, any required data receiving stations will be installed on City-owned property and will not require advanced permits or specialty approvals.

ARNIE ROBLAN
STATE SENATOR
District 5

OREGON STATE SENATE
900 COURT ST. NE, S-417
SALEM, OR 97301

January 7, 2016

Ms. Janeen Koza, Bureau of Reclamation
Acquisition Operations Branch
Mail Code: 84-27852
P.O. Box 25007
Denver, CO 80225

RE: Letter of Support for Citywide Automatic Meter Interface Water Meter Upgrade Project

Dear Ms. Koza:

As the elected State Senator for District 5 and a member of the Oregon Legislative Coastal Caucus Coast, I am grateful for the opportunity to write this strong letter of support for the City of Newport's application to the U.S. Department of the Interior Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program. Funding to our regional project will allow the City of Newport, within Lincoln County, to advance our meter infrastructure system and optimize water operations to significantly enhance supply reliability and efficiency.

As you are likely aware, the State of Oregon experienced unprecedented drought in 2015. In Lincoln County alone, several water providers and users were unable to meet their current water demands. Otter Rock Water District, for example, approached the City of Newport to purchase raw water to help the district meet its current needs. Similarly, the City of Yachats' City Council declared a water shortage emergency within its service area and the Siletz River was too low to pump under Georgia Pacific's permit in the City of Toledo.

If climate predictions are correct, prolonged periods of drought and increasingly scarce water supply will become the new normal throughout Oregon, including Lincoln County. Water conservation efforts, like the City of Newport's metering project, will help build resiliency to drought in the area by leaving more water in the system for other uses. This conservation effort will prove especially valuable during critical times of year when municipal and ecological water demands are at their highest and water supplies are at their lowest.

This project aligns well with WaterSMART Water and Energy Efficiency Grant's goal to help communities in the Western United States develop a sustainable water supply.

Please do not hesitate to call me directly if I can be of any assistance at my legislative office (503) 986-1705 or by e-mail at sen.arnieroblan@state.or.us

Sincerely,

Arnie Roblan

Senator Arnie Roblan, Senate District 5

DAVID GOMBERG
STATE REPRESENTATIVE
DISTRICT 10

HOUSE OF REPRESENTATIVES

January 18, 2016

Ms. Janeen Koza
Bureau of Reclamation
Acquisition Operations Branch
Mail Code: 84-27852
P.O. Box 25007
Denver, CO 80225

RE: Letter of Support for City of Newport WaterSMART grant application

Dear Ms. Koza:

As the State Representative for Oregon's central coast, I wish to express my support for the City of Newport's application to the U.S. Department of the Interior Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant program. This money will support the City of Newport in optimizing water operations and conserving both water and energy in Lincoln County.

I am in strong support of this project because of the unprecedented drought the State of Oregon has experienced. Should the drought continue as predicted, conservation efforts, such as the City of Newport's meter project, will be necessary during critical times when water demands are at their highest and water supplies at their lowest.

Thank you for considering the City of Newport's funding request.

Warm regards,

Rep. David Gomberg

900 Court St NE Salem, OR 97301 | 541-921-2038 | rep.davidgomberg@state.or.us

PO Box 190 · 1037 NW Grebe Street · Seal Rock, Oregon 97376
Phone: 541.563.3529 · FAX 541.563.4246 · Email: info@srwd.org

Seal Rock Water District

Date: January 15, 2016

To: Ms. Janeen Koza
Bureau of Reclamation
Acquisition Operations Branch
Mail Code: 84-27852
P.O. Box 25007
Denver, CO 80225

From: Adam Denlinger
SRWD General Manager

Re: Letter of Support for Citywide Automatic Meter Interface Water Meter Upgrade Project

Dear Ms. Koza,

The purpose of this letter is to express Seal Rock Water District's (District) support for the City of Newport's (City) Advanced Meter Infrastructure project and the associated grant application that is being submitted to the Bureau of Reclamation under the WaterSMART Water and Energy Efficiency Grant Program. The District is located south of the City in Lincoln County, and it serves approximately 5000 coastal customers between the cities of Newport and Waldport, Oregon.

The City's proposed project is expected to result in 543 acre-feet of water savings annually. Water that is conserved by the project will be used to address several priority water needs in the area, including leaving water in the Siletz River and the Big Creek Reservoir to maintain adequate water levels for fish passage and to support tribal water use in the Siletz. This conservation effort will prove especially valuable during critical times of year when municipal and ecological water demands are at their highest and water supplies are at their lowest.

As part of this grant, the City will also execute an interagency agreement with the District to outline conditions of use and rates by which water can be purchased during times of shortage or when emergency water supplies are needed through a newly constructed emergency intertie and pump station. The purpose of this intertie is to provide emergency and on-demand water to both SRWD and the City. The District currently retains 1.74 MGD (2.7 cfs) of total authorized water rights from the Siletz River. Because these water rights are junior to other water rights on the Siletz, the District purchases all of its treated water from the City of Toledo, Oregon. The District's water needs are expected to grow over the next 40+ years, as a result of an anticipated population growth rate of 1.25%. As a result of the interagency agreement that will be executed through this grant, the District will have access to a secondary source of water when supplies are too low or unavailable to meet its current and future demands.

adenlinger@srwd.org

This project serves as an example for other communities in water conservation and regional collaboration, and the District is eager to support this effort. Please do not hesitate to contact me at adenlinger@srwd.org, if you have questions regarding my support for this project.

Sincerely,

A. Denlinger

Adam Denlinger
General Manager, Seal Rock Water District

cc: Tim Gross, Public Works Director, PE. City of Newport
Tia A. Cavender, MA, GPC President, Chase Park Grants
Joy King, Seal Rock Water District

ATTACHMENT B

OFFICIAL RESOLUTION

CERTIFICATION

STATE OF OREGON)
)
COUNTY OF LINCOLN) ss.
)
CITY OF NEWPORT)

I, Margaret M. Hawker, City Recorder, for the City of Newport, Lincoln County, Oregon, do hereby certify that the attached is a true and correct copy of Resolution No. 3737, a resolution requesting funding from the U.S. Department of the Interior Bureau of Reclamation for a WaterSMART Water Grant for the city's automatic water meter reading program.

Witness my hand this 5th day of January, 2016.

Margaret M. Hawker, City Recorder

RESOLUTION NO. 3737

CITY OF NEWPORT

A RESOLUTION REQUESTING FUNDING
FROM THE U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FOR A WATERSMART WATER GRANT
FOR THE CITY'S AUTOMATIC WATER METER READING PROGRAM

WHEREAS, The U.S. Department of Interior Bureau of Reclamation provides funding opportunities for water and energy efficiency projects as part of the Bureau of Reclamation's WaterSMART Water and Energy Efficiency Program; and

WHEREAS, the City of Newport deems it beneficial to apply to the U.S. Department of Interior Bureau of Reclamation for grant funding in an amount not to exceed $300,000 for funding to help defray the cost of replacing existing water meters with more accurate and efficient automated meter reading equipment; and

WHEREAS, in accordance with the rules and regulations of the U.S. Department of Interior Bureau of Reclamation WaterSMART Program, which governs the procedures of making such application, the governing body of the city is required to adopt a resolution to accompany such application.

THE CITY OF NEWPORT RESOLVES AS FOLLOWS:

Section 1. The U.S. Department of Interior Bureau of Reclamation under the WaterSMART Water and Energy Efficiency Program is hereby requested to grant funding in an amount not to exceed $300,000 to the City of Newport to help defray the cost of replacing existing water meters with more accurate and efficient automated meter reading equipment as described in the application for financial assistance.

Section 2. The City Manager of the City of Newport is hereby authorized to execute and submit to the U.S. Department of Interior Bureau of Reclamation WaterSMART Water and Energy Efficiency Program a grant application for such financial assistance.

Section 3. The City Manager is further specifically authorized to make the required assurances to the U.S. Department of Interior Bureau of Reclamation in accordance with the rules, regulations, and policies of the U.S. Department of Interior Bureau of Reclamation WaterSMART Water and Energy Efficiency Program.

Section 4. The additional funding in support of the project, in the amount of up to $150,000 (50% match) will be provided through sources of capital funding available to the city, such as water rates, state revolving loan funds and revenue bonds.

Section 5. If the application is selected for an award, the city will work with the U.S. Department of Interior Bureau of Reclamation to meet established deadlines for entering into a grant funding agreement.

Section 6. A certified copy of this resolution shall be attached to the grant application herein authorized to be prepared and submitted to the U.S. Department of Interior Bureau of Reclamation WaterSMART Water and Energy Efficiency Program.

Section 7. This resolution will become effective on adoption.

Adopted by a 7-0 vote of the Newport City Council on January 4, 2016.

Sandra N. Roumagoux, Mayor

ATTEST:

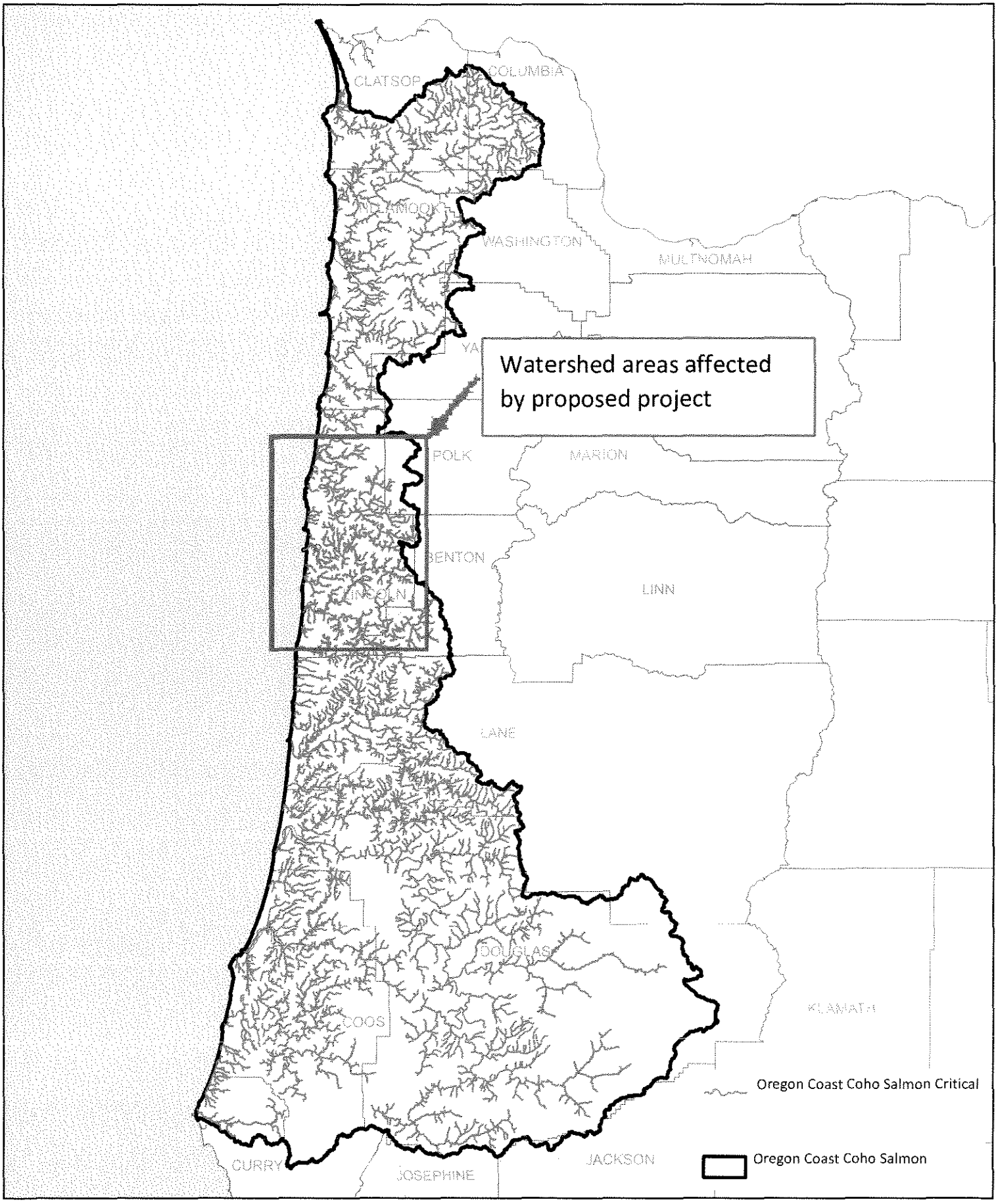
Margaret M. Hawker, City Recorder

ATTACHMENT C

MAP OF COHO SALMON CRITICAL HABITATS

NOAA FISHERIES

Critical Habitat
Oregon Coast Coho Salmon



0 50 Miles

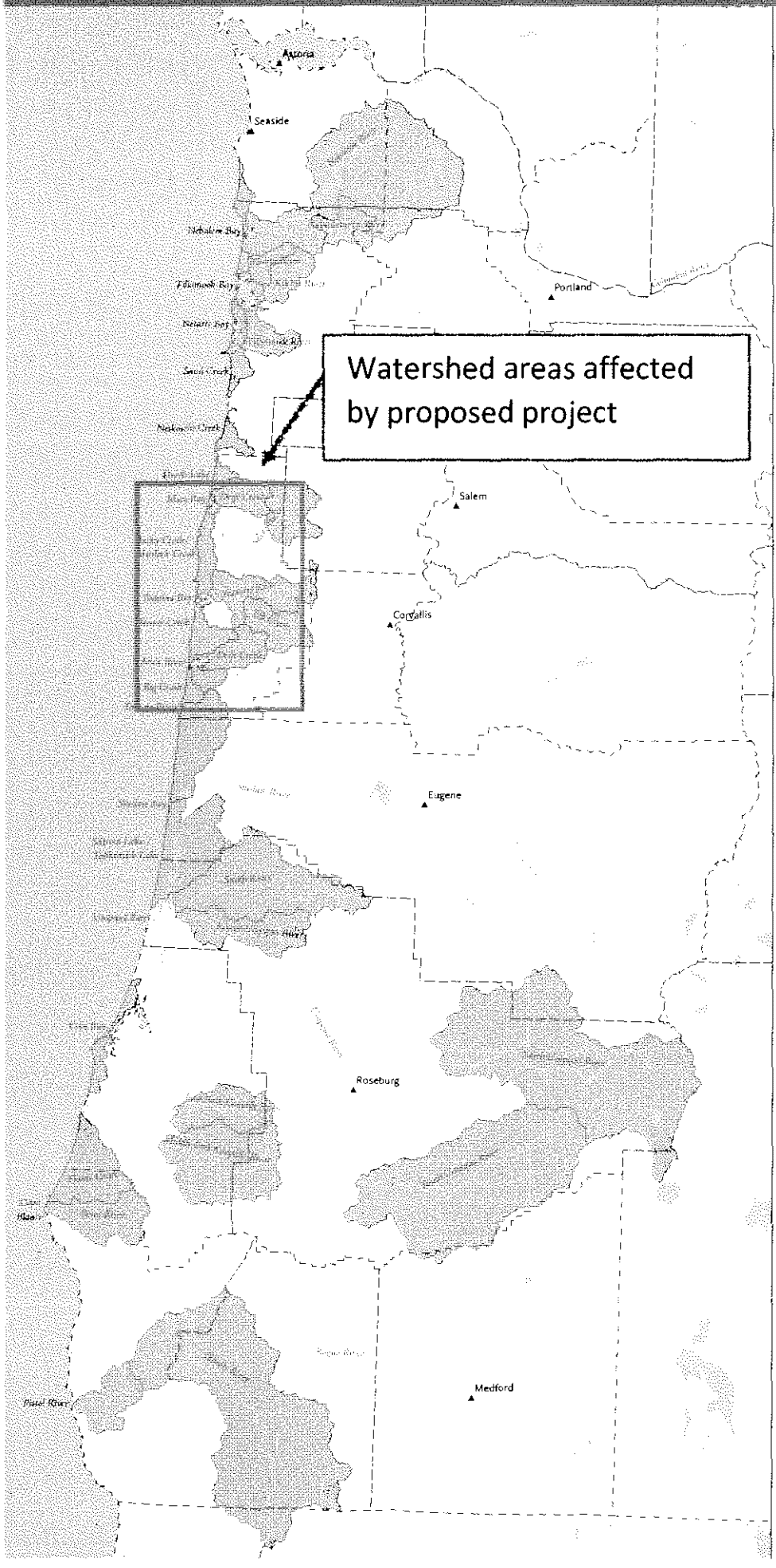
See Federal Register Notice for detailed description of critical habitat (73 FR 7816)

DOC-NOAA Fisheries-West Coast Region

ATTACHMENT D

MAP OF COASTAL WATERSHEDS MANAGED FOR WILD SALMON AND STEELHEAD

Coastal Oregon Watersheds Managed for Wild Salmon and Steelhead

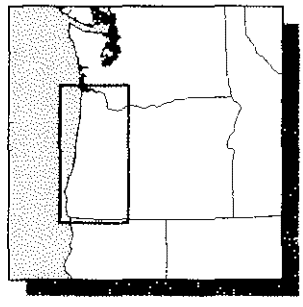


In June 2014, the Oregon Department of Fish and Wildlife approved the *Coastal Multi-Species Conservation and Management Plan*, which established roughly half the watersheds on the Oregon Coast as "wild fish emphasis areas." When combined with rivers to the south that are already managed for wild fish, Oregon has created the largest regional sanctuary for wild salmon and steelhead south of Canada.

While reducing the risks posed by hatcheries and harvest to wild fish is a major step, in order for these coastal populations to flourish we must also ensure that critical habitats are protected. Wild Salmon Center is now working with public and private partners to ensure the conservation of these key coastal habitats, while also maintaining the productivity of our working lands.

Watersheds Managed for Wild Salmon and Steelhead

County



06.19.14
Data Source:
Oregon Department of Fish and Wildlife

WILD SALMON CENTER

0 20
Miles

N