Lindon City Corporation

WATER CONSERVATION PLAN

Adopted by the Lindon City Council - December 5, 2019
Resolution No. 2019-29-R

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Prepared by Lindon City Public Works

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INTRODUCTION

Lindon City and its leaders have worked diligently, for many years, to ensure adequate water for current and future residents, businesses, and institutions, and will continue to do so. The City owns and operates both a culinary water system and a pressure irrigation system. The culinary water system provides for all domestic water demands requiring a high quality of water and has limited use for outside watering in commercial and industrial areas. It also provides for fire protection. The pressure irrigation system provides for all other outside watering demands using raw water surface sources heretofore used for flood irrigation within the City. The culinary system has evolved over many years since the incorporation of Lindon in 1924. Construction of the pressure irrigation system occurred in 1992-93 and service began in late June of 1993.

Purpose

The purpose of this plan is to assess the water conservation alternatives available to Lindon City, to set reasonable and achievable goals to conserve water, and to identify the methods and measures which Lindon City will take to reach these goals. This plan includes detailed alternatives available to reduce the amount of water used by Lindon residents, businesses, and Lindon City Corporation.

The plan addresses future water needs and the City's ability to meet these needs. Lindon City may choose the presented alternatives that best suit their interests, while attaining the predetermined goals. Once the conservation measures are implemented, the water system will be monitored to ensure that the methods are effective in promoting water conservation.

Plan Updates

Because we are in the second driest state in the nation, water conservation and the wise use of water has been a focal point on both a local and state level. The state legislature in 1998 passed the Utah Water Conservation Plan Act (House Bill 153), revised in the 1999 legislative session (Section 73-10-32 Utah Code Annotated) which was then revised again with the Water Conservation Plan Act of 2004 (House Bill 71, Section 73-10-32 Utah State Code Annotated). This water conservation plan addresses the concerns of leaders and citizens of both Lindon and the State of Utah and takes into consideration the revised Water Conservation Plan Act of 2004 and therefore will be readdressed again within five (5) years.

DESCRIPTION OF OUR CITY AND ITS WATER SYSTEMS

Lindon City is located in northern Utah County approximately 37 miles south of Salt Lake City. The city extends east to the Wasatch Mountains and west to Utah Lake. Lindon City is bounded on the north by Pleasant Grove City and on the South by Orem City and is 1 to 1-1/2 miles wide. The incorporated area of the city is 5,460 acres or approximately 8.5 square miles. In the past nearly 20 years Lindon has grown from a census population of 8,363 in 2000, to 10,070 in 2010, to an estimated current population of approximately 11,452 (2018). Meeting the future needs of a growing population remains an important concern of city leaders and staff.

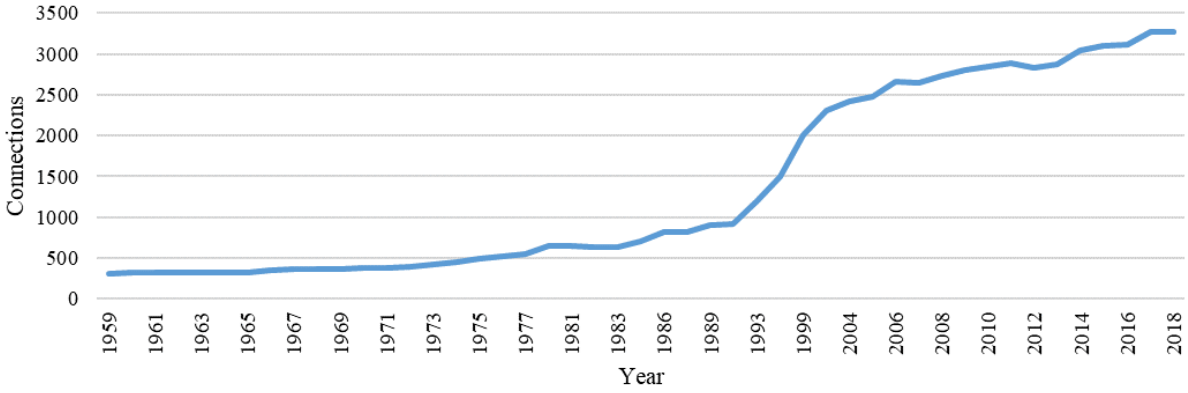
Water System Connections

Providing water to meet the needs of its citizens has always been a top priority of city leaders and planners. As a result, well maintained and operated culinary and pressure irrigation water systems provide the citizens of our City with water where and when needed. Growth in number of connections since 2014 is shown in Table 1 and since 1959 is shown in Figure 1.

Table 1

Potable Water System Connections					
Year	**Residential**	**Commercial**	**Industrial**	**Institutional**	**Total**
2014	2,714	184	112	29	3,039
2015	2,774	185	123	23	3,105
2016	2,792	179	123	23	3,117
2017	2,866	197	175	28	3,266
2018	2,866	205	178	25	3,274

Figure 1
Potable Water System Connections



Open Space Preservation

Open space and preservation of a "Little Bit Of Country" is of high value to our leaders and citizens. Consequently, open space preservation has been a high priority. There are numerous existing and planned parks and other open space, as well as the City cemetery. There are also multiple public and charter schools, including a junior high school with their accompanying athletic fields, playgrounds, and other landscaped areas. Alpine School District operates and maintains the public schools in our city and associated fields and open space.

Water Sources

Lindon City's potable water sources are Dry Canyon springs, east of the city and four deep wells located between State Street and 400 East and Center Street and 700 North. Lindon City installed a pressure irrigation system to accommodate the growing need for outside watering and to preserve the use of surface waters historically used to flood irrigate land that is being developed. The water supply for the pressure irrigation system comes primarily from the Provo River delivered through the Provo Bench Canal Company/North Union Irrigation Company canal and through the Alpine Aqueduct. This water is available because of the shares owned by Lindon City in the various irrigation/canal companies and in the Deer Creek project. The City also has 924 acre-feet of Contract Water from the Jordanelle Project of the Central Utah Project. This lesser quality surface water, that does not require treatment, conserves the higher quality water for the culinary water system.

Water Rights

Lindon City supplied 1,392 acre-feet of water to their culinary water system in calendar year 2015; 1,824 acre-feet in 2016; 1,832 acre-feet in 2017; and 1,763 acre-feet in 2018. Wells will supply potable water for future growth. We presently have developed well capacity that will supply up to 6,215 acre-feet, 3.15 times the maximum yearly volume of potable water supplied between 2003 and 2018 (1973.21 acre-feet; see Table 4). Table 2 shows the City-Owned Culinary Water Rights.

Table 2

City-Owned Water Rights				
Source Name/No.	**Water Right #**	**CFS**	**Total CFS**	**Present Yield, AF**
DRY CANYON SPRINGS	55-6908	1.34	1.34	592.45
WELL NO. 1	55-416	1.1	1.1	806.559
WELL NO. 2	55-742	0.71	0.71	493.614
WELL NO. 3	55-4478	4.61	4.61	1,419.54
WELL NO. 4	55-4107	6.68	6.68	2,903.61
WELL	55-2298	2.23	2.23	0
WELL	55-2527	0.75	0.75	0
ALL WELLS	55-1670	0.67	0.67	135.97
ALL WELLS	55-1039	0.16	0.16	30.8
ALL WELLS	55-1040	0.52	0.52	77.72
ALL WELLS	55-9400			14
ALL WELLS	55-7873 & 2520			90.38
ALL WELLS	55-12048			5.6
ALL WELLS	55-12066			12.92
ALL WELLS	55-3206			50.4
ALL WELLS	55-8998			30
ALL WELLS	55-286			92.092
ALL WELLS	55-3533			9.57
ALL WELLS	55-3534			2.57
ALL WELLS	55-12164			21.11
ALL WELLS	55-12052			1
TOTAL				**6,789.91**

Under current water rights, the City is entitled to withdraw more than 13,165 acre-feet annually from the wells shown in Table 2. We have rights that would yield about twice the present developed capacity. We anticipate that the amount of water needed for future growth will be well within the safe yield for the aquifer supplying the wells. The City no longer seeks nor accepts underground rights (with rare exceptions).

Irrigation Shares

We require that new development turn in water shares from the various irrigation companies that have historically supplied water to land in Lindon. Diversion of this water historically is from streams, springs, shallow wells (artesian) and subsurface drains.

The City owns shares of stock in several local irrigation/canal companies and/or raw water providers. Water provided under these shares is, and will continue to be, used for irrigation of lawns, gardens, school athletic fields, playgrounds and other landscaped areas, church landscaped and recreation areas, city-owned parks, and other open spaces. Table 3 shows the City-owned shares listed by company.

Table 3

City-Owned Stock in Local Irrigation Companies		
Irrigation Company	**Shares**	**Acre-Feet**
North Union Irrigation Company	633.93	5,735.83
Provo Bench Canal	92.18	1,559.06
Provo Reservoir Water Users		
Orem District	29.23	195.93
Alpine District	69.99	469.11
Central Utah Project	925.00	925.00
Provo River Water Users	200.00	200.00
Hollow Water Users		
Whole Stream	301.48	865.25
Half Stream	31.11	89.29
Cobbley Ditch Company	212.30	390.63
Spring Ditch & South Field Irrigation Company	32.05	

WATER USAGE

Culinary Water System

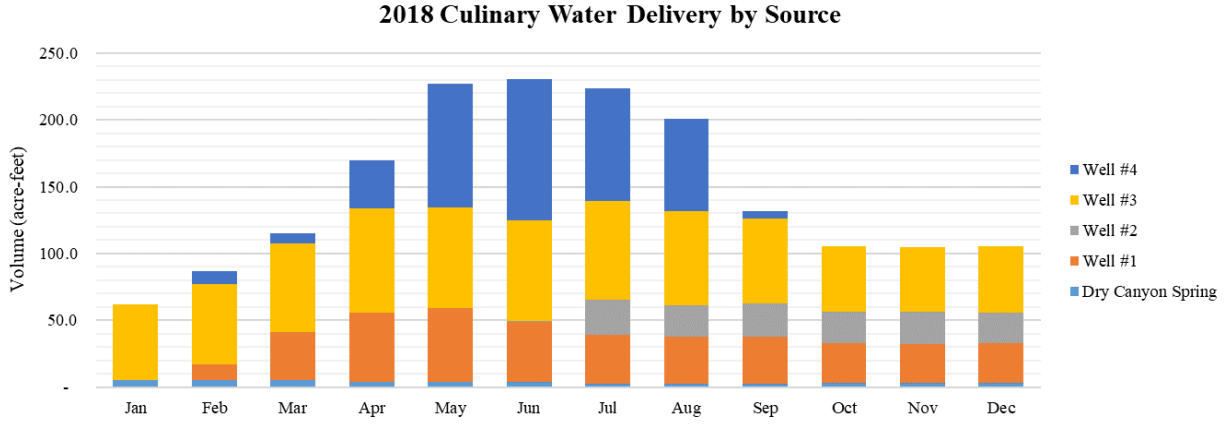
Table 4 shows the "water budget", or in other words, the amount of water delivered into the culinary water system and the metered outflows to end-users for the years 2003 to 2018. The numbers shown for years between 2003 and 2009 are for the fiscal year, while the 2010 through 2018 numbers are for the calendar year.

Table 4

	Culinary Water Budget									
		INFLOW (acre-feet)			METERED SALES (acre-feet)					
	Year	Wells	Springs	Total	Residential	Commercial	Industrial	Institutional	Total	% Diff.
Fiscal	2003	1,310.5	75.2	1,385.7	672.4	187.2	189.7	17.1	1,066.3	23.1%
	2004	1,570.5	68.3	1,638.8	633.6	184.5	170.8	16.1	1,005.0	38.7%
	2005	1,271.4	122.8	1,394.2	682.0	199.2	192.7	17.3	1,091.1	21.7%
	2006	1,351.7	351.3	1,703.1	697.6	296.2	166.6	18.4	1,178.8	30.8%
	2007	1,510.2	274.7	1,784.9	861.3	296.1	201.3	22.7	1,381.4	22.6%
	2008	1,702.6	133.9	1,836.4	839.9	242.1	177.8	17.7	1,277.5	30.4%
	2009	1,834.6	115.8	1,950.4	821.7	394.0	152.6	25.7	1,394.1	33.9%
Calendar	2010	1,479.2	138.9	1,618.1	728.5	266.3	126.0	18.9	1,139.7	42.0%
	2011	1,686.5	286.7	1,973.2	756.3	376.6	128.0	18.1	1,278.9	54.3%
	2012	1,636.9	200.9	1,837.7	825.6	261.1	152.4	14.0	1,253.2	46.6%
	2013	1,665.1	112.6	1,777.7	852.4	253.0	149.1	17.6	1,272.2	39.7%
	2014	1,529.8	71.0	1,600.8	744.7	173.2	112.0	17.1	1,047.0	52.9%
	2015	1,338.5	54.0	1,392.5	745.2	180.9	125.7	12.9	1,064.7	30.8%
	2016	1,780.5	43.8	1,824.3	750.0	180.9	133.5	14.6	1,078.9	69.1%
	2017	1,778.4	53.1	1,831.5	972.9	320.4	245.8	11.8	1,550.9	18.1%
	2018	1,717.2	45.7	1,762.9	764.2	308.5	284.7	11.5	1,369.0	28.8%

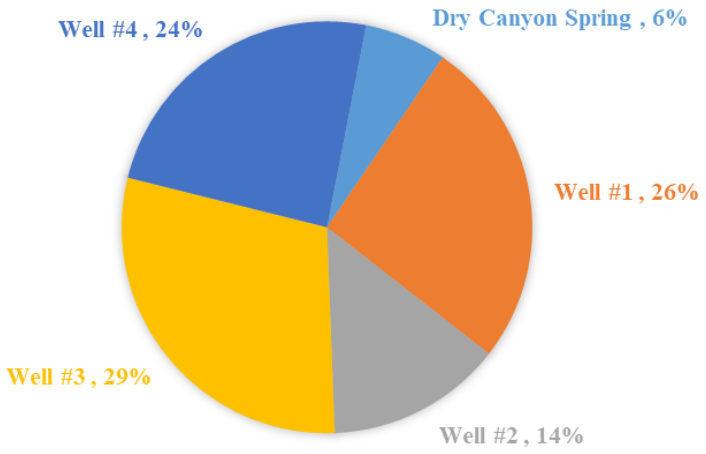
The total monthly water deliveries for the culinary system for 2018 from all sources is shown in Figure 2. As can be seen, the city uses different sources to meet its culinary needs throughout the year and that Well #4 is principally used to meet peak summer demands. As can also be seen, each well is critical in order to meet the city's needs and if one of the larger producing wells were to "go down" and not be able to be used, the city would not be able to meet summer demands. City staff therefore recommends that additional wells be put into production as soon as possible and has initiated a well siting study for this purpose. (It should be noted that Well #2 was not used prior to July since it was being re-equipped with a new pump.)

Figure 2



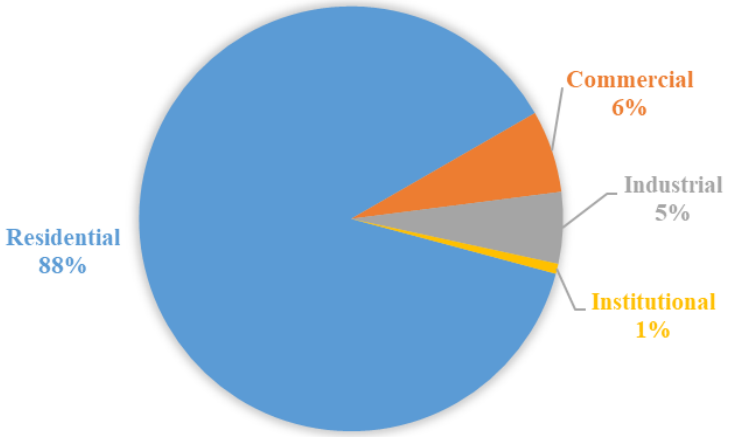
On average, the City's culinary system receives approximately 6% of its annual water from Dry Canyon Spring and 94% of its annual water from wells. This is shown graphically in Figure 3.

Figure 3
Average Annual Water Source Distribution



A breakdown of the City's water usage by type of use for 2018 is shown graphically in Figure 4.

Figure 4
2018 Water System Connections by Type



Secondary Water System

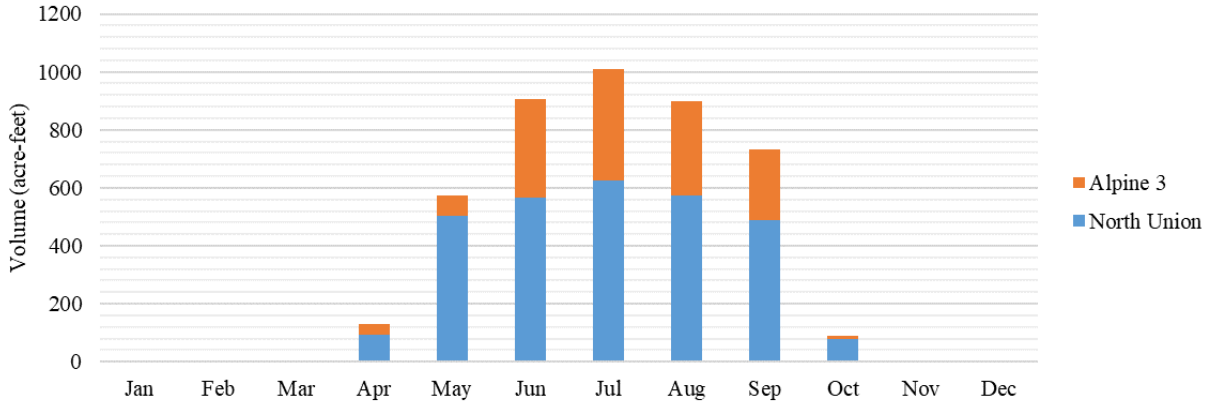
The pressure irrigation water supply is metered from each of the water sources delivering water to the system. The services have no meters and so no comparison for a water budget can be made. Table 5 shows the amount of water delivered to the pressure irrigation system for the years 1999 through 2018.

Table 5

Pressure Irrigation Source						
Year	From North Union Canal		Salt Lake Aqueduct (acre-ft)	Alpine 3 (acre-ft)	North Union Pump Station (acre-ft)	Total (acre-ft)
	Gravity (acre-ft)	Pumped (acre-ft)				
1999						2,913.46
2000	672.33	1,173.80	114.00		1,219.00	3,179.13
2001	842.14	1,275.00	201.00		1,529.00	3,847.14
2002	728.21	1,874.00		919.00		3,521.21
2003	807.72	1,932.00		1,093.00		3,832.72
2004	759.67	1,933.00		1,153.00		3,845.67
2005	751.17	1,344.00		1,262.00		3,357.17
2006	640.05	1,364.91		1,509.00		3,513.96
2007	1,008.91	1,691.72		1,787.00		4,487.62
2008	1,008.91	1,329.84		1,707.00		4,045.74
2009	908.02	1,187.01		1,526.00		3,621.03
2010	1,008.91	1,179.60		1,574.00		3,762.51
2011	1,008.91	1,099.16		1,396.00		3,504.06
2012	1,008.91	1,289.87		2,079.00		4,377.78
2013	1,008.91	899.70		1,862.00		3,770.61
2014	1,008.91	781.39		2,031.00		3,821.30
2015	1,008.91	1,050.71		1,671.00		3,730.62
2016	1,008.91	1,010.89		1,906.00		3,925.79
2017	1,008.91	1,010.89		1,324.00		3,343.79
2018	1,011.14	1,915.28		1,418.00		4,344.42

The total monthly water use in the pressure irrigation system is shown in Figure 5. The system is "charged" around April 15 and drained between October 15 and October 30 each year.

Figure 5
2018 Secondary Water Delivery by Source



Per Capita Usage

Per capita usage (typically measured in gallons per capita per day, GPCD) is a method utilized internationally to measure water use by drinking water suppliers. Per capita usage gives us an average per person usage for all uses per day. This, of course, does not mean that every person uses that much water. Instead, it is a per capita average of all water withdrawn from the City's water system for domestic, commercial, industrial, and outside watering uses, as well as water lost in collection and distribution systems, public use (water for fire-fighting, street washing, municipal parks, and swimming pools). It is used to determine conservation potential and track the results of conservation program implementation, as well as to provide a measuring stick between different water suppliers.

Per capita water use is calculated by dividing the total annual volume of water supplied through the City's public water system by the estimated population served by the water system, and then dividing this figure by 365 to determine a daily average per person, i.e.,

Total usage (gallons/year) / (365 days / year) / population = gallons / capita / day (GPCD)

All uses (residential, commercial, industrial, and institutional) of Lindon's culinary grade water (approximately 1,763 ac-ft/year) divided by the number of people living in Lindon in 2018 (approximately 11,452 people) makes the average daily use approximately 137 gallons of water per capita per day (gpcd).

All uses of irrigation grade water in 2018 (approximately 4,344 ac-ft) divided by the number of people living in Lindon in 2018 makes the average daily use approximately 690 gallons of water per capita per day (gpcd) during the 2018 irrigation season of 179 days, which equates to an annual average irrigation use of 338 gpcd.

Adding the culinary and irrigation uses together gives a total average daily water use of 475 gallons of water per capita per day (gpcd) for our City.

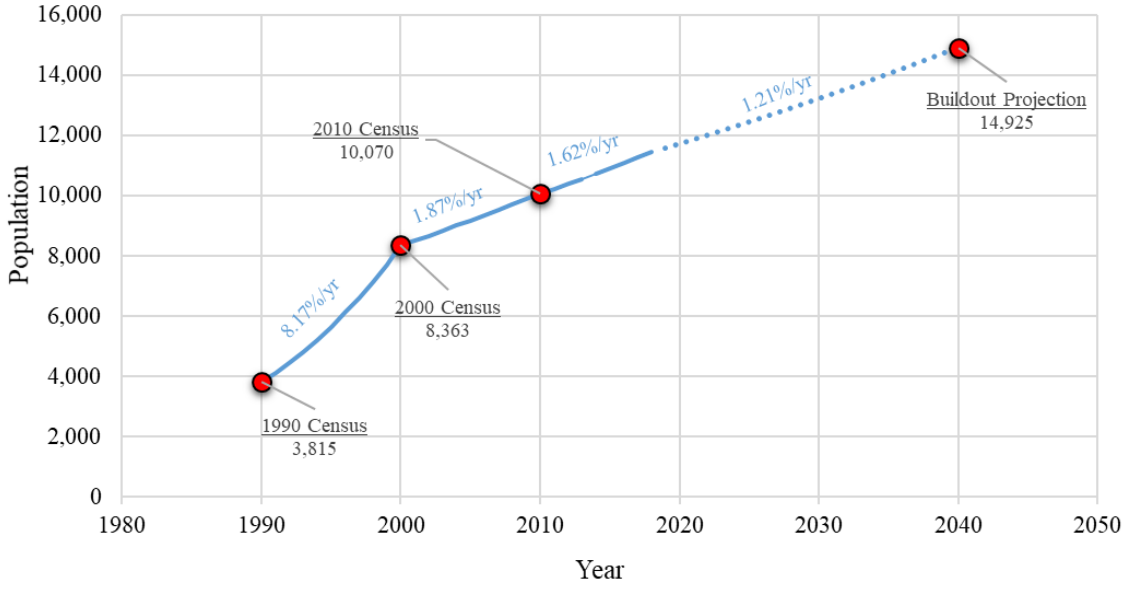
Based on information provided by the Utah Division of Water Resources for 2010, the statewide average is 240 gpcd and 184 gpcd nationally. The statewide and national numbers, however, do not consider all uses and so a direct comparison cannot be made. Our per capita water use is likely higher than the state's average because of the large amount of green space discussed earlier and the larger size of residential lots (the typical lot is 20,000 to 24,000 square feet.) It also appears that users are overwatering from the secondary system and need additional education of water users is needed.

Population Projections

During the 1990s Lindon's population grew rapidly and the City had an annual growth rate of about 8 percent. That rate slowed during the years of 2000 to 2010, however, to about 2 percent. Projecting the number of future water connections with any degree of accuracy can be a very subjective process, especially with the fluctuating growth trends that the City has seen in recent years. With this in mind, this plan uses several resources including Census figures, water connection data from the City's utility billings, growth predictions from the City's Community Development Department, and parcel data to evaluate the growth trends and to provide a projection of how growth will occur in the future.

Based on this data, it is anticipated that the City will reach build-out within approximately 20 years (i.e., approximate year 2040). Because it is anticipated that the City will reach build-out at, or before, 2040, this plan does not project the needed water supply to year 2050 as typically directed by the State, but instead only projects to build-out (i.e. year 2040). It is estimated that the build-out population of the City is approximately 14,925. Figure 6 shows the population history and projections.

Figure 6
Lindon City Population, Acutal and Projected
1990-2040



WATER PROBLEMS, CONSERVATION MEASURES AND GOALS

Problems Identified

City Staff, in conjunction with their historical City Engineering Consultant, identified and prioritized several problems during the investigative phase of preparing the Water Conservation Plan.

- Water not metered, accounted for, and/or billed, such as main line leaks, theft, or inaccurate meters.

- Contractor authorized use or unauthorized use of water for construction purposes. Authorized use is metered by a hydrant meter provided by the City, reported and billed separately. However, the usage is not included in the metered water sales. Unauthorized use is contractors obtaining water from hydrants without having notified the city, we the city continues to be vigilant in trying to enforce.

- Citizens lack understanding and fail to implement landscape water requirements and efficient water-use habits and practices. Many residences do not know how much water is required to maintain healthy landscaped areas and how to consistently use water efficiently indoors. Many citizens' irrigation and indoor practices are based on convenience rather than plant needs and water supply considerations.

- Lindon residents have home landscapes with large areas of grass and other water intensive landscaping. Over watering of lawns, shrubs, and landscaped areas from the pressure irrigation system occurs due to water being un-metered to the user, combined with poor watering practices.

Each of these problems represents an opportunity. Opportunities exist to solve the above problems through a combination of education, reduction in high water-use landscaping, and better accounting of water delivered from the culinary and pressure irrigation systems.

Opportunities also exist to educate and prepare a new generation of wise-water users. This can be assisted with a strong sustained water education program in the public and private schools.

Additional opportunities can also be found in two of the remaining problems. First, the City can implement increased enforcement, with appropriate fines, for unauthorized use of water by contractors and others. Second, the City can help promote guidelines for water-thrifty plants, shrubs, and landscaping concepts. In addition, planter areas along existing and future roads could be more easily maintained if low water-use shrubs, mulches, and decorative rock were used instead of traditional Kentucky Blue Grass mixes.

Water Conservation Goals

In pursuit of solutions to the problems identified previously, and in light of the variety of conservation measures available to solve these problems, the following goals have been identified:

- **Continue to install water meters on all city-owned facilities that use culinary water.**
  Installing water meters at the city-owned facilities and parks is allows for more accurate accounting of the water used and a more correct water budget comparison to evaluate per capita use compared with State and National per capita use. Payment of revenues to the Water Fund from other funds receiving benefit of service from the water systems also gives a more accurate basis on which to determine future water rates. Since this goal was set in a previous iteration of this plan, meters have been installed at all existing city-owned facilities except the Geneva Road landscaping from 200 South to Center Street and this is presently underway. All new parks will have meters installed.

- **Bill for water supplied from the pressure irrigation system to users of the system, including residential, commercial, industrial, institutional, and public users (i.e. city parks and other public properties).**
  The operation and maintenance cost for parks, and public properties are paid for from general funds, and that fund should pay the water fund for services rendered. All new residential development is required to extend and connect to the pressure irrigation system, where available. Utah State Senate Bill 52, recently passed by the legislature, requires that all new secondary water connections designed after April 1, 2020, will install meters. Lindon City will comply with this requirement, and has already begun to install pressure irrigation meters within the Anderson Farms / Ivory Homes development. All individual services within this development will be metered. Complying with SB 52 requirements will help the city to reach this goal.

- **Continue to maintain financially-viable water systems.**
  Continue using a water pricing / tiered-rate system that encourages customers to reduce use without creating a revenue shortfall. A financially viable water system will ensure that the utility can provide service at a reasonable price to all of the users. The rate structure will encourage conservation and require the abusers of the system to pay a higher rate. All users, both public and private, will pay for water used.

- **Continue education of water conservation practices.**
  Continue the ongoing education program with emphasis on elementary grades 4 and 5 and continue to provide information on an annual basis regarding efficient use of water to all users of both systems. Continuing the education program, particularly in elementary grades 4 and 5, will develop a generation of water conservation minded customers. This age group also has an impact on their parents as they learn and then observe the water use habits at their home. Water conservation is a part of a comprehensive approach to water resource management.

CURRENT CONSERVATION PRACTICES

In order to solve the problems identified above and take advantage of the many associated opportunities, specific water conservation measures must be identified and evaluated. Lindon has already implemented several water conservation measures; these, along with additional measures that will effectively help us manage Lindon's water systems, are discussed below.

Having both culinary and pressure irrigation systems provides flexibility in dealing with water conservation. Lindon's current water conservation program is primarily directed at managing water shortages in the culinary system, such as during emergency events (such as losing a well) as well as providing useful material to educate residents to use water more efficiently indoors. To help with this education city representatives work with local elementary schools to help teach students fundamentals of water conservation. We also continue to monitor our water rate structure with the goal of maintaining financially viable water systems while promoting conservation.

Our rates are regularly adjusted to continue sustainable operation of the city's water systems. Water conservation for the pressure irrigation system is directed at education and information sharing regarding the water available for a given water year. Through recent drought years, we have not had to eliminate outside watering.

Current measures include a water conservation contingency plan, water education program for outdoor and indoor water use, and implementation of a conservation-oriented water rate structure.

Water Conservation Contingency Plan

The city has a "Water Conservation Contingency Plan" that spells out climate and political realities related to water use during drought or other water supply shortages. Also addressed are the conservation measures that may be implemented during times of emergency. They are as follows:

Level 1 – Normal Supply

- Eliminate outside watering on all property from 10 a.m. to 6 p.m.
- Promote voluntary public conservation measures.
- Issue information to all customers on conservation procedures each can accomplish around their own property and within their own homes.

Level 2 – 75% of Normal Supply

- Educate the public on the water supply decreases.
- Initiate mandatory public conservation measures.
- Enforce outside watering restrictions including watering times and quantities.

Level 3 – 50% of Normal Supply

- Strictly enforce all conservation policies with significant fines for non-compliance.
- Physically restrict water supplies to (in order of priority):

- All outside irrigation systems
- Park properties and other non-essential support facilities
- Commercial businesses, restricting largest users first
- Residential areas
- Any other "non-life support" areas, insuring water supplies to hospitals, hospices, and all other health care facilities, and controlled designated area water facilities.

Additional non-emergency water conservation measures are listed below.

Water Education Program

The following information on efficient outdoor and indoor water use is available to the citizens of Lindon through the City Center, Public Works, Elementary School Programs, Lindon Fair and is occasionally distributed with the water bill.

Outdoor Water Use:

- Use pressure irrigation system for landscaping, if available. Most residential and some commercial areas have the pressure irrigation system in Lindon.
- Water landscape only as much as required by the type of landscape, and the specific weather patterns of your area, including cutting back on watering times in the spring and fall.
- Do not water on windy days and/or rainy days.
- Do not water during the hours of 10:00 AM and 6:00 PM.
- Sweep sidewalks and driveways instead of using the hose to clean them.
- Wash your car from a bucket of soapy (biodegradable) water and rinse while parked on or near the grass or landscape so that all the water running off goes to beneficial use instead of running down the gutter to waste.
- Check for and repair leaks in all pipes, valves etc. for secondary, faucets, hoses etc. on culinary. Verify there are no leaks by turning everything off and checking your water meter to see if it is still running. Some underground leaks may not be visible due to draining off into storm drains, ditches, or traveling outside your property. Periodic checks by city on their secondary boxes for leaks.
- Adjust and repair sprinkler heads to maintain proper spray patterns and eliminate waste.
- Periodically check and adjust timers on sprinkling systems.
- Use mulch around trees and shrubs, as well as in your garden to retain as much moisture as possible. Areas with drip systems will use much less water, particularly during hot, dry and windy conditions.

- ♦ Cut your lawn at the highest setting on your mower and all other landscaped areas free of weeds to reduce overall water needs of your yard. Discourage water fountains. Encourage low water landscaping at interchanges, planting strips, etc in the city.

Indoor Water Use:

About two-thirds of the total water used in a household is used in the bathroom. Concentrate on reducing your bathroom use. Following are suggestions for this specific area:

- Do not use your toilet as a wastebasket. Put all tissues, wrappers, diapers, cigarette butts, etc. in the trashcan.

- Check the toilet for leaks. Is the water level too high? Put a few drops of food coloring in the tank. If the bowl water becomes colored without flushing, there is a leak.

- If you do not have a low volume flush toilet, put a plastic bottle full of sand and water to reduce the amount of water used per flush. However, be careful not to over conserve to the point of having to flush twice to make the toilet work. Also, be sure the containers used do not interfere with the flushing mechanism.

- Take short showers with the water turned up only as much as necessary. Turn the shower off while soaping up or shampooing. Install low flow showerheads and/or other flow restriction devices.

- Do not let the water run while shaving or brushing your teeth. Fill the sink or a glass instead.

- When doing laundry, make sure you always wash a full load or adjust the water level appropriately if your machine will do that. Most machines use 40 gallons or more for each load, whether it is two socks or a week's worth of clothes.

- Repair any leak within the household. Even a minor slow drip can waste up to 15 to 20 gallons of water a day.

- Know where your main shutoff valve is and make sure that it works. Shutting the water off yourself when a pipe breaks or a leak occurs will not only save water, but also eliminate or minimize damage to your personal property.

- Keep a jar of water in the refrigerator for a cold drink instead of running water from the tap until it gets cold. You are putting several glasses of water down the drain for one cold drink.

- Plug the sink when rinsing vegetables, dishes, or anything else; use only a sink full of water instead of continually running water down the drain.

Water Rates

Designing an appropriate rate structure is a complex task. Rate design is a process of matching the costs of operating the water system to the unique economic, political, and social environments in which the city provides its service. The cost of delivering the service must be evaluated and understood. Each water system has unique assets and constraints. Based on the characteristics of the system, and past capital and operating costs, revenue requirements can be estimated.

The City routinely studies and evaluates water rates for both culinary and secondary water. As part of our evaluations we consider several factors including the following: revenue and rate stability, equity and fairness, affordability, water conservation, and simplicity. Based on our analysis it was determined that a tiered rate structure would help to promote water conservation, help reduce peak water usage, and help keep the water system sustainable.

The City's current rate structures for culinary and secondary (pressure irrigation) water, as adopted in the City's annual budget for 2019-2020, are included in the Appendix.

NOTE: The reason for the different rates for different zones is pumping costs to boost the water up to higher developed areas of the city. The City regularly performs a water systems rate analysis. Based the results of the analysis the City Council may make changes. Also, in an effort to increase the accuracy of water billing, the water meters are read every month.

POSSIBLE ADDITIONAL CONSERVATION MEASURES

In order to effectively meet our city's future water needs and solve all the water problems identified, additional and more specific water conservation measures may be required. These include water rates that are more stringent; meter replacement, improved efficiency of irrigation at city parks and other open spaces, education, and plumbing fixture replacement.

More Stringent Water Rate Structure

The current culinary water rates may need to be increased to help promote additional conservation. As part of the investigation, a different rate schedule could be designed to provide additional price incentives for efficient water use to show the customer how much water is needed each month and provide funding for water conservation assistance and education. This type of rate schedule is called "Target Billing". The targeted rate schedule would be designed to meet revenue requirements while creating funding for the water conservation program from fees paid by those who waste water. Water users, who use water indiscriminately and fall into the most expensive tier, would experience a substantial charge for the last block of water.

Meter Replacement, Leak Detection Program, and Water Service Replacement

Over time, all meters become less accurate in recording actual flows. This leads to lost revenue to the city and inaccurate data to citizens. (When sewer revenues, which are calculated based on metered usage, are accounted for, total revenue lost dependent on metered deliveries is greater.) The City should also consider performing leak-detection testing for all water lines prior to new overlays of asphalt; performing annual leakage surveys to identify unsurfacing leaks on main pipelines and services, especially in older areas of the water system; and replacing galvanized steel water service lines with copper and polyethylene pipe.

Plumbing Fixture Replacement

Incentives to exchange old high water-use toilets and shower heads for new ones that are more efficient can be provided through city cost sharing using revenues generated by penalty tiers in the rate schedule. While it is difficult to calculate meaningful estimates of the benefits and costs of such programs on the water-use rate, there is ample evidence in the literature that such programs are effective. The Division of Water Resources estimated in 1995 that such programs could reduce residential indoor water use by 33 percent. Many of the city's homes and businesses have been built since 1992 when plumbing codes were revised to require low water-use toilets and low flow showerheads in new construction.

IMPLEMENTING AND UPDATING THE WATER CONSERVATION PLAN

The responsibility of assuring the conservation goals are met and that the conservation methods are being executed will be governed by the city council and coordinated through the Public Works Director, who is the city's designated Water Conservation Officer. Regular meetings will be held to review the plans and goals to verify each goal is being met and to make any changes that are necessary to the water conservation plan.

This water conservation plan was placed on the December 3, 2019, Lindon City Council agenda and adopted by the city council on that date. The city council is comprised of the following:

Mayor
Jeff Acerson

City Council
Van Broderick
Jacob Hoyt
Carolyn Lundberg
Randi Powell
Mike Vanchiere

The water conservation plan will be revised and updated as required to meet changing conditions and needs. This plan will be updated and resubmitted to the Utah Division of Water Resources in December 2024, as required. The original implementing ordinance from 2005 as well as the current 2019 resolution for the water conservation plan for Lindon City are attached in the Appendix.

APPENDIX

Water Conservation Plan Ordinance

ORDINANCE NO. 2005- 1

AN ORDINANCE OF THE CITY COUNCIL OF LINDON CITY, UTAH COUNTY, UTAH, ADDING A WATER CONSERVATION PLAN ORDINANCE BY ADOPTING SECTION 13.32 "WATER CONSERVATION PLAN" INTO THE LINDON CITY CODE; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the adoption of a water conservation plan has been mandated by the State of Utah; and

WHEREAS, Lindon City operates a culinary water system and a pressurized irrigation system; and

WHEREAS, the Lindon City Council understands the pressing need to use water in a more efficient manner to allow for future sustained growth of the community; and

WHEREAS, city staff have caused a water conservation plan to be created; and

WHEREAS, the next and final step in putting a water conservation plan into place for Lindon City is the adoption of a water conservation plan ordinance; and

WHEREAS, the Municipal Council of Lindon City desires to adopt a water conservation plan ordinance for the health, safety and welfare of the citizens of Lindon City and place the ordinance into the Lindon City Code; and

WHEREAS, the ordinance being adopted will achieve this stated purpose;

NOW, THEREFORE, BE IT ORDAINED by the City Council of Lindon City, Utah County, State of Utah, as follows:

SECTION I: Section 13.32 of the Lindon City Code is hereby added and will read as follows:

13.30.010 Short Title and Purpose.

1. This ordinance shall be known as the "Water Conservation Plan Ordinance."
2. The purpose of this ordinance is to create a plan for water conservation in Lindon City by the establishment of water conservation measures and goals.

13.30.020 Establishment of Conservation Measures and Goals. There is hereby established a set of conservation measures and goals for Lindon City as detailed in the Water Conservation Plan.

13.30.030 The Water Conservation Plan of Lindon City is hereby adopted on January 4, 2005. The plan will be amended no less than every five years and will continue to play a vital role in the future development of Lindon City, Utah.

SECTION II: The provisions of this ordinance and the provisions adopted or incorporated by reference are severable.

SECTION III: Provisions of other ordinances in conflict with this ordinance and the provisions adopted or incorporated by reference are hereby repealed or amended as provided herein.

SECTION IV: This ordinance shall take effect upon the date of posting.

PASSED AND ADOPTED by the Lindon City Council on this 4th day of JANUARY, 2005.

Larry A. Ellertson, Mayor

ATTEST:

Ott H. Dameron, City Administrator/Recorder

LINDON CITY Seal UTAH COUNTY UTAH

Selected Sections from the Lindon City Code

13.04.030 Water scarcity.

In time of scarcity of water, whenever it shall in the judgment of the mayor or the city council be necessary, the mayor or the city council shall by proclamation limit the use of water for other than domestic purposes to such extent as may be necessary for the public good. It is unlawful for any person, or his family, servants, or agents, to violate any proclamation made pursuant to this section. (Ord. 121 §51, amended, 1985)

13.04.060 Waste of water.

It is unlawful for any water user to waste water, or to allow it to be wasted, by imperfect stops, taps, valves, leaky joints or pipes, or to allow tanks or water troughs to leak or overflow or to wastefully run water from hydrants, faucets, or stops or through basins, water closets, urinals, sinks, or other apparatus or to use water in violation of the rules, regulations, or ordinances controlling the city water system. (Ord. 121 §25,1985, amended, 1985)

13.12.110 Water meters.

All structures, dwellings, units, and establishments using water from the city water system must have such number, size and type of water meters connected to their water system as are necessary in the judgment of the public works department to adequately measure the water used by the respective water users. Meters will be paid for at the expense of the property holder, at rates established from time to time by resolution of the city council. Meter readings shall be taken at regular intervals as determined by the public works department and shall be submitted to the city for the purpose of making necessary billings for water and sewer service. (Ord. 2018-18 §1 (Exh. A), amended, 2019; Ord. 121 §14, amended, 1985)

13.18.100 Waste of Water Prohibited.

It shall be unlawful for any Pressurized Irrigation System user, person, or entity to use water from the Pressurized Irrigation System to create, fill, or provide water to any natural or artificial pond or reservoir, or to waste water, or to waste water, or to allow it to be wasted by imperfect stop-taps, valves, leaky joints or pipes, or to allow tanks or watering troughs to continually flow, leak or overflow, or wastefully to run water from faucets or stops or through basins, or other apparatus, or to use the water in such a manner as to cause it to overflow into the neighboring yards, property, streets or sidewalks, or to use water in such quantities as to cause the water to pool, flood, or accumulate on the property so that standing water remains on the ground for a period of more than 30 minutes after the water has been turned off or otherwise diverted from the area, or in violation of the rules and regulations set forth by resolution for controlling the Pressurized Irrigation System service. Any use of water in violation of Section 13.18.360 of this Chapter shall constitute a waste of water. (Ord. 97-2, amended, 1997; Ord. 3-94, amended, 1994; Ord. 1-92, adopted, 1992)

13.18.140 Water Shortage.

In time of shortage of water, the Mayor, with concurrence of the Council, shall by proclamation, limit the use of Pressurized Irrigation water to such extent as may be necessary. The Mayor shall have this authority without concurrence of the Council in the case of an emergency. In this event, the proclamation shall be reviewed at the next available regular meeting of the Council. It is unlawful for any person to violate any proclamation made by the Mayor pursuant to this section.

13.18.150 Connection Required.

All record owners and occupants of (i) all residential properties or lots located within the corporate boundaries of Lindon City, and (ii) all institutional properties, school properties, religious institution properties, commercial properties, lots or sites located with the corporate boundaries of Lindon City, whose properties lie within three hundred (300) feet of a Pressurized Irrigation System main line shall connect their properties to the Lindon City Pressurized Irrigation System and pay the applicable fees and charges. This section shall not apply to a record owner or occupant of a residential property who both (i) as of the effective date of the Ordinance enacting this Chapter, has connected the residential property to the Lindon City culinary water system and (ii), prior to the first day of June, 1992, has elected to not connect to the Pressurized Irrigation System. (Ord. 1-96, amended, 1996; Ord. 13-94, amended, 1994; Ord. 1-92, adopted, 1992)

13.18.330 Water Meters.

Water meters shall not be installed at each Pressurized Irrigation water connection; provided, however, that the Council may determine that it is necessary to monitor water use through any Pressurized Irrigation water connection or combination of Pressurized Irrigation water connections.

17.32.270 Water – Subdivider obligation to provide sufficient quantity.

The procurement of water shall be the responsibility of the subdivider; and water shall be provided for the exclusive use of Lindon City according to LCC Section 17.66. In residential zones one share of North Union Water or its equivalent per net acre shall be submitted 9rounded to the nearest 1/10th share per acre) and in non-residential zone one half (½) share of North Union water or its equivalent per net acre shall be submitted (rounded to the4 nearest 10 th share per acre). Water shares other than North Union shall be accepted as per the Lindon City Fee Schedule and LCC Section 17.66. (Ord. 2007-8, amended, 2007; Ord. 2001-8, amended, 2001; Ord. 111 §1, amended, 1985; Prior code §12-107-7(H)(19))

17.66.010 Transfer of Water.

No subdivision of land or building permit shall be approved or issued, where such subdivision or permit is for residential, commercial, or industrial use where the supply of water is to be from the City water system, unless and until the subdivider shall first deliver to the City irrigation water stock as listed in the Lindon City Fee Schedule and further described in LCC Section 17.32.270.

Applicants desiring building permits for parcels that have existing culinary water service that has previously served a residential, commercial, industrial building shall not be required to turn in water share for the property unless connection to the pressure

irrigation system is desired. If connection to the pressure irrigation system is desired then water shares shall be submitted to the City. Vacant parcels with culinary water service connections that have not been utilized for previous residential, commercial or industrial structures shall be required to turn in water shares at the time a building permit is issued for the property.

The City Council shall have the authority to require the transfer of more water than required herein when a proposed land use will have a water intensive use which proposes to consume large quantities of water uncharacteristic of the area. Said water stock shall be held in trust by Lindon City for present and future water demands. Lindon City may use the water for any purpose in any area of the City which it deems appropriate so long as water from other sources is made available to the land so subdivided. Upon delivery of the water stock provided for above, the subdivider, or building permit applicant, as the case may be, shall have no further interest of any kind or nature in and to said water stock.

In the event the subdivider or building permit applicant is unable to obtain the requisite water stock for transfer to Lindon City and demonstrates said inability to obtain said water stock to the satisfaction of Lindon City, the subdivider shall then be allowed by Lindon City to pay to the City in cash the equivalent cost of the water shares of said water stock required to be delivered to the City, as set forth above. This money shall be placed by Lindon City in a fund to develop water within the City limits of Lindon City. (Ord. 2007-8, amended, 2007; Ord. 2003-16, amended, 2003; Ord. 2003-7, amended, 2003; Ord. 2002-15, amended, 2002; Ord. 161 §3, amended, 1988)

Culinary Water

(Last updated 6/18/2019 with Ordinance 2019-11-O)

- Base Rate - Occupancy type based on Table 403.1 in 2015 International Plumbing Code as currently adopted or as may be amended.
  - Single Family Residential (R-3, R-4)
    - 1 base rate fee covers up to 2 units (home + accessory apartment)
    - Base rate is based on meter size and water zone
  - Multi-family Residential (R-2)
    - ½ base rate fee of 1" meter per unit
    - Base rate is based on water zone
  - Other Residential (R-1, R-2 [dormitories]; Institutional)
    - ¼ base rate fee of 1" meter per unit
    - Base rate is based on water zone
  - Non-Residential
    - 1 base rate fee per meter
    - Base rate is based on meter size and water zone

	METER SIZE						
ZONES	**1"**	**1 ½"**	**2"**	**3"**	**4"**	**6"**	**8"**
Below North Union Canal	$24.90	$48.64	$77.14	$167.37	$300.34	$618.54	$761.01
Above North Union Canal	$29.35	$53.09	$81.59	$171.82	$304.79	$622.99	$765.46
Upper Foothills	$46.54	$70.28	$98.78	$189.01	$321.98	$640.18	$782.65

- Usage Rate per 1,000 gallons

	BLOCK			
ZONES	**1**	**2**	**3**	**4**
Below North Union Canal	$1.48	$1.92	$2.59	$3.55
Above North Union Canal	$1.81	$2.35	$3.17	$4.34
Upper Foothills	$1.81	$2.35	$3.17	$4.34

Thousands of Gallons of Water Included in Each Block of Water

Meter Size	**Block of Water (thousands of gallons)**			
	1	**2**	**3**	**4**
1"	0-6	7-12	13-24	more than 24
1½"	0-12	13-24	25-48	more than 48
2"	0-19	20-38	39-77	more than 77
3"	0-42	43-84	85-168	more than 168
4"	0-76	77-151	152-302	more than 302
6"	0-156	157-312	313-624	more than 624
8"	0-192	193-384	385-768	more than 768

Deposit (one time)

- Owner (Residential or Business) — None
- Resident that files Bankruptcy — $250.00

- Business that files Bankruptcy $500.00

Customers filing bankruptcy will be given 30 days to pay deposit.

Garbage (Residential Only)
(Last updated 6/18/2019 with Ordinance 2019-11-O)
- First garbage can $10.30
- Each additional garbage can $8.76

Groundwater Pumping (where available) $12.00
(Last updated 6/19/2018 with Ordinance 2018-10-O)

Late Fee (on past due balance, charged monthly) $10.00

Reconnect Fee (per incident) $50.00

Recycling, per can $3.71
(Last updated 6/18/2019 with Ordinance 2019-11-O)

Secondary Water
(Last updated 6/18/2019 with Ordinance 2019-11-O)
- Non-Agricultural
  - Lots up to 11,000 sq. ft. $8.00
  - Lots 11,001 - 21,000 sq. ft. $10.00
  - Lots 21,001 - 28,000 sq. ft. $15.00
  - Lots 28,001 - 40,000 sq. ft. $20.00
  - Lots 40,001 - 60,000 sq. ft. $30.00
  - Lots 60,001 - 80,000 sq. ft. $40.00
  - Lots 80,001 - 87,120 sq. ft. $50.00
  - Lots 2 acres or more
    - » Base rate $50.00
    - » Each ¼ acre (or part thereof) $3.00
- Metered secondary water (where available; in addition fee based on lot size)
  - Base $6.20
  - Usage rate per 1,000 gallons
    - » If using treated water See Culinary Water Usage Rates and Blocks
    - » If using untreated water $0.57
- Agricultural rate
  - Base rate $10.00
  - Each acre (or part thereof) $3.00
    Agricultural land is that which is planted into pasture, hay, grains, vegetables, fruits, or other identifiable agronomy products and can be subdivided.

Sewer Utility Fee
(Last updated 6/18/2019 with Ordinance 2019-11-O)
- Base charge - Based on Table 403.1 in 2015 International Plumbing Code as currently adopted or as may be amended.
  - Single Family Residential (R-3, R-4) $20.22
    - 1 base rate fee covers up to 2 units (home + accessory apartment)

- Multi-family Residential (R-2), per unit $10.11
  (½ base rate fee for Single Family Residential)
- Other Residential (R-1, R-2 (dormitories); Institutional), per unit $5.06
  (¼ base rate fee for Single Family Residential)
- Non-Residential, per water meter $20.22

- Usage rate per 1000 gallons $2.67
  - For customers with pressurized irrigation, usage is based on water usage
  - For customers without pressurized irrigation, usage is based on average winter water usage from December to March.

Storm Water Utility Fee $10.08
(Last updated 6/18/2019 with Ordinance 2019-11-O)
Charged per Equivalent Service Unit (ESU) with credits available for industrial and commercial use as per Council action.

Utility Sign-up Fee (one-time per account) $10.00
(Last updated 6/18/2019 with Ordinance 2019-11-O)
Utility Agreement must be signed before services commence.

Utility Shut-off Notice Fee (per incident) $5.00
(Last updated 6/18/2019 with Ordinance 2019-11-O)
This fee will not be charged to customer's account if customer responds to notice within 1 week of mailing.

Lindon City does not pay interest on deposits or bonds held by the city.

REVISED - Notice of Meeting of the *Lindon City Council*

The Lindon City Council will hold a meeting beginning at **7:00 p.m.** on **Tuesday, December 3, 2019** in the Lindon City Center Council Chambers, 100 North State Street, Lindon, Utah. The agenda will consist of the following:

Scan or click here for link to download agenda & staff report materials:

REGULAR SESSION – 7:00 P.M. - Conducting: Jeff Acerson, Mayor
Pledge of Allegiance: By Invitation
Invocation: Randi Powell

(Review times are estimates only)

1. **Call to Order / Roll Call** *(2 minutes)*

2. **Presentations and Announcements** *(5 minutes)*
   a) Comments / Announcements from Mayor and Council members.

3. **Approval of minutes:** The regular City Council meeting of November 19, 2019, will be reviewed. *(5 minutes)*

4. **Open Session for Public Comment** *(For items not on the agenda)* *(10 minutes)*

5. **Consent Agenda —** *(Items do not require public comment or discussion and can all be approved by a single motion.)* *(5 minutes)*

   a) **Officer Involved Critical Incident Protocol Agreement.** All the cities in Utah County had public safety and legal teams agree to this protocol. Staff recommends approval by the Council.
   b) **Employee Merit Increase.** The Mayor and City Council will review for approval the 2.5% merit increase for employees. In the FY2019-20 budget the City Council approved a 2.5% merit increase for employees (based upon year-end employee performance evaluation scores). The merit increase will be effective January 1, 2020. Per past practice, the City evaluates mid-fiscal year budget constraints and economic indicators to determine if recommended merit increases are still financially prudent. Given a healthy economic outlook, strong revenues, and healthy General Fund reserves the City Administration recommends the merit increase be applied as approved in the budget.

6. **Concept Review – South Haven Development – 531 N. State Street.** South Haven Development requests concept review of a proposal to allow for 99 residential units on approximately 6 acres of the Linden Nursery property. Parcel #45:244:0001. A Concept Review allows applicants to receive Planning Commission feedback and comments on proposed projects. No formal approvals or motions are given, but general suggestions or recommendations are typically provided. *(20 minutes)*

7. **Anderson Farms Plat E Major Subdivision Approval and Anderson Farms Boulevard road dedication – Ivory Development, LLC.** Request for major subdivision approval of a 60-lot single family residential subdivision located in the Anderson Farms Planned Development (AFPD) zone. The request also includes the dedication of the north section of Anderson Boulevard from 500 N. to 700 N. The subdivision and road dedication are part of a master development agreement with Ivory Development. (20 minutes)

8. **Public Hearing — Lindon City Water Conservation Plan; Resolution #2019-29-R.** The Mayor and City Council will hear for possible adoption, the Water Conservation Plan as required by the State to be updated and adopted every 5-years. The plan will be presented by City Engineer, Noah Gordon. *(15 minutes)*

9. **Discussion Item — Lindon Days finances and fundraising.** Heath Bateman, Parks & Recreation Director will present an overview of 2019 Lindon Days events and expenditures and discuss future fundraising. *(20 minutes)*

10. **Review & Action — Safety Incentive Award Program; Resolution #2019-30-R.** The City's insurance carrier is asking its members to adopt an Employee Safety Incentive Program to help reduce workplace accidents and injuries. The insurance provider will provide discounts on premiums that off-set potential costs of the program. If approved, the program will be incorporated into the Employee Policies & Procedures Manual. *(15 minutes)*

Council Reports:
A) MAG, COG, UIA, Utah Lake Comm., ULCT, NUVAS, IHC Outreach, County Board of Health - Jeff Acerson

B) Police/Fire/EMS, Emergency Mgmt., Irrigation Co. Representative/Board member, City Buildings - Van Broderick
C) Public Works/Engineering, Historic Commission, Administration, Building Const. & Inspection - Randi Powell
D) PG/Lindon Chamber of Commerce, Economic Development, Lindon Days - Carolyn Lundberg
E) Planning Commission/BOA, Planning/Zoning, General Plan, Transfer Station/Solid Waste Board - Mike Vanchiere
F) Parks, Trails, and Recreation, Cemetery, Tree Advisory Board - Jake Hoyt

Administrator's Report *(10 minutes)*

Adjourn

All or a portion of this meeting may be held electronically to allow a council member to participate by video conference or teleconference. Staff Reports and application materials for the agenda items above are available for review at the Lindon City Offices, located at 100 N. State Street, Lindon, UT. For specific questions on agenda items our staff may be contacted directly at (801)785-5043. City Codes and ordinances are available on the City web site found at www.lindoncity.org. The City of Lindon, in compliance with the Americans with Disabilities Act, provides accommodations and auxiliary communicative aids and services for all those citizens in need of assistance. Persons requesting these accommodations for city-sponsored public meetings, services programs or events should call Kathy Moosman at 801-785-5043, giving at least 24 hours-notice.

CERTIFICATE OF POSTING:
I certify that the above notice and agenda was posted in three public places within the Lindon City limits and on the State (http://pmn.utah.gov) and City (www.lindoncity.org) websites.
Posted by: /s/ Kathryn A. Moosman, City Recorder
Date: November 26, 2019; Time: 1:30 p.m.; Place: Lindon City Center, Lindon Police Dept., Lindon Community Center

RESOLUTION NO. 2019-29-R

RESOLUTION APPROVING THE LINDON CITY WATER CONSERVATION PLAN FOR SUBMITTAL TO THE UTAH DIVISION OF WATER RESOURCES AS REQUIRED BY UTAH CODE 73-10-32, AND SETTING AN EFFECTIVE DATE.

WHEREAS, Utah Code 73-10-32 requires a Water Conservation Plan to be adopted by the City and revised every five years and re-submitted to the Division of Water Resources with the plan outlining specific water use reduction goals and conservation measures; and

WHEREAS, in 2005 Lindon City adopted Section 13.32 'Water Conservation Plan Ordinance' into the Lindon City Code and adopted a Water Conservation Plan as required by the State; and

WHEREAS, Lindon City amended the Water Conservation Plan in 2014 (adopted in March 2015) as required by the State and said plan is required to be amended again in 2019; and

WHEREAS, a public hearing to accept comment on the plan was duly noticed and held on December 3, 2019; and

WHEREAS, the Municipal Council of Lindon City desires to adopt the amended 2019 Water Conservation Plan to ensure prudent use of its water resources for the wellbeing of its citizens.

NOW THEREFORE, BE IT RESOLVED by the City Council of Lindon City, Utah County, State of Utah, as follows:

Section 1: The 2019 Lindon City Water Conservation Plan is adopted as attached as 'Exhibit A'; and

Section 2: This Resolution shall take effect immediately upon its passage by the Lindon City Council.

Passed and adopted by the Lindon City Council this 3rd day of December, 2019.

Jeff Acerson, Mayor

Attest:

Kathryn A. Moosman, City Recorder

SEAL