Evaluating the Sustainability of the Albuquerque Water Supply
Category A

New Mexico High School
Supercomputing Challenge
Final Report
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Team #013
Bosque School

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Executive Summary

Who hasn't heard the catastrophic tales of the world's water drying up? Who actually believes them? In certain places around the world with arid climates, this is a real danger. New Mexico is one such place. The people of this state use too much water from the aquifer from which most of the state's water is pumped. As the water supply dwindles, the population grows. How long until this issue becomes a serious problem?

In Albuquerque, New Mexico, the government has seen this problem and is taking steps to fix it. The City of Albuquerque has implemented conservation and management plans in order to conserve this most important resource. But will they work?

Team 13's Supercomputing Challenge project was initially to create a complete model of the city's groundwater supply. Upon hearing that the City of Albuquerque and the United States Geological Survey (USGS) had already spent millions of dollars on this selfsame project, the gears began turning in another direction. The project's main goal then became to write a program to numerically model the Albuquerque water system in order to predict the effectiveness of the City's conservation and management plans.

Large amounts of data from the City and USGS were gathered and meticulously examined. It first had to be decided what data would be used where. Calculating future rainfall and gallons per capita per day were the first steps towards the completion of the project. The final product is a program that can predict how much water will be taken from the aquifer one hundred years following any given year, based on user input.

Introduction

The Issue

To humans, water is one of the most valuable resources that we have, as it enables us to live. We use water for everything from agriculture and engineering to transportation. Humans need to protect the water from overuse and pollution. In the arid climate of New Mexico, this resource is doubly precious, especially in a metropolitan area like Albuquerque.

The city sits atop a pool of water that spans from Cochiti Reservoir in the north to downstream San Acacia in the south. The City of Albuquerque is pulling all of its water from this aquifer. For decades, we believed that the aquifer provided a perfect, inexhaustible supply of water. We also thought that precipitation or the Rio Grande would automatically replace all water that we removed from the aquifer. But in 1993, the United States Geological Survey (USGS) released a study of the water system, (the aquifer and the natural and manmade factors that affect it), that disclosed that the water level has dropped about 160 feet since the year 1960. It also revealed that only about one half of the water that we remove from the aquifer is getting replaced.

On September 22, 2000, the Albuquerque Journal printed an article that stressed the issues of our dwindling water supply. The article said that the water level is continuing to fall at about a rate of two feet per year. It also outlined the City of Albuquerque's plans to use river water for the purpose of drinking by the year 2005. It told us that this could create yet another problem. Endangered species, such as the

Southwestern Willow Flycatcher and the Silvery Minnow, can't survive unless a certain amount of water always remains in the river.

In addition, the Albuquerque Public Works Department's draft of the Fundamental Water Service Policies states, "As used in the context of a sustainable water supply, sustainability is the concept of use and management of water resources today so as not to limit the choices and opportunities for future generations with regard to those water resources." This means that we, the citizens and government of Albuquerque, need to make a real effort today to protect and conserve water so that future generations won't have to go to extreme lengths to get a sustainable supply of clean water.

Our Project

To address these issues, our project was to create a model of the Albuquerque water system that functions the same way as the actual system. The model includes important factors such as aquifer recharge, both by natural and human means, the city's water removal from the aquifer, as well as that which leaves the system naturally, rainfall and other types of precipitation, population growth, and use of water routed through the San Juan/Chama diversion tunnels for the purpose of drinking.

The model was validated by being run on previous years. We cross-referenced our results with the actual data from those years. When our model was calibrated, we ran different scenarios of weather patterns, population, etc., in order to predict the future sustainability of the water supply. Finally, when we had all of this figured out, we used our model to study individual, as well as combinations of, the City of Albuquerque's water management and conservation plans.

Background Information

To build this model, we needed a basic understanding of the workings of water. For example, we needed to know that water is measured in terms of acre-feet, (an acre of water one foot deep), and gallons. We needed to know information specific to this aquifer. We needed to know the factors that affected the amount of groundwater and how much can be safely removed.

Water Systems

Water behaves in a very complicated system, very like a life form. Water falls from the sky as precipitation such as rain, snow or hail. When it rains, the water gets absorbed into the ground, flows into, or lands in, a body of water, or is used by plants. When it snows or hails, if it doesn't melt immediately, it will result in runoff in the spring, when it does melt, it either flows into the nearest body of water, or gets absorbed into the ground. From here, the water does several things. If it falls to the ground and doesn't flow into a water body, it will either sink into the ground, joining an aquifer and becoming groundwater, or it will evaporate and begin the cycle again. That which does become groundwater, very little of the actual water that falls, may sit in the aquifer for many years until it eventually flows slowly into a body of water, or gets pumped out. The water that is used for plants does something called evapotranspiration in which the water evaporates from the leaves or other parts of the plant. Some of the water that flows into rivers gets removed by evaporation, animals or man. This circle, where water falls, lands, evaporates and becomes rain again, or percolates through the ground to become part of an aquifer, is known as the hydrologic cycle.

Groundwater is everywhere, but in an aquifer, there is more a concentrated, larger amount. An aquifer is an underground formation of porous or permeable rock and loose materials, such as sand. They can be very small, but many go to hundreds of meters thick. Although the water in aquifers flows, it is not an underground river, which is a common misconception. The water does flow, however, but very slowly, at a rate of no more than a few feet per year: this can vary more, or less, in different cases, often depending on the slope of the land, or pressure within the aquifer.

The most general grouping of aquifers falls into two categories; confined and unconfined aquifers. In the case of unconfined aquifers, the groundwater doesn't fill up to the surface, so that the levels of water in the aquifer can rise and fall. Generally, the form that an unconfined aquifer takes mimics the topography of the land it is in, such as hills and valleys. In the other type of aquifer, confined, the water is between two layers of a solid material, such as clay. Instead of being influenced to move by gravity, like the unconfined aquifers, the confined aquifers flow because of the intense water pressure caused by the level being unable to rise or fall.

Water leaves an aquifer by either exiting the ground at a body of water, a process called discharge, or by being removed by the pumping of a well. Water, called recharge, enters the aquifer by seeping down from bodies of water or from the surface, or through a process called injection, where it is pumped artificially back into the aquifer through wells. Water that is removed but not replenished by recharge or injection is called drawdown. Drawdown can be affected by an area's location in relation to pumping well, i.e., drawdown will be higher near a large well, whereas it will be smaller in areas where there is no well.

Our Aquifer

The Albuquerque aquifer spans from Cochiti Reservoir, downstream to San Acacia in the south. It is about one hundred miles long, 25-40 miles wide, and can range in thickness anywhere from 5 meters to 14,000 meters in some places. This aquifer is called an unconsolidated sand and gravel aquifer. It is made up of sand and other very porous materials, allowing it to flow and percolate relatively easily. It is an unconfined aquifer in which the uppermost level, the 'water table' is able to rise and fall. The aquifer is also considered a basin-fill aquifer, which means that Rio Grande Valley forces surface water to flow into the river, where it can then recharge the aquifer. We remove water from our aquifer by pumping it out, yet rely on natural means to recharge the groundwater supply. Because of this, little of what we take out manages to make it back in.

Saving The Water

For our project we gathered information from the City of Albuquerque, the United States Geological Survey (USGS), and the Western Regional Climate Center (WRCC). We obtained data on water usage, population statistics and growth, and gallons (of water) per capita (person) per day (GPCD) from the City of Albuquerque. We also acquired information on water systems and their properties from the USGS and weather and climate data from the WRCC.

To save the water that we already have, the City of Albuquerque has implemented conservation measures that include drop days, (days where watering isn't permitted/practical), low-flow toilets, landscaping restrictions, such as giving fines for 'watering the sidewalk,' restaurants only giving water to customers who request it,

sheets in hotels and motels being washed only at guests' request, and voluntary conservation measures that include taking shorter showers and avoiding baths. *Table 1* shows the estimated savings that the conservation measures will bring.

Method	Projected Savings
Low-flow toilets	About 33% of indoor residential water use can occur through the toilet. Ultra-low-flow toilets use only 1.6 gallons of water per flush while older toilets use 3.5 to 5 gallons per flush.
Low-flow shower heads	Low-flow showerheads deliver 2.5 gallons of water per minute and are relatively inexpensive. Older showerheads use 5 to 7 gallons per minute.
"Drop days"	Nearly 60% of Albuquerque's water use during the growing season is applied to landscape.
Water upon request and not changing sheets daily	100,000,000 gallons per year

Table 1. Projected Savings from City Conservation Plans

To bring new water into the system, the city has implemented various water management plans. These include the recycling of gray and industrial wastewater to use to water City properties such as the Balloon Fiesta Park and public parks. San Juan/Chama water, which was obtained by the city in the 1970's, and diverted into the Rio Grande by a system of diversion tunnels, will be treated and used as drinking water. Approximately half of this water will then be returned to the river and some of this may eventually be used to manually recharge the aquifer. *Table 2* shows the estimated savings and new water the management plans will bring.

Method	Projected Savings
Shallow Ground Water Irrigation - use shallow, nonpotable ground water to irrigate the Biological Park and areas in the central city	900 acre-feet per year
Southside Recycling - reclaimed water to irrigate green areas and provide industrial water to the Southeast Heights and South Valley	3,000 acre-feet per year
North I-25 Reuse Corridor - recycled wastewater and reclaimed surface water withdrawn from the river just south of Alameda for irrigation and industrial water including Balloon Fiesta Park, factories, schools, parks and golf courses	3,900 acre-feet per year
Drinking water from San Juan-Chama Diversion	94,000 acre-feet per year, half of it is native Rio Grande water which will be returned to the river

Table 2. Projected Savings from City Management Plans

Project Description

For our program, we needed to find data pertaining to the weather and population growth for the City of Albuquerque. We got historical population data from Jean Witherspoon at the Water Resources Division of the City of Albuquerque Public Works Department, and found our historical weather data from the Western Regional Climate Center. We used this data to develop the scenario that our program uses. We did not find an independent scenario for the city, but multiple scenarios because of the fact that there is no one single idea for the future of Albuquerque. We found four different scenarios for Albuquerque. We used these scenarios when running the program in order to give us an accurate view of a possible future.

Baseline Water Usage

The first step of our project was to establish a baseline *Gallons per Capita per Day* (GPCD). We began by studying actual water usage data from before the City's conservation projects were implemented (see *Table 3*). While studying the historical water usage data from the City of Albuquerque Water Resources Department, we conjectured that the amount of water used often depends on the amount of rainfall. The rainfall data that was used came from the Western Regional Climate Center. (See *Figure 1*.) Generally, we found that increased water use can be attributed to a decrease in rainfall.

Year	GPCD	Rainfall
1985	230	10.75
1986	240	12.98
1987	249	8.34
1988	246	13.11
1989	279	4.99
1990	249	10.25
1991	243	11.59
1992	237	12.08
1993	248	9.03
1994	246	11.15

Table 3. Historical Water Usage and Rainfall Data
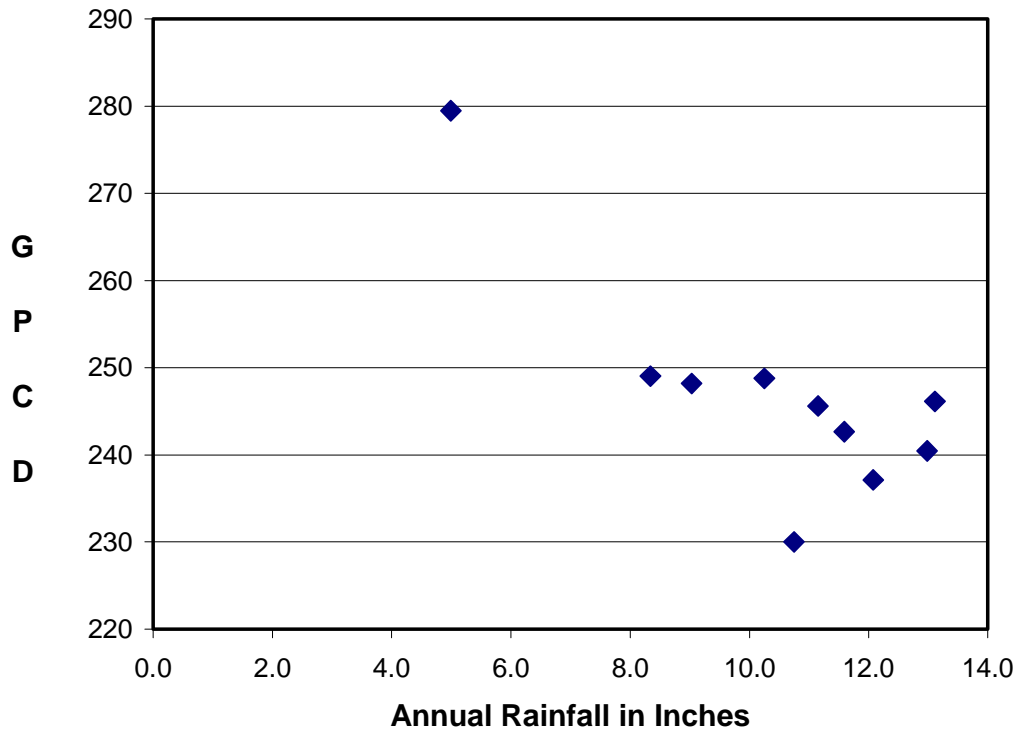
Figure 1. Water Usage vs. Rainfall for 1985-1994

In order to derive the relationship between rainfall and GPCD, we used trend analysis. Using Microsoft Excel, we experimented, in trial-and-error style, with linear trend, quadratic trend, cubic trend, and quartic trend. The quartic equation, an equation with a fourth power, (see *Figure 2*) turned out to be the closest to solving our problems.

$$y = 0.0857x^4 - 3.2025x^3 + 44.26x^2 - 271.1x + 874.94$$
$$R^2 = 0.8568$$
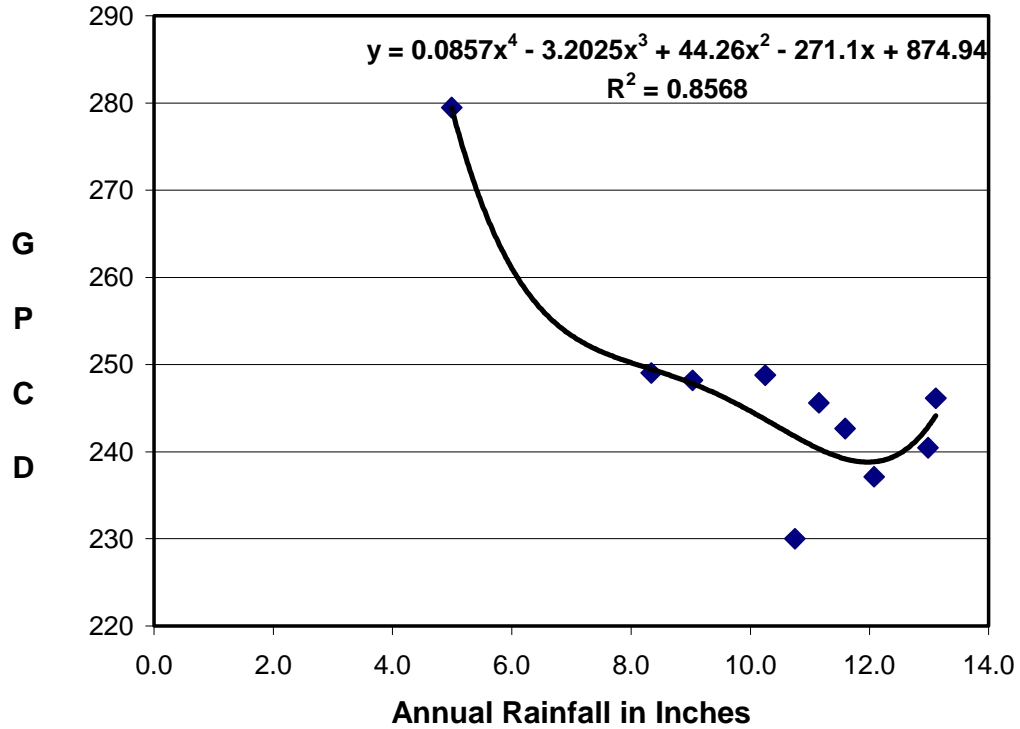
Figure 2. Quartic Trendline Computed by Excel

The result of the quartic equation matches fairly closely to the historical GPCD, as shown in *Figure* 3.

Computed GPCD vs. Actual GPCD
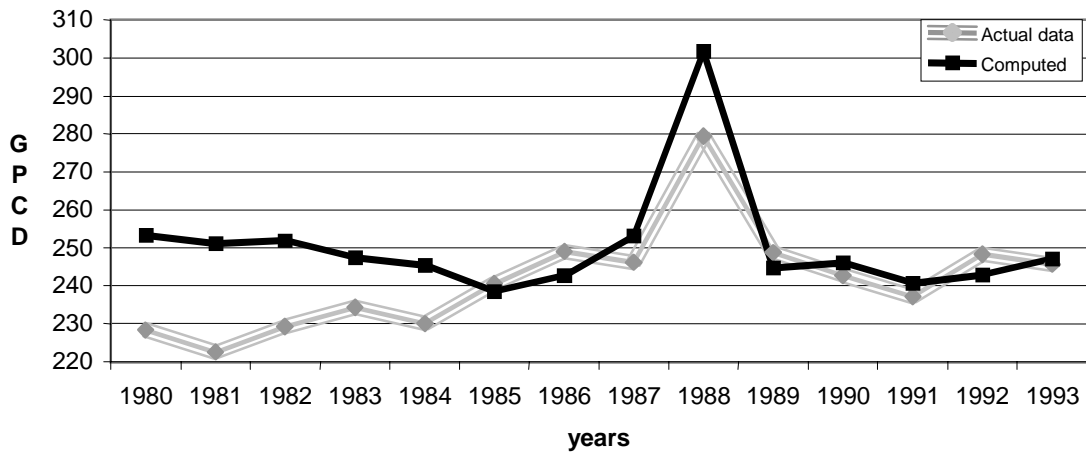
Figure 3. Comparison of Historical Data to Computed Usage

Population Estimates

Because total water consumption depends on the service population, we needed to estimate the growth of the city's population. In our research, we found two different growth rate estimates. The first is the current population growth rate, which is 1.5% per year. This rate is based on the last twelve years of actual population growth. The second is a projected rate from the Albuquerque City Planning Department, which is 1% per year. This rate is based upon the declining population growth rate from the 1950's. Although these population growth rates can be used in the program, we decided to make growth rate a user-input variable, rather than limiting it to just the two set rates. *Table 4* shows projected populations using both rates.

Year	1% growth	1.5% growth
2000	446,871	446,871
2001	451,340	453,574
2002	455,853	460,378
2003	460,412	467,283
2004	465,016	474,293
2005	469,666	481,407
2006	474,363	488,628
2007	479,106	495,958
2008	483,897	503,397
2009	488,736	510,948
2010	493,624	518,612

Table 4. Future Population Estimates

Weather Prediction

Once we had the rates of population growth established, we had to figure out what the rainfall would be for future years. It is generally very dry, and average rainfall per year in Albuquerque is 8.99 inches. In addition, we found that there are two

weather patterns that are believed to affect yearly precipitation levels. The first is Pacific Decadal Oscillation, or PDO. It was developed by Charlie Liles, the National Weather Service's top official in New Mexico. It is similar to El Nino and La Nina, except that it lasts for decades. This ten-year pattern dictates that one year will be wetter-than-average, four average, and five dryer-than-average. Currently, we are in the wet part of the cycle. But, according to the pattern, it is also on the downswing; we will have dry spells for the next 20 years with only 60%-80% of our average rainfall. The second pattern type, the wet/dry pattern (WDP), is based on the last 80 years. Of the next twenty years, 27% will be wet years, 46% will be dry, and 27% average years. In our program, the user may choose between wet-dry, PDO, and a custom pattern. With the custom pattern the user is able to enter a specific percent for wet, dry and average rainfall years. The entered percentages are then used to create three categories of random numbers. These three categories are wet, dry and normal. These categories are then broken down into another random number set. The random number plus/minus forms the minimum/maximum baseline, allowing for a wide range of values.

Conservation Savings

Our next step was to figure out savings from the various water conservation plans. We learned, from the City of Albuquerque's conservation plans, that residential water usage is 71% of the total water used. During an average year 60% of water usage is indoors, and the rest outdoors. The conservation savings that we implemented as part of the program are the outdoor water savings, low-flow toilet and showerhead savings, as well as 'water on demand' savings. We determined the amount of outdoor water savings by using the program to figure the baseline GPCD, which is then

multiplied by 71% for residential usage, 40% for outdoor usage and 50% for percent-of-savings. To determine the amount of water savings from low-flow toilets, we used the baseline GPCD multiplied by 71% for residential usage, 60% for indoor usage, and 33% for the amount used in toilets. Then we subtracted low-flow toilets from normal toilets and divided it by the normal (3.5-1.6/3.5) to get the percent of savings. We used the same method to figure the low-flow showerhead savings, substituting the toilet numbers with showerhead ones respectively. *Figure 4* shows the indoor water usage percentages. The program is set up so that the user enters a beginning rate of compliance (as a decimal) for each of the types of plans.
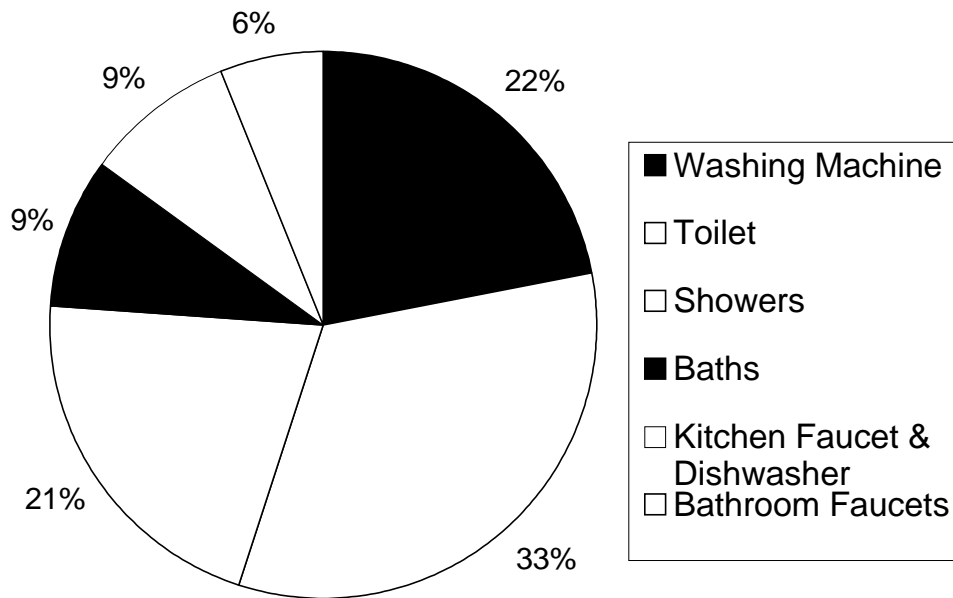
Figure 4. Indoor Water Usage

Management Savings

We then implemented the City's water management plans in the program. Three management plans were used in our program. The North I-25 Reuse Corridor is where Phillip's Semiconductor Plant, as well as other industrial corporations, use their gray water for watering parks, such as the Balloon Fiesta Park, rather than disposing of it. The Southside Recycling Corridor is where the wastewater treatment plant will use its water to water nearby parks, golf courses and other recreational areas. The third plan is the Shallow Groundwater Irrigation plan in which low quality groundwater will be used for irrigation of the Albuquerque Biological Park and surrounding areas. These were all in acre-feet; therefore the program converts them to gallons. We implemented these into the program by subtracting the total management plan savings from our computed total water usage and used the calculations so far to determine the conserved GPCD. Values for the management are not seen or affected by the user, as they are set rates.

San Juan/Chama Water

Our final addition to the program was the implementation of the water from the San Juan/Chama (SJ/C) Project. This part is different from the rest of the program because it does not affect the GPCD, but the drawdown, (the amount of water that is removed from the aquifer that is not replenished), so it is the final variable in the program. The user enters the year in which SJ/C first goes into effect. The program then uses this information to compute the amount of drawdown, beginning in that specific year, which is affected by the SJ/C water.

Recharge

The USGS computed that the mountain front and tributary recharge rate for a normal year is 110,000 acre-feet. We reduced this by other urban withdrawals, rural withdrawals and commercial and industrial withdrawals, (23,700 + 6,400 + 8,300 acre-feet, respectively), resulting in an annual recharge of 72,600 acre-feet for a normal rainfall year. However, if the rainfall is below average, the recharge will be less, but, conversely, an above average rainfall will cause the recharge to increase.

Drawdown

Drawdown is the amount that the city pumps out of the aquifer that is not replenished. Our program computes drawdown by subtracting recharge from the total amount pumped. If this amount is negative, then the aquifer is being filled. If the amount is positive then the aquifer is being depleted.

City Water Model Program

This model is a parallel-processing program that uses Message Passing Interface (MPI) routines to communicate between processors. All input and output for the program is done by the root processor (rank = 0). The data is broadcast to all processors and the processors each do a share of the calculations. Once the calculations are complete the results are returned to the root processor.

The program prompts for the type of weather pattern to be used. Because the patterns that we found to be most accurate are PDO and WDP, the program has these patterns built in. The program also has a custom weather option in the event that another weather type occurs. The program prompts for current population in order to compute the total water usage. The user inputs the population growth rate, as well as

the year from which the original population came, (the starting year). Next is the prompt that asks how many years the program is to run for, with a maximum of one hundred years. Then the program needs to know the compliance rates for the low-flow showerheads and toilets, in order to know how much will be saved from this. The user enters the initial compliance rate. Since current regulations require all new construction to use the low-flow toilets and showerheads, the compliance rates are increased as the population grows. The final prompt asks what year the San Juan/Chama project goes into effect. The program then broadcasts the data to all of the processors.

The program stores these values into the local classes. One class is used to calculate the yearly rainfall from the weather pattern entered. The GPCD is computed using this rainfall. Next, the conservation savings are computed based on the GPCD and compliance levels. These plans are subtracted from the baseline GPCD. This modified GPCD is multiplied by 365 days and the population to give the total water demand. The management plans are subtracted from the total water demand. After dividing the total water demand by 365 and population, we have a new GPCD. The San Juan/Chama water savings is then subtracted from the year's total water demand to give the amount that has to be pumped from the aquifer. The program assumes that any excess water is pumped back into the aquifer following the implementation of SJ/C. This new calculated data is then collected by the main processor.

The final calculation is that of drawdown using recharge which varies with the rainfall. All of the collected data along with the drawdown is written to the screen. F*igure 5* is a flowchart showing the main processing of our program.

Start mpi_run

Is rank =0?

No

Yes

Get Input Data

Broadcast Data

Wait for all processors

Store input values locally

1

1

Calculate rainfall based on weather pattern

Calculate the GPCD from rainfall

Multiply the GPCD by population and 365 then divide by 1,000,000

Apply Conservation Measures

Apply Management Plans

Apply San Juan/Chama Savings

Have we finished all the years?

No

Yes

Gather data from all processors

Is rank =0?

Yes

No

Calculate drawdown

Output data

End MPI_Run
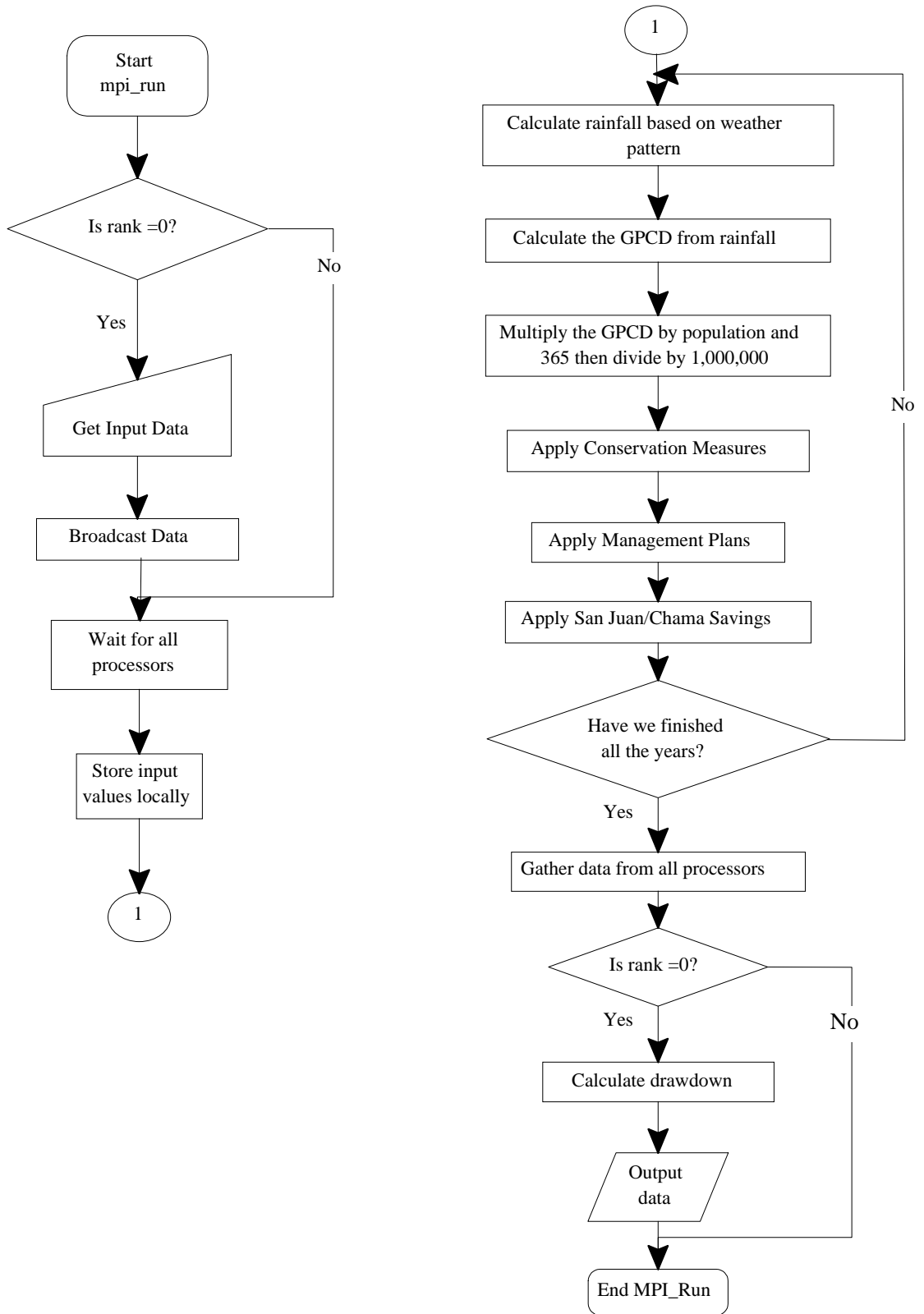
Figure 5. Graphical Representation of City Water Model Program

Results

Upon the completion of writing our program, we ran various scenarios of the management plans and conservation measures in order to get results. We ran five scenarios, each with five separate runs to account for extreme numbers generated by the program's random numbers. The five scenarios that we ran were Happy Days Scenario (Happy), Pacific Decadal Oscillation, 1% Growth Scenario (PDO1), Pacific Decadal Oscillation, 1.5% Growth Scenario(PDO15), Wet/Dry Pattern, 1% Growth Scenario(WDP1), and Wet/Dry Pattern, 1.5% Growth Scenario(WDP15). The output from each of the runs was captured in a file that we downloaded from pi to a Windows PC. We loaded the information that we got from the program into Microsoft Excel spreadsheets. Following this, we got a running total of the drawdown by adding together the previous years' drawdowns.

Happy Days Scenario

The Happy Days scenario is the ideal scenario, in which all variables are 'perfect'. The scenario assumes that all management plans are implemented on time and work correctly, that the rainfall for every year will fall within the average amount, and that all city water accounts comply completely with all conservation measures implemented by the city. This scenario starts in 1999 and runs for 100 years.

The results that we got from the program showed that the city will continue to achieve negative drawdown from the aquifer until 2005 when San Juan/Chama goes into effect. From there the drawdown drastically drops as the city removes less and less from the aquifer. It continues to drop until about 2060. Then it begins to rise

exponentially, just as it had previously until SJ/C. This ideal situation bodes well, as it doesn't reach our current drawdown again until after the hundred years for which we had run the program. This is very similar to the City of Albuquerque's predictions for its future from current trends, yet ours shows the most ideal situation. *Figure 6* shows the average of the five Happy Days runs. A positive number denotes aquifer discharge; a negative number denotes aquifer recharge.
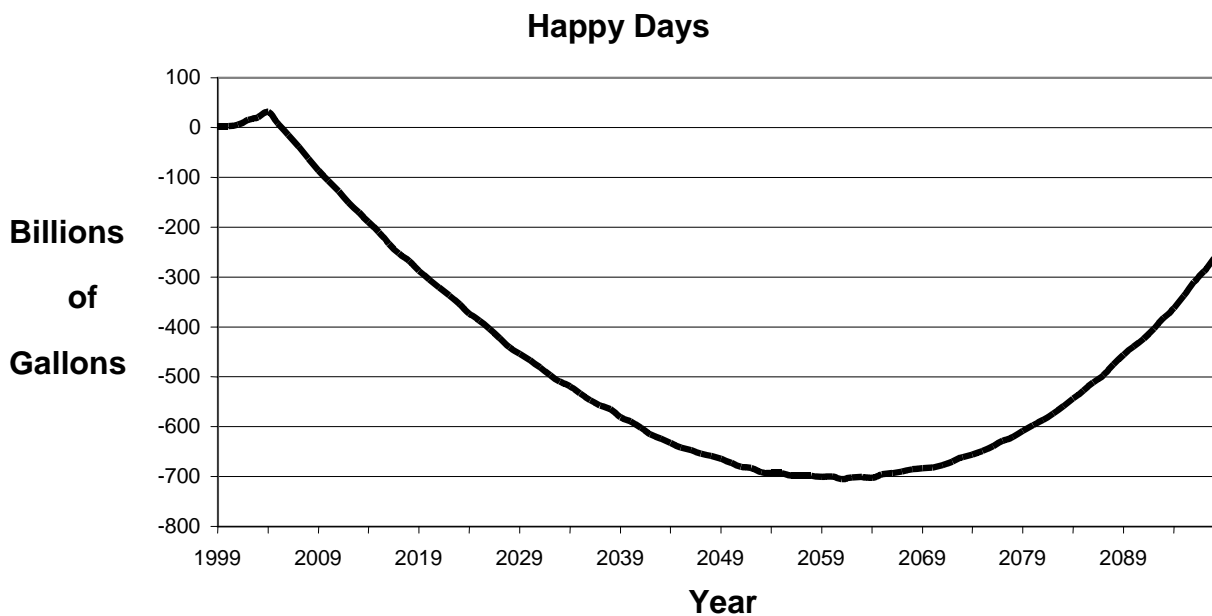
Happy Days

Figure 6. Happy Days Average

Pacific Decadal Oscillation, 1% Growth Scenario

The next scenario takes on the properties of the PDO weather scenario, (50% dry years, 10% wet, 40% average). This scenario assumes that SJ/C is implemented on time and works correctly, that 10% of water accounts comply with the low-flow showerhead and toilets, and that 40% of accounts comply with the water on request and

outdoor plan. The population growth rate in PDO1 is 1%. This scenario starts in 1999 and runs for 100 years.

With this scenario, the drawdown will rise until 2005 when SJ/C is implemented and will begin to drop until about 2040.   At this time, the drawdown will begin to rise exponentially, having never broken into negative drawdown.   *Figure 7* shows the average of the five PDO1 runs, where positive numbers equal aquifer drawdown.

PDO 1 Drawdown
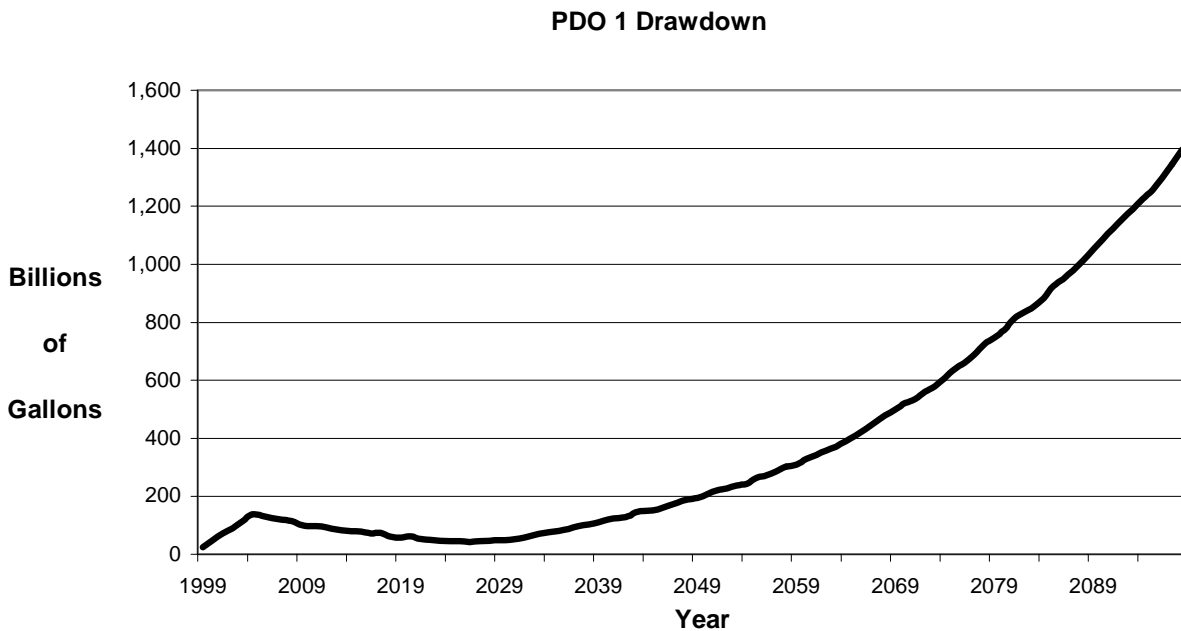
Figure 7. PDO1 Average

Pacific Decadal Oscillation, 1.5% Growth Scenario

The PDO15 scenario takes on the properties of the PDO weather scenario, (50% dry years, 10% wet, 40% average). This scenario assumes that SJ/C is implemented on time and works correctly, that 10% of water accounts comply with the low-flow showerhead and toilets, and that 40% of accounts comply with the water on request and

outdoor plan. The population growth rate in PDO15 is 1.5%. This scenario starts in 1999 and runs for 100 years.

In PDO15 the drawdown will rise until 2005 when SJ/C is implemented and will begin to drop until about 2025, where it evens out until about 2030. At this time, the drawdown will begin to rise exponentially, having never broken into negative drawdown. *Figure 8* shows the average of the five PDO15 runs, where positive numbers equal aquifer drawdown.

PDO 1.5 Drawdown
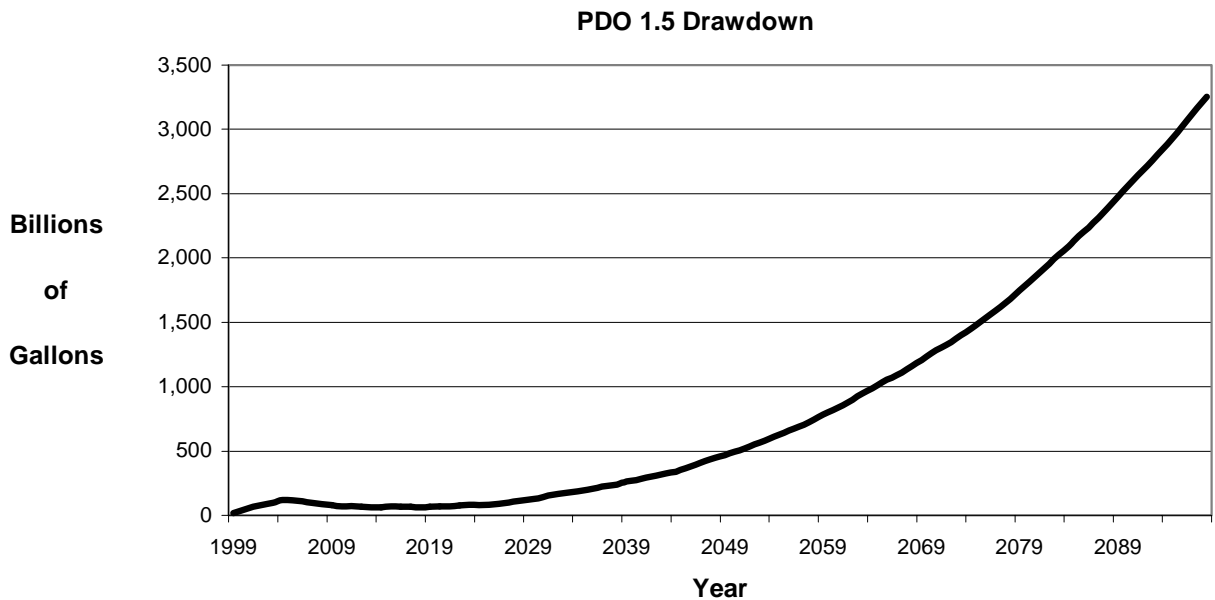
Figure 8. PDO15 Average

Wet/Dry Pattern, 1% Growth Scenario

The fourth scenario takes on the properties of the WDP weather scenario, (46% dry years, 27% wet, 27% average). This scenario assumes that SJ/C is implemented on time and works correctly, that 10% of water accounts comply with the low-flow showerhead and toilets, and that 40% of accounts comply with the water on request and

outdoor plan. The population growth rate in WDP1 is 1%. This scenario starts in 1999 and runs for 100 years.

In this scenario, the drawdown rises quickly until 2005 when SJ/C is implemented, and will begin to drop until about 2030. It manages to reach negative drawdown around 2020 but rises out of negative about 2040. It continues to rise exponentially from there. *Figure 9* shows the average of the five WDP1 runs, where positive numbers equal aquifer drawdown, and negative numbers equal recharge.

WDP 1 Drawdown
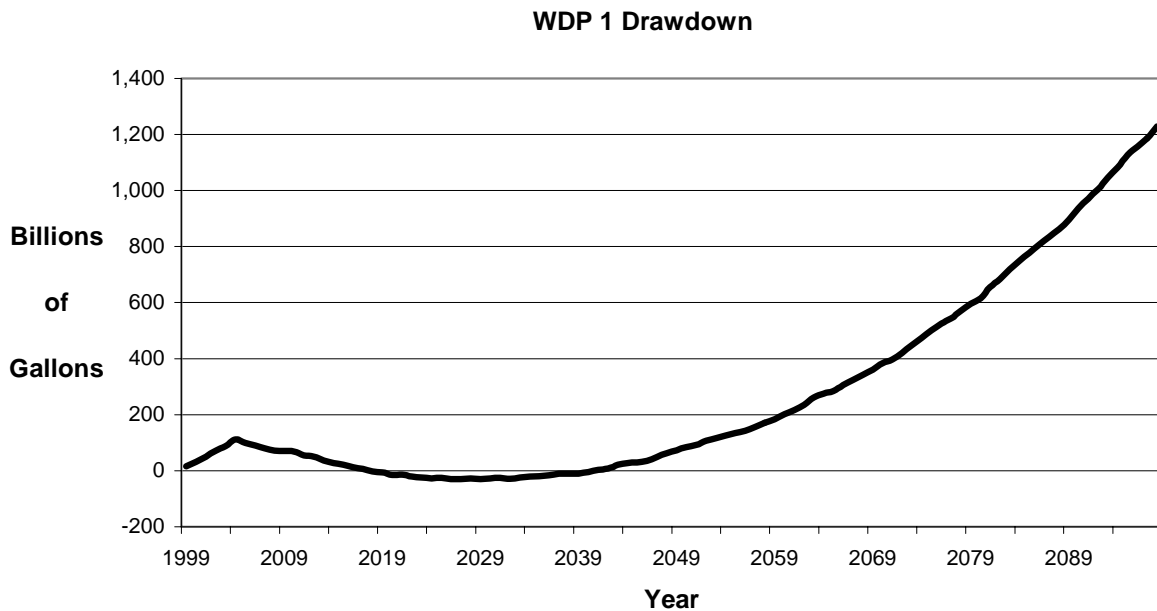
Figure 9. WDP1 Average

Wet/Dry Pattern, 1.5% Growth Scenario

Scenario WDP15 takes on the properties of the WDP weather scenario, (46% dry years, 27% wet, 27% average). This scenario assumes that SJ/C is implemented on time and works correctly, that 10% of water accounts comply with the low-flow showerhead and toilets, and that 40% of accounts comply with the water on request and

outdoor plan. The population growth rate in WDP15 is 1.5%. This scenario starts in 1999 and runs for 100 years.

Here the drawdown rises quickly until 2005 when SJ/C is implemented, and will do a shallow drop about 2010, then evens out until around 2030 where it begins a slow rise, never reaching negative drawdown. In about 2040, the drawdown starts rising exponentially. *Figure 10* shows the average of the five WDP15 runs, where positive numbers equal aquifer drawdown.

WDP 1.5 Drawdown
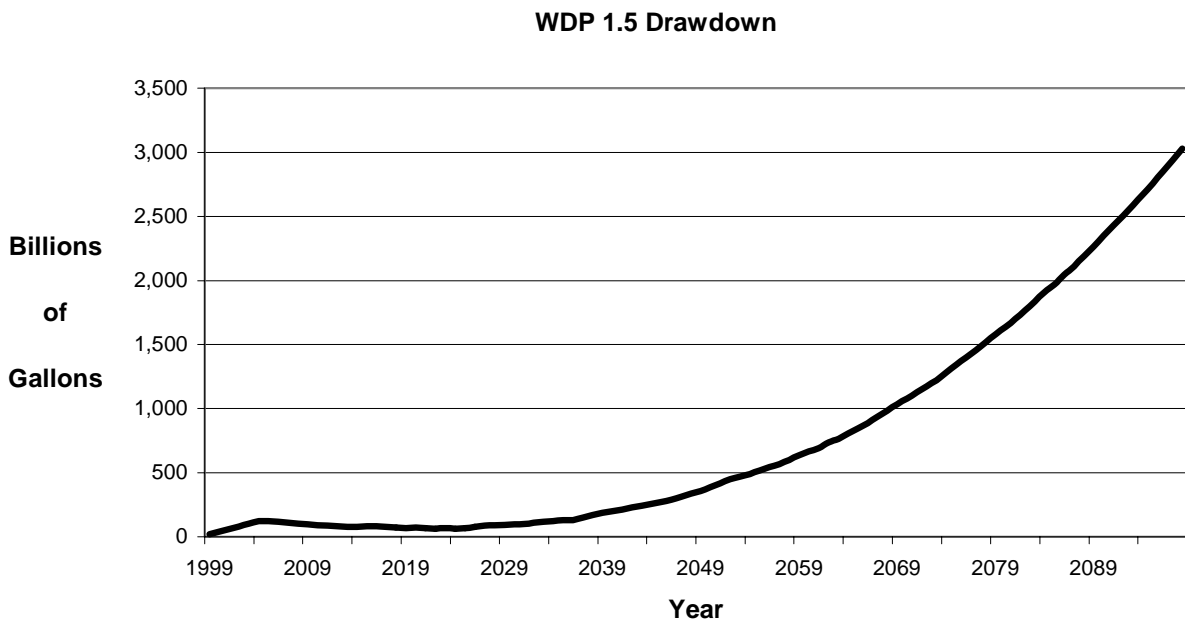
Figure 10. WDP15 Average

Table 5 shows the inputs for the five types of runs on the program. And, for the interested reader, full output of all twenty-five runs can be found in *Appendix B: Model Output*.

	Happy Days	PDO1	PDO15	WDP1	WDP15
%Dry, %Wet, %Normal	0, 0, 100	50, 10, 40	50, 10, 40	46, 27, 27	46, 27, 27
Population	483,053	483,053	483,053	483,053	483,053
Growth Rate	1%	1%	1.5%	1%	1.5%
Current Year	1999	1999	1999	1999	1999
Number of Years to Run	100	100	100	100	100
Shower Compliance	100%	10%	10%	10%	10%
Toilet Compliance	100%	10%	10%	10%	10%
Outdoor Compliance	100%	40%	40%	40%	40%
Water Request Compliance	100%	40%	40%	40%	40%
Year SJ/C Is Effective	2005	2005	2005	2005	2005

Table 5. Program Input Values

Conclusions

All in all, we managed to accomplish most of our goals. Our program encompasses all of the major variables, and returns results that make sense in the given context. The results were good, in that they were realistic, but they predict future water problems for the City of Albuquerque.

According to the various graphs and numbers that were calculated by the program, the biggest help to the water supply was the implementation of the San Juan/Chama Project. Once the city begins to get most of its water from the river, the drawdown in the aquifer decreases dramatically. When you add that to the fact that the City begins pumping water back *into* the aquifer, the result is a negative drawdown in which the aquifer begins to grow instead of shrink.

The results that we got for the future of the water system all showed that in the near future our water supply is fine up until about 2040 to 2060, when the drawdown starts growing exponentially. The City of Albuquerque's prediction that, with 1% population growth, we would be fine until about 2060 is, according to our program, a rather accurate one.

The graphs of the results for each of the five scenarios seemed to mirror a population growth curve once the San Juan/Chama effects wore off. This seems to suggest that the biggest threat to the water supply in the future is the growing population. Beyond the management and conservation plans, the best solutions would be to limit the population and, in addition, find a new reliable water supply.

Figure 11 shows a comparison between a population growth curve and the drawdown curve for our PDO15 run average. It can be seen that the population curve is very similar to the drawdown curve.

PDO15 vs. Population Growth Curve
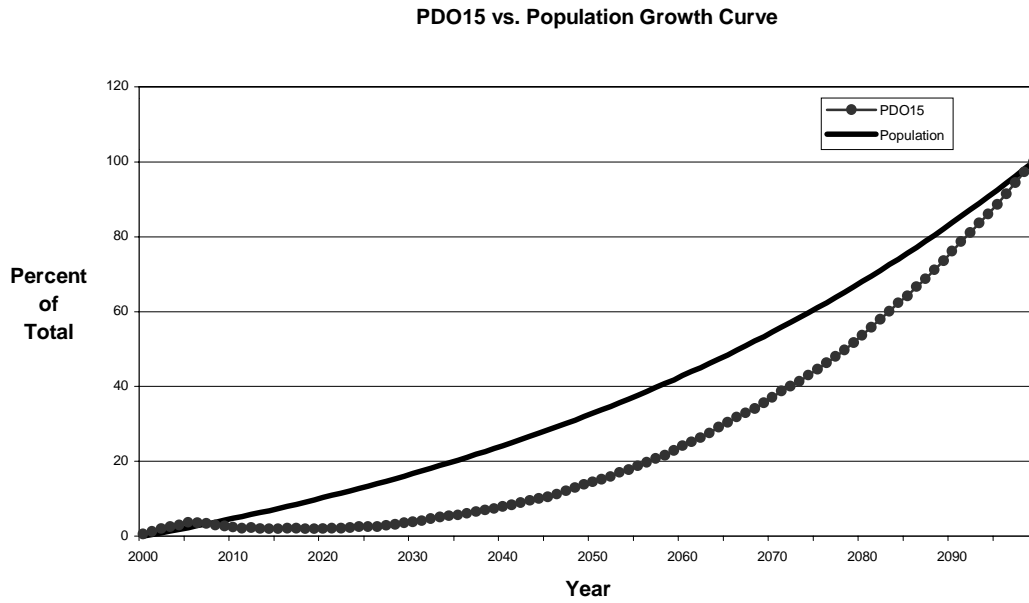
Figure 11. Population Growth Curve vs. PDO15 Average Drawdown Curve

Recommendations

The project was basically completed as well as possible considering our limited time and resources. The City of Albuquerque and the USGS have spent years and millions of dollars working on a similar project.

If we had more time and money to spend on this project, we probably could have gone much farther with it. We could have run several more scenarios with differing variables for more accurate results. As with any scientific project, more results are synonymous with more accuracy.

As for future work with this project, we hope that other people, such as those who work for the City and USGS, will be able to use and expand upon our program. The model can easily be adapted to similar situations in other places by changing the rainfall, population, conservation, etc. The code is very versatile because the variables for the Albuquerque area can be changed to fit variables for different areas.

Other things that can be added to the program that we didn't have time to implement are the effects of leaving water in the river, or pumping groundwater into the river, for the silvery minnow. We also couldn't study the effects of small water-losses that add up, such as leaky pipes and broken water mains, nor did we study the effects on the aquifer of removing water from the river at Alameda and then returning about half of it downstream south of the city. We could probably have done much more with an already complex project with more time.

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Appendices

Appendix A: Code

This is the code from our project. In our project the classes each had their own header and body file. The project also had a makefile. The main part of the code is mainp2.cpp, this is the parallel processing version of the code.

```
Makefile:

CityModel : gpcd.o population.o weather.o conservation.o mainp2.o
management.o output.o
     CC -o CityModel gpcd.o population.o weather.o conservation.o
     mainp2.o management.o output.o -lmpi -lm
gpcd.o : gpcd.cpp gpcd.h
     CC -c gpcd.cpp
population.o : population.cpp population.h
     CC -c population.cpp
weather.o : weather.cpp weather.h
     CC -c weather.cpp
conservation.o : conservation.cpp conservation.h
     CC -c conservation.cpp
mainp2.o : mainp2.cpp conservation.h gpcd.h weather.h population.h
     CC -c mainp2.cpp
management.o :  management.h management.cpp
     CC -c management.cpp
output.o: output.h output.cpp
     CC -c output.cpp
clean:
     rm gpcd.o weather.o population.o conservation.o mainp2.o
management.o
```

```
//
//The Main Program
//


#include <mpi.h>
#include "weather.h"
#include "gpcd.h"
#include "population.h"
#include <iostream.h>
#include <string.h>
#include <iomanip.h>
#include "conservation.h"
#include "management.h"
#include "output.h"
#include <unistd.h>
int main(int argc, char *argv[])
{
  //These are defined here so that all processors have a varible
  //for each value
  Management Plans;
  Output results[100];
  Conservation HomeSavings;
  Population_Manager Albuquerque;
  int wet=0;
  int dry=0;
  int normal=0;
  DataYear WaterUsage;
  int type=0;
  Typed water;
  long count;
  long counts;
  long num_years;
  long years;
  double total;
  double newTotal;
  double population;
  double growthRate;
  double fixedRateShower;
  double fixedRateToilet;
  double fixedRateOutdoor;
  double waterOnRequest;
  long sanJuanYear;
  int rank;
  int p;
  MPI_Init(&argc, &argv);
  MPI_Comm_rank(MPI_COMM_WORLD,&rank);
  MPI_Comm_size(MPI_COMM_WORLD,&p);
```

```
//The input stage
  if(rank==0)
    {
      while (type != 1 && type != 2 && type != 3)
      {
        cout << "Please enter the type of weather pattern:" <<endl;
        cout << "\tPDO(type 1),\n\tWet Dry Pattern, (type 2) or"<<endl;
        cout << "\tCustom (type 3): "<<endl;
        cin >> type;
      }
       cout <<endl << type << endl;
       if (type == 1) {
      water = pdo;
       }
       else if (type == 2) {
      water = wdp;
       }
       else if (type == 3) {
      water = custom;
      while(wet+dry+normal!=100)
        {
          cout << "Enter the Percent Wet Years: "<< endl;
          cin >> wet;
          cout << wet <<endl;
          cout << "Enter the Percent Dry Years: "<<endl;
          cin >> dry;
          cout << dry <<endl;
          cout << "Enter the Percent Normal Years: "<<endl;
          cin >>normal;
          cout << normal<< endl;
        }

      }
      cout << " Please enter the population: "<<endl;
      cin >> population;
      cout << population << endl;
      cout << "Please enter the growth rate: "<<endl;
      cin >> growthRate;
      cout <<growthRate<<endl;

      cout << "Please enter the current year: "<<endl;
      cin >> years;
      cout <<years<<endl;
      cout << "Please enter the number of years the program is to run
for: "<<endl;
      cin >> num_years;
      cout << num_years<<endl;

      cout << "Please enter the fixed compliance for low flow
showerheads: "<<endl;
      cin >> fixedRateShower;
      cout << fixedRateShower<<endl;
```

```
      cout << "Please enter the fixed compliance for low flow toilets:
"<<endl;
      cin >> fixedRateToilet;
      cout<< fixedRateToilet<< endl;
      cout << "Please enter the fixed compliance for outdoor water
savings "<<endl;
      cin >> fixedRateOutdoor;
      cout <<fixedRateOutdoor<<endl;
      cout << "Please enter the Water On Request compliance "<<endl;
      cin >> waterOnRequest;
      cout << waterOnRequest<< endl;
      cout << "Please enter the year that San Juan Chama goes into
effect: "<<endl;
      cin >> sanJuanYear;
      cout << sanJuanYear <<endl;

      cout << endl<<endl;
    }
  sleep(rank);//This sleep lets each processor have its own seed
  Weather Climate;
  //This allows for all processors to stop at this point and gather
data
  MPI_Barrier(MPI_COMM_WORLD);
  //The distribution of information
  MPI_Bcast( &type,1, MPI_INT,0,MPI_COMM_WORLD);
  MPI_Bcast( &num_years,1, MPI_LONG,0,MPI_COMM_WORLD);
  MPI_Bcast( &years,1, MPI_LONG,0,MPI_COMM_WORLD);
  MPI_Bcast( &population,1, MPI_DOUBLE,0,MPI_COMM_WORLD);
  MPI_Bcast( &growthRate,1,MPI_DOUBLE,0,MPI_COMM_WORLD);
  MPI_Bcast( &fixedRateShower,1,MPI_DOUBLE,0,MPI_COMM_WORLD);
  MPI_Bcast( &fixedRateToilet,1,MPI_DOUBLE,0,MPI_COMM_WORLD);
  MPI_Bcast( &fixedRateOutdoor,1,MPI_DOUBLE,0,MPI_COMM_WORLD);
  MPI_Bcast( &waterOnRequest,1,MPI_DOUBLE,0,MPI_COMM_WORLD);
  MPI_Bcast(&sanJuanYear,1, MPI_LONG,0,MPI_COMM_WORLD);
  MPI_Bcast(&wet,1,MPI_INT,0,MPI_COMM_WORLD);
  MPI_Bcast(&dry,1,MPI_INT,0,MPI_COMM_WORLD);
  MPI_Bcast(&normal,1,MPI_INT,0,MPI_COMM_WORLD);
  if (type == 1) {
    water = pdo;
    Climate.SetType(water);
  }
  else if (type == 2) {
     water = wdp;
     Climate.SetType(water);
  }
  else if (type == 3) {
    water = custom;
    Climate.Custom(normal,wet,dry);
  }
  //Each class is now getting its own data that it needs
  HomeSavings.SetPercentWaterOnRequest(waterOnRequest);
  Albuquerque.SetStartPopulation(population);
```

```
HomeSavings.SetPercentOutsideCompliance(fixedRateOutdoor);
HomeSavings.SetPercentToiletCompliance(fixedRateToilet);
HomeSavings.SetPercentToiletCompliance(fixedRateToilet);
Albuquerque.SetGrowthRate(growthRate);
Plans.SetSanJuanChamaYear(sanJuanYear);
HomeSavings.SetPercentShowerCompliance(fixedRateShower);
long nonToiletPeople=population-population*fixedRateToilet;
long nonShowerPeople=population-population*fixedRateShower;
MPI_Barrier(MPI_COMM_WORLD);
//The major loop
for (count = rank; count < num_years ; count+=p)
  {
    counts=count;
    WaterUsage.SetRainfall(Climate.GetRainfall());
    WaterUsage.SetPopulation(Albuquerque.Population(count));

HomeSavings.SetPercentToiletCompliance((Albuquerque.Population(count)-
nonToiletPeople)/Albuquerque.Population(count));

HomeSavings.SetPercentShowerCompliance((Albuquerque.Population(count)-
nonShowerPeople)/Albuquerque.Population(count));
    WaterUsage.SetGPCD();
    HomeSavings.SetGPCD(WaterUsage.GetGPCD());
    HomeSavings.SetPopulation(WaterUsage.GetPopulation());
    total = (WaterUsage.GetGPCD() * 365 *
WaterUsage.GetPopulation());
    newTotal = total - HomeSavings.GetToiletSavings() -
HomeSavings.GetShowerSavings() - HomeSavings.GetOutdoorSavings() -
    HomeSavings.GetWaterOnRequest();
    total = total / 1000000;
    newTotal = newTotal - Plans.ManagementPlan();
    results[counts].SetPopulation(WaterUsage.GetPopulation());
    results[counts].SetRainfall(WaterUsage.GetRainfall());
    results[counts].SetYear(count+years);
    results[counts].SetNewGPCD( newTotal / 365
/WaterUsage.GetPopulation());
    newTotal = newTotal - Plans.SanJuanChama(count + years);
    newTotal = newTotal / 1000000;
    results[counts].SetGPCD(WaterUsage.GetGPCD());
    results[counts].SetTotal(total);
    results[counts].SetNewTotal(newTotal);
  }
MPI_Status status;
double tempPop;
float tempRainfall;
long tempYear;
float tempGPCD;
float tnewGPCD;
double tNewTotal;
double tempTotal;
```

```
  //The collection of data
  for(count=0;count<num_years;count++){
    if(rank==count%p)
      {
      tempPop=results[count].GetPopulation();
      tempRainfall=results[count].GetRainfall();
      tempYear=results[count].GetYear();
      tempGPCD=results[count].GetGPCD();
      tnewGPCD=results[count].GetNewGPCD();
      tempTotal=results[count].GetTotal();
      tNewTotal=results[count].GetNewTotal();
      MPI_Send(&tempPop, 1, MPI_DOUBLE, 0, count, MPI_COMM_WORLD );
      MPI_Send(&tempRainfall , 1, MPI_FLOAT, 0, count, MPI_COMM_WORLD
);
      MPI_Send(&tempYear, 1, MPI_LONG, 0, count, MPI_COMM_WORLD );
      MPI_Send(&tempGPCD, 1, MPI_FLOAT, 0, count, MPI_COMM_WORLD );
      MPI_Send(&tnewGPCD, 1, MPI_FLOAT, 0, count, MPI_COMM_WORLD );
      MPI_Send(&tempTotal, 1, MPI_DOUBLE, 0, count, MPI_COMM_WORLD );
      MPI_Send(&tNewTotal, 1, MPI_DOUBLE, 0, count, MPI_COMM_WORLD );
      MPI_Send(&results[count], 1, MPI_BYTE, 0, count, MPI_COMM_WORLD
);
      }
    if(rank==0)
      {
      MPI_Recv(&tempPop, 1, MPI_DOUBLE, count%p, count,
MPI_COMM_WORLD,&status  );
      MPI_Recv(&tempRainfall , 1, MPI_FLOAT, count%p, count,
MPI_COMM_WORLD,&status  );
      MPI_Recv(&tempYear, 1, MPI_LONG, count%p, count,
MPI_COMM_WORLD,&status  );
      MPI_Recv(&tempGPCD, 1, MPI_FLOAT, count%p, count,
MPI_COMM_WORLD,&status  );
      MPI_Recv(&tnewGPCD, 1, MPI_FLOAT, count%p, count,
MPI_COMM_WORLD,&status  );
      MPI_Recv(&tempTotal, 1, MPI_DOUBLE, count%p, count,
MPI_COMM_WORLD,&status  );
      MPI_Recv(&tNewTotal, 1, MPI_DOUBLE, count%p, count,
MPI_COMM_WORLD,&status  );
      results[count].SetPopulation(tempPop);
      results[count].SetRainfall(tempRainfall);
      results[count].SetYear(tempYear);
      results[count].SetGPCD(tempGPCD);
      results[count].SetNewGPCD(tnewGPCD);
      results[count].SetTotal(tempTotal);
      results[count].SetNewTotal(tNewTotal);
      }
  }

  if(rank==0)
    {
```

```
        //The outputing of data
        cout <<"Year\tNGpcd
\tRainfall\tPopulation\tGPCD\tTotal\t\tnewtotal\tDrawdown"<<endl;
        for(count=0;count<num_years;count++)
        {
          cout << setiosflags(ios::fixed) << setprecision(2);
          cout <<
results[count].GetYear()<<"\t"<<results[count].GetNewGPCD();
          cout<<"\t"<<results[count].GetRainfall()<<"\t\t";
          cout<<results[count].GetPopulation()<<"\t\t";

cout<<results[count].GetGPCD()<<"\t"<<results[count].GetTotal();

cout<<"\t"<<results[count].GetNewTotal()<<"\t\t"<<results[count].GetNe
wTotal()-
(Plans.Recharge()*(results[count].GetRainfall()/8.99))/1000000<<endl;
        }
        cout <<"Year\tNGpcd
\tRainfall\tPopulation\tGPCD\tTotal\t\tnewtotal"<<endl;
      }
  //End of MPI
  MPI_Finalize();
  return 0;
}//The End
```

```
//
//conservation.h
//

#ifndef CONSERVATION_H
#define CONSERVATION_H
const double cPercentIndoor =.6; //These are the percentages
const double cPercentOutdoor =.4; //of water usage for
const double cPercentShower =.21; // Albuquerque
const double cPercentToilet =.33;
const double cPercentToiletReduction = 1 - (1.5 / 5);
const double cPercentShowerReduction = 1 - (1.5 / 7);
const double cWaterOnRequest = 1000000;
const double cPercentOutdoorReduction =.5;
const  double cPercentResidental =.71;
class Conservation {
 public:
  double GetToiletSavings();
  double GetShowerSavings();
  double GetOutdoorSavings();
  double GetWaterOnRequest();
  double GetGPCD();
  double GetPopulation();
  void SetPopulation(double population);
  void SetGPCD(double GPCD);
  void SetPercentShowerCompliance(double percent);
  void SetPercentToiletCompliance(double percent);
  void SetPercentOutsideCompliance(double percent);
  void SetPercentWaterOnRequest(double percent);
  double GetPercentIndoor();
  double GetPercentOutdoor();
  double GetPercentShower();
  double GetPercentToilet();
  double GetPercentToiletReduction();
  double GetPercentShowerReduction();
  double GetPercentOutdoorReduction();
  double GetPercentShowerCompliance();
  double GetPercentToiletCompliance();
  double GetPercentOutsideComplaince();
  double GetPercentWaterOnRequest();
 private:
  double itsGPCD;
  double itsPercentToiletCompliance;
  double itsPercentShowerCompliance;
  double itsPercentOutdoorCompliance;
  double itsPopulation;
  double itsPercentWaterOnRequest;
};

#endif
```

```
//
//conservation.cpp
//
#include "conservation.h"

double Conservation::GetToiletSavings() {
  double total;
  total = itsPercentToiletCompliance * cPercentResidental *
itsPopulation * cPercentIndoor * cPercentToilet *
cPercentToiletReduction * itsGPCD * 365;
  return total;
}

double Conservation::GetShowerSavings() {
  double total;
  total = itsPercentShowerCompliance * cPercentResidental *
itsPopulation * cPercentIndoor * cPercentShower *
cPercentShowerReduction * itsGPCD * 365;
  return total;
}

double Conservation::GetOutdoorSavings() {
    double total;
    total = itsPercentToiletCompliance * cPercentResidental *
itsPopulation * cPercentOutdoor * cPercentOutdoorReduction * itsGPCD *
365;
    return total;
}

double Conservation::GetGPCD() {return itsGPCD;}

void Conservation::SetGPCD(double GPCD) {itsGPCD = GPCD;}

double Conservation::GetPercentIndoor() {
  return cPercentIndoor;
}

double Conservation::GetPercentOutdoor() {
  return cPercentOutdoor;
}

double Conservation::GetPercentShower() {
  return cPercentShower;
}

double Conservation::GetPercentToilet() {
  return cPercentToilet;
}
double Conservation::GetPercentToiletReduction() {
  return cPercentToiletReduction;
}
```

```cpp
double Conservation::GetPercentShowerReduction() {
  return cPercentShowerReduction;
}

double Conservation::GetWaterOnRequest() {
  return itsPercentWaterOnRequest * cWaterOnRequest;
}

double Conservation::GetPercentOutdoorReduction() {
  return cPercentOutdoorReduction;
}

void Conservation::SetPercentShowerCompliance(double percent) {
  itsPercentShowerCompliance = percent;
}

void Conservation::SetPercentToiletCompliance(double percent) {
  itsPercentToiletCompliance = percent;
}

void Conservation::SetPercentOutsideCompliance(double percent) {
  itsPercentOutdoorCompliance = percent;
}

double Conservation::GetPercentShowerCompliance() {
  return itsPercentShowerCompliance;
}

double Conservation::GetPercentToiletCompliance() {
  return itsPercentToiletCompliance;
}

double Conservation::GetPercentOutsideComplaince() {
  return itsPercentOutdoorCompliance;
}

double Conservation::GetPopulation() {
  return itsPopulation;
}

void Conservation::SetPopulation(double population) {
  itsPopulation = population;
}

void Conservation::SetPercentWaterOnRequest(double percent) {
  itsPercentWaterOnRequest = percent;
}

double Conservation::GetPercentWaterOnRequest() {
  return itsPercentWaterOnRequest;
}
```

```
//
//gpcd.h
//
#include <math.h>
#ifndef GPCD_H
#define GPCD_H
class DataYear {
 public:
  long GetPopulation() { return mypopulation; }
  void SetPopulation(long population);
  float GetRainfall() { return myrainfall; }
  void SetRainfall(float rainfall);
  long GetYear() { return myyear; }
  void SetYear(long year);
  float GetGPCD() { return myGPCD; }
  void SetGPCD() {
    myGPCD = ((pow(myrainfall, 4.0) * 0.0857) -
            (3.2025 * (pow(myrainfall, 3.0))) +
            (44.26 * (pow(myrainfall, 2.0))) -
            (271.1 * myrainfall) + 874.94);
  }
 private:
  long mypopulation;
  long myyear;
  float myrainfall;
  float myGPCD;
};
#endif

//
//gpcd.cpp
//
#include "gpcd.h"

void DataYear::SetPopulation(long population) {
  mypopulation = population;
}

void DataYear::SetRainfall(float rainfall) {
  myrainfall = rainfall;
}

void DataYear::SetYear(long year) {
  myyear = year;
}
```

```
//
//management.h
//
#ifndef MANAGEMENT_H
#define MANAGEMENT_H
const double cAcreFeetToGallons = 7.481 * 43560.0;
class Management {
 public:
  void SetSanJuanChamaYear(long year);
  long GetSanJuanChamaYear();
  double Recharge();
  double ManagementPlan();
  double SanJuanChama(long year);
 private:
  long itsSanJuanChamaYear;
};
#endif

//
//management.cpp
//

#include "management.h"

double Management::Recharge(){
  return 72600*cAcreFeetToGallons;
}

void Management::SetSanJuanChamaYear(long year) {
  itsSanJuanChamaYear = year;
}

long Management::GetSanJuanChamaYear() {
  return itsSanJuanChamaYear;
}

double Management::SanJuanChama(long Year) {
  if (Year >= itsSanJuanChamaYear) {
        return (94000) * cAcreFeetToGallons;
  }
  else {
    return 0;
  }
}

double Management::ManagementPlan() {
  return (900 + 3000 + 3900) * cAcreFeetToGallons;
}
```

```
//
//output.h
//
#include <math.h>
#ifndef OUTPUT_H
#define OUTPUT_H
class Output {
 public:
  long GetPopulation() { return mypopulation; }
  void SetPopulation(long population);
  float GetRainfall() { return myrainfall; }
  void SetRainfall(float rainfall);
  long GetYear() { return myyear; }
  void SetYear(long year);
  float GetGPCD() { return myGPCD; }
  void SetGPCD(float GPCD);
  float GetNewGPCD(){return myNewGPCD;}
  void  SetNewGPCD(float GPCD);
  double GetTotal(){return myTotal;}
  void   SetTotal(double total);
  double GetNewTotal(){return myNewTotal;}
  void   SetNewTotal(double total);
 private:
  long mypopulation;
  long myyear;
  float myrainfall;
  float myGPCD;
  float myNewGPCD;
  double myTotal;
  double myNewTotal;
};
#endif
```

```
//
//output.cpp
//
#include "output.h"

void Output::SetPopulation(long population) {
  mypopulation = population;
}

void Output::SetRainfall(float rainfall) {
  myrainfall = rainfall;
}

void Output::SetYear(long year) {
  myyear = year;
}

void Output::SetGPCD(float GPCD){
  myGPCD=GPCD;
}

void  Output::SetNewGPCD(float GPCD){
  myNewGPCD=GPCD;
}
void  Output::SetTotal(double total){
  myTotal=total;
}

void  Output::SetNewTotal(double total){
  myNewTotal=total;
}
```

```
//
//population.h
//

#ifndef POPULATION_H
#define POPULATION_H

class Population_Manager {
 public:
  Population_Manager();
  ~Population_Manager();
  long GetStartPopulation() { return itsStartPop; }
  void SetStartPopulation(long population);
  float GetGrowthRate() { return itsGrowthRate; }
  void SetGrowthRate(float rate);
  double Population(int yearNum);
 private:
  int itsStartPop;
  float itsGrowthRate;
};

#endif

//
//population.cpp
//
#include "population.h"
#include <math.h>

Population_Manager::Population_Manager() { }

Population_Manager::~Population_Manager() { }

void Population_Manager::SetStartPopulation(long population) {
  itsStartPop = population;
}

void Population_Manager::SetGrowthRate(float rate) {
  itsGrowthRate = rate;
}

double Population_Manager::Population(int yearNum) {
  return itsStartPop * pow(1 + itsGrowthRate, yearNum);
}
```

```
//
//Bosque School Challenge Team 13
//Feburary 2, 2001
//Weather class
//
#include <time.h>
#include <stdlib.h>

#ifndef WEATHER_H
#define WEATHER_H

enum Typed { pdo = 1, wdp = 2, custom = 3, idle = 4 };

class Weather {
public:
  Weather();
  ~Weather();
  void SetType(Typed water);
  float GetRainfall();
  void Custom(int newNormal, int newWet, int newDry);
 private:
  time_t itsTimer;
  int itsNormal;
  int itsDry;
  int itsWet;
  float itsRain;
  int itsNum;
  Typed itsType;
};

#endif
```

```
//
//Bosque School Challenge Team 13
//Feburary 25,2001
//Weather body file
//

#include "weather.h"
#include <iostream.h>

Weather::Weather() {
  itsTimer = time(0);
  srand((unsigned)itsTimer);
  itsDry = 0;
  itsNormal = 0;
  itsWet = 0;
}

Weather::~Weather() { }

void Weather::SetType(Typed water) {
  if (water == wdp) {
    itsDry = 46;
    itsWet = 27;
    itsNormal = 27;
  }
  else if (water == pdo) {
    itsDry = 50;
    itsWet = 10;
    itsNormal = 40;
  }
  else {
    while (itsDry + itsWet + itsNormal != 100) {
      cout << "Enter percent dry:";
      cin >> itsDry;
      cout << "Enter percent wet:";
      cin >> itsWet;
      cout << "Enter percent normal:";
      cin >> itsNormal;
    }
  }
}


void Weather::Custom(int newNormal, int newWet, int newDry) {
  itsNormal = newNormal;
  itsWet = newWet;
  itsDry = newDry;
}

float Weather::GetRainfall() {
  int num;
  int x;
```

```
  float rain;
  num = rand() % 100 + 1;
  x = rand() % 300;
  rain = (x) / 100.0;
  float rainfall;
  if (num < itsDry) {
    rainfall = 4.51 + rain;
  }
  else if (num < itsDry + itsNormal) {
    rainfall = 5.7 + rain * 2;
  }
  else {
    rainfall = 13.29 - rain;
  }
  return rainfall;
}
```

Appendix B: Model Output

Happy Days Scenario

All five runs of the Happy Days Scenario used the following input:

Please enter the type of weather pattern:
        PDO(type 1),
        Wet Dry Pattern, (type 2) or
        Custom (type 3): 3
Enter the Percent Wet Years: 0
Enter the Percent Dry Years: 0
Enter the Percent Normal Years: 100
Please enter the population: 483053
Please enter the growth rate: 0.01
Please enter the current year: 1999
Please enter the number of years the program is to run for: 100
Please enter the fixed compliance for low flow showerheads: 1
Please enter the fixed compliance for low flow toilets: 1
Please enter the fixed compliance for outdoor water savings: 1
Please enter the Water On Request compliance: 1
Please enter the year that San Juan Chama goes into effect: 2005

Happy Days Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	160.65	6.86	483,053	253.98	44,781.06	28,324.96	10,271.99
2000	155.77	9.36	487,883	246.7	43,931.22	27,739.16	3,107.12
2001	157.43	8.54	492,762	248.91	44,767.88	28,315.88	5,841.78
2002	163.54	6.34	497,689	257.56	46,787.83	29,708.24	13,023.72
2003	156.01	9.44	502,666	246.44	45,215.29	28,624.27	3,781.71
2004	162.82	6.52	507,693	256.12	47,461.03	30,172.27	13,014.06
2005	153.59	10.48	512,770	242.53	45,392.26	-1,885.74	-29,465.20
2006	158.25	8.46	517,898	249.09	47,086.29	-718.04	-22,981.61
2007	160.29	7.36	523,077	251.86	48,086.80	-28.38	-19,397.16
2008	159.16	8.04	528,307	250.04	48,214.84	59.88	-21,098.41
2009	151.84	11.4	533,590	239.22	46,591.31	-1,059.23	-31,059.78
2010	160.55	7.42	538,926	251.67	49,505.16	949.30	-18,577.38
2011	154.55	10.42	544,316	242.77	48,232.95	72.36	-27,349.20
2012	162.63	6.8	549,759	254.31	51,030.83	2,000.95	-15,894.12
2013	160.34	7.72	555,256	250.81	50,830.83	1,863.09	-18,453.08
2014	161.38	7.28	560,809	252.14	51,612.41	2,401.84	-16,756.41
2015	159.11	8.64	566,417	248.67	51,410.87	2,262.91	-20,474.35
2016	161.78	7.22	572,081	252.36	52,696.04	3,148.79	-15,851.56
2017	154.35	10.76	577,802	241.41	50,913.54	1,920.10	-26,396.21
2018	160.04	8.28	583,580	249.5	53,144.33	3,457.79	-18,332.08
2019	155.8	10.32	589,416	243.18	52,316.08	2,886.88	-24,271.52
2020	153.23	11.38	595,310	239.28	51,992.31	2,663.70	-27,284.22
2021	161.33	7.7	601,263	250.86	55,053.99	4,774.13	-15,489.40
2022	153.5	11.36	607,276	239.33	53,049.72	3,392.58	-26,502.71
2023	153.27	11.56	613,348	238.84	53,468.78	3,681.44	-26,740.18
2024	156.04	10.44	619,482	242.69	54,875.30	4,650.96	-22,823.23
2025	160.5	8.5	625,677	249	56,864.44	6,022.08	-16,346.76
2026	165.42	6.54	631,934	255.97	59,041.94	7,523.04	-9,687.81
2027	157.15	10.16	638,253	243.81	56,799.68	5,977.44	-20,759.90
2028	155.95	12.95	644,635	241.92	56,922.85	6,062.34	-28,017.24
2029	162.11	7.76	651,082	250.71	59,578.81	7,893.11	-12,528.32
2030	159.95	9.12	657,593	247.42	59,386.06	7,760.24	-16,240.20
2031	165.05	6.74	664,169	254.66	61,735.08	9,379.43	-8,357.74
2032	158.68	9.78	670,810	245.27	60,052.24	8,219.44	-17,517.88
2033	168.43	6.16	677,518	259.26	64,114.69	11,019.71	-5,191.12
2034	163.94	7.16	684,293	252.6	63,090.59	10,313.79	-8,528.66
2035	160.92	8.88	691,136	248.07	62,580.44	9,962.14	-13,406.72
2036	161.72	8.46	698,048	249.09	63,465.19	10,572.00	-11,691.57
2037	160.51	9.2	705,028	247.19	63,609.88	10,671.74	-13,539.24
2038	155.31	11.3	712,079	239.51	62,250.15	9,734.47	-20,002.92
2039	155.8	11.12	719,199	240.08	63,023.93	10,267.84	-18,995.86
2040	166.95	6.52	726,391	256.12	67,905.73	13,632.89	-3,525.33
2041	162.51	8.26	733,655	249.54	66,823.03	12,886.57	-8,850.67
2042	159.09	10	740,992	244.44	66,111.75	12,396.29	-13,919.99
2043	164.12	7.44	748,402	251.6	68,730.08	14,201.11	-5,378.20
2044	156.14	11.18	755,886	239.88	66,183.51	12,445.75	-16,975.85
2045	164.49	7.36	763,445	251.86	70,183.99	15,203.29	-4,165.49
2046	163.13	8.16	771,079	249.76	70,294.61	15,279.55	-6,194.53
2047	163.97	7.7	778,790	250.86	71,309.06	15,978.81	-4,284.72
2048	159.58	10.02	786,578	244.36	70,156.81	15,184.57	-11,184.34
2049	159.4	10.12	794,443	243.97	70,745.18	15,590.13	-11,041.95

Happy Days Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	155.89	11.6	802,388	238.75	69,924.30	15,024.29	-15,502.59
2051	167.37	6.64	810,412	255.29	75,513.58	18,877.00	1,403.00
2052	163.9	8	818,516	250.13	74,727.59	18,335.22	-2,717.80
2053	158.31	10.64	826,701	241.89	72,988.61	17,136.54	-10,863.98
2054	165.46	7.28	834,968	252.14	76,843.84	19,793.96	635.71
2055	162.04	9.24	843,318	247.07	76,050.10	19,246.83	-5,069.41
2056	159.83	10.18	851,751	243.74	75,774.75	19,057.03	-7,732.94
2057	163.85	8.3	860,268	249.45	78,327.18	20,816.43	-1,026.08
2058	164.72	7.8	868,871	250.6	79,476.24	21,608.48	1,081.79
2059	162.15	9.34	877,560	246.76	79,039.67	21,307.55	-3,271.85
2060	164.75	7.88	886,335	250.41	81,010.46	22,666.03	1,928.80
2061	157.71	11.12	895,199	240.08	78,446.93	20,898.97	-8,364.73
2062	166.89	7	904,151	253.29	83,588.93	24,443.38	6,021.98
2063	166.03	7.34	913,192	251.93	83,972.89	24,708.04	5,391.89
2064	160.67	10.1	922,324	244.05	82,159.44	23,458.03	-3,121.41
2065	168.58	6.62	931,547	255.42	86,845.90	26,688.42	9,267.04
2066	163.1	9.14	940,863	247.36	84,947.93	25,380.14	1,327.06
2067	162.67	9.38	950,271	246.63	85,544.76	25,791.54	1,106.87
2068	157.64	11.4	959,774	239.22	83,804.28	24,591.82	-5,408.74
2069	161.15	10.06	969,372	244.21	86,405.73	26,385.01	-89.16
2070	164.16	8.72	979,066	248.48	88,795.87	28,032.54	5,084.75
2071	162.55	9.56	988,856	246.04	88,804.37	28,038.40	2,880.04
2072	164.82	8.4	998,745	249.23	90,853.61	29,450.95	7,345.28
2073	170.51	6.36	1,008,732	257.39	94,767.58	32,148.86	15,411.71
2074	164.02	8.96	1,018,820	247.86	92,172.78	30,360.26	6,780.87
2075	167.76	7.02	1,029,008	253.2	95,097.41	32,376.21	13,902.19
2076	163.48	9.3	1,039,298	246.88	93,654.16	31,381.38	6,907.24
2077	169.81	6.54	1,049,691	255.97	98,073.20	34,427.44	17,216.60
2078	158.87	11.14	1,060,188	240.02	92,878.86	30,846.96	1,530.63
2079	166.04	7.92	1,070,790	250.31	97,832.29	34,261.38	13,418.89
2080	164.18	9.08	1,081,498	247.53	97,713.04	34,179.18	10,284.00
2081	159.35	11.02	1,092,312	240.43	95,859.61	32,901.61	3,901.07
2082	168.48	6.94	1,103,236	253.58	102,109.92	37,209.97	18,946.47
2083	166.42	7.84	1,114,268	250.51	101,882.78	37,053.40	16,421.44
2084	160.22	10.76	1,125,411	241.41	99,166.60	35,181.13	6,864.81
2085	162.2	10.06	1,136,665	244.21	101,317.53	36,663.77	10,189.59
2086	163.98	9.36	1,148,031	246.7	103,373.96	38,081.28	13,449.24
2087	161.61	10.32	1,159,512	243.18	102,917.33	37,766.52	10,608.12
2088	165.94	8.34	1,171,107	249.36	106,590.71	40,298.60	18,350.82
2089	170.65	6.52	1,182,818	256.12	110,574.22	43,044.45	25,886.23
2090	160.74	10.7	1,194,646	241.65	105,370.18	39,457.28	11,298.86
2091	162.56	10.06	1,206,592	244.21	107,550.52	40,960.20	14,486.02
2092	161.57	10.44	1,218,658	242.69	107,951.85	41,236.84	13,762.64
2093	172.64	6.22	1,230,845	258.67	116,207.95	46,927.80	30,559.07
2094	166.81	8	1,243,153	250.13	113,495.43	45,058.05	24,005.03
2095	170.7	6.58	1,255,585	255.69	117,180.15	47,597.94	30,281.83
2096	176.21	5.8	1,268,141	263.6	122,014.11	50,930.01	35,666.57
2097	167.27	7.82	1,280,822	250.56	117,134.53	47,566.50	26,987.17
2098	163.53	9.84	1,293,630	245.05	115,704.12	46,580.51	20,685.29

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
**Happy Days Scenario – Run 2**
1999	151.21	11.06	483,053	240.29	42,366.92	26,660.88	-2,444.92
2000	150.86	11.28	487,883	239.57	42,661.58	26,864.00	-2,820.76
2001	153.15	10.44	492,762	242.69	43,650.12	27,545.40	71.21
2002	158.01	8.26	497,689	249.54	45,330.69	28,703.82	6,966.58
2003	157.55	8.64	502,666	248.67	45,624.50	28,906.35	6,169.09
2004	165.89	6.04	507,693	260.56	48,284.42	30,739.84	14,844.81
2005	154.85	10.02	512,770	244.36	45,735.21	-1,649.34	-28,018.26
2006	158.99	7.98	517,898	250.17	47,290.98	-576.94	-21,577.33
2007	157.57	8.94	523,077	247.92	47,333.04	-547.95	-24,074.70
2008	152.21	11.16	528,307	239.95	46,269.98	-1,280.72	-30,649.69
2009	161.06	7.16	533,590	252.6	49,196.04	736.22	-18,106.23
2010	154.08	10.54	538,926	242.29	47,660.11	-322.51	-28,059.86
2011	159.3	8.2	544,316	249.67	49,604.21	1,017.57	-20,561.77
2012	151.85	11.64	549,759	238.68	47,893.66	-161.51	-30,793.66
2013	163.9	6.54	555,256	255.97	51,877.87	2,584.82	-14,626.03
2014	166.73	6.1	560,809	259.9	53,199.65	3,495.92	-12,557.00
2015	162.11	7.06	566,417	253.02	52,309.32	2,882.22	-15,697.07
2016	153.96	10.86	572,081	241.03	50,328.78	1,517.02	-27,062.45
2017	159.77	8.38	577,802	249.27	52,570.88	3,062.51	-18,990.53
2018	168.66	5.92	583,580	262.01	55,808.82	5,294.44	-10,284.80
2019	156.73	9.98	589,416	244.52	52,604.58	3,085.74	-23,177.91
2020	162.47	7.14	595,310	252.68	54,904.07	4,670.79	-14,119.03
2021	158.24	9.46	601,263	246.38	54,069.83	4,095.75	-20,799.45
2022	162.76	7.12	607,276	252.76	56,025.91	5,444.08	-13,293.11
2023	155.38	10.64	613,348	241.89	54,151.88	4,152.30	-23,848.22
2024	161.01	8.1	619,482	249.9	56,504.94	5,774.28	-15,541.91
2025	167.72	6.14	625,677	259.47	59,256.13	7,670.68	-8,487.51
2026	160.05	8.84	631,934	248.18	57,243.65	6,283.47	-16,980.12
2027	154.18	11.3	638,253	239.51	55,796.26	5,285.78	-24,451.61
2028	154.05	11.42	644,635	239.17	56,274.88	5,615.69	-24,437.49
2029	164.68	6.78	651,082	254.43	60,463.03	8,502.60	-9,339.83
2030	161.57	8.16	657,593	249.76	59,948.78	8,148.13	-13,325.96
2031	161.61	8.2	664,169	249.67	60,526.57	8,546.40	-13,032.95
2032	156.79	10.48	670,810	242.53	59,382.53	7,757.81	-19,821.65
2033	154.47	11.48	677,518	239.02	59,107.98	7,568.56	-22,642.52
2034	166.47	6.5	684,293	256.27	64,007.34	10,945.71	-6,159.87
2035	154.97	11.32	691,136	239.45	60,404.41	8,462.20	-21,327.83
2036	158.25	10.1	698,048	244.05	62,181.22	9,686.96	-16,892.48
2037	168.55	6.2	705,028	258.86	66,614.35	12,742.73	-3,573.36
2038	165.01	6.94	712,079	253.58	65,906.42	12,254.75	-6,008.75
2039	161.98	8.48	719,199	249.04	65,376.19	11,889.27	-10,426.94
2040	159.42	9.8	726,391	245.19	65,008.56	11,635.86	-14,154.10
2041	155.17	11.54	733,655	238.88	63,968.21	10,918.74	-19,450.25
2042	164.4	7.28	740,992	252.14	68,195.03	13,832.30	-5,325.95
2043	157.48	10.62	748,402	241.97	66,097.49	12,386.46	-15,561.43
2044	161.49	9.04	755,886	247.65	68,324.93	13,921.84	-9,868.08
2045	156.18	11.2	763,445	239.82	66,827.23	12,889.47	-16,584.76
2046	170.73	6.02	771,079	260.79	73,398.62	17,419.16	1,576.76
2047	161.4	9.22	778,790	247.13	70,248.03	15,247.44	-9,016.17
2048	163.92	7.78	786,578	250.65	71,963.19	16,429.71	-4,044.36
2049	161.49	9.26	794,443	247.01	71,625.05	16,196.63	-8,172.25

Happy Days Scenario – Run 2						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	161.32	9.38	802,388	246.63	72,232.12	16,615.09	-8,069.58
2051	156.94	11.1	810,412	240.15	71,037.25	15,791.45	-13,419.62
2052	162.49	8.88	818,516	248.07	74,114.34	17,912.51	-5,456.35
2053	156.26	11.52	826,701	238.92	72,094.56	16,520.26	-13,796.09
2054	161.35	9.52	834,968	246.18	75,025.60	18,540.64	-6,512.46
2055	169.04	6.38	843,318	257.22	79,175.28	21,401.03	4,611.25
2056	164.56	7.8	851,751	250.6	77,910.25	20,529.04	2.35
2057	172.33	5.94	860,268	261.75	82,190.25	23,479.27	7,847.40
2058	156.84	11.42	868,871	239.17	75,850.07	19,108.95	-10,944.24
2059	160.34	10.08	877,560	244.13	78,197.01	20,726.70	-5,800.10
2060	165.71	7.38	886,335	251.8	81,459.81	22,975.76	3,554.35
2061	159.01	10.62	895,199	241.97	79,062.34	21,323.18	-6,624.71
2062	168.94	6.5	904,151	256.27	84,572.41	25,121.29	8,015.71
2063	159.16	10.62	913,192	241.97	80,651.44	22,418.56	-5,529.33
2064	162.83	9.2	922,324	247.19	83,215.02	24,185.64	-25.34
2065	175.02	5.72	931,547	264.76	90,022.35	28,877.96	13,825.05
2066	164.64	8.24	940,863	249.59	85,711.36	25,906.38	4,221.77
2067	161.11	10.02	950,271	244.36	84,756.99	25,248.53	-1,120.39
2068	168.45	6.7	959,774	254.9	89,296.99	28,377.96	10,746.06
2069	157.75	11.38	969,372	239.28	84,661.59	25,182.77	-4,765.16
2070	161.27	10.04	979,066	244.29	87,297.60	26,999.78	578.23
2071	163.77	8.98	988,856	247.81	89,442.49	28,478.26	4,846.25
2072	157.63	11.58	998,745	238.79	87,050.59	26,829.52	-3,644.73
2073	165.23	8.18	1,008,732	249.72	91,943.50	30,202.22	8,675.50
2074	159.52	10.78	1,018,820	241.34	89,745.24	28,686.94	318.00
2075	158.91	11.04	1,029,008	240.36	90,277.32	29,053.71	0.54
2076	164	9.04	1,039,298	247.65	93,942.69	31,580.26	7,790.35
2077	166.39	7.64	1,049,691	251.02	96,175.28	33,119.20	13,013.56
2078	160.62	13.02	1,060,188	242.55	93,859.32	31,522.80	-2,741.00
2079	166.64	7.58	1,070,790	251.19	98,173.56	34,496.62	14,548.88
2080	167.9	7.08	1,081,498	252.93	99,843.35	35,647.61	17,015.69
2081	164.4	9	1,092,312	247.76	98,778.48	34,913.59	11,228.95
2082	159.67	10.92	1,103,236	240.8	96,965.89	33,664.17	4,926.79
2083	168.34	7	1,114,268	253.29	103,014.29	37,833.35	19,411.96
2084	167.29	7.42	1,125,411	251.67	103,379.03	38,084.78	18,558.10
2085	169.49	6.72	1,136,665	254.78	105,703.93	39,687.34	22,002.80
2086	173.7	6.02	1,148,031	260.79	109,280.49	42,152.67	26,310.27
2087	163.45	9.62	1,159,512	245.84	104,042.91	38,542.39	13,226.13
2088	162.65	9.96	1,171,107	244.59	104,552.42	38,893.59	12,682.58
2089	166.27	8.16	1,182,818	249.76	107,830.36	41,153.09	19,679.01
2090	160	10.98	1,194,646	240.58	104,903.43	39,135.55	10,240.27
2091	161.68	10.38	1,206,592	242.93	106,989.67	40,573.60	13,257.30
2092	166.86	7.9	1,218,658	250.36	111,363.29	43,588.36	22,798.50
2093	163.65	9.68	1,230,845	245.63	110,349.13	42,889.29	17,415.14
2094	159.19	11.46	1,243,153	239.07	108,477.41	41,599.11	11,440.65
2095	167.37	7.7	1,255,585	250.86	114,966.27	46,071.91	25,808.37
2096	167.22	7.82	1,268,141	250.56	115,974.82	46,767.10	26,187.78
2097	163.47	9.84	1,280,822	245.05	114,558.55	45,790.86	19,895.64
2098	175.75	5.86	1,293,630	262.78	124,079.82	52,353.91	36,932.57

Happy Days Scenario – Run 3						
Year	**New GPCD**	**Rainfall**	**Population**	**GPCD**	**Total**	**New Total**	**Drawdown**
1999	151.07	11.12	483,053	240.08	42,330.28	26,635.63	-2,628.07
2000	155.59	9.44	487,883	246.44	43,885.54	27,707.67	2,865.11
2001	157.31	8.62	492,762	248.72	44,734.12	28,292.61	5,607.98
2002	163.08	6.42	497,689	256.89	46,665.92	29,624.20	12,729.15
2003	158.99	7.74	502,666	250.76	46,007.02	29,170.02	8,801.22
2004	156.83	9.12	507,693	247.42	45,848.86	29,061.00	5,060.55
2005	160.76	7.08	512,770	252.93	47,338.67	-544.07	-19,176.00
2006	163.62	6.42	517,898	256.89	48,560.83	298.37	-16,596.68
2007	153.64	10.56	523,077	242.21	46,243.13	-1,299.23	-29,089.22
2008	154.98	10.12	528,307	243.97	47,045.76	-745.98	-27,378.05
2009	165.8	6.14	533,590	259.47	50,534.83	1,659.05	-14,499.14
2010	159.27	8.14	538,926	249.81	49,139.45	697.21	-20,724.24
2011	167.13	6	544,316	261.03	51,859.66	2,572.27	-13,217.50
2012	154.84	10.36	549,759	243.01	48,763.84	438.30	-26,825.36
2013	156.16	9.92	555,256	244.75	49,602.16	1,016.16	-25,089.59
2014	157.36	9.48	560,809	246.31	50,418.45	1,578.83	-23,369.00
2015	156.03	10.06	566,417	244.21	50,488.02	1,626.79	-24,847.39
2016	152.76	11.38	572,081	239.28	49,963.57	1,265.28	-28,682.64
2017	158.91	8.9	577,802	248.02	52,307.36	2,880.86	-20,540.62
2018	165.03	6.44	583,580	256.73	54,685.41	4,520.07	-12,427.62
2019	162.03	7.26	589,416	252.22	54,260.78	4,227.36	-14,878.25
2020	163.84	6.74	595,310	254.66	55,334.58	4,967.54	-12,769.63
2021	159.12	9.04	601,263	247.65	54,348.47	4,287.81	-19,502.10
2022	164.23	6.7	607,276	254.9	56,500.71	5,771.36	-11,860.55
2023	160.31	8.48	613,348	249.04	55,754.19	5,256.78	-17,059.42
2024	157.25	10	619,482	244.44	55,270.56	4,923.41	-21,392.87
2025	161.22	8.04	625,677	250.04	57,101.12	6,185.22	-14,973.07
2026	168.27	6.08	631,934	260.12	59,997.07	8,181.41	-7,818.88
2027	156.1	10.54	638,253	242.29	56,444.13	5,732.36	-22,005.00
2028	168.96	6.02	644,635	260.79	61,362.48	9,122.60	-6,719.80
2029	162.82	7.4	651,082	251.73	59,823.00	8,061.43	-11,412.62
2030	160.61	8.76	657,593	248.38	59,616.36	7,918.99	-15,134.07
2031	161.83	8.06	664,169	249.99	60,602.96	8,599.06	-12,611.86
2032	154.63	11.34	670,810	239.39	58,613.75	7,227.89	-22,614.77
2033	167.14	6.36	677,518	257.39	63,650.94	10,700.04	-6,037.11
2034	161.1	8.72	684,293	248.48	62,061.58	9,604.49	-13,343.30
2035	162.24	8.06	691,136	249.99	63,063.60	10,295.18	-10,915.73
2036	163.16	7.58	698,048	251.19	63,999.34	10,940.19	-9,007.54
2037	159.43	9.68	705,028	245.63	63,207.98	10,394.71	-15,079.45
2038	172.11	5.78	712,079	263.88	68,586.01	14,101.80	-1,109.00
2039	159.62	9.68	719,199	245.63	64,478.45	11,270.45	-14,203.71
2040	162.67	8.1	726,391	249.9	66,256.45	12,496.03	-8,820.15
2041	159.41	9.84	733,655	245.05	65,619.15	12,056.74	-13,838.48
2042	155.2	11.58	740,992	238.79	64,584.85	11,343.79	-19,130.46
2043	165.41	6.96	748,402	253.48	69,241.66	14,553.75	-3,762.38
2044	169.5	6.16	755,886	259.26	71,530.78	16,131.65	-79.18
2045	162.76	8.34	763,445	249.36	69,486.52	14,722.53	-7,225.25
2046	161.47	9.14	771,079	247.36	69,618.60	14,813.57	-9,239.51
2047	168.02	6.44	778,790	256.73	72,977.92	17,129.16	181.48
2048	167.89	6.48	786,578	256.42	73,618.32	17,570.59	517.65
2049	163.74	7.94	794,443	250.27	72,570.29	16,848.19	-4,046.94

Happy Days Scenario – Run 3						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	163.64	8.06	802,388	249.99	73,214.93	17,292.54	-3,918.38
2051	156.16	11.48	810,412	239.02	70,701.92	15,560.31	-14,650.78
2052	172.27	5.9	818,516	262.26	78,352.40	20,833.82	5,307.21
2053	160.33	9.9	826,701	244.82	73,873.67	17,746.61	-8,306.50
2054	168.1	6.54	834,968	255.97	78,011.51	20,598.84	3,387.99
2055	160.39	9.94	843,318	244.67	75,311.99	18,738.05	-7,420.33
2056	158.01	10.84	851,751	241.1	74,956.49	18,493.00	-10,033.84
2057	162.72	8.98	860,268	247.81	77,811.65	20,461.07	-3,170.94
2058	163.68	8.46	868,871	249.09	78,996.09	21,277.51	-986.06
2059	163.67	8.52	877,560	248.95	79,741.97	21,791.65	-629.82
2060	165.02	7.72	886,335	250.81	81,139.41	22,754.91	2,438.75
2061	158.1	10.96	895,199	240.65	78,632.56	21,026.93	-7,815.71
2062	164.4	8.2	904,151	249.67	82,396.43	23,621.38	2,042.03
2063	163.26	8.94	913,192	247.92	82,634.41	23,785.42	258.67
2064	161.95	9.6	922,324	245.9	82,783.34	23,888.08	-1,375.55
2065	171.52	6.12	931,547	259.68	88,295.83	27,687.87	11,582.30
2066	164.01	8.64	940,863	248.67	85,397.47	25,690.01	2,952.75
2067	165.02	8.04	950,271	250.04	86,724.52	26,604.75	5,446.47
2068	165.12	8.02	959,774	250.08	87,607.82	27,213.61	6,107.96
2069	168.61	6.68	969,372	255.03	90,234.24	29,024.02	11,444.74
2070	157.86	11.36	979,066	239.33	85,528.13	25,780.07	-4,115.22
2071	163.99	8.86	988,856	248.13	89,556.84	28,557.08	5,240.86
2072	162.99	9.4	998,745	246.57	89,885.18	28,783.41	4,046.11
2073	173.02	6	1,008,732	261.03	96,106.86	33,072.04	17,282.27
2074	164.64	8.6	1,018,820	248.77	92,508.53	30,591.69	7,959.69
2075	162.97	9.5	1,029,008	246.24	92,486.06	30,576.20	5,575.74
2076	172.44	6.1	1,039,298	259.9	98,590.24	34,783.84	18,730.91
2077	159.93	10.7	1,049,691	241.65	92,584.86	30,644.31	2,485.89
2078	163.61	9.3	1,060,188	246.88	95,536.62	32,678.97	8,204.83
2079	168.02	7.02	1,070,790	253.2	98,958.75	35,037.86	16,563.83
2080	165.29	8.44	1,081,498	249.14	98,345.71	34,615.28	12,404.35
2081	161.13	10.36	1,092,312	243.01	96,888.50	33,610.83	6,347.17
2082	171.47	6.3	1,103,236	257.92	103,858.21	38,415.07	21,835.82
2083	165.06	8.7	1,114,268	248.53	101,077.79	36,498.52	13,603.36
2084	165.57	8.42	1,125,411	249.18	102,357.57	37,380.67	15,222.37
2085	171.17	6.38	1,136,665	257.22	106,716.29	40,385.16	23,595.38
2086	158.41	11.68	1,148,031	238.61	99,984.67	35,745.03	5,007.61
2087	166.19	8.14	1,159,512	249.81	105,724.68	39,701.64	18,280.19
2088	169.93	6.66	1,171,107	255.16	109,067.30	42,005.72	24,479.08
2089	163.89	9.48	1,182,818	246.31	106,338.96	40,125.06	15,177.23
2090	167.12	7.68	1,194,646	250.91	109,409.48	42,241.59	22,030.69
2091	159.12	11.4	1,206,592	239.22	105,355.62	39,447.24	9,446.69
2092	160.91	10.68	1,218,658	241.73	107,523.33	40,941.45	12,835.67
2093	171.2	6.46	1,230,845	256.57	115,267.95	46,279.86	29,279.54
2094	166.44	8.24	1,243,153	249.59	113,249.57	44,888.58	23,203.97
2095	165.49	8.86	1,255,585	248.13	113,713.44	45,208.32	21,892.10
2096	163.87	9.66	1,268,141	245.7	113,725.49	45,216.63	19,795.10
2097	159.04	11.68	1,280,822	238.61	111,549.75	43,716.88	12,979.47
2098	167.53	7.7	1,293,630	250.86	118,449.82	48,473.13	28,209.60

			Happy Days Scenario – Run 4			
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	157.53	8.3	483,053	249.45	43,981.85	27,774.06	5,931.55
2000	152.07	10.78	487,883	241.34	42,976.36	27,080.97	-1,287.97
2001	154.51	9.94	492,762	244.67	44,005.80	27,790.57	1,632.19
2002	158.81	7.76	497,689	250.71	45,542.22	28,849.63	8,428.20
2003	155.1	9.82	502,666	245.12	44,972.73	28,457.08	2,614.50
2004	165.13	6.14	507,693	259.47	48,082.19	30,600.44	14,442.25
2005	154.64	10.1	512,770	244.05	45,676.90	-1,689.54	-28,268.98
2006	158.84	8.08	517,898	249.94	47,247.69	-606.79	-21,870.34
2007	155.18	10	523,077	244.44	46,669.25	-1,005.51	-27,321.78
2008	159.1	8.08	528,307	249.94	48,197.30	47.79	-21,215.77
2009	155.22	10.08	533,590	244.13	47,546.77	-400.63	-26,927.44
2010	160.51	7.44	538,926	251.6	49,492.68	940.70	-18,638.61
2011	157.51	9.24	544,316	247.07	49,086.21	660.52	-23,655.72
2012	163.58	6.58	549,759	255.69	51,307.43	2,191.61	-15,124.50
2013	166.31	6.14	555,256	259.47	52,586.75	3,073.45	-13,084.74
2014	161.98	7.06	560,809	253.02	51,791.42	2,525.23	-16,054.07
2015	160.92	7.54	566,417	251.3	51,954.75	2,637.81	-17,204.66
2016	159.89	8.22	572,081	249.63	52,125.14	2,755.26	-18,876.72
2017	170.24	5.74	577,802	264.46	55,774.78	5,270.97	-9,834.57
2018	158.28	9.28	583,580	246.95	52,601.17	3,083.39	-21,338.11
2019	159.97	8.4	589,416	249.23	53,617.86	3,784.20	-18,321.47
2020	160.65	8.04	595,310	250.04	54,329.73	4,274.90	-16,883.39
2021	171.12	5.7	601,263	265.06	58,170.71	6,922.50	-8,077.78
2022	160.94	8	607,276	250.13	55,442.13	5,041.67	-16,011.35
2023	164.99	6.56	613,348	255.83	57,273.42	6,303.99	-10,959.49
2024	154.59	10.98	619,482	240.58	54,397.52	4,321.62	-24,573.65
2025	159.61	9.02	625,677	247.7	56,567.87	5,817.66	-17,919.63
2026	154.19	12.61	631,934	239.69	55,285.20	4,933.50	-28,251.32
2027	160.53	8.62	638,253	248.72	57,942.15	6,764.95	-15,919.68
2028	156.82	10.32	644,635	243.18	57,217.27	6,265.29	-20,893.11
2029	163.71	7.06	651,082	253.02	60,128.24	8,271.83	-10,307.46
2030	161.17	8.42	657,593	249.18	59,808.92	8,051.72	-14,106.58
2031	162.9	7.46	664,169	251.54	60,979.34	8,858.50	-10,773.44
2032	158.37	9.9	670,810	244.82	59,943.31	8,144.36	-17,908.75
2033	155.7	10.92	677,518	240.8	59,548.58	7,872.27	-20,865.11
2034	170.42	5.92	684,293	262.01	65,440.19	11,933.38	-3,645.86
2035	161.65	8.44	691,136	249.14	62,848.25	10,146.75	-12,064.19
2036	160.68	9.06	698,048	247.59	63,082.74	10,308.38	-13,534.17
2037	155.52	11.16	705,028	239.95	61,747.49	9,387.98	-19,980.98
2038	164.07	7.26	712,079	252.22	65,552.95	12,011.11	-7,094.51
2039	159.33	9.8	719,199	245.19	64,364.91	11,192.19	-14,597.77
2040	163.71	7.5	726,391	251.42	66,659.79	12,774.05	-6,963.15
2041	160.81	9.24	733,655	247.07	66,160.73	12,430.05	-11,886.19
2042	156.48	10.96	740,992	240.65	65,087.31	11,690.14	-17,152.50
2043	155.29	11.58	748,402	238.79	65,230.70	11,788.98	-18,685.27
2044	161	9.28	755,886	246.95	68,132.03	13,788.87	-10,632.63
2045	155.7	11.44	763,445	239.12	66,632.22	12,755.05	-17,350.77
2046	169	6.26	771,079	258.28	72,692.62	16,932.51	458.52
2047	161.83	9	778,790	247.76	70,426.48	15,370.45	-8,314.20
2048	162.81	8.48	786,578	249.04	71,501.04	16,111.14	-6,205.06
2049	162.74	8.58	794,443	248.81	72,148.81	16,557.66	-6,021.71

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
					Happy Days Scenario – Run 4		
2050	159.65	10.06	802,388	244.21	71,521.48	16,125.24	-10,348.94
2051	165.02	7.36	810,412	251.86	74,501.69	18,179.51	-1,189.27
2052	162.93	8.62	818,516	248.72	74,306.85	18,045.20	-4,639.43
2053	156.75	11.26	826,701	239.63	72,307.06	16,666.74	-12,965.39
2054	161.88	9.28	834,968	246.95	75,260.11	18,702.29	-5,719.22
2055	171.83	5.98	843,318	261.27	80,420.36	22,259.27	6,522.14
2056	163.98	8.16	851,751	249.76	77,648.99	20,348.95	-1,125.13
2057	169.81	6.28	860,268	258.1	81,042.52	22,688.13	6,161.51
2058	173.88	5.78	868,871	263.88	83,687.90	24,511.60	9,300.79
2059	163.41	8.68	877,560	248.58	79,621.00	21,708.26	-1,134.27
2060	167.36	6.82	886,335	254.2	82,237.09	23,511.55	5,563.84
2061	160.55	10.06	895,199	244.21	79,794.27	21,827.70	-4,646.48
2062	166.05	7.3	904,151	252.07	83,187.37	24,166.58	4,955.70
2063	173.88	5.82	913,192	263.32	87,770.19	27,325.53	12,009.46
2064	157.54	11.3	922,324	239.51	80,629.83	22,403.66	-7,333.73
2065	165.23	7.82	931,547	250.56	85,192.42	25,548.67	4,969.34
2066	160.16	10.34	940,863	243.1	83,482.59	24,370.08	-2,840.95
2067	163.98	8.7	950,271	248.53	86,201.25	26,244.06	3,348.90
2068	161.18	10.02	959,774	244.36	85,604.58	25,832.77	-536.14
2069	164.16	8.68	969,372	248.58	87,951.10	27,450.24	4,607.71
2070	166.54	7.34	979,066	251.93	90,030.36	28,883.48	9,567.33
2071	161.02	10.16	988,856	243.81	88,000.69	27,484.42	747.08
2072	166.55	7.4	998,745	251.73	91,767.13	30,080.64	10,606.60
2073	158.07	11.36	1,008,732	239.33	88,119.65	27,566.42	-2,328.87
2074	165.64	7.96	1,018,820	250.22	93,049.14	30,964.34	10,016.58
2075	163.1	9.44	1,029,008	246.44	92,560.25	30,627.35	5,784.78
2076	163.3	9.38	1,039,298	246.63	93,559.10	31,315.86	6,631.19
2077	165.81	7.98	1,049,691	250.17	95,850.77	32,895.51	11,895.12
2078	169.68	6.58	1,060,188	255.69	98,944.31	35,027.90	17,711.79
2079	160.23	10.64	1,070,790	241.89	94,538.99	31,991.30	3,990.78
2080	166.86	7.5	1,081,498	251.42	99,247.42	35,236.83	15,499.62
2081	163.54	9.42	1,092,312	246.51	98,280.37	34,570.24	9,780.31
2082	158.66	11.36	1,103,236	239.33	96,375.23	33,257.02	3,361.73
2083	161.76	10.18	1,114,268	243.74	99,129.18	35,155.33	8,365.36
2084	164.66	8.96	1,125,411	247.86	101,816.08	37,007.43	13,428.04
2085	168.8	6.9	1,136,665	253.78	105,287.17	39,400.06	21,241.83
2086	172.37	6.2	1,148,031	258.86	108,471.36	41,594.94	25,278.85
2087	169.7	6.7	1,159,512	254.9	107,880.52	41,187.67	23,555.76
2088	166.34	8.08	1,171,107	249.94	106,839.76	40,470.27	19,206.72
2089	172.02	6.28	1,182,818	258.1	111,428.71	43,633.45	27,106.82
2090	164.76	9.1	1,194,646	247.48	107,911.25	41,208.85	17,261.04
2091	166.39	8.16	1,206,592	249.76	109,997.69	42,647.04	21,172.96
2092	163.74	9.62	1,218,658	245.84	109,350.08	42,200.64	16,884.38
2093	159.24	11.4	1,230,845	239.22	107,473.31	40,906.97	10,906.42
2094	165.97	8.54	1,243,153	248.91	112,941.60	44,676.29	22,202.19
2095	176.15	5.8	1,255,585	263.6	120,806.04	50,097.28	34,833.84
2096	176.8	5.74	1,268,141	264.46	122,412.66	51,204.73	36,099.19
2097	167.37	7.76	1,280,822	250.71	117,204.68	47,614.85	27,193.42
2098	163.68	9.78	1,293,630	245.27	115,808.31	46,652.33	20,915.01

				Happy Days Scenario – Run 5		
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	155.41	9.46	483,053	246.38	43,439.55	27,400.25	2,505.05
2000	151.03	11.2	487,883	239.82	42,706.24	26,894.78	-2,579.45
2001	156.64	9.0	492,762	247.76	44,560.79	28,173.12	4,488.47
2002	158.13	8.18	497,689	249.72	45,363.16	28,726.20	7,199.49
2003	154.09	10.2	502,666	243.66	44,704.35	28,272.08	1,429.48
2004	158.5	8.12	507,693	249.85	46,299.95	29,371.93	8,003.12
2005	165.71	6.08	512,770	260.12	48,683.40	382.86	-15,617.44
2006	154.88	10.06	517,898	244.21	46,163.24	-1,354.30	-27,828.47
2007	161.27	7	523,077	253.29	48,358.57	158.95	-18,262.45
2008	160.04	7.54	528,307	251.3	48,459.10	228.25	-19,614.22
2009	152.98	10.9	533,590	240.88	46,913.03	-837.47	-29,522.21
2010	161.93	6.92	538,926	253.67	49,899.80	1,221.32	-16,989.54
2011	161.55	7.08	544,316	252.93	50,250.98	1,463.40	-17,168.53
2012	156.24	9.84	549,759	245.05	49,171.23	719.12	-25,176.10
2013	153.86	10.76	555,256	241.41	48,926.88	550.69	-27,765.63
2014	155.2	10.32	560,809	243.18	49,776.95	1,136.64	-26,021.76
2015	158.25	9.12	566,417	247.42	51,152.12	2,084.55	-21,915.89
2016	152.34	11.64	572,081	238.68	49,838.30	1,178.93	-29,453.22
2017	158.41	9.16	577,802	247.3	52,155.92	2,776.48	-21,329.23
2018	163.77	6.7	583,580	254.9	54,296.05	4,251.68	-13,380.23
2019	160.69	7.94	589,416	250.27	53,841.61	3,938.43	-16,956.69
2020	163.6	6.8	595,310	254.31	55,259.05	4,915.48	-12,979.59
2021	158.96	9.12	601,263	247.42	54,299.00	4,253.71	-19,746.73
2022	163.9	6.78	607,276	254.43	56,394.97	5,698.47	-12,143.97
2023	169.42	5.9	613,348	262.26	58,712.70	7,296.09	-8,230.51
2024	161.46	7.82	619,482	250.56	56,653.25	5,876.51	-14,702.82
2025	170	5.86	625,677	262.78	60,012.43	8,192.00	-7,229.34
2026	157.68	9.92	631,934	244.75	56,451.96	5,737.76	-20,367.99
2027	162.74	7.34	638,253	251.93	58,690.78	7,280.98	-12,035.17
2028	161.8	7.88	644,635	250.41	58,919.23	7,438.46	-13,298.77
2029	156.09	10.62	651,082	241.97	57,502.37	6,461.81	-21,486.08
2030	169.5	5.98	657,593	261.27	62,709.28	10,050.95	-5,686.18
2031	157.08	10.34	664,169	243.1	58,931.59	7,446.97	-19,764.06
2032	167.27	6.32	670,810	257.74	63,105.98	10,324.40	-6,307.49
2033	163.42	7.32	677,518	252	62,318.43	9,781.54	-9,481.98
2034	161.71	8.34	684,293	249.36	62,282.33	9,756.66	-12,191.12
2035	158.09	10.12	691,136	243.97	61,545.69	9,248.88	-17,383.19
2036	159.18	9.74	698,048	245.41	62,527.59	9,925.71	-15,706.34
2037	171.44	5.84	705,028	263.05	67,692.55	13,485.94	-1,882.77
2038	166.56	6.56	712,079	255.83	66,492.76	12,658.92	-4,604.56
2039	154.94	11.56	719,199	238.84	62,696.37	10,042.05	-20,379.56
2040	165.63	6.82	726,391	254.2	67,396.96	13,282.18	-4,665.52
2041	162.08	8.54	733,655	248.91	66,653.23	12,769.53	-9,704.57
2042	158.33	10.28	740,992	243.34	65,813.30	12,190.56	-14,862.57
2043	173.4	5.7	748,402	265.06	72,406.05	16,734.97	1,734.70
2044	165.19	7.06	755,886	253.02	69,807.02	14,943.45	-3,635.84
2045	163.52	7.86	763,445	250.46	69,791.83	14,932.98	-5,751.62
2046	159.35	10.04	771,079	244.29	68,752.61	14,216.64	-12,204.90
2047	161.32	9.26	778,790	247.01	70,213.80	15,223.85	-9,145.02
2048	166.76	6.72	786,578	254.78	73,147.66	17,246.17	-438.37
2049	166.45	6.82	794,443	254.2	73,711.05	17,634.52	-313.18

**Happy Days Scenario – Run 5**
Year	**New GPCD**	**Rainfall**	**Population**	**GPCD**	**Total**	**New Total**	**Drawdown**
2050	163.27	8.3	802,388	249.45	73,057.22	17,183.83	-4,658.68
2051	157.14	11.02	810,412	240.43	71,120.50	15,848.84	-13,151.70
2052	162	9.14	818,516	247.36	73,901.56	17,765.83	-6,287.25
2053	173.28	5.8	826,701	263.6	79,540.99	21,653.12	6,389.68
2054	163.39	8.44	834,968	249.14	75,927.58	19,162.38	-3,048.56
2055	167.71	6.64	843,318	255.29	78,579.73	20,990.51	3,516.51
2056	158.72	10.58	851,751	242.13	75,274.90	18,712.49	-9,130.14
2057	160.18	10.08	860,268	244.13	76,656.16	19,664.60	-6,862.21
2058	164.08	8.2	868,871	249.67	79,181.32	21,405.20	-174.15
2059	161.8	9.5	877,560	246.24	78,874.08	21,193.41	-3,807.05
2060	158.71	10.7	886,335	241.65	78,176.53	20,712.59	-7,445.83
2061	164.73	7.94	895,199	250.27	81,774.08	23,192.40	2,297.27
2062	161.26	9.82	904,151	245.12	80,892.96	22,585.03	-3,257.55
2063	157.51	11.28	913,192	239.57	79,851.55	21,867.19	-7,817.57
2064	164.27	8.38	922,324	249.27	83,916.95	24,669.48	2,616.44
2065	158.56	10.9	931,547	240.88	81,901.26	23,280.06	-5,404.68
2066	166.07	7.42	940,863	251.67	86,426.66	26,399.43	6,872.76
2067	166.33	7.34	950,271	251.93	87,382.51	27,058.31	7,742.16
2068	168.53	6.68	959,774	255.03	89,340.81	28,408.17	10,828.90
2069	157.83	11.34	969,372	239.39	84,701.38	25,210.20	-4,632.46
2070	161.38	10	979,066	244.44	87,352.86	27,037.87	721.59
2071	167.02	7.18	988,856	252.52	91,142.13	29,649.83	10,754.74
2072	174.16	5.86	998,745	262.78	95,795.63	32,857.50	17,436.16
2073	164.79	8.46	1,008,732	249.09	91,711.98	30,042.63	7,779.06
2074	158.8	11.06	1,018,820	240.29	89,357.20	28,419.47	-686.34
2075	165.12	8.34	1,029,008	249.36	93,657.28	31,383.53	9,435.75
2076	162.41	9.76	1,039,298	245.34	93,067.59	30,977.06	5,292.37
2077	165.22	8.36	1,049,691	249.32	95,522.58	32,669.29	10,668.88
2078	168.15	6.96	1,060,188	253.48	98,087.90	34,437.57	16,121.44
2079	165.13	8.5	1,070,790	249	97,318.37	33,907.14	11,538.30
2080	159.65	10.88	1,081,498	240.95	95,114.70	32,388.14	3,756.03
2081	168.84	6.82	1,092,312	254.2	101,348.32	36,685.00	18,737.29
2082	167.25	7.38	1,103,236	251.8	101,394.37	36,716.74	17,295.33
2083	165.48	8.44	1,114,268	249.14	101,325.64	36,669.36	14,458.42
2084	168.53	6.96	1,125,411	253.48	104,122.29	38,597.10	20,280.97
2085	159.86	10.92	1,136,665	240.8	99,904.04	35,689.45	6,952.07
2086	161.83	10.22	1,148,031	243.58	102,066.17	37,179.81	10,284.57
2087	159.93	10.94	1,159,512	240.73	101,880.59	37,051.89	8,261.88
2088	175.37	5.84	1,171,107	263.05	112,442.65	44,332.36	28,963.65
2089	162.55	10.02	1,182,818	244.36	105,498.42	39,545.68	13,176.77
2090	166.27	8.2	1,194,646	249.67	108,869.61	41,869.45	20,290.10
2091	165.89	8.48	1,206,592	249.04	109,680.90	42,428.68	20,112.48
2092	176.78	5.72	1,218,658	264.76	117,768.04	48,003.18	32,950.27
2093	165.37	8.86	1,230,845	248.13	111,472.84	43,663.87	20,347.65
2094	161.19	10.62	1,243,153	241.97	109,792.99	42,505.94	14,558.06
2095	158.93	11.68	1,255,585	238.61	109,351.80	42,201.83	11,464.42
2096	165.75	8.74	1,268,141	248.43	114,990.60	46,088.68	23,088.25
2097	160.97	10.76	1,280,822	241.41	112,860.78	44,620.58	16,304.27
2098	169.99	6.78	1,293,630	254.43	120,133.56	49,633.74	31,791.30

PDO1 Scenario

All five runs of the PDO1 Scenario used the following input:

Please enter the type of weather pattern:
        PDO(type 1),
        Wet Dry Pattern, (type 2) or
        Custom (type 3): 1
Please enter the population: 483053
Please enter the growth rate: 0.01
Please enter the current year: 1999
Please enter the number of years the program is to run for: 100
Please enter the fixed compliance for low flow showerheads: 0.1
Please enter the fixed compliance for low flow toilets: 0.1
Please enter the fixed compliance for outdoor water savings: 0.4
Please enter the Water On Request compliance: 0.4
Please enter the year that San Juan Chama goes into effect: 2005

| PDO1 Scenario – Run 1 |
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	229.43	7.42	483,053	251.67	44,372.73	40,451.86	20,925.18
2000	228.78	7.45	487,883	251.57	44,799.53	40,741.37	21,135.75
2001	229.71	7.04	492,762	253.11	45,523.13	41,315.70	22,789.04
2002	225.04	8.58	497,689	248.81	45,198.55	40,880.32	18,300.96
2003	246.15	5.34	502,666	271.4	49,794.09	45,161.48	31,108.59
2004	238.66	5.76	507,693	264.17	48,953.14	44,225.60	29,067.42
2005	214.69	11.27	512,770	239.6	44,843.46	9,549.25	-20,109.20
2006	232.6	6.19	517,898	258.96	48,952.21	13,336.08	-2,953.69
2007	236.19	5.82	523,077	263.32	50,274.82	14,462.89	-853.18
2008	255.33	4.82	528,307	284.14	54,792.00	18,602.98	5,918.54
2009	212.67	11.3	533,590	239.51	46,646.59	10,787.68	-18,949.72
2010	211.35	11.68	538,926	238.61	46,936.31	10,943.08	-19,794.33
2011	222.28	7.74	544,316	250.76	49,819.07	13,529.08	-6,839.72
2012	213.27	10.7	549,759	241.65	48,489.85	12,163.85	-15,994.57
2013	224.67	6.79	555,256	254.37	51,552.54	14,902.05	-2,966.70
2014	225.48	6.57	560,809	255.76	52,352.99	15,522.43	-1,767.36
2015	217.71	8.94	566,417	247.92	51,254.87	14,378.78	-9,147.97
2016	230.52	5.9	572,081	262.26	54,762.42	17,503.70	1,977.10
2017	225.46	6.37	577,802	257.3	54,264.96	16,916.48	153.02
2018	221.55	6.94	583,580	253.58	54,013.20	16,559.08	-1,704.42
2019	230.17	5.81	589,416	263.46	56,680.64	18,885.26	3,595.51
2020	241.81	5.1	595,310	276.7	60,122.66	21,910.24	8,488.94
2021	214.39	9.18	601,263	247.25	54,260.81	16,417.71	-7,740.64
2022	206.41	11.5	607,276	238.97	52,969.33	15,119.53	-15,144.18
2023	213.88	9.04	613,348	247.65	55,440.84	17,250.79	-6,539.12
2024	216.91	7.49	619,482	251.45	56,855.73	18,413.70	-1,297.19
2025	220.77	6.51	625,677	256.19	58,507.49	19,786.11	2,654.21
2026	215.42	7.74	631,934	250.76	57,838.40	19,056.83	-1,311.97
2027	241.33	4.97	638,253	279.97	65,223.24	25,587.69	12,508.50
2028	216.03	7.22	644,635	252.36	59,379.20	20,198.17	1,197.82
2029	219.25	6.48	651,082	256.42	60,936.82	21,471.80	4,418.85
2030	220.42	6.27	657,593	258.19	61,971.47	22,272.34	5,772.04
2031	223.74	5.89	664,169	262.39	63,608.86	23,607.97	8,107.69
2032	231.89	5.31	670,810	272.01	66,600.26	26,144.22	12,170.28
2033	223.85	5.81	677,518	263.46	65,152.89	24,725.21	9,435.45
2034	218.36	6.32	684,293	257.74	64,374.39	23,906.30	7,274.42
2035	231.89	5.24	691,136	273.49	68,992.25	27,866.11	14,076.38
2036	246.99	4.6	698,048	291.07	74,162.24	32,296.71	20,191.22
2037	236.75	4.97	705,028	279.97	72,047.00	30,291.33	17,212.14
2038	199.83	11.78	712,079	238.47	61,979.83	21,305.68	-9,694.89
2039	212.95	6.89	719,199	253.83	66,631.56	25,269.38	7,137.46
2040	213.3	6.74	726,391	254.66	67,518.67	25,921.93	8,184.76
2041	203.91	13.19	733,655	244.33	65,428.64	23,972.15	-10,739.02
2042	209.39	7.64	740,992	251.02	67,891.51	25,999.51	5,893.87
2043	218.92	5.89	748,402	262.39	71,676.04	29,168.70	13,668.42
2044	221.67	5.64	755,886	266	73,387.96	30,526.57	15,684.19
2045	216.58	6.04	763,445	260.56	72,607.85	29,720.98	13,825.94
2046	203.61	9.58	771,079	245.97	69,227.67	26,671.69	1,460.69
2047	218.36	5.81	778,790	263.46	74,891.62	31,438.17	16,148.41
2048	196.72	11.6	786,578	238.75	68,546.53	25,846.26	-4,680.62
2049	227.2	5.19	794,443	274.6	79,625.79	35,250.43	21,592.28

PDO1 Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	207.89	7.18	802,388	252.52	73,955.51	30,253.30	11,358.21
2051	212.99	6.2	810,412	258.86	76,571.53	32,369.29	16,053.20
2052	196.84	11.04	818,516	240.36	71,810.36	28,175.33	-877.84
2053	220.4	5.5	826,701	268.36	80,976.50	35,873.91	21,399.96
2054	194.73	11.68	834,968	238.61	72,719.29	28,715.41	-2,022.01
2055	235.95	4.71	843,318	287.48	88,490.52	41,996.17	29,601.21
2056	200.04	13.29	851,751	245.57	76,344.74	31,557.58	-3,416.75
2057	208.36	6.57	860,268	255.76	80,308.27	34,792.12	17,502.33
2058	200.54	9.3	868,871	246.88	78,296.49	32,967.79	8,493.66
2059	200.6	9.16	877,560	247.3	79,213.90	33,620.86	9,515.15
2060	231.31	4.82	886,335	284.14	91,923.95	44,198.19	31,513.75
2061	198.94	9.56	895,199	246.04	80,393.49	34,371.70	9,213.34
2062	193.86	12.73	904,151	240.33	79,313.85	33,346.10	-154.52
2063	205.19	6.82	913,192	254.2	84,728.97	37,762.43	19,814.73
2064	211.42	5.92	922,324	262.01	88,203.53	40,542.22	24,962.99
2065	194.4	10.62	931,547	241.97	82,272.52	35,466.06	7,518.17
2066	230.74	4.76	940,863	285.93	98,194.27	48,608.66	36,082.11
2067	205.04	6.62	950,271	255.42	88,591.49	40,484.89	23,063.51
2068	201.89	7.33	959,774	251.97	88,268.37	40,092.00	20,802.17
2069	195.37	10	969,372	244.44	86,487.95	38,493.67	12,177.40
2070	198.56	8.66	979,066	248.62	88,847.86	40,326.63	17,536.73
2071	197.44	9.06	988,856	247.59	89,363.12	40,630.82	16,788.27
2072	220.39	5.14	998,745	275.75	100,521.21	49,710.34	36,183.77
2073	195.64	9.56	1,008,732	246.04	90,589.33	41,399.73	16,241.37
2074	228.93	4.73	1,018,820	286.86	106,673.55	54,498.98	42,051.38
2075	205.02	6.28	1,029,008	258.1	96,938.86	46,370.95	29,844.32
2076	199.48	7.42	1,039,298	251.67	95,468.79	45,040.57	25,513.90
2077	229.57	4.67	1,049,691	288.76	110,634.48	57,323.02	45,033.32
2078	200.41	6.97	1,060,188	253.43	98,069.31	46,919.96	28,577.51
2079	197.89	7.78	1,070,790	250.65	97,965.45	46,711.56	26,237.50
2080	188.24	12.47	1,081,498	239.11	94,387.35	43,675.92	10,859.52
2081	210.26	5.61	1,092,312	266.48	106,244.29	53,198.46	38,435.02
2082	192.66	9.82	1,103,236	245.12	98,704.79	46,948.27	21,105.68
2083	189.9	12.96	1,114,268	242.01	98,427.43	46,603.81	12,497.91
2084	187.22	11.5	1,125,411	238.97	98,163.38	46,271.98	16,008.26
2085	201.67	6.39	1,136,665	257.14	106,681.66	53,039.26	36,223.16
2086	194.37	8.76	1,148,031	248.38	104,078.71	50,813.27	27,760.21
2087	194.6	8.52	1,159,512	248.95	105,362.33	51,726.36	29,304.89
2088	221.99	4.85	1,171,107	283.27	121,087.02	64,257.59	51,494.20
2089	201.64	6.26	1,182,818	258.28	111,508.86	56,423.26	39,949.27
2090	211.77	5.35	1,194,646	271.2	118,254.02	61,709.29	47,630.09
2091	185.8	11.45	1,206,592	239.09	105,298.15	51,196.01	21,063.88
2092	206.25	5.71	1,218,658	264.91	117,834.83	61,110.43	46,083.83
2093	185.97	11.2	1,230,845	239.82	107,740.52	52,915.31	23,441.08
2094	184.82	11.66	1,243,153	238.64	108,284.36	53,232.21	22,547.43
2095	186.83	10.76	1,255,585	241.41	110,637.00	54,990.50	26,674.18
2096	193.9	7.82	1,268,141	250.56	115,974.82	59,120.59	38,541.26
2097	197.78	6.58	1,280,822	255.69	119,535.45	61,828.14	44,512.03
2098	225.92	4.59	1,293,630	291.41	137,598.53	76,040.33	63,961.16

PDO1 Scenario – Run 2						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	251.21	5.21	483,053	274.15	48,336.72	44,292.69	30,581.91
2000	229.33	7.28	487,883	252.14	44,900.88	40,839.30	21,681.05
2001	229.03	7.21	492,762	252.4	45,396.59	41,193.78	22,219.75
2002	219.78	10.28	497,689	243.34	44,203.66	39,924.52	12,871.39
2003	235.88	6.03	502,666	260.68	47,827.32	43,277.28	27,408.57
2004	243.35	5.46	507,693	269.08	49,863.50	45,095.31	30,726.62
2005	226.1	7.45	512,770	251.57	47,084.77	11,684.59	-7,921.03
2006	220.38	9.54	517,898	246.11	46,522.72	11,027.78	-14,077.95
2007	229.51	6.5	523,077	256.27	48,927.54	13,186.29	-3,919.29
2008	217.51	10.08	528,307	244.13	47,076.01	11,311.55	-15,215.26
2009	232.09	6.08	533,590	260.12	50,660.09	14,570.18	-1,430.11
2010	228.77	6.39	538,926	257.14	50,580.88	14,368.76	-2,447.34
2011	262.68	4.52	544,316	293.85	58,381.27	21,555.78	9,660.82
2012	230.64	6.07	549,759	260.23	52,217.39	15,649.10	-324.88
2013	232.64	5.85	555,256	262.92	53,285.02	16,517.72	1,122.69
2014	220.37	7.94	560,809	250.27	51,228.43	14,476.42	-6,418.71
2015	237.52	5.45	566,417	269.27	55,669.31	18,474.39	4,132.02
2016	208.41	12.09	572,081	238.36	49,772.25	12,885.73	-18,930.65
2017	221.84	6.98	577,802	253.38	53,437.70	16,152.86	-2,215.90
2018	211.23	10.52	583,580	242.37	51,626.25	14,361.27	-13,323.46
2019	225.07	6.3	589,416	257.92	55,487.39	17,789.30	1,210.04
2020	244.09	5	595,310	279.19	60,664.68	22,406.83	9,248.69
2021	225.47	6.15	601,263	259.37	56,921.14	18,849.13	2,664.61
2022	206.9	11.3	607,276	239.51	53,088.24	15,227.95	-14,509.44
2023	224.09	6.2	613,348	258.86	57,952.00	19,534.76	3,218.67
2024	217.88	7.18	619,482	252.52	57,097.20	18,632.79	-262.29
2025	212.93	9.08	625,677	247.53	56,529.74	17,995.88	-5,899.30
2026	205.3	12.58	631,934	239.55	55,253.05	16,722.13	-16,383.75
2027	229.62	5.58	638,253	266.98	62,195.63	22,860.01	8,175.53
2028	204.37	11.34	644,635	239.39	56,326.64	17,454.41	-12,388.25
2029	239.44	5.01	651,082	278.93	66,286.90	26,269.57	13,085.11
2030	213.04	8.08	657,593	249.94	59,992.02	20,501.31	-762.24
2031	209.15	9.56	664,169	246.04	59,645.80	20,070.24	-5,088.12
2032	204.78	10.72	670,810	241.57	59,147.47	19,506.29	-8,704.76
2033	250.86	4.52	677,518	293.85	72,668.01	31,403.67	19,508.71
2034	215.63	6.74	684,293	254.66	63,605.62	23,224.64	5,487.47
2035	221.73	5.92	691,136	262.01	66,094.60	25,302.44	9,723.20
2036	204.06	10.5	698,048	242.45	61,773.19	21,359.57	-6,272.52
2037	229.02	5.35	705,028	271.2	69,788.37	28,301.72	14,222.51
2038	216.17	6.4	712,079	257.05	66,810.65	25,551.94	8,709.53
2039	203.26	10.42	719,199	242.77	63,729.68	22,724.10	-4,697.46
2040	215.05	6.45	726,391	256.65	68,046.85	26,384.22	9,410.22
2041	210.61	7.32	733,655	252	67,481.94	25,765.54	6,502.03
2042	211.13	7.06	740,992	253.02	68,431.54	26,470.20	7,890.90
2043	229.34	5.2	748,402	274.37	74,949.80	32,016.19	18,331.72
2044	199.15	12.68	755,886	240.05	66,228.46	24,312.12	-9,056.92
2045	197.56	12.28	763,445	238.6	66,486.89	24,418.81	-7,897.58
2046	217.36	5.93	771,079	261.88	73,704.25	30,541.60	14,936.05
2047	209.54	7.01	778,790	253.24	71,986.14	28,931.48	10,483.77
2048	222.83	5.46	786,578	269.08	77,254.42	33,343.99	18,975.30

PDO1 Scenario – Run 2						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2049	206.76	7.72	794,443	250.81	72,727.18	29,322.26	9,006.09
2050	212.92	6.25	802,388	258.38	75,671.80	31,725.27	15,277.59
2051	207.59	7.17	810,412	252.56	74,706.76	30,773.09	11,904.32
2052	206.9	7.28	818,516	252.14	75,329.72	31,182.02	12,023.77
2053	209.37	6.62	826,701	255.42	77,071.36	32,544.02	15,122.65
2054	218.32	5.62	834,968	266.32	81,163.97	35,902.46	21,112.71
2055	211.47	6.22	843,318	258.67	79,620.31	34,461.16	18,092.44
2056	200.03	9.7	851,751	245.55	76,340.08	31,553.64	6,026.85
2057	193.76	12.23	860,268	238.51	74,891.69	30,207.97	-1,976.84
2058	236.74	4.64	868,871	289.74	91,887.17	44,448.70	32,237.94
2059	193.53	11.52	877,560	238.92	76,529.84	31,357.60	1,041.25
2060	206.15	6.81	886,335	254.26	82,255.03	36,059.86	18,138.48
2061	203.36	7.54	895,199	251.3	82,112.37	35,815.89	15,973.42
2062	204.54	7.05	904,151	253.06	83,514.04	36,868.80	18,315.82
2063	193.26	11.16	913,192	239.95	79,978.83	33,785.53	4,416.56
2064	192.75	11.25	922,324	239.66	80,681.12	34,255.33	4,649.52
2065	207.7	6.3	931,547	257.92	87,695.47	39,990.45	23,411.20
2066	217.81	5.39	940,863	270.41	92,862.08	44,167.65	29,983.18
2067	219.18	5.29	950,271	272.42	94,490.26	45,389.40	31,468.09
2068	206.82	6.3	959,774	257.92	90,352.75	41,822.12	25,242.87
2069	200.16	7.96	969,372	250.22	88,533.03	40,188.33	19,240.57
2070	204.18	6.62	979,066	255.42	91,275.98	42,335.33	24,913.96
2071	189.85	11.85	988,856	238.4	86,045.29	37,890.63	6,705.84
2072	194.77	9.94	998,745	244.67	89,192.30	40,369.11	14,210.73
2073	224.45	4.93	1,008,732	281.04	103,476.65	52,008.68	39,034.76
2074	196.47	9.14	1,018,820	247.36	91,986.44	42,427.89	18,374.81
2075	202.82	6.62	1,029,008	255.42	95,931.96	45,544.71	28,123.34
2076	201.84	6.76	1,039,298	254.54	96,558.85	45,933.63	28,143.83
2077	202.08	6.66	1,049,691	255.16	97,759.61	46,791.58	29,264.94
2078	206.91	5.97	1,060,188	261.39	101,148.17	49,434.50	33,723.68
2079	197.39	8.04	1,070,790	250.04	97,723.43	46,514.21	25,355.92
2080	192.59	13.2	1,081,498	244.45	96,496.12	45,392.88	10,655.39
2081	223.22	4.88	1,092,312	282.42	112,600.64	58,365.93	45,523.58
2082	187.16	11.95	1,103,236	238.34	95,975.70	44,732.96	13,285.01
2083	191.37	10.16	1,114,268	243.81	99,161.41	47,198.72	20,461.38
2084	222.84	4.86	1,125,411	282.99	116,244.93	60,905.84	48,116.13
2085	208.08	5.7	1,136,665	265.06	109,969.53	55,696.32	40,696.04
2086	197.77	7.16	1,148,031	252.6	105,846.41	52,239.73	33,397.28
2087	189.81	10.36	1,159,512	243.01	102,849.17	49,701.26	22,437.60
2088	199.26	6.68	1,171,107	255.03	109,012.79	54,542.15	36,962.88
2089	206.26	5.77	1,182,818	264.03	113,988.32	58,415.51	43,231.02
2090	221.23	4.86	1,194,646	282.99	123,396.29	65,835.30	53,045.59
2091	188.17	10.6	1,206,592	242.05	106,599.24	52,238.51	24,343.25
2092	212.77	5.26	1,218,658	273.06	121,459.92	64,011.02	50,168.66
2093	185.04	11.65	1,230,845	238.66	107,220.15	52,499.51	21,841.05
2094	187.04	10.76	1,243,153	241.41	109,541.54	54,235.39	25,919.07
2095	195.94	7.1	1,255,585	252.84	115,875.84	59,165.24	40,480.68
2096	228.08	4.53	1,268,141	293.5	135,851.65	74,938.91	63,017.64
2097	193.81	7.76	1,280,822	250.71	117,204.68	59,975.73	39,554.30
2098	189.29	9.78	1,293,630	245.27	115,808.31	58,745.02	33,007.71

PDO1 Scenario – Run 3						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	246.66	5.44	483,053	269.46	47,508.84	43,490.53	29,174.48
2000	230.35	7.02	487,883	253.2	45,088.48	41,020.54	22,546.52
2001	235.45	6.18	492,762	259.06	46,594.37	42,347.75	26,084.29
2002	216.59	11.14	497,689	240.02	43,600.56	39,345.12	10,028.79
2003	251.69	5.08	502,666	277.18	50,855.13	46,177.98	32,809.31
2004	227.42	7.21	507,693	252.4	46,772.13	42,141.95	23,167.92
2005	233.04	6.2	512,770	258.86	48,448.92	12,984.26	-3,331.84
2006	227.03	7.04	517,898	253.11	47,845.29	12,284.37	-6,242.28
2007	219	13.26	523,077	245.18	46,811.14	11,180.94	-23,714.45
2008	230.89	6.26	528,307	258.28	49,805.56	13,890.91	-2,583.08
2009	212.96	11.2	533,590	239.82	46,707.15	10,844.75	-18,629.48
2010	232.99	5.95	538,926	261.63	51,464.79	15,199.58	-458.61
2011	228.58	6.35	544,316	257.48	51,154.03	14,780.54	-1,930.29
2012	223.36	7.2	549,759	252.44	50,655.25	14,188.50	-4,759.22
2013	246.87	5.04	555,256	278.17	56,376.47	19,400.70	6,137.29
2014	237.2	5.5	560,809	268.36	54,932.01	17,921.34	3,447.39
2015	220.91	7.52	566,417	251.36	51,966.90	15,039.38	-4,750.46
2016	211.75	10.62	572,081	241.97	50,525.14	13,582.46	-14,365.42
2017	232.2	5.73	577,802	264.61	55,805.92	18,338.91	3,259.69
2018	207.77	11.68	583,580	238.61	50,825.33	13,623.81	-17,113.61
2019	213.45	9.78	589,416	245.27	52,765.68	15,289.49	-10,447.83
2020	220.24	7.03	595,310	253.15	55,006.66	17,222.95	-1,277.40
2021	207.48	12.61	601,263	239.69	52,601.93	14,901.56	-18,283.27
2022	208.78	10.72	607,276	241.57	53,545.48	15,644.82	-12,566.23
2023	248.43	4.77	613,348	285.63	63,944.83	24,985.40	12,432.54
2024	219.82	6.74	619,482	254.66	57,581.38	19,072.12	1,334.95
2025	221.78	6.37	625,677	257.3	58,761.20	20,015.77	3,252.30
2026	233.17	5.39	631,934	270.41	62,371.14	23,150.13	8,965.66
2027	217.54	6.94	638,253	253.58	59,073.46	20,047.14	1,783.64
2028	217.58	6.84	644,635	254.09	59,785.63	20,563.49	2,563.15
2029	235.15	5.21	651,082	274.15	65,150.55	25,250.52	11,539.74
2030	224.17	5.89	657,593	262.39	62,979.07	23,173.85	7,673.56
2031	239.91	4.95	664,169	280.5	68,000.44	27,528.23	14,501.67
2032	241.41	4.87	670,810	282.71	69,219.23	28,476.84	15,660.81
2033	230.37	5.37	677,518	270.8	66,966.99	26,337.35	12,205.51
2034	210.73	8.44	684,293	249.14	62,225.99	22,001.33	-209.61
2035	212.53	7.44	691,136	251.6	63,471.01	22,981.24	3,401.93
2036	218.81	6.17	698,048	259.16	66,031.47	25,118.81	8,881.67
2037	212.43	7.22	705,028	252.36	64,942.18	24,032.76	5,032.40
2038	212.11	7.2	712,079	252.44	65,611.55	24,497.94	5,550.22
2039	218.76	6.05	719,199	260.45	68,370.01	26,794.21	10,872.86
2040	219.3	5.96	726,391	261.51	69,334.25	27,511.02	11,826.52
2041	202.83	10.34	733,655	243.1	65,097.06	23,682.55	-3,528.48
2042	217.31	6.08	740,992	260.12	70,351.25	28,143.39	12,143.10
2043	210.58	7.11	748,402	252.8	69,057.27	26,890.93	8,180.06
2044	198.06	11.58	755,886	238.79	65,883.00	24,012.27	-6,461.98
2045	213.69	6.38	763,445	257.22	71,676.37	28,914.10	12,124.31
2046	217.25	5.94	771,079	261.75	73,669.11	30,511.22	14,879.35
2047	218.72	5.78	778,790	263.88	75,011.47	31,541.57	16,330.76
2048	229.81	5.08	786,578	277.18	79,578.74	35,345.30	21,976.63
2049	197.42	12.66	794,443	239.94	69,575.46	26,613.90	-6,702.51

PDO1 Scenario – Run 3						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	226.83	5.19	802,388	274.6	80,422.10	35,799.34	22,141.19
2051	199.83	10.24	810,412	243.5	72,026.40	28,478.76	1,530.89
2052	197.6	10.8	818,516	241.26	72,077.76	28,403.78	-17.80
2053	194.96	11.74	826,701	238.52	71,972.00	28,195.84	-2,699.47
2054	205.96	7.38	834,968	251.8	76,738.85	32,136.35	12,714.94
2055	205.34	7.49	843,318	251.45	77,399.28	32,574.46	12,863.56
2056	194.53	11.46	851,751	239.07	74,323.71	29,843.97	-314.48
2057	209.05	6.46	860,268	256.57	80,563.62	35,008.22	18,007.91
2058	201.09	9.08	868,871	247.53	78,502.25	33,141.61	9,246.43
2059	202.14	8.44	877,560	249.14	79,800.66	34,115.64	11,904.70
2060	223.27	5.19	886,335	274.6	88,835.98	41,599.05	27,940.90
2061	196.6	10.3	895,199	243.26	79,483.40	33,607.05	6,501.28
2062	218.45	5.43	904,151	269.64	88,986.23	41,458.31	27,168.57
2063	203.07	7.42	913,192	251.67	83,884.83	37,055.70	17,529.02
2064	205.59	6.68	922,324	255.03	85,854.76	38,579.22	20,999.95
2065	205.96	6.56	931,547	255.83	86,986.32	39,398.80	22,135.32
2066	198.76	9.08	940,863	247.53	85,006.70	37,625.16	13,729.98
2067	191.34	11.51	950,271	238.95	82,878.78	35,735.07	5,445.04
2068	206.9	6.29	959,774	258.01	90,384.53	41,848.50	25,295.57
2069	213.36	5.63	969,372	266.16	94,171.71	44,860.79	30,044.73
2070	224.72	4.96	979,066	280.24	100,145.64	49,672.90	36,620.03
2071	194.66	13.18	988,856	244.22	88,146.14	39,625.72	4,940.86
2072	204.21	6.52	998,745	256.12	93,366.39	43,810.85	26,652.64
2073	192.46	12.98	1,008,732	242.19	89,169.49	40,230.90	6,072.37
2074	197.01	8.9	1,018,820	248.02	92,231.91	42,629.63	19,208.15
2075	211.5	5.64	1,029,008	266	99,905.01	48,804.88	33,962.50
2076	190.05	11.1	1,039,298	240.15	91,100.41	41,461.69	12,250.62
2077	194.22	9.7	1,049,691	245.55	94,080.90	43,782.45	18,255.67
2078	208.6	5.81	1,060,188	263.46	101,952.00	50,091.00	34,801.24
2079	199.35	7.2	1,070,790	252.44	98,663.48	47,280.77	28,333.05
2080	200.27	6.88	1,081,498	253.88	100,217.91	48,423.15	30,317.55
2081	202.87	6.36	1,092,312	257.39	102,619.69	50,251.79	33,514.64
2082	207.55	5.81	1,103,236	263.46	106,091.68	52,944.49	37,654.73
2083	190.05	12.98	1,114,268	242.19	98,498.62	46,661.51	12,502.98
2084	195.63	8.34	1,125,411	249.36	102,431.60	49,726.35	27,778.58
2085	210.89	5.49	1,136,665	268.54	111,412.17	56,862.17	42,414.53
2086	186.6	11.6	1,148,031	238.75	100,045.44	47,558.58	17,031.69
2087	203.42	6.1	1,159,512	259.9	109,994.02	55,458.56	39,405.63
2088	185.85	11.89	1,171,107	238.37	101,891.56	48,812.11	17,522.06
2089	199.03	6.68	1,182,818	255.03	110,102.92	55,293.59	37,714.31
2090	187.5	10.88	1,194,646	240.95	105,065.74	51,127.42	22,495.30
2091	187.85	10.7	1,206,592	241.65	106,423.84	52,097.98	23,939.56
2092	186.5	11.08	1,218,658	240.22	106,853.15	52,323.53	23,165.09
2093	205.31	5.77	1,230,845	264.03	118,616.69	61,605.86	46,421.37
2094	198	6.66	1,243,153	255.16	115,777.07	59,211.08	41,684.44
2095	189.64	13.24	1,255,585	244.93	112,250.13	56,275.97	21,433.22
2096	189.69	9.78	1,268,141	245.27	113,526.49	57,172.16	31,434.84
2097	226.99	4.56	1,280,822	292.45	136,718.48	75,484.57	63,484.35
2098	206.65	5.57	1,293,630	267.15	126,139.32	66,944.94	52,286.77

| PDO1 Scenario – Run 4 |
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	218.55	11.02	483,053	240.43	42,391.98	38,532.66	9,532.12
2000	240.54	5.79	487,883	263.74	46,966.66	42,835.17	27,598.05
2001	246.76	5.37	492,762	270.8	48,705.41	44,381.57	30,249.73
2002	228.24	7.28	497,689	252.14	45,803.35	41,461.36	22,303.11
2003	226.57	7.66	502,666	250.97	46,045.56	41,570.32	21,412.06
2004	233.4	6.22	507,693	258.67	47,932.90	43,250.89	26,882.17
2005	247.82	5.2	512,770	274.37	51,352.10	15,750.18	2,065.72
2006	214.86	11.06	517,898	240.29	45,423.05	9,982.97	-19,122.83
2007	228.96	6.58	523,077	255.69	48,817.28	13,081.82	-4,234.29
2008	250.89	4.99	528,307	279.45	53,886.78	17,747.57	4,615.75
2009	217.17	10.04	533,590	244.29	47,577.10	11,664.63	-14,756.91
2010	258.19	4.68	538,926	288.44	56,737.91	20,155.99	7,839.97
2011	249.92	4.96	544,316	280.24	55,676.40	19,020.08	5,967.20
2012	213.35	10.68	549,759	241.73	48,505.75	12,178.71	-15,927.07
2013	213.71	10.46	555,256	242.61	49,169.64	12,679.84	-14,846.99
2014	221.89	7.35	560,809	251.9	51,562.43	14,787.09	-4,555.38
2015	226.04	6.42	566,417	256.89	53,110.22	16,100.13	-794.92
2016	227.11	6.23	572,081	258.57	53,991.78	16,790.54	395.50
2017	223.36	6.68	577,802	255.03	53,784.85	16,473.30	-1,105.97
2018	207.98	11.56	583,580	238.84	50,873.75	13,668.39	-16,753.23
2019	228.15	5.98	589,416	261.27	56,207.80	18,450.97	2,713.84
2020	229.06	5.86	595,310	262.78	57,099.76	19,140.65	3,719.31
2021	216.69	8.16	601,263	249.76	54,813.51	16,922.85	-4,551.23
2022	254.85	4.57	607,276	292.1	64,745.60	25,856.32	13,829.78
2023	207.2	11.06	613,348	240.29	53,794.64	15,753.53	-13,352.28
2024	205.5	11.54	619,482	238.88	54,013.34	15,834.66	-14,534.32
2025	211.52	9.58	625,677	245.97	56,173.44	17,673.35	-7,537.64
2026	231.81	5.47	631,934	268.9	62,023.66	22,836.34	8,441.33
2027	217.59	6.93	638,253	253.62	59,084.98	20,057.51	1,820.33
2028	219.15	6.56	644,635	255.83	60,194.95	20,931.39	3,667.92
2029	203.13	12.18	651,082	238.44	56,664.43	17,640.47	-14,412.76
2030	205.76	10.66	657,593	241.81	58,039.11	18,754.02	-9,299.13
2031	213.74	7.58	664,169	251.19	60,893.20	21,183.77	1,236.03
2032	240.91	4.89	670,810	282.14	69,081.72	28,354.36	15,485.70
2033	213.26	7.46	677,518	251.54	62,204.96	22,105.47	2,473.52
2034	216.54	6.58	684,293	255.69	63,863.11	23,452.96	6,136.84
2035	214.02	7	691,136	253.29	63,895.65	23,356.94	4,935.54
2036	227.73	5.45	698,048	269.27	68,606.43	27,392.00	13,049.63
2037	206.49	9.68	705,028	245.63	63,207.98	22,505.12	-2,969.04
2038	247.58	4.55	712,079	292.79	76,099.81	33,717.05	21,743.15
2039	221.16	5.83	719,199	263.19	69,088.84	27,424.70	12,082.31
2040	217.16	6.18	726,391	259.06	68,685.75	26,943.42	10,679.96
2041	223.11	5.62	733,655	266.32	71,315.73	29,114.03	14,324.28
2042	199.33	11.31	740,992	239.48	64,769.71	23,278.57	-6,485.14
2043	245.67	4.54	748,402	293.14	80,077.40	36,476.10	24,528.51
2044	209.97	7.18	755,886	252.52	69,669.45	27,298.91	8,403.82
2045	207.54	8	763,445	250.13	69,699.81	27,201.94	6,148.91
2046	211.12	6.74	771,079	254.66	71,672.46	28,785.15	11,047.98
2047	211.3	6.64	778,790	255.29	72,567.06	29,432.66	11,958.66
2048	202.82	9.62	786,578	245.84	70,579.58	27,596.77	2,280.51

| **PDO1 Scenario – Run 4** |
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2049	197.66	11.08	794,443	240.22	69,657.56	26,684.45	-2,473.98
2050	207.63	7.26	802,388	252.22	73,866.67	30,177.10	11,071.49
2051	209.29	6.76	810,412	254.54	75,293.56	31,275.38	13,485.58
2052	214.49	6	818,516	261.03	77,984.05	33,449.68	17,659.92
2053	195.75	11.32	826,701	239.45	72,252.62	28,435.12	-1,354.91
2054	194.57	12.16	834,968	238.42	72,661.40	28,666.14	-3,334.46
2055	237.87	4.64	843,318	289.74	89,184.82	42,585.97	30,375.22
2056	208.86	6.54	851,751	255.97	79,579.55	34,300.34	17,089.50
2057	203.79	7.9	860,268	250.36	78,612.93	33,357.32	12,567.46
2058	221.08	5.35	868,871	271.2	86,006.64	39,481.05	25,401.84
2059	205.3	7.09	877,560	252.89	81,002.15	35,128.76	16,470.52
2060	203.29	7.7	886,335	250.86	81,156.30	35,135.06	14,871.53
2061	204.55	7.13	895,199	252.72	82,575.52	36,205.02	17,441.51
2062	201.74	8.18	904,151	249.72	82,411.19	35,943.84	14,417.12
2063	192.44	11.5	913,192	238.97	79,652.69	33,512.47	3,248.76
2064	204.29	6.96	922,324	253.48	85,332.81	38,143.01	19,826.88
2065	221.06	5.22	931,547	273.93	93,140.03	44,532.86	30,795.76
2066	192.03	11.32	940,863	239.45	82,230.24	35,312.73	5,522.71
2067	214.1	5.62	950,271	266.32	92,372.12	43,628.28	28,838.54
2068	202.09	7.26	959,774	252.22	88,355.39	40,164.24	21,058.62
2069	209.72	5.94	969,372	261.75	92,614.08	43,570.07	27,938.20
2070	193.12	10.6	979,066	242.05	86,497.91	38,382.59	10,487.34
2071	190.4	11.46	988,856	239.07	86,287.47	38,090.64	7,932.19
2072	202.86	6.77	998,745	254.48	92,769.94	43,319.05	25,502.93
2073	202.36	6.82	1,008,732	254.2	93,593.49	43,872.77	25,925.07
2074	195.76	9.42	1,018,820	246.51	91,667.95	42,166.12	17,376.19
2075	200.96	7.03	1,029,008	253.15	95,080.37	44,845.92	26,345.58
2076	201.29	6.88	1,039,298	253.88	96,307.41	45,727.63	27,622.03
2077	188.88	11.48	1,049,691	239.02	91,577.07	41,734.36	11,523.28
2078	201.61	6.7	1,060,188	254.9	98,639.46	47,385.61	29,753.70
2079	200.92	6.79	1,070,790	254.37	99,417.10	47,895.31	30,026.56
2080	207.09	5.9	1,081,498	262.26	103,526.33	51,116.87	35,590.27
2081	210.8	5.57	1,092,312	267.15	106,509.19	53,413.81	38,755.64
2082	192.84	9.76	1,103,236	245.34	98,793.14	47,019.99	21,335.30
2083	188.03	11.24	1,114,268	239.69	97,484.28	45,839.37	16,259.87
2084	198.58	7.06	1,125,411	253.02	103,933.12	50,941.58	32,362.29
2085	223.03	4.84	1,136,665	283.56	117,645.19	61,899.31	49,162.23
2086	186.51	11.66	1,148,031	238.64	99,998.80	47,520.94	16,836.16
2087	190.65	10.1	1,159,512	244.05	103,287.84	50,054.75	23,475.30
2088	186.48	11.43	1,171,107	239.14	102,223.30	49,079.04	18,999.53
2089	223.13	4.79	1,182,818	285.03	123,055.66	65,701.12	53,095.63
2090	197.87	6.88	1,194,646	253.88	110,702.86	55,650.47	37,544.87
2091	216.71	5.06	1,206,592	277.67	122,288.49	64,809.54	51,493.50
2092	185.7	11.4	1,218,658	239.22	106,409.18	51,968.29	21,967.73
2093	203.59	5.93	1,230,845	261.88	117,651.39	60,834.54	45,228.99
2094	186.37	10.98	1,243,153	240.58	109,162.89	53,933.24	25,037.97
2095	185.77	11.12	1,255,585	240.08	110,027.82	54,505.05	25,241.35
2096	186.63	10.76	1,268,141	241.41	111,743.39	55,753.13	27,436.82
2097	196.77	6.78	1,280,822	254.43	118,944.14	61,358.18	43,515.74
2098	201.25	6.06	1,293,630	260.34	122,924.65	64,393.40	48,445.73

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
PDO1 Scenario – Run 5
1999	261.76	4.79	483,053	285.03	50,254.91	46,151.28	33,545.78
2000	233.77	6.44	487,883	256.73	45,717.95	41,628.72	24,681.03
2001	225.21	8.74	492,762	248.43	44,681.94	40,505.28	17,504.86
2002	231.92	6.54	497,689	255.97	46,499.35	42,130.01	24,919.17
2003	214.74	11.68	502,666	238.61	43,778.34	39,398.28	8,660.87
2004	215.62	11.13	507,693	240.05	44,483.22	39,955.21	10,665.20
2005	239.69	5.65	512,770	265.84	49,754.40	14,228.02	-640.67
2006	261.84	4.64	517,898	289.74	54,770.14	18,863.79	6,653.03
2007	244.42	5.31	523,077	272.01	51,932.84	16,033.92	2,059.97
2008	219.94	9.36	528,307	246.7	47,571.18	11,779.47	-12,852.56
2009	212.51	11.36	533,590	239.33	46,612.74	10,755.77	-19,139.52
2010	242.17	5.34	538,926	271.4	53,386.01	17,005.40	2,952.51
2011	215.25	10.3	544,316	243.26	48,329.02	12,132.21	-14,973.56
2012	235.16	5.7	549,759	265.06	53,187.83	16,556.46	1,556.18
2013	210.04	12.32	555,256	238.68	48,373.02	11,936.94	-20,484.72
2014	222.39	7.2	560,809	252.44	51,673.41	14,890.31	-4,057.40
2015	226.99	6.3	566,417	257.92	53,322.28	16,296.87	-282.39
2016	225.78	6.39	572,081	257.14	53,692.65	16,513.71	-302.39
2017	242.27	5.15	577,802	275.51	58,105.20	20,461.32	6,908.44
2018	209.92	10.88	583,580	240.95	51,324.22	14,083.16	-14,548.95
2019	213.52	9.76	589,416	245.34	52,781.33	15,303.86	-10,380.83
2020	219.96	7.1	595,310	252.84	54,940.16	17,162.03	-1,522.53
2021	209.06	10.76	601,263	241.41	52,980.83	15,247.86	-13,068.45
2022	238.89	5.19	607,276	274.6	60,866.33	22,319.47	8,661.32
2023	214.08	8.96	613,348	247.86	55,489.68	17,295.21	-6,284.18
2024	222.53	6.33	619,482	257.65	58,257.38	19,685.49	3,027.28
2025	234.35	5.35	625,677	271.2	61,933.68	22,887.46	8,808.25
2026	208.18	10.43	631,934	242.73	55,987.64	17,385.50	-10,062.38
2027	204.66	11.38	638,253	239.28	55,742.81	17,046.44	-12,901.49
2028	236.02	5.19	644,635	274.6	64,610.76	24,900.50	11,242.36
2029	212.72	8.44	651,082	249.14	59,205.95	19,919.62	-2,291.32
2030	218.3	6.56	657,593	255.83	61,404.95	21,765.47	4,501.99
2031	210.73	8.98	664,169	247.81	60,074.40	20,452.84	-3,179.18
2032	215.78	6.87	670,810	253.93	62,173.99	22,201.90	4,122.62
2033	213.49	7.38	677,518	251.8	62,268.20	22,161.67	2,740.26
2034	217.46	6.44	684,293	256.73	64,122.90	23,683.32	6,735.63
2035	201.19	11.58	691,136	238.79	60,239.40	20,122.10	-10,352.15
2036	205.47	10.1	698,048	244.05	62,181.22	21,719.79	-4,859.66
2037	242	4.76	705,028	285.93	73,581.08	31,642.68	19,116.13
2038	213.11	6.94	712,079	253.58	65,906.42	24,757.13	6,493.63
2039	220.12	5.92	719,199	262.01	68,778.31	27,152.33	11,573.10
2040	214.58	6.52	726,391	256.12	67,905.73	26,260.71	9,102.49
2041	220.86	5.79	733,655	263.74	70,626.21	28,511.79	13,274.67
2042	212.99	6.66	740,992	255.16	69,009.92	26,974.30	9,447.66
2043	226.75	5.34	748,402	271.4	74,136.70	31,308.96	17,256.07
2044	211.58	6.79	755,886	254.37	70,179.95	27,742.02	9,873.27
2045	199.03	11.06	763,445	240.29	66,959.13	24,827.88	-4,277.92
2046	226.65	5.28	771,079	272.64	76,731.44	33,158.54	19,263.55
2047	203.73	9.42	778,790	246.51	70,071.34	27,279.49	2,489.55
2048	215.4	6.05	786,578	260.45	74,775.34	31,209.44	15,288.09
2049	204.41	8.88	794,443	248.07	71,934.60	28,641.17	5,272.32

PDO1 Scenario – Run 5						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	203.81	9	802,388	247.76	72,560.47	29,056.85	5,372.20
2051	229.95	5.02	810,412	278.68	82,432.73	37,386.35	24,175.57
2052	196.01	11.34	818,516	239.39	71,519.94	27,927.22	-1,915.43
2053	218.25	5.65	826,701	265.84	80,215.33	35,224.86	20,356.17
2054	197.59	10.62	834,968	241.97	73,742.84	29,586.53	1,638.64
2055	207.82	6.79	843,318	254.37	78,297.55	33,337.51	15,468.76
2056	225.63	5.14	851,751	275.75	85,726.63	39,512.37	25,985.81
2057	209.18	6.44	860,268	256.73	80,612.96	35,049.98	18,102.30
2058	196.52	10.58	868,871	242.13	76,787.92	31,693.41	3,850.79
2059	193.57	11.5	877,560	238.97	76,544.71	31,370.14	1,106.42
2060	195.7	12.94	886,335	241.84	78,238.22	32,678.91	-1,374.35
2061	207.66	6.48	895,199	256.42	83,784.50	37,220.80	20,167.85
2062	205.22	6.88	904,151	253.88	83,783.90	37,095.13	18,989.53
2063	210.33	6.06	913,192	260.34	86,774.28	39,474.79	23,527.13
2064	204.76	6.85	922,324	254.04	85,521.32	38,300.55	20,273.90
2065	204.25	6.9	931,547	253.78	86,287.47	38,815.75	20,657.52
2066	206.9	6.37	940,863	257.3	88,362.26	40,419.90	23,656.43
2067	210.51	5.92	950,271	262.01	90,876.15	42,384.46	26,805.23
2068	204.75	6.62	959,774	255.42	89,477.44	41,095.58	23,674.21
2069	198.95	8.6	969,372	248.77	88,018.67	39,762.10	17,130.10
2070	201.54	7.26	979,066	252.22	90,131.38	41,388.44	22,282.83
2071	208.94	5.96	988,856	261.51	94,386.61	44,779.72	29,095.22
2072	199.34	7.96	998,745	250.22	91,215.68	42,037.48	21,089.72
2073	192.48	10.56	1,008,732	242.21	89,177.94	40,237.86	12,447.87
2074	217.94	5.24	1,018,820	273.49	101,703.11	50,413.85	36,624.12
2075	224.3	4.91	1,029,008	281.59	105,761.80	53,610.79	40,689.50
2076	195.76	9.22	1,039,298	247.13	93,746.24	43,629.34	19,365.73
2077	211.89	5.57	1,049,691	267.15	102,353.31	50,549.15	35,890.98
2078	224.32	4.87	1,060,188	282.71	109,398.19	56,172.37	43,356.34
2079	193.64	13.28	1,070,790	245.44	95,926.96	45,049.28	10,101.26
2080	221.09	4.99	1,081,498	279.45	110,311.69	56,641.51	43,509.69
2081	206.22	5.96	1,092,312	261.51	104,261.51	51,586.52	35,902.02
2082	189.28	10.88	1,103,236	240.95	97,026.50	45,585.94	16,953.83
2083	200.66	6.64	1,114,268	255.29	103,826.64	50,980.02	33,506.01
2084	193.26	9.44	1,125,411	246.44	101,231.79	48,755.32	23,912.75
2085	204.54	6.03	1,136,665	260.68	108,150.64	54,226.40	38,357.69
2086	195.7	8.04	1,148,031	250.04	104,772.67	51,373.27	30,214.98
2087	200.55	6.49	1,159,512	256.34	108,490.22	54,246.80	37,167.54
2088	206.39	5.78	1,171,107	263.88	112,798.65	57,588.42	42,377.61
2089	188.36	12.93	1,182,818	241.76	104,373.31	50,689.84	16,662.90
2090	188.38	10.6	1,194,646	242.05	105,543.84	51,511.02	23,615.77
2091	213.89	5.21	1,206,592	274.15	120,737.69	63,566.95	49,856.17
2092	194.13	8.16	1,218,658	249.76	111,097.68	55,719.76	34,245.68
2093	189.84	9.94	1,230,845	244.67	109,919.85	54,656.69	28,498.31
2094	228.88	4.52	1,243,153	293.85	133,335.88	73,222.28	61,327.33
2095	195.71	7.17	1,255,585	252.56	115,744.43	59,060.52	40,191.75
2096	201.08	6.13	1,268,141	259.58	120,150.63	62,443.77	46,311.89
2097	195.38	7.14	1,280,822	252.68	118,127.26	60,708.96	41,919.14
2098	213.3	5.15	1,293,630	275.51	130,090.64	70,081.17	56,528.29

PDO15 runs

All five runs of the PDO15 Scenario used the following input:

Please enter the type of weather pattern:
        PDO(type 1),
        Wet Dry Pattern, (type 2) or
        Custom (type 3): 1
Please enter the population: 483053
Please enter the growth rate: 0.015
Please enter the current year: 1999
Please enter the number of years the program is to run for: 100
Please enter the fixed compliance for low flow showerheads: 0.1
Please enter the fixed compliance for low flow toilets: 0.1
Please enter the fixed compliance for outdoor water savings: 0.4
Please enter the Water On Request compliance: 0.4
Please enter the year that San Juan Chama goes into effect: 2005

PDO15 Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	240.99	5.8	483,053	263.6	46,476.92	42,490.67	27,227.23
2000	227.87	7.68	490,298	250.91	44,903.06	40,780.15	20,569.25
2001	219.32	10.4	497,653	242.85	44,112.71	39,838.03	12,469.10
2002	217.55	10.66	505,118	241.81	44,581.68	40,109.76	12,056.61
2003	213.54	11.86	512,694	238.39	44,610.57	39,961.11	8,750.00
2004	216.67	10.5	520,385	242.45	46,051.05	41,154.24	13,522.15
2005	230.64	6.29	528,191	258.01	49,741.19	13,832.89	-2,720.05
2006	224.55	7.22	536,113	252.36	49,382.93	13,307.70	-5,692.65
2007	222.29	7.74	544,155	250.76	49,804.34	13,518.91	-6,849.89
2008	215.24	13.16	552,317	243.99	49,187.45	12,760.12	-21,872.10
2009	217.18	9.32	560,602	246.82	50,504.81	13,807.82	-10,718.95
2010	209.6	11.34	569,011	239.39	49,718.80	12,899.60	-16,943.06
2011	232.36	5.72	577,546	264.76	55,812.59	18,350.84	3,297.93
2012	208.99	11.1	586,210	240.15	51,384.66	14,085.47	-15,125.60
2013	207.71	11.32	595,003	239.45	52,002.51	14,476.64	-15,313.39
2014	214.14	9.2	603,928	247.19	54,488.31	16,571.62	-7,639.35
2015	219.17	6.97	612,987	253.43	56,702.40	18,405.59	63.14
2016	217.28	7.3	622,181	252.07	57,244.42	18,712.22	-498.66
2017	206.8	10.82	631,514	241.18	55,592.73	17,036.77	-11,437.44
2018	203.65	11.97	640,987	238.34	55,761.47	17,012.91	-14,487.67
2019	237.04	5.12	650,602	276.22	65,593.33	25,657.64	12,183.70
2020	205.62	12.94	660,361	241.84	58,291.13	18,929.31	-15,123.95
2021	207.16	10.06	670,266	244.21	59,744.68	20,047.97	-6,426.21
2022	218.14	6.38	680,320	257.22	63,872.14	23,534.60	6,744.81
2023	211.3	7.98	690,525	250.17	63,054.13	22,623.32	1,622.93
2024	216.72	6.41	700,883	256.97	65,739.23	24,809.36	7,940.63
2025	211.15	7.54	711,396	251.3	65,252.99	24,194.65	4,352.17
2026	199.63	11.58	722,067	238.79	62,935.34	21,980.43	-8,493.82
2027	206.49	9.18	732,898	247.25	66,140.18	24,606.21	447.86
2028	211.26	6.99	743,891	253.33	68,785.55	26,729.86	8,334.79
2029	217	6.04	755,050	260.56	71,809.43	29,170.62	13,275.59
2030	208.8	7.4	766,376	251.73	70,416.50	27,775.11	8,301.07
2031	210.09	6.89	777,871	253.83	72,067.33	29,016.29	10,884.37
2032	221.62	5.53	789,539	267.83	77,184.04	33,233.68	18,680.78
2033	204.42	8.74	801,382	248.43	72,666.53	29,163.17	6,162.74
2034	196.8	11.12	813,403	240.08	71,279.09	27,795.39	-1,468.31
2035	209.19	6.66	825,604	255.16	76,889.99	32,406.06	14,879.42
2036	205.42	7.54	837,988	251.3	76,864.68	32,198.63	12,356.15
2037	203.41	8.28	850,558	249.5	77,456.96	32,517.85	10,727.97
2038	206.83	6.84	863,316	254.09	80,066.85	34,543.42	16,543.09
2039	213.36	5.89	876,266	262.39	83,921.85	37,609.79	22,109.50
2040	193.15	11.52	889,410	238.92	77,563.26	32,069.93	1,753.58
2041	220.83	5.29	902,751	272.42	89,765.10	42,132.33	28,211.02
2042	209.33	6.16	916,292	259.26	86,710.28	39,377.82	23,167.00
2043	208.22	6.24	930,037	258.47	87,742.38	40,050.25	23,628.89
2044	202.19	7.39	943,987	251.77	86,747.06	39,033.43	19,585.70
2045	229.39	4.79	958,147	285.03	99,681.79	49,589.42	36,983.92
2046	199.17	8.44	972,519	249.14	88,435.74	40,067.82	17,856.88
2047	199.9	7.84	987,107	250.51	90,255.85	41,389.97	20,758.01
2048	212.93	5.59	1,001,914	266.81	97,572.20	47,237.00	32,526.20
2049	189.15	12.15	1,016,942	238.41	88,493.53	39,578.78	7,604.50

PDO15 Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	204.15	6.39	1,032,197	257.14	96,876.81	46,280.75	29,464.65
2051	200.84	6.94	1,047,680	253.58	96,967.94	46,167.96	27,904.47
2052	196.33	8.7	1,063,395	248.53	96,462.99	45,571.00	22,675.84
2053	198.73	7.34	1,079,346	251.93	99,251.64	47,661.14	28,344.99
2054	196.9	8	1,095,536	250.13	100,018.53	48,100.75	27,047.73
2055	213.94	5.33	1,111,969	271.6	110,233.81	56,200.82	42,174.25
2056	207.31	5.78	1,128,648	263.88	108,709.09	54,769.47	39,558.66
2057	222.58	4.85	1,145,578	283.27	118,447.44	62,438.12	49,674.73
2058	205.67	5.86	1,162,762	262.78	111,527.48	56,657.90	41,236.56
2059	196.73	7.29	1,180,203	252.11	108,601.10	54,114.35	34,929.78
2060	188.78	10.46	1,197,906	242.61	106,078.28	51,907.21	24,380.38
2061	208.92	5.51	1,215,875	268.18	119,017.78	62,087.16	47,586.89
2062	196.22	7.13	1,234,113	252.72	113,837.84	57,754.27	38,990.76
2063	218.04	4.95	1,252,625	280.5	128,249.05	69,057.84	56,031.29
2064	195.17	7.26	1,271,414	252.22	117,044.52	59,939.77	40,834.16
2065	197.78	6.55	1,290,485	255.9	120,536.88	62,528.85	45,291.69
2066	199.06	6.3	1,309,842	257.92	123,308.02	64,538.32	47,959.07
2067	185.36	10.87	1,329,490	240.99	116,943.31	59,316.55	30,710.75
2068	201.87	5.9	1,349,432	262.26	129,174.31	68,796.12	53,269.51
2069	185.76	10.56	1,369,674	242.21	121,087.37	62,233.16	34,443.17
2070	198.05	6.27	1,390,219	258.19	131,014.04	69,863.66	53,363.35
2071	187.54	13.26	1,411,072	245.18	126,279.48	65,958.77	31,063.39
2072	193.14	7.14	1,432,238	252.68	132,092.01	70,334.92	51,545.09
2073	206.13	5.43	1,453,722	269.64	143,074.82	78,741.79	64,452.05
2074	181.88	11.5	1,475,528	238.97	128,702.16	67,322.48	37,058.76
2075	191.73	7.34	1,497,661	251.93	137,717.94	74,176.11	54,859.96
2076	202.41	5.64	1,520,125	266	147,586.91	81,672.20	66,829.82
2077	182.87	12.86	1,542,927	241.21	135,840.24	72,353.02	38,510.28
2078	181.65	11.16	1,566,071	239.95	137,159.03	73,200.07	43,831.11
2079	190.63	7.36	1,589,562	251.86	146,129.45	79,970.86	60,602.08
2080	197.02	6.05	1,613,406	260.45	153,377.00	85,389.87	69,468.52
2081	182.25	10.7	1,637,607	241.65	144,440.25	78,302.85	50,144.43
2082	192.52	6.64	1,662,171	255.29	154,879.84	86,171.19	68,697.18
2083	206.97	5.2	1,687,103	274.37	168,957.38	96,815.98	83,131.52
2084	209.24	5.06	1,712,410	277.67	173,553.30	100,146.58	86,830.55
2085	195.34	6.1	1,738,096	259.9	164,879.84	93,291.57	77,238.64
2086	188.95	7.36	1,764,167	251.86	162,181.01	91,035.26	71,666.48
2087	180.37	10.88	1,790,630	240.95	157,480.86	87,257.37	58,625.26
2088	192.65	6.37	1,817,489	257.3	170,691.64	97,169.87	80,406.40
2089	201.41	5.46	1,844,752	269.08	181,183.87	104,982.98	90,614.29
2090	197.21	5.78	1,872,423	263.88	180,347.99	104,150.46	88,939.65
2091	185.91	8.36	1,900,509	249.32	172,947.59	98,331.09	76,330.68
2092	177.63	12.32	1,929,017	238.68	168,052.88	94,432.76	62,011.11
2093	183.37	9.42	1,957,952	246.51	176,165.99	100,410.96	75,621.03
2094	178.1	11.2	1,987,321	239.82	173,957.73	98,559.10	69,084.87
2095	189.14	6.74	2,017,131	254.66	187,494.06	108,621.45	90,884.28
2096	187.44	7.14	2,047,388	252.68	188,825.88	109,441.80	90,651.98
2097	204.47	5.15	2,078,099	275.51	208,978.79	124,459.10	110,906.21
2098	176.5	11.64	2,109,270	238.68	183,754.44	105,255.79	74,623.64

PDO15 Scenario – Run 2						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	229.31	7.46	483,053	251.54	44,350.54	40,430.36	20,798.42
2000	222.21	9.84	490,298	245.05	43,852.96	39,767.02	13,871.80
2001	234.99	6.17	497,653	259.16	47,075.22	42,684.19	26,447.05
2002	216.14	12.73	505,118	240.33	44,309.91	39,849.76	6,349.14
2003	215.6	10.99	512,694	240.54	45,013.51	40,345.01	11,423.42
2004	221.75	8.98	520,385	247.81	47,069.07	42,120.20	18,488.19
2005	226.45	6.94	528,191	253.58	48,886.68	13,025.35	-5,238.14
2006	224.92	7.12	536,113	252.76	49,460.57	13,380.78	-5,356.41
2007	215.26	10.3	544,155	243.26	48,314.72	12,122.35	-14,983.42
2008	221.19	7.9	552,317	250.36	50,471.78	13,959.51	-6,830.35
2009	222.1	7.29	560,602	252.11	51,586.04	14,813.63	-4,370.94
2010	240.02	5.3	569,011	272.22	56,536.32	19,217.31	5,269.68
2011	219.03	7.92	577,546	250.31	52,767.25	15,539.45	-5,303.04
2012	222.34	6.74	586,210	254.66	54,488.72	16,940.35	-796.82
2013	248.93	4.81	595,003	284.44	61,772.95	23,429.47	10,771.34
2014	254.52	4.59	603,928	291.41	64,237.54	25,472.31	13,393.14
2015	225.05	6.1	612,987	259.9	58,149.38	19,721.84	3,668.91
2016	220.44	6.6	622,181	255.55	58,035.11	19,428.91	2,060.17
2017	209.25	10.14	631,514	243.89	56,218.18	17,601.67	-9,083.03
2018	215.01	7.66	640,987	250.97	58,716.14	19,672.22	-486.05
2019	215.32	7.32	650,602	252	59,842.69	20,499.78	1,236.26
2020	238.1	5.04	660,361	278.17	67,048.03	26,756.67	13,493.26
2021	210.17	9.06	670,266	247.59	60,572.07	20,785.03	-3,057.51
2022	215.86	6.74	680,320	254.66	63,236.33	22,970.10	5,232.93
2023	229.03	5.4	690,525	270.21	68,105.26	27,093.14	12,882.35
2024	201.94	11.08	700,883	240.22	61,454.12	21,029.80	-8,128.64
2025	207.73	9.12	711,396	247.42	64,244.92	23,308.37	-692.07
2026	230.03	5.24	722,067	273.49	72,079.92	29,994.46	16,204.73
2027	205.96	9.38	732,898	246.63	65,976.53	24,463.24	-221.42
2028	209.34	7.6	743,891	251.13	68,187.10	26,208.68	6,208.31
2029	211.42	6.83	755,050	254.15	70,040.90	27,635.18	9,661.16
2030	245.57	4.51	766,376	294.21	82,298.54	38,059.66	26,191.02
2031	240.79	4.65	777,871	289.41	82,170.19	37,734.55	25,497.48
2032	197.3	11.28	789,539	239.57	69,039.06	26,225.87	-3,458.89
2033	212.56	6.3	801,382	257.92	75,441.79	31,543.94	14,964.68
2034	207.05	7.3	813,403	252.07	74,838.00	30,839.56	11,628.67
2035	211.86	6.26	825,604	258.28	77,832.90	33,210.28	16,736.29
2036	226.61	5.12	837,988	276.22	84,485.49	38,680.07	25,206.14
2037	204.66	7.66	850,558	250.97	77,913.42	32,904.98	12,746.71
2038	208.43	6.54	863,316	255.97	80,660.08	35,045.15	17,834.30
2039	221.48	5.31	876,266	272.01	86,998.62	40,204.90	26,230.95
2040	209.51	6.25	889,410	258.38	83,878.69	37,382.31	20,934.64
2041	194.3	10.92	902,751	240.8	79,344.81	33,390.45	4,653.08
2042	205.89	6.66	916,292	255.16	85,335.92	38,227.87	20,701.23
2043	202.46	7.45	930,037	251.57	85,400.03	38,095.46	18,489.84
2044	215.42	5.54	943,987	267.66	92,222.86	43,591.44	29,012.23
2045	199.32	8.58	958,147	248.81	87,015.89	39,073.20	16,493.83
2046	202.5	7.03	972,519	253.15	89,860.78	41,248.03	22,747.69
2047	222.55	5.05	987,107	277.92	100,133.15	49,550.03	36,260.31
2048	189.47	11.94	1,001,914	238.34	87,162.35	38,658.03	7,236.40
2049	203.3	6.59	1,016,942	255.62	94,882.62	44,831.43	27,489.00

PDO15 Scenario – Run 2						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	190.08	11.15	1,032,197	239.98	90,414.04	40,980.21	11,637.56
2051	191.3	12.95	1,047,680	241.92	92,512.71	42,522.55	8,442.97
2052	198.84	7.44	1,063,395	251.6	97,657.70	46,546.27	26,966.96
2053	201.15	6.7	1,079,346	254.9	100,421.91	48,614.26	30,982.35
2054	209.03	5.7	1,095,536	265.06	105,990.41	52,953.49	37,953.21
2055	194.83	8.9	1,111,969	248.02	100,664.52	48,442.27	25,020.78
2056	204.44	6.06	1,128,648	260.34	107,247.57	53,587.12	37,639.45
2057	186.71	11.56	1,145,578	238.84	99,866.08	47,439.00	17,017.38
2058	200.43	6.5	1,162,762	256.27	108,762.34	54,430.66	37,325.08
2059	199.39	6.62	1,180,203	255.42	110,027.51	55,260.83	37,839.45
2060	188.51	12.99	1,197,906	242.27	105,931.09	51,789.15	17,604.30
2061	199.76	6.44	1,215,875	256.73	113,935.75	58,019.53	41,071.84
2062	197.49	6.8	1,234,113	254.31	114,555.30	58,327.34	40,432.27
2063	205.73	5.7	1,252,625	265.06	121,188.38	63,429.52	48,429.24
2064	219.2	4.88	1,271,414	282.42	131,063.32	71,092.34	58,249.99
2065	200.62	6.14	1,290,485	259.47	122,218.24	63,863.81	47,705.61
2066	187.13	10.4	1,309,842	242.85	116,106.36	58,831.54	31,462.62
2067	186.39	10.54	1,329,490	242.29	117,573.90	59,815.28	32,077.92
2068	189.92	9.22	1,349,432	247.13	121,720.79	62,912.31	38,648.70
2069	192.22	7.88	1,369,674	250.41	125,187.33	65,463.61	44,726.39
2070	216.02	4.93	1,390,219	281.04	142,609.94	78,983.42	66,009.50
2071	182.23	12.16	1,411,072	238.42	122,795.69	63,223.90	31,223.31
2072	191.71	7.7	1,432,238	250.86	131,141.32	69,589.94	49,326.41
2073	185.49	10.3	1,453,722	243.26	129,073.83	67,789.94	40,684.17
2074	182.76	12.69	1,475,528	240.1	129,311.17	67,798.02	34,402.67
2075	201.16	5.77	1,497,661	264.03	144,329.79	79,330.01	64,145.52
2076	194.07	6.64	1,520,125	255.29	141,644.10	77,047.74	59,573.73
2077	181.69	11.24	1,542,927	239.69	134,986.50	71,689.79	42,110.30
2078	193.85	6.58	1,566,071	255.69	146,156.93	80,178.43	62,862.32
2079	212.19	4.98	1,589,562	279.71	162,285.21	92,479.93	79,374.42
2080	198.22	5.92	1,613,406	262.01	154,292.96	86,097.94	70,518.70
2081	201.8	5.58	1,637,607	266.98	159,579.36	89,987.01	75,302.52
2082	193.06	6.54	1,662,171	255.97	155,297.53	86,493.05	69,282.21
2083	180.74	11.06	1,687,103	240.29	147,970.00	80,668.99	51,563.18
2084	185.39	9.38	1,712,410	246.63	154,153.62	85,244.07	60,559.40
2085	204.47	5.32	1,738,096	271.8	172,433.60	99,085.44	85,085.18
2086	191.67	6.62	1,764,167	255.42	164,469.08	92,787.63	75,366.25
2087	205.59	5.22	1,790,630	273.93	179,034.80	103,740.48	90,003.39
2088	198.93	5.67	1,817,489	265.52	176,143.81	101,333.27	86,411.94
2089	189.09	7.08	1,844,752	252.93	170,306.58	96,688.78	78,056.86
2090	193.62	6.17	1,872,423	259.16	177,120.84	101,693.16	85,456.01
2091	186.56	7.98	1,900,509	250.17	173,541.77	98,782.89	77,782.50
2092	179.52	10.82	1,929,017	241.18	169,813.05	95,769.30	67,295.09
2093	190.23	6.6	1,957,952	255.55	182,631.69	105,313.85	87,945.10
2094	195.7	5.84	1,987,321	263.05	190,810.60	111,321.31	95,952.60
2095	192.47	6.18	2,017,131	259.06	190,734.96	111,072.44	94,808.98
2096	187.35	7.17	2,047,388	252.56	188,735.75	109,373.73	90,504.96
2097	187.57	7.04	2,078,099	253.11	191,982.29	111,638.59	93,111.93
2098	176.55	11.61	2,109,270	238.73	183,797.76	105,288.42	74,735.22

PDO15 Scenario – Run 3						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	221.59	10.22	483,053	243.58	42,946.03	39,069.49	12,174.25
2000	247.64	5.34	490,298	271.4	48,568.92	44,316.97	30,264.08
2001	256.01	4.93	497,653	281.04	51,049.70	46,502.58	33,528.66
2002	229.3	6.84	505,118	254.09	46,846.36	42,276.41	24,276.08
2003	218.56	10.2	512,694	243.66	45,596.18	40,900.16	14,057.55
2004	251.78	4.99	520,385	279.45	53,078.74	47,822.60	34,690.78
2005	226.27	6.98	528,191	253.38	48,849.45	12,990.18	-5,378.59
2006	221.16	8.6	536,113	248.77	48,678.89	12,645.02	-9,986.98
2007	215.15	13.08	544,155	243.14	48,290.81	12,099.93	-22,321.76
2008	216.23	9.84	552,317	245.05	49,400.02	12,958.63	-12,936.59
2009	258.98	4.58	560,602	291.76	59,699.03	22,360.73	10,307.87
2010	209.13	11.54	569,011	238.88	49,612.71	12,801.29	-17,567.69
2011	224.8	6.46	577,546	256.57	54,086.86	16,757.68	-242.63
2012	232.18	5.68	586,210	265.37	56,779.95	19,047.64	4,099.99
2013	226.05	6.14	595,003	259.47	56,351.08	18,461.31	2,303.12
2014	215.75	8.52	603,928	248.95	54,877.62	16,927.05	-5,494.42
2015	224.67	6.14	612,987	259.47	58,054.30	19,635.35	3,477.15
2016	226.29	5.92	622,181	262.01	59,500.31	20,756.96	5,177.73
2017	211.55	9.44	631,514	246.44	56,805.29	18,131.94	-6,710.62
2018	237.11	5.15	640,987	275.51	64,459.24	24,841.19	11,288.31
2019	208.12	10.12	650,602	243.97	57,936.13	18,789.76	-7,842.31
2020	251.48	4.54	660,361	293.14	70,657.20	29,982.73	18,035.14
2021	225.87	5.69	670,266	265.21	64,883.92	24,626.14	9,652.18
2022	224.57	5.74	680,320	264.46	65,670.76	25,131.50	10,025.96
2023	219.9	6.1	690,525	259.9	65,504.81	24,791.97	8,739.04
2024	202.5	12.81	700,883	240.85	61,614.60	21,171.34	-12,539.81
2025	212.85	7.01	711,396	253.24	65,756.69	24,637.48	6,189.77
2026	218.8	6.03	722,067	260.68	68,702.74	27,034.81	11,166.09
2027	243.04	4.66	732,898	289.08	77,332.15	34,383.57	22,120.19
2028	219.03	5.9	743,891	262.26	71,208.93	28,840.34	13,313.74
2029	227.11	5.3	755,050	272.22	75,020.95	31,958.85	18,011.23
2030	206.15	8.64	766,376	248.67	69,560.16	27,033.90	4,296.64
2031	244.32	4.53	777,871	293.5	83,330.68	38,735.99	26,814.71
2032	196.42	11.72	789,539	238.55	68,744.87	25,972.76	-4,869.92
2033	201.52	9.84	801,382	245.05	71,676.75	28,314.07	2,418.86
2034	207.75	7.09	813,403	252.89	75,080.22	31,046.75	12,388.50
2035	223.92	5.29	825,604	272.42	82,093.98	36,844.60	22,923.29
2036	197.74	12.99	837,988	242.27	74,103.46	29,850.24	-4,334.61
2037	206.47	7.04	850,558	253.11	78,577.61	33,468.29	14,941.63
2038	201.14	9.14	863,316	247.36	77,946.42	32,750.04	8,696.96
2039	209	6.38	876,266	257.22	82,268.62	36,215.37	19,425.59
2040	203.92	7.4	889,410	251.73	81,721.16	35,567.45	16,093.40
2041	211.77	5.95	902,751	261.63	86,208.29	39,148.42	23,490.24
2042	195.87	10.32	916,292	243.18	81,329.32	34,875.48	7,717.08
2043	205.08	6.73	930,037	254.72	86,468.08	38,986.79	21,275.94
2044	195.83	10.08	943,987	244.13	84,116.14	36,843.47	10,316.66
2045	202.66	7.1	958,147	252.84	88,425.78	40,243.80	21,559.24
2046	220.45	5.18	972,519	274.82	97,554.39	47,619.84	33,988.01
2047	204.3	6.56	987,107	255.83	92,174.42	42,974.98	25,711.50
2048	197.41	8.92	1,001,914	247.97	90,682.21	41,558.83	18,084.71
2049	191.03	10.95	1,016,942	240.69	89,339.92	40,274.62	11,458.30

PDO15 Scenario – Run 3						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	201.35	6.91	1,032,197	253.72	95,591.33	45,226.44	27,041.89
2051	211.53	5.6	1,047,680	266.64	101,965.90	50,257.44	35,520.33
2052	227.37	4.74	1,063,395	286.55	111,220.48	57,617.92	45,144.00
2053	192.12	10.16	1,079,346	243.81	96,053.62	45,056.51	18,319.17
2054	219.08	5.07	1,095,536	277.43	110,934.26	56,970.87	43,628.51
2055	192.71	9.74	1,111,969	245.41	99,604.53	47,582.85	21,950.79
2056	187.86	11.19	1,128,648	239.85	98,808.18	46,759.81	17,311.90
2057	186.92	11.45	1,145,578	239.09	99,973.52	47,525.73	17,393.59
2058	211.51	5.41	1,162,762	270.02	114,599.71	59,132.49	44,895.39
2059	199.72	6.56	1,180,203	255.83	110,205.40	55,403.81	38,140.34
2060	206.3	5.74	1,197,906	264.46	115,632.93	59,570.63	44,465.09
2061	185.7	11.42	1,215,875	239.17	106,142.58	51,781.90	21,728.71
2062	202.95	5.99	1,234,113	261.15	117,633.43	60,786.01	45,022.56
2063	208.94	5.46	1,252,625	269.08	123,027.62	64,895.65	50,526.96
2064	196.17	6.96	1,271,414	253.48	117,630.39	60,405.86	42,089.73
2065	198.7	6.4	1,290,485	257.05	121,079.46	62,959.65	46,117.23
2066	186.36	10.64	1,309,842	241.89	115,644.65	58,465.67	30,465.15
2067	186.36	10.55	1,329,490	242.25	117,554.38	59,799.84	32,036.17
2068	216.69	4.93	1,349,432	281.04	138,425.97	76,099.39	63,125.47
2069	193.64	7.26	1,369,674	252.22	126,090.19	66,174.99	47,069.38
2070	195.97	6.6	1,390,219	255.55	129,675.31	68,810.80	51,442.06
2071	197.82	6.26	1,411,072	258.28	133,027.25	71,255.97	54,781.98
2072	183.86	10.91	1,432,238	240.84	125,902.18	65,484.48	36,773.42
2073	193.12	7.06	1,453,722	253.02	134,253.05	71,841.22	53,261.93
2074	195.44	6.49	1,475,528	256.34	138,058.38	74,628.26	57,548.99
2075	191.52	7.42	1,497,661	251.67	137,573.52	74,063.53	54,536.86
2076	193.77	6.7	1,520,125	254.9	141,431.82	76,882.55	59,250.64
2077	191.28	7.31	1,542,927	252.04	141,938.82	77,090.69	57,853.49
2078	198.65	5.93	1,566,071	261.88	149,694.25	82,921.81	67,316.26
2079	181.84	11	1,589,562	240.51	139,539.32	74,868.25	45,920.34
2080	192.02	6.86	1,613,406	253.98	149,569.57	82,446.64	64,393.67
2081	190.76	7.14	1,637,607	252.68	151,032.73	83,390.83	64,601.01
2082	191.36	6.9	1,662,171	253.78	153,963.82	85,465.34	67,307.11
2083	201.02	5.6	1,687,103	266.64	164,198.01	93,154.28	78,417.16
2084	181.14	10.84	1,712,410	241.1	150,696.90	82,588.67	54,061.83
2085	196.86	5.93	1,738,096	261.88	166,137.41	94,256.15	78,650.60
2086	178.71	12.22	1,764,167	238.5	153,571.98	84,441.87	52,283.38
2087	193.85	6.23	1,790,630	258.57	168,995.85	96,063.32	79,668.28
2088	181.28	10.51	1,817,489	242.41	160,810.43	89,624.35	61,965.94
2089	184.14	9.44	1,844,752	246.44	165,937.20	93,357.02	68,514.45
2090	201.03	5.47	1,872,423	268.9	183,776.36	106,760.96	92,365.96
2091	192.18	6.34	1,900,509	257.56	178,667.19	102,680.14	85,995.62
2092	198.25	5.65	1,929,017	265.84	187,173.75	108,951.73	94,083.04
2093	178.15	11.26	1,957,952	239.63	171,251.45	96,684.30	67,052.18
2094	188.67	6.9	1,987,321	253.78	184,081.86	106,225.82	88,067.58
2095	189.28	6.71	2,017,131	254.84	187,627.65	108,722.48	91,064.26
2096	187.26	7.2	2,047,388	252.44	188,648.03	109,307.48	90,359.76
2097	187.37	7.1	2,078,099	252.84	191,784.29	111,489.24	92,804.68
2098	183.09	9.12	2,109,270	247.42	190,484.45	110,325.79	86,325.34

PDO15 Scenario – Run 4						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	235.06	6.35	483,053	257.48	45,396.62	41,443.94	24,733.11
2000	268.62	4.54	490,298	293.14	52,460.83	48,071.88	36,124.29
2001	228.84	7.12	497,653	252.76	45,912.34	41,566.98	22,829.79
2002	223.89	8.74	505,118	248.43	45,802.34	41,277.58	18,277.16
2003	230.09	6.57	512,694	255.76	47,861.33	43,058.30	25,768.51
2004	235.34	5.91	520,385	262.13	49,789.49	44,701.54	29,148.62
2005	229.14	6.48	528,191	256.42	49,435.06	13,543.60	-3,509.35
2006	215.44	10.44	536,113	242.69	47,490.27	11,526.22	-15,947.97
2007	211.25	12.43	544,155	238.98	47,464.58	11,325.31	-21,385.82
2008	213.32	10.63	552,317	241.93	48,771.57	12,371.74	-15,602.46
2009	223.11	7.02	560,602	253.2	51,808.92	15,020.97	-3,453.06
2010	212.88	10.38	569,011	242.93	50,454.75	13,581.59	-13,734.70
2011	244.97	5.03	577,546	278.42	58,692.76	21,009.76	7,772.67
2012	207.78	11.56	586,210	238.84	51,103.02	13,826.44	-16,595.18
2013	219.54	7.22	595,003	252.36	54,807.45	17,046.86	-1,953.49
2014	209.16	10.68	603,928	241.73	53,285.13	15,473.16	-12,632.62
2015	244.79	4.91	612,987	281.59	63,003.02	24,137.00	11,215.70
2016	209.51	10.24	622,181	243.5	55,297.13	16,947.20	-10,000.67
2017	215.41	7.76	631,514	250.71	57,788.20	19,019.70	-1,401.73
2018	204.7	11.3	640,987	239.51	56,035.27	17,259.35	-12,478.05
2019	221.47	6.2	650,602	258.86	61,471.93	21,961.08	5,644.99
2020	211.98	8.52	660,361	248.95	60,005.56	20,461.76	-1,959.71
2021	214.96	7.07	670,266	252.97	61,889.21	21,958.37	3,352.76
2022	222.5	5.91	680,320	262.13	65,091.78	24,617.46	9,064.54
2023	207.02	9.76	690,525	245.34	61,835.49	21,544.93	-4,139.76
2024	212.21	7.36	700,883	251.86	64,432.62	23,656.91	4,288.13
2025	203.61	10.43	711,396	242.73	63,027.76	22,238.28	-5,209.60
2026	215.7	6.39	722,067	257.14	67,769.58	26,217.01	9,400.91
2027	211.61	7.04	732,898	253.11	67,707.76	25,975.65	7,448.99
2028	234.46	4.97	743,891	279.97	76,018.42	33,028.84	19,949.65
2029	207.94	8	755,050	250.13	68,933.37	26,673.63	5,620.60
2030	213.85	6.34	766,376	257.56	72,047.15	29,186.53	12,502.01
2031	211.12	6.68	777,871	255.03	72,408.33	29,310.55	11,731.27
2032	240.18	4.65	789,539	289.41	83,402.74	38,584.14	26,347.07
2033	227.66	5.15	801,382	275.51	80,588.96	35,959.46	22,406.58
2034	205.39	8	813,403	250.13	74,260.79	30,345.84	9,292.81
2035	197.6	10.72	825,604	241.57	72,796.15	28,914.39	703.34
2036	214.31	5.94	837,988	261.75	80,061.61	34,917.60	19,285.73
2037	206.67	6.99	850,558	253.33	78,648.75	33,528.62	15,133.54
2038	197.16	10.45	863,316	242.65	76,462.02	31,494.59	3,994.08
2039	205.89	6.95	876,266	253.53	81,087.08	35,218.80	16,928.99
2040	207.99	6.46	889,410	256.57	83,292.75	36,889.43	19,889.12
2041	201.74	8.2	902,751	249.67	82,268.85	35,843.51	14,264.16
2042	197.12	9.94	916,292	244.67	81,828.88	35,293.47	9,135.09
2043	192.09	11.43	930,037	239.14	81,180.84	34,574.38	4,494.88
2044	191.33	11.62	943,987	238.72	82,250.62	35,290.62	4,711.11
2045	193.46	12.93	958,147	241.76	84,548.07	37,024.22	2,997.27
2046	218.63	5.28	972,519	272.64	96,777.10	46,976.10	33,081.10
2047	232.86	4.62	987,107	290.4	104,630.30	53,265.31	41,107.19
2048	215.42	5.42	1,001,914	269.83	98,677.15	48,147.62	33,884.20
2049	214.07	5.48	1,016,942	268.72	99,744.29	48,828.34	34,407.02

PDO15 Scenario – Run 4						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	198.91	7.74	1,032,197	250.76	94,472.88	44,309.13	23,940.33
2051	199.72	7.26	1,047,680	252.22	96,447.89	45,742.44	26,636.82
2052	208.41	5.82	1,063,395	263.32	102,206.74	50,259.77	34,943.70
2053	203.46	6.32	1,079,346	257.74	101,538.73	49,523.85	32,891.96
2054	187.56	11.66	1,095,536	238.64	95,426.24	44,369.06	13,684.28
2055	201.27	6.54	1,111,969	255.97	103,891.86	51,058.92	33,848.07
2056	201.08	6.51	1,128,648	256.19	105,540.66	52,206.26	35,074.36
2057	196.13	7.84	1,145,578	250.51	104,745.60	51,377.81	30,745.85
2058	212.94	5.32	1,162,762	271.8	115,355.68	59,741.41	45,741.15
2059	224.66	4.73	1,180,203	286.86	123,570.84	66,146.33	53,698.74
2060	205.39	5.82	1,197,906	263.32	115,135.08	59,171.32	43,855.25
2061	201.54	6.19	1,215,875	258.96	114,925.67	58,811.85	42,522.07
2062	200.37	6.3	1,234,113	257.92	116,178.92	59,624.21	43,044.96
2063	204.35	5.82	1,252,625	263.32	120,394.32	62,796.54	47,480.47
2064	194.73	7.42	1,271,414	251.67	116,790.71	59,737.85	40,211.18
2065	193.12	8.04	1,290,485	250.04	117,773.44	60,334.76	39,176.47
2066	186.61	10.56	1,309,842	242.21	115,797.86	58,587.08	30,797.09
2067	225.51	4.58	1,329,490	291.76	141,578.63	78,800.68	66,747.83
2068	195.09	6.92	1,349,432	253.67	124,945.51	65,457.91	47,247.04
2069	198.42	6.26	1,369,674	258.28	129,124.50	68,565.79	52,091.80
2070	191.97	7.86	1,390,219	250.46	127,089.61	66,777.23	46,092.64
2071	183.48	11.14	1,411,072	240.02	123,618.41	63,869.76	34,553.43
2072	183.89	10.9	1,432,238	240.88	125,921.82	65,499.87	36,815.13
2073	191.92	7.48	1,453,722	251.48	133,437.96	71,203.64	51,519.06
2074	194.32	6.7	1,475,528	254.9	137,282.53	74,022.43	56,390.53
2075	181.2	12.16	1,497,661	238.42	130,330.92	68,417.97	36,417.38
2076	190.55	7.74	1,520,125	250.76	139,130.98	75,092.12	54,723.32
2077	216	4.83	1,542,927	283.85	159,856.53	91,010.02	78,299.26
2078	191.55	7.13	1,566,071	252.72	144,458.53	78,861.23	60,097.72
2079	219.7	4.65	1,589,562	289.41	167,912.95	96,837.37	84,600.30
2080	190.57	7.29	1,613,406	252.11	148,464.01	81,592.02	62,407.45
2081	198.98	5.82	1,637,607	263.32	157,396.34	88,302.18	72,986.11
2082	202.06	5.54	1,662,171	267.66	162,385.87	91,955.10	77,375.88
2083	202.2	5.51	1,687,103	268.18	165,144.66	93,882.60	79,382.33
2084	181.62	10.68	1,712,410	241.73	151,087.53	82,888.75	54,782.96
2085	191.75	6.65	1,738,096	255.22	161,913.04	91,015.99	73,515.66
2086	185.18	9.28	1,764,167	246.95	159,013.77	88,609.56	64,188.06
2087	195.37	6.04	1,790,630	260.56	170,298.83	97,059.76	81,164.73
2088	197.35	5.81	1,817,489	263.46	174,777.16	100,289.66	84,999.91
2089	211.15	4.9	1,844,752	281.87	189,790.11	111,545.45	98,650.47
2090	189.18	6.99	1,872,423	253.33	173,137.77	98,660.28	80,265.20
2091	187.8	7.38	1,900,509	251.8	174,668.82	99,639.88	80,218.47
2092	196.55	5.8	1,929,017	263.6	185,600.26	107,756.94	92,493.50
2093	189.78	6.69	1,957,952	254.97	182,211.56	104,995.26	87,389.67
2094	195.7	5.84	1,987,321	263.05	190,810.60	111,321.31	95,952.60
2095	185.37	8.2	2,017,131	249.67	183,823.71	105,845.69	84,266.34
2096	204.17	5.18	2,047,388	274.82	205,375.62	121,941.45	108,309.62
2097	183.41	9.06	2,078,099	247.59	187,798.22	108,482.54	84,639.99
2098	186.87	7.2	2,109,270	252.44	194,349.89	113,237.79	94,290.07

PDO15 Scenario – Run 5						
Year	**New GPCD**	**Rainfall**	**Population**	**GPCD**	**Total**	**New Total**	**Drawdown**
1999	218.51	12.74	483,053	240.39	42,385.02	38,525.91	4,998.98
2000	234.63	6.3	490,298	257.92	46,156.46	41,989.44	25,410.18
2001	227.88	7.39	497,653	251.77	45,731.49	41,393.24	21,945.51
2002	222.47	9.28	505,118	246.95	45,528.97	41,016.05	16,594.55
2003	219.74	9.88	512,694	244.9	45,828.19	41,121.20	15,120.72
2004	222.01	8.88	520,385	248.07	47,119.41	42,167.97	18,799.12
2005	222.72	8.22	528,191	249.63	48,126.10	12,306.59	-9,325.39
2006	256.43	4.75	536,113	286.24	56,011.86	19,547.21	7,046.98
2007	240.18	5.42	544,155	269.83	53,593.09	17,070.98	2,807.56
2008	238.85	5.45	552,317	269.27	54,283.51	17,519.14	3,176.77
2009	210.24	11.35	560,602	239.36	48,978.20	12,387.70	-17,481.28
2010	222.74	6.94	569,011	253.58	52,664.77	15,629.59	-2,633.90
2011	225.02	6.43	577,546	256.81	54,136.78	16,803.77	-117.60
2012	218.7	7.76	586,210	250.71	53,642.55	16,162.10	-4,259.33
2013	219.21	7.32	595,003	252	54,728.66	16,974.66	-2,288.85
2014	241.3	5.09	603,928	276.94	61,046.27	22,558.79	9,163.81
2015	225.15	6.09	612,987	260.01	58,173.68	19,743.95	3,717.33
2016	217.83	7.14	622,181	252.68	57,382.32	18,837.21	47.39
2017	249.78	4.67	631,514	288.76	66,559.80	26,942.15	14,652.45
2018	220.27	6.43	640,987	256.81	60,083.48	20,902.87	3,981.50
2019	219.01	6.52	650,602	256.12	60,820.69	21,376.97	4,218.76
2020	214.03	7.56	660,361	251.24	60,557.83	20,955.40	1,060.30
2021	207.84	9.86	670,266	244.97	59,931.36	20,214.27	-5,733.58
2022	212.93	7.52	680,320	251.36	62,417.12	22,242.76	2,452.92
2023	247.49	4.6	690,525	291.07	73,362.98	31,745.77	19,640.29
2024	210.24	8.22	700,883	249.63	63,860.93	23,152.66	1,520.68
2025	217.29	6.26	711,396	258.28	67,066.07	25,788.66	9,314.67
2026	213.18	6.81	722,067	254.26	67,010.38	25,551.67	7,630.28
2027	223.58	5.59	732,898	266.81	71,373.86	29,178.38	14,467.58
2028	232.24	5.07	743,891	277.43	75,326.60	32,426.34	19,083.99
2029	207.54	8.2	755,050	249.67	68,808.67	26,565.36	4,986.02
2030	203.87	9.56	766,376	246.04	68,824.51	26,397.16	1,238.80
2031	219.52	5.72	777,871	264.76	75,171.50	31,695.02	16,642.11
2032	237.99	4.73	789,539	286.86	82,667.13	37,951.24	25,503.64
2033	208	7.16	801,382	252.6	73,885.98	30,209.28	11,366.82
2034	217.65	5.74	813,403	264.46	78,517.16	33,986.58	18,881.04
2035	206.5	7.32	825,604	252	75,939.45	31,595.34	12,331.83
2036	206.35	7.21	837,988	252.4	77,201.15	32,484.80	13,510.76
2037	214.91	5.84	850,558	263.05	81,665.47	36,087.13	20,718.42
2038	203.6	7.94	863,316	250.27	78,861.66	33,524.11	12,628.98
2039	208.73	6.42	876,266	256.89	82,163.29	36,126.53	19,231.48
2040	193.64	11.3	889,410	239.51	77,752.48	32,229.10	2,491.71
2041	223.03	5.17	902,751	275.05	90,631.01	42,858.77	29,253.26
2042	210.42	6.04	916,292	260.56	87,144.45	39,741.10	23,846.07
2043	199.58	8.86	930,037	248.13	84,229.82	37,118.88	13,802.66
2044	193	10.94	943,987	240.73	82,943.47	35,867.34	7,077.34
2045	236.12	4.54	958,147	293.14	102,519.66	51,945.64	39,998.05
2046	225.37	4.94	972,519	280.77	99,665.92	49,368.60	36,368.36
2047	198.5	8.58	987,107	248.81	89,645.95	40,886.11	18,306.74
2048	225.57	4.89	1,001,914	282.14	103,179.65	51,858.21	38,989.55

PDO15 Scenario – Run 5						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2049	203.36	6.58	1,016,942	255.69	94,908.29	44,852.53	27,536.42
2050	210.9	5.68	1,032,197	265.37	99,977.98	48,824.21	33,876.57
2051	200.1	7.14	1,047,680	252.68	96,625.12	45,887.45	27,097.63
2052	211.95	5.54	1,063,395	267.66	103,888.42	51,632.57	37,053.35
2053	191.34	10.4	1,079,346	242.85	95,674.85	44,748.03	17,379.10
2054	207.18	5.86	1,095,536	262.78	105,079.43	52,213.23	36,791.90
2055	200.31	6.72	1,111,969	254.78	103,407.33	50,666.07	32,981.53
2056	200.46	6.62	1,128,648	255.42	105,221.15	51,947.79	34,526.41
2057	201.69	6.36	1,145,578	257.39	107,623.88	53,701.20	36,964.05
2058	196.47	7.52	1,162,762	251.36	106,679.59	52,753.07	32,963.23
2059	191.91	9.54	1,180,203	246.11	106,017.51	52,037.77	26,932.04
2060	213.2	5.26	1,197,906	273.06	119,391.63	62,585.35	48,742.98
2061	188.52	10.44	1,215,875	242.69	107,705.32	53,032.71	25,558.52
2062	208.71	5.5	1,234,113	268.36	120,883.07	63,381.67	48,907.72
2063	198.21	6.59	1,252,625	255.62	116,872.29	59,989.00	42,646.58
2064	184.37	11.66	1,271,414	238.64	110,746.03	54,929.05	24,244.27
2065	204.46	5.75	1,290,485	264.32	124,500.52	65,675.87	50,544.01
2066	195.36	7.01	1,309,842	253.24	121,073.03	62,767.26	44,319.55
2067	184.49	11.18	1,329,490	239.88	116,406.86	58,892.26	29,470.66
2068	195.09	6.92	1,349,432	253.67	124,945.51	65,457.91	47,247.04
2069	198.5	6.25	1,369,674	258.38	129,171.54	68,602.85	52,155.18
2070	204.83	5.59	1,390,219	266.81	135,387.59	73,303.31	58,592.51
2071	198.43	6.18	1,411,072	259.06	133,427.50	71,570.18	55,306.72
2072	193.27	7.1	1,432,238	252.84	132,178.85	70,402.97	51,718.41
2073	195.61	6.51	1,453,722	256.19	135,938.56	73,159.66	56,027.76
2074	196.82	6.28	1,475,528	258.1	139,003.79	75,366.47	58,839.85
2075	215.06	4.9	1,497,661	281.87	154,081.02	86,931.03	74,036.06
2076	183.77	10.6	1,520,125	242.05	134,299.05	71,332.10	43,436.85
2077	202.89	5.58	1,542,927	266.98	150,353.12	83,627.32	68,942.84
2078	214.59	4.88	1,566,071	282.42	161,437.94	92,029.68	79,187.34
2079	190.48	7.42	1,589,562	251.67	146,015.44	79,882.58	60,355.90
2080	191.74	6.93	1,613,406	253.62	149,357.79	82,282.93	64,045.75
2081	213.5	4.89	1,637,607	282.14	168,644.92	96,983.69	84,115.03
2082	187.86	8.4	1,662,171	249.23	151,204.00	83,338.71	61,233.04
2083	197.65	5.9	1,687,103	262.26	161,497.84	91,076.86	75,550.26
2084	186.92	8.66	1,712,410	248.62	155,397.05	86,199.25	63,409.35
2085	200.02	5.64	1,738,096	266	168,749.42	96,259.61	81,417.23
2086	189.22	7.26	1,764,167	252.22	162,406.63	91,208.05	72,102.44
2087	190.9	6.73	1,790,630	254.72	166,479.76	94,139.17	76,428.31
2088	189.88	6.92	1,817,489	253.67	168,283.47	95,330.94	77,120.07
2089	195.17	6.01	1,844,752	260.91	175,679.49	100,785.76	84,969.67
2090	189.52	6.9	1,872,423	253.78	173,439.07	98,889.71	80,731.47
2091	185.46	8.62	1,900,509	248.72	172,532.79	98,015.69	75,331.06
2092	186.5	7.9	1,929,017	250.36	176,277.26	100,677.75	79,887.89
2093	190.77	6.5	1,957,952	256.27	183,142.76	105,701.38	88,595.80
2094	180.37	10.41	1,987,321	242.81	176,129.84	100,203.97	72,808.73
2095	187.58	7.16	2,017,131	252.6	185,975.87	107,473.29	88,630.84
2096	192.19	6.19	2,047,388	258.96	193,521.06	112,987.96	96,698.19
2097	187.07	7.2	2,078,099	252.44	191,477.76	111,258.02	92,310.30
2098	203.23	5.21	2,109,270	274.15	211,064.21	125,829.39	112,118.61

WDP1 Scenario

All five runs of the WDP1 Scenario used the following input:

Please enter the type of weather pattern:
      PDO(type 1),
      Wet Dry Pattern, (type 2) or
      Custom (type 3): 2
Please enter the population: 483053
Please enter the growth rate: 0.01
Please enter the current year: 1999
Please enter the number of years the program is to run for: 100
Please enter the fixed compliance for low flow showerheads: 0.1
Please enter the fixed compliance for low flow toilets: 0.1
Please enter the fixed compliance for outdoor water savings: 0.4
Please enter the Water On Request compliance: 0.4
Please enter the year that San Juan Chama goes into effect: 2005

WDP1 Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	267.94	4.59	483,053	291.41	51,380.52	47,241.92	35,162.75
2000	216.68	12.45	487,883	239.04	42,567.69	38,585.05	5,821.29
2001	216.91	11.2	492,762	239.82	43,133.32	39,013.31	9,539.08
2002	230.11	6.84	497,689	254.09	46,157.37	41,801.46	23,801.13
2003	220.45	13.21	502,666	244.57	44,871.87	40,445.90	5,682.10
2004	232.02	6.38	507,693	257.22	47,664.98	42,994.94	26,205.15
2005	215.69	10.96	512,770	240.65	45,040.73	9,737.19	-19,105.45
2006	230.04	6.5	517,898	256.27	48,443.10	12,852.37	-4,253.21
2007	235.94	5.84	523,077	263.05	50,222.71	14,413.51	-955.20
2008	250.4	5.01	528,307	278.93	53,787.13	17,653.41	4,468.95
2009	227.24	6.69	533,590	254.97	49,657.12	13,624.94	-3,980.65
2010	231.78	6.06	538,926	260.34	51,210.39	14,960.45	-987.21
2011	221.35	8.16	544,316	249.76	49,622.00	13,344.33	-8,129.75
2012	255.54	4.73	549,759	286.86	57,561.44	20,645.79	8,198.19
2013	216.47	13.29	555,256	245.57	49,769.09	13,238.87	-21,735.46
2014	211.81	12.84	560,809	241.06	49,343.96	12,723.56	-21,066.54
2015	222.21	7.12	566,417	252.76	52,256.35	15,307.93	-3,429.26
2016	215.2	9.66	572,081	245.7	51,303.59	14,302.85	-11,118.67
2017	240.2	5.25	577,802	273.28	57,633.09	20,025.53	6,209.48
2018	221.24	7.01	583,580	253.24	53,942.23	16,493.73	-1,953.98
2019	208.54	11.17	589,416	239.92	51,614.88	14,232.51	-15,162.77
2020	218.74	7.47	595,310	251.51	54,650.49	16,896.63	-2,761.63
2021	206.82	11.5	601,263	238.97	52,444.85	14,758.00	-15,505.72
2022	206.25	11.58	607,276	238.79	52,930.16	15,083.82	-15,390.43
2023	214.6	8.74	613,348	248.43	55,616.26	17,410.34	-5,590.09
2024	205.06	11.86	619,482	238.39	53,902.42	15,734.02	-15,477.08
2025	242.54	4.96	625,677	280.24	63,998.57	24,756.58	11,703.70
2026	217.8	6.98	631,934	253.38	58,444.07	19,603.78	1,235.02
2027	204.56	11.42	638,253	239.17	55,717.75	17,023.86	-13,029.33
2028	209.02	13.21	644,635	244.57	57,545.13	18,549.63	-16,214.17
2029	223.92	5.95	651,082	261.63	62,175.14	22,582.28	6,924.09
2030	208.25	9.96	657,593	244.59	58,707.65	19,352.17	-6,858.85
2031	225.86	5.72	664,169	264.76	64,183.62	24,121.05	9,068.13
2032	227.4	5.58	670,810	266.98	65,368.21	25,046.87	10,362.39
2033	220.88	6.08	677,518	260.12	64,324.90	23,989.40	7,989.10
2034	207.04	9.86	684,293	244.97	61,185.58	21,078.80	-4,869.05
2035	224.98	5.66	691,136	265.68	67,021.61	26,122.60	11,227.59
2036	219.65	6.08	698,048	260.12	66,274.06	25,332.97	9,332.68
2037	206.8	9.58	705,028	245.97	63,297.59	22,584.05	-2,626.94
2038	211.24	7.49	712,079	251.45	65,354.23	24,271.76	4,560.87
2039	205.48	13.27	719,199	245.31	64,395.84	23,308.40	-11,613.30
2040	212.95	6.81	726,391	254.26	67,411.66	25,828.27	7,906.88
2041	242.43	4.68	733,655	288.44	77,238.89	34,287.41	21,971.39
2042	198.51	12.25	740,992	238.54	64,516.78	23,058.12	-9,179.32
2043	233.98	4.98	748,402	279.71	76,407.57	33,284.13	20,178.63
2044	213.49	6.46	755,886	256.57	70,788.30	28,270.07	11,269.75
2045	201.24	10.4	763,445	242.85	67,672.91	25,446.18	-1,922.75
2046	199.42	12.85	771,079	241.13	67,865.48	25,494.10	-8,322.31
2047	230.4	5.07	778,790	277.43	78,860.48	34,862.27	21,519.92
2048	244.47	4.51	786,578	294.21	84,467.96	39,555.05	27,686.41
2049	217.52	5.82	794,443	263.32	76,356.79	32,441.28	17,125.21

| **WDP1 Scenario – Run 1** | | | | | | |
Year	**New GPCD**	**Rainfall**	**Population**	**GPCD**	**Total**	**New Total**	**Drawdown**
2050	224.61	5.31	802,388	272.01	79,663.77	35,148.95	21,175.01
2051	206.23	7.66	810,412	250.97	74,235.93	30,370.07	10,211.80
2052	230.23	4.99	818,516	279.45	83,487.80	38,151.69	25,019.87
2053	202.09	9.3	826,701	246.88	74,496.43	30,348.39	5,874.26
2054	199.41	13.17	834,968	244.1	74,393.80	30,140.53	-4,518.00
2055	194.61	11.57	843,318	238.82	73,509.97	29,270.59	-1,177.34
2056	224.84	5.18	851,751	274.82	85,440.03	39,269.37	25,637.54
2057	205.42	7.24	860,268	252.29	79,218.19	33,869.56	14,816.58
2058	193.88	11.49	868,871	238.99	75,794.35	30,854.08	616.68
2059	235.01	4.69	877,560	288.12	92,286.62	44,644.09	32,301.76
2060	207.07	6.63	886,335	255.35	82,609.36	36,358.10	18,910.41
2061	193.38	12.55	895,199	239.42	78,228.85	32,552.99	-473.94
2062	205.22	6.88	904,151	253.88	83,783.90	37,095.13	18,989.53
2063	223.23	5.14	913,192	275.75	91,910.50	43,774.94	30,248.37
2064	219.95	5.3	922,324	272.22	91,641.12	43,415.20	29,467.57
2065	192.5	11.24	931,547	239.69	81,498.52	34,820.31	5,240.82
2066	207.26	6.32	940,863	257.74	88,511.03	40,543.80	23,911.91
2067	214.65	5.58	950,271	266.98	92,600.75	43,818.38	29,133.90
2068	192.71	10.89	959,774	240.91	84,396.16	36,877.92	8,219.50
2069	190.73	11.56	969,372	238.84	84,505.27	36,850.74	6,429.12
2070	213.75	5.58	979,066	266.98	95,406.73	45,752.56	31,068.07
2071	193.68	13.07	988,856	243.04	87,719.22	39,273.12	4,877.74
2072	221.18	5.1	998,745	276.7	100,867.13	49,995.57	36,574.27
2073	204.7	6.4	1,008,732	257.05	94,644.05	44,737.61	27,895.19
2074	193.25	13.11	1,018,820	243.45	90,530.20	41,231.03	6,730.39
2075	192.54	10.39	1,029,008	242.89	91,227.97	41,684.76	14,342.15
2076	205.96	6.13	1,039,298	259.58	98,468.79	47,498.39	31,366.51
2077	188.7	12.37	1,049,691	238.8	91,494.12	41,666.51	9,113.28
2078	205.34	6.14	1,060,188	259.47	100,407.46	48,829.55	32,671.36
2079	205.34	6.11	1,070,790	259.79	101,535.56	49,622.80	33,543.56
2080	191.09	10.46	1,081,498	242.61	95,769.99	44,801.67	17,274.84
2081	202.73	6.38	1,092,312	257.22	102,552.19	50,196.91	33,407.13
2082	207.55	5.81	1,103,236	263.46	106,091.68	52,944.49	37,654.73
2083	201.46	6.5	1,114,268	256.27	104,226.32	51,303.96	34,198.38
2084	198.96	6.96	1,125,411	253.48	104,122.29	51,094.67	32,778.54
2085	186.52	11.86	1,136,665	238.39	98,903.58	46,753.51	15,542.40
2086	209.24	5.59	1,148,031	266.81	111,801.93	57,045.60	42,334.80
2087	193.08	9.24	1,159,512	247.07	104,564.35	51,083.35	26,767.11
2088	189.66	10.34	1,171,107	243.1	103,912.10	50,437.92	23,226.89
2089	197.07	7.16	1,182,818	252.6	109,053.71	54,450.54	35,608.09
2090	196.31	7.34	1,194,646	251.93	109,854.09	54,969.44	35,653.29
2091	197.14	7.01	1,206,592	253.24	111,529.30	56,188.73	37,741.01
2092	190.37	13.25	1,218,658	245.06	109,004.09	54,044.58	19,175.51
2093	201.84	6.12	1,230,845	259.68	116,664.52	60,045.99	43,940.42
2094	196.51	7	1,243,153	253.29	114,929.73	58,534.94	40,113.54
2095	188.74	10.16	1,255,585	243.81	111,737.55	55,867.51	29,130.17
2096	185.18	12.59	1,268,141	239.59	110,900.77	55,082.57	21,950.38
2097	191.2	9.12	1,280,822	247.42	115,668.77	58,755.04	34,754.60
2098	185.12	11.14	1,293,630	240.02	113,329.78	56,777.77	27,461.44

				WDP1 Scenario – Run 2		
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	216.56	11.86	483,053	238.39	42,031.44	38,183.32	6,972.22
2000	225.65	8.78	487,883	248.33	44,221.84	40,183.23	17,077.54
2001	215.56	12.16	492,762	238.42	42,881.62	38,770.81	6,770.22
2002	239.8	5.76	497,689	264.17	47,988.53	43,560.68	28,402.50
2003	226.95	7.52	502,666	251.36	46,117.95	41,639.67	21,849.83
2004	258.3	4.8	507,693	284.73	52,763.22	47,865.59	35,233.78
2005	218.33	10.26	512,770	243.42	45,558.12	10,230.12	-16,770.38
2006	213	12.03	517,898	238.34	45,053.78	9,632.12	-22,026.36
2007	216.25	12.99	523,077	242.27	46,255.81	10,654.74	-23,530.10
2008	228.37	6.59	528,307	255.62	49,292.05	13,405.65	-3,936.78
2009	261.59	4.59	533,590	291.41	56,755.95	20,315.20	8,236.03
2010	237.71	5.6	538,926	266.64	52,451.20	16,126.74	1,389.63
2011	225.35	6.85	544,316	254.04	50,471.01	14,140.24	-3,886.41
2012	237.11	5.57	549,759	267.15	53,605.92	16,947.37	2,289.21
2013	219.13	8.74	555,256	248.43	50,348.68	13,779.37	-9,221.05
2014	232.64	5.81	560,809	263.46	53,929.68	16,989.01	1,699.25
2015	209.03	12.26	566,417	238.56	49,320.46	12,584.08	-19,679.67
2016	222.58	6.92	572,081	253.67	52,969.66	15,844.65	-2,366.21
2017	211.97	10.44	577,802	242.69	51,183.18	14,071.77	-13,402.42
2018	218.46	7.96	583,580	250.22	53,298.54	15,901.04	-5,046.72
2019	222.9	6.6	589,416	255.55	54,978.90	17,322.26	-46.49
2020	213.01	9.78	595,310	245.27	53,293.33	15,653.19	-10,084.13
2021	226.15	6.08	601,263	260.12	57,085.10	18,998.98	2,998.68
2022	228.24	5.85	607,276	262.92	58,277.11	19,958.80	4,563.78
2023	221.59	6.52	613,348	256.12	57,338.05	18,976.36	1,818.14
2024	236.71	5.25	619,482	273.28	61,790.48	22,891.23	9,075.19
2025	205.89	11.22	625,677	239.75	54,753.22	16,387.79	-13,139.08
2026	204.76	11.51	631,934	238.95	55,114.72	16,597.20	-13,692.83
2027	219.83	6.52	638,253	256.12	59,666.26	20,581.21	3,423.00
2028	219.02	6.58	644,635	255.69	60,161.94	20,901.73	3,585.62
2029	206.61	10.53	651,082	242.33	57,588.23	18,468.90	-9,242.14
2030	213.32	7.94	657,593	250.27	60,069.40	20,570.54	-324.58
2031	238.74	5	664,169	279.19	67,681.71	27,243.71	14,085.57
2032	213.29	7.6	670,810	251.13	61,488.29	21,591.17	1,590.80
2033	207.08	9.96	677,518	244.59	60,486.48	20,578.31	-5,632.70
2034	203.14	10.98	684,293	240.58	60,088.66	20,106.17	-8,789.11
2035	217.35	6.4	691,136	257.05	64,845.68	24,197.47	7,355.05
2036	201.99	12.69	698,048	240.1	61,174.98	20,831.47	-12,563.88
2037	218.6	6.15	705,028	259.37	66,744.50	25,620.41	9,435.89
2038	201.37	11.08	712,079	240.22	62,435.80	21,706.48	-7,451.96
2039	200.84	11.14	719,199	240.02	63,006.16	22,089.49	-7,226.84
2040	237.36	4.89	726,391	282.14	74,805.59	32,299.85	19,431.19
2041	221.24	5.76	733,655	264.17	70,741.02	28,612.07	13,453.89
2042	199.68	11.18	740,992	239.88	64,879.43	23,374.20	-6,047.40
2043	199.12	11.26	748,402	239.63	65,458.66	23,760.91	-5,871.22
2044	197.67	12.06	755,886	238.35	65,759.65	23,905.20	-7,832.23
2045	215.55	6.15	763,445	259.37	72,274.80	29,432.47	13,247.96
2046	209.1	7.23	771,079	252.33	71,015.71	28,217.41	9,190.74
2047	215.57	6.07	778,790	260.23	73,971.29	30,644.15	14,670.17
2048	224.65	5.35	786,578	271.2	77,860.73	33,866.04	19,786.84
2049	204.5	8.84	794,443	248.18	71,964.50	28,666.87	5,403.28

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
**WDP1 Scenario – Run 2**							
2050	213.85	6.14	802,388	259.47	75,991.93	31,999.83	15,841.63
2051	203.43	9.02	810,412	247.7	73,269.89	29,543.16	5,805.88
2052	217.43	5.74	818,516	264.46	79,010.71	34,326.79	19,221.24
2053	197.29	10.8	826,701	241.26	72,798.53	28,900.61	479.03
2054	221.96	5.38	834,968	270.6	82,469.77	37,013.79	22,855.64
2055	209.69	6.46	843,318	256.57	78,976.26	33,914.06	16,913.75
2056	194.02	12.2	851,751	238.47	74,136.76	29,685.47	-2,420.39
2057	221.59	5.34	860,268	271.4	85,218.14	38,947.43	24,894.54
2058	197.17	10.39	868,871	242.89	77,030.83	31,898.62	4,556.00
2059	196.3	10.56	877,560	242.21	77,581.55	32,244.42	4,454.43
2060	222.71	5.22	886,335	273.93	88,619.54	41,416.87	27,679.78
2061	196.4	10.36	895,199	243.01	79,404.50	33,540.76	6,277.10
2062	217.98	5.46	904,151	269.08	88,801.95	41,303.75	26,935.07
2063	205.99	6.66	913,192	255.16	85,047.21	38,028.87	20,502.23
2064	213.47	5.74	922,324	264.46	89,031.21	41,233.96	26,128.41
2065	193.81	10.8	931,547	241.26	82,031.17	35,264.71	6,843.12
2066	202.85	7.2	940,863	252.44	86,691.90	39,028.71	20,080.99
2067	205.26	6.58	950,271	255.69	88,686.08	40,563.53	23,247.42
2068	191.91	11.16	959,774	239.95	84,058.56	36,597.70	7,228.74
2069	191.46	11.23	969,372	239.72	84,818.87	37,110.60	7,557.42
2070	190.08	11.9	979,066	238.36	85,181.05	37,293.20	5,976.83
2071	200.84	7.41	988,856	251.7	90,846.82	41,856.21	22,355.85
2072	190.26	11.41	998,745	239.2	87,197.36	38,724.19	8,697.32
2073	207.41	6.06	1,008,732	260.34	95,852.78	45,732.65	29,784.98
2074	207.79	5.99	1,018,820	261.15	97,112.09	46,640.57	30,877.12
2075	202.25	6.73	1,029,008	254.72	95,669.68	45,329.50	27,618.64
2076	197.96	8.14	1,039,298	249.81	94,763.53	44,462.78	23,041.33
2077	199.41	7.35	1,049,691	251.9	96,511.68	45,770.79	26,428.33
2078	201.87	6.65	1,060,188	255.22	98,762.25	47,485.90	29,985.57
2079	187.91	12.16	1,070,790	238.42	93,183.34	42,811.99	10,811.40
2080	213.73	5.39	1,081,498	270.41	106,742.59	53,735.55	39,551.07
2081	202.94	6.35	1,092,312	257.48	102,653.90	50,279.60	33,568.77
2082	190.56	10.48	1,103,236	242.53	97,662.45	46,102.17	18,522.71
2083	216.69	5.17	1,114,268	275.05	111,866.10	57,496.21	43,890.69
2084	187.2	12.42	1,125,411	238.94	98,152.60	46,263.25	13,578.43
2085	218.88	5.03	1,136,665	278.42	115,512.89	60,176.12	46,939.03
2086	188.62	10.8	1,148,031	241.26	101,094.55	48,405.16	19,983.58
2087	188.37	10.81	1,159,512	241.22	102,089.19	49,088.88	20,640.98
2088	187.52	11.02	1,171,107	240.43	102,774.54	49,522.59	20,522.05
2089	201.64	6.26	1,182,818	258.28	111,508.86	56,423.26	39,949.27
2090	225.86	4.67	1,194,646	288.76	125,912.33	67,854.10	55,564.40
2091	196.62	7.16	1,206,592	252.6	111,245.62	55,961.43	37,118.98
2092	213.12	5.24	1,218,658	273.49	121,651.83	64,164.58	50,374.85
2093	197.5	6.81	1,230,845	254.26	114,226.78	58,098.13	40,176.74
2094	201.96	6.08	1,243,153	260.12	118,027.41	61,006.76	45,006.46
2095	221.59	4.79	1,255,585	285.03	130,626.05	70,919.43	58,313.93
2096	195.5	7.17	1,268,141	252.56	116,901.90	59,858.37	40,989.60
2097	185.09	12.62	1,280,822	239.74	112,076.26	55,899.85	22,688.70
2098	200.16	6.19	1,293,630	258.96	122,275.14	63,877.87	47,588.09

WDP1 Scenario – Run 3						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	218.28	12.7	483,053	240.16	42,343.37	38,485.56	5,063.89
2000	231.88	6.72	487,883	254.78	45,370.58	41,293.10	23,608.56
2001	216.12	11.49	492,762	238.99	42,985.18	38,870.58	8,633.18
2002	249.38	5.21	497,689	274.15	49,801.27	45,302.19	31,591.41
2003	217.52	12.9	502,666	241.51	44,311.35	39,908.91	5,960.92
2004	240.56	5.63	507,693	266.16	49,320.92	44,576.96	29,760.89
2005	263.41	4.61	512,770	290.74	54,414.75	18,668.05	6,536.25
2006	219.23	9.88	517,898	244.9	46,293.36	10,809.86	-15,190.62
2007	213.52	11.34	523,077	239.39	45,705.20	10,133.02	-19,709.64
2008	212.22	12.24	528,307	238.53	45,995.49	10,290.48	-21,920.64
2009	218.03	9.8	533,590	245.19	47,753.78	11,831.14	-13,958.81
2010	234.59	5.82	538,926	263.32	51,798.13	15,512.89	196.82
2011	211.86	12.6	544,316	239.64	47,610.46	11,458.59	-21,699.92
2012	222.82	7.36	549,759	251.86	50,539.70	14,080.45	-5,288.33
2013	223.1	7.14	555,256	252.68	51,209.98	14,582.60	-4,207.23
2014	213.02	10.52	560,809	242.37	49,611.83	12,972.71	-14,712.01
2015	222.61	7.02	566,417	253.2	52,346.33	15,391.41	-3,082.62
2016	224.71	6.54	572,081	255.97	53,449.83	16,289.01	-921.83
2017	239.22	5.3	577,802	272.22	57,409.78	19,819.40	5,871.77
2018	221.03	7.06	583,580	253.02	53,894.35	16,449.64	-2,129.65
2019	233.24	5.59	589,416	266.81	57,400.75	19,546.66	4,835.86
2020	208.39	11.08	595,310	240.22	52,197.38	14,649.08	-14,509.35
2021	226.66	6.03	601,263	260.68	57,208.57	19,111.82	3,243.11
2022	218.76	7.18	607,276	252.52	55,972.18	17,857.32	-1,037.77
2023	217.66	7.38	613,348	251.8	56,370.57	18,096.40	-1,325.01
2024	206.88	12.74	619,482	240.39	54,355.85	16,145.44	-17,381.49
2025	217.82	7.08	625,677	252.93	57,762.19	19,111.47	479.55
2026	223.58	6.11	631,934	259.79	59,921.90	20,938.34	4,859.10
2027	222.85	6.14	638,253	259.47	60,447.17	21,284.76	5,126.56
2028	220.17	6.41	644,635	256.97	60,463.46	21,172.74	4,304.01
2029	216.04	7.1	651,082	252.84	60,087.27	20,709.95	2,025.39
2030	244.7	4.78	657,593	285.33	68,485.23	28,100.28	15,521.10
2031	203.09	12.51	664,169	239.26	58,000.70	18,601.69	-14,319.97
2032	205.99	13.06	670,810	242.94	59,481.69	19,803.97	-14,565.09
2033	232.76	5.24	677,518	273.49	67,632.84	26,929.06	13,139.33
2034	217.53	6.43	684,293	256.81	64,142.81	23,700.96	6,779.60
2035	226.58	5.55	691,136	267.49	67,477.14	26,525.62	11,920.09
2036	222.13	5.85	698,048	262.92	66,988.03	25,963.27	10,568.24
2037	213.67	6.9	705,028	253.78	65,305.44	24,352.75	6,194.52
2038	215.09	6.56	712,079	255.83	66,492.76	25,272.52	8,009.04
2039	223.35	5.66	719,199	265.68	69,742.96	27,998.44	13,103.43
2040	245.47	4.59	726,391	291.41	77,263.46	34,451.12	22,371.95
2041	225.69	5.45	733,655	269.27	72,106.00	29,804.26	15,461.89
2042	215.24	6.32	740,992	257.74	69,708.31	27,583.01	10,951.12
2043	213.09	6.58	748,402	255.69	69,846.22	27,577.16	10,261.04
2044	198.73	11.28	755,886	239.57	66,096.37	24,197.47	-5,487.29
2045	201.67	13.1	763,445	243.34	67,808.92	25,563.99	-8,910.34
2046	218.97	5.79	771,079	263.74	74,228.88	30,995.13	15,758.00
2047	208.92	7.18	778,790	252.52	71,780.50	28,754.06	9,858.97
2048	212.91	6.34	786,578	257.56	73,946.34	30,495.65	13,811.13
2049	196.8	11.4	794,443	239.22	69,368.13	26,435.73	-3,564.82

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
WDP1 Scenario – Run 3							
2050	208.03	7.14	802,388	252.68	74,002.40	30,293.52	11,503.69
2051	211.44	6.4	810,412	257.05	76,036.72	31,911.50	15,069.09
2052	201.75	9.54	818,516	246.11	73,527.21	29,642.08	4,536.35
2053	195.2	12.37	826,701	238.8	72,057.66	28,268.87	-4,284.36
2054	208.34	6.75	834,968	254.6	77,592.91	32,863.22	15,099.74
2055	213.28	6.02	843,318	260.79	80,275.02	35,017.33	19,174.93
2056	195.22	11.18	851,751	239.88	74,577.22	30,058.92	637.32
2057	194.19	11.48	860,268	239.02	75,051.45	30,343.18	132.09
2058	211.91	6.06	868,871	260.34	82,562.76	36,571.78	20,624.12
2059	200.03	9.38	877,560	246.63	78,999.22	33,439.84	8,755.17
2060	232.56	4.77	886,335	285.63	92,405.19	44,603.25	32,050.39
2061	208.26	6.39	895,199	257.14	84,018.87	37,417.72	20,601.61
2062	206.08	6.7	904,151	254.9	84,121.85	37,378.56	19,746.66
2063	207.94	6.35	913,192	257.48	85,820.47	38,676.25	21,965.41
2064	192.82	11.22	922,324	239.75	80,712.90	34,281.90	4,755.03
2065	194.43	12.96	931,547	242.01	82,287.00	35,478.14	1,372.25
2066	199.21	8.88	940,863	248.07	85,192.52	37,779.93	14,411.07
2067	191.25	11.56	950,271	238.84	82,840.13	35,702.94	5,281.33
2068	210.32	5.91	959,774	262.13	91,829.44	43,047.83	27,494.91
2069	234.86	4.57	969,372	292.1	103,350.99	52,467.17	40,440.63
2070	202.83	6.9	979,066	253.78	90,689.07	41,849.80	23,691.57
2071	189.89	11.8	988,856	238.44	86,062.52	37,904.85	6,851.65
2072	200.44	7.46	998,745	251.54	91,697.77	42,434.99	22,803.05
2073	202.98	6.69	1,008,732	254.97	93,874.94	44,104.47	26,498.88
2074	222.84	4.99	1,018,820	279.45	103,918.61	52,234.73	39,102.91
2075	204.87	6.3	1,029,008	257.92	96,870.41	46,314.78	29,735.52
2076	199.59	7.38	1,039,298	251.8	95,518.07	45,080.95	25,659.54
2077	189.75	11.12	1,049,691	240.08	91,985.17	42,068.18	12,804.48
2078	188.8	12.5	1,060,188	239.22	92,569.60	42,428.29	9,532.95
2079	194.24	9.52	1,070,790	246.18	96,215.26	45,284.37	20,231.28
2080	190.07	12.88	1,081,498	241.36	95,275.43	44,398.99	10,503.63
2081	207.04	5.88	1,092,312	262.52	104,664.97	51,914.52	36,440.55
2082	199.94	6.84	1,103,236	254.09	102,317.85	49,881.13	31,880.80
2083	198.86	7.05	1,114,268	253.06	102,921.99	50,246.78	31,693.80
2084	196.32	7.96	1,125,411	250.22	102,784.12	50,011.66	29,063.91
2085	187.22	12.51	1,136,665	239.26	99,262.93	47,043.91	14,122.25
2086	187.46	11.2	1,148,031	239.82	100,491.49	47,918.52	18,444.29
2087	194.71	8.46	1,159,512	249.09	105,420.61	51,773.32	29,509.75
2088	200.63	6.44	1,171,107	256.73	109,740.69	55,127.85	38,180.17
2089	188.53	10.62	1,182,818	241.97	104,464.31	50,762.96	22,815.07
2090	203.06	6.06	1,194,646	260.34	113,518.90	57,909.97	41,962.31
2091	202.56	6.09	1,206,592	260.01	114,507.97	58,575.39	42,548.78
2092	195.51	7.48	1,218,658	251.48	111,861.30	56,330.76	36,646.18
2093	200.57	6.28	1,230,845	258.1	115,953.15	59,477.57	42,950.95
2094	187.45	10.63	1,243,153	241.93	109,774.86	54,421.56	26,447.36
2095	195.71	7.17	1,255,585	252.56	115,744.43	59,060.52	40,191.75
2096	185.18	12.59	1,268,141	239.59	110,900.77	55,082.57	21,950.38
2097	191.2	9.12	1,280,822	247.42	115,668.77	58,755.04	34,754.60
2098	194.89	7.23	1,293,630	252.33	119,142.20	61,391.20	42,364.53

			WDP1 Scenario – Run 4				
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	218.9	10.92	483,053	240.8	42,456.61	38,595.28	9,857.90
2000	228.3	7.62	487,883	251.08	44,710.80	40,655.65	20,602.64
2001	253.62	5.05	492,762	277.92	49,986.29	45,615.59	32,325.87
2002	217.64	10.84	497,689	241.1	43,798.04	39,534.84	11,008.00
2003	258.92	4.8	502,666	284.73	52,240.78	47,505.46	34,873.64
2004	216.55	10.86	507,693	241.03	44,664.25	40,128.17	11,548.69
2005	213.69	11.72	512,770	238.55	44,646.69	9,361.79	-21,480.89
2006	250.37	5.06	517,898	277.67	52,489.13	16,696.57	3,380.53
2007	249.79	5.06	523,077	277.67	53,014.02	17,058.37	3,742.34
2008	225.67	7.12	528,307	252.76	48,740.41	12,884.36	-5,852.83
2009	230.73	6.22	533,590	258.67	50,377.91	14,304.24	-2,064.48
2010	224.25	7.23	538,926	252.33	49,634.62	13,479.32	-5,547.34
2011	210.81	11.74	544,316	238.52	47,387.76	11,249.82	-19,645.48
2012	210.48	12.31	549,759	238.66	47,889.71	11,602.72	-20,792.62
2013	210.65	12.53	555,256	239.33	48,505.49	12,060.48	-20,913.82
2014	233.85	5.72	560,809	264.76	54,195.17	17,235.96	2,183.05
2015	217.91	8.86	566,417	248.13	51,298.18	14,418.96	-8,897.26
2016	212.01	10.55	572,081	242.25	50,583.78	13,636.72	-14,126.95
2017	217.35	8.7	577,802	248.53	52,413.74	15,207.67	-7,687.49
2018	211.4	13.02	583,580	242.55	51,664.81	14,396.77	-19,867.02
2019	230.17	5.81	589,416	263.46	56,680.64	18,885.26	3,595.51
2020	208.23	11.13	595,310	240.05	52,160.07	14,614.90	-14,675.12
2021	223.98	6.32	601,263	257.74	56,563.40	18,522.17	1,890.28
2022	211.46	9.98	607,276	244.52	54,198.56	16,240.26	-10,023.39
2023	210.26	10.2	613,348	243.66	54,547.79	16,438.54	-10,404.07
2024	243.52	4.94	619,482	280.77	63,485.90	24,429.57	11,429.33
2025	218.31	6.96	625,677	253.48	57,887.22	19,224.65	908.53
2026	213.5	8.66	631,934	248.62	57,346.47	18,612.60	-4,177.30
2027	210.69	9.58	638,253	245.97	57,302.52	18,451.63	-6,759.36
2028	233.87	5.3	644,635	272.22	64,050.24	24,396.68	10,449.05
2029	212.26	8.66	651,082	248.62	59,084.11	19,810.35	-2,979.54
2030	214.78	7.35	657,593	251.9	60,461.04	20,920.94	1,578.48
2031	203.02	11.42	664,169	239.17	57,980.15	18,583.35	-11,469.84
2032	210.04	9.1	670,810	247.48	60,593.64	20,794.34	-3,153.47
2033	203.2	11.08	677,518	240.22	59,405.46	19,617.63	-9,540.80
2034	213.59	7.22	684,293	252.36	63,032.22	22,716.21	3,715.86
2035	204.95	13.07	691,136	243.04	61,309.14	21,068.54	-13,326.83
2036	219.95	6.05	698,048	260.45	66,359.31	25,408.23	9,486.88
2037	212.85	7.1	705,028	252.84	65,065.86	24,141.70	5,457.15
2038	201.08	12.65	712,079	239.89	62,348.60	21,629.82	-11,660.27
2039	200.01	11.46	719,199	239.07	62,757.23	21,871.15	-8,287.30
2040	201.21	10.91	726,391	240.84	63,854.06	22,714.45	-5,996.60
2041	202.6	13.05	733,655	242.84	65,027.94	23,622.18	-10,720.56
2042	208.77	7.92	740,992	250.31	67,700.43	25,832.96	4,990.47
2043	239.4	4.76	748,402	285.93	78,107.85	34,763.02	22,236.47
2044	224.84	5.43	755,886	269.64	74,394.04	31,399.85	17,110.12
2045	218.86	5.83	763,445	263.19	73,339.27	30,354.56	15,012.17
2046	204.76	9.16	771,079	247.3	69,602.27	26,995.52	2,889.81
2047	197.8	11.26	778,790	239.63	68,116.54	25,592.99	-4,039.13
2048	197.52	12.61	786,578	239.69	68,814.34	26,076.85	-7,107.98
2049	226.25	5.24	794,443	273.49	79,304.81	34,974.60	21,184.87

					WDP1 Scenario – Run 4	
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	195.8	11.82	802,388	238.42	69,827.72	26,713.13	-4,392.71
2051	196.68	11.2	810,412	239.82	70,938.43	27,547.48	-1,926.75
2052	201.69	9.56	818,516	246.04	73,506.96	29,624.78	4,466.42
2053	235.39	4.76	826,701	285.93	86,279.62	40,395.84	27,869.29
2054	208.29	6.76	834,968	254.54	77,575.00	32,847.98	15,058.18
2055	199.52	9.96	843,318	244.59	75,288.54	30,781.43	4,570.42
2056	207.55	6.78	851,751	254.43	79,098.26	33,892.26	16,049.82
2057	202.87	8.38	860,268	249.27	78,270.83	33,067.80	11,014.76
2058	217.38	5.59	868,871	266.81	84,615.70	38,306.03	23,595.23
2059	206.51	6.8	877,560	254.31	81,458.63	35,513.67	17,618.60
2060	193	12.3	886,335	238.64	77,202.11	31,806.82	-562.20
2061	204.59	7.12	895,199	252.76	82,589.03	36,216.38	17,479.19
2062	201.77	8.16	904,151	249.76	82,425.98	35,956.24	14,482.16
2063	236.92	4.57	913,192	292.1	97,361.28	48,338.43	36,311.89
2064	192.69	12.59	922,324	239.59	80,658.57	34,236.49	1,104.30
2065	197.62	9.62	931,547	245.84	83,587.63	36,563.26	11,247.00
2066	203.36	7.05	940,863	253.06	86,905.03	39,206.22	20,653.24
2067	211.61	5.82	950,271	263.32	91,333.98	42,765.13	27,449.05
2068	193.75	10.57	959,774	242.17	84,835.68	37,242.74	9,426.44
2069	191.43	11.24	969,372	239.69	84,807.73	37,101.37	7,521.87
2070	209.85	5.9	979,066	262.26	93,721.04	44,358.05	28,831.44
2071	201.92	7.06	988,856	253.02	91,322.10	42,248.74	23,669.45
2072	198.15	8.6	998,745	248.77	90,685.73	41,600.51	18,968.51
2073	200.72	7.26	1,008,732	252.22	92,862.39	43,270.93	24,165.31
2074	212.87	5.56	1,018,820	267.31	99,406.14	48,526.01	33,894.16
2075	206.23	6.13	1,029,008	259.58	97,493.86	46,826.36	30,694.49
2076	188.97	11.56	1,039,298	238.84	90,601.09	41,052.61	10,630.99
2077	198.44	7.76	1,049,691	250.71	96,054.48	45,396.81	24,975.38
2078	225.02	4.84	1,060,188	283.56	109,729.80	56,443.20	43,706.12
2079	225.44	4.81	1,070,790	284.44	111,168.94	57,478.32	44,820.19
2080	191.09	10.46	1,081,498	242.61	95,769.99	44,801.67	17,274.84
2081	229.71	4.62	1,092,312	290.4	115,781.70	60,952.01	48,793.89
2082	197.03	7.84	1,103,236	250.51	100,874.08	48,709.17	28,077.20
2083	197.73	7.42	1,114,268	251.67	102,355.45	49,787.58	30,260.90
2084	198.18	7.18	1,125,411	252.52	103,728.30	50,775.81	31,880.72
2085	190.33	10.34	1,136,665	243.1	100,856.06	48,331.38	21,120.35
2086	206.65	5.8	1,148,031	263.6	110,457.74	55,960.90	40,697.46
2087	186.04	11.98	1,159,512	238.34	100,869.02	48,105.67	16,578.77
2088	205.39	5.87	1,171,107	262.65	112,271.26	57,164.06	41,716.41
2089	219.28	4.96	1,182,818	280.24	120,986.80	64,038.80	50,985.92
2090	200.62	6.37	1,194,646	257.3	112,196.60	56,849.00	40,085.53
2091	186.02	11.35	1,206,592	239.36	105,416.52	51,290.86	21,421.88
2092	185.99	12.59	1,218,658	239.59	106,573.41	52,099.70	18,967.50
2093	184.98	11.7	1,230,845	238.58	107,182.77	52,469.64	21,679.60
2094	196.59	6.98	1,243,153	253.38	114,972.31	58,568.92	40,200.15
2095	201.06	6.16	1,255,585	259.26	118,818.16	61,509.92	45,299.10
2096	184.67	11.51	1,268,141	238.95	110,602.11	54,844.89	24,554.85
2097	185.21	11.18	1,280,822	239.88	112,145.61	55,954.97	26,533.37
2098	202.38	5.94	1,293,630	261.75	123,593.79	64,924.50	49,292.63

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	226.24	8.76	483,053	248.38	43,792.84	39,889.99	16,836.93
2000	226.95	8.2	487,883	249.67	44,461.40	40,414.68	18,835.34
2001	264.37	4.66	492,762	289.08	51,994.07	47,549.93	35,286.55
2002	216.46	11.18	497,689	239.88	43,576.42	39,321.93	9,900.33
2003	215.89	11.2	502,666	239.82	44,000.26	39,610.88	10,136.65
2004	226.84	7.38	507,693	251.8	46,660.20	42,035.02	22,613.60
2005	217.52	10.47	512,770	242.57	45,399.81	10,079.30	-17,473.85
2006	231.43	6.32	517,898	257.74	48,720.90	13,116.31	-3,515.58
2007	217.93	10.1	523,077	244.05	46,595.03	10,976.16	-15,603.28
2008	225.63	7.13	528,307	252.72	48,732.43	12,876.83	-5,886.67
2009	235.25	5.81	533,590	263.46	51,312.19	15,184.75	-105.01
2010	226.06	6.81	538,926	254.26	50,014.24	13,836.15	-4,085.23
2011	214.91	10.39	544,316	242.89	48,257.01	12,064.71	-15,277.91
2012	225.17	6.79	549,759	254.37	51,042.17	14,550.27	-3,318.48
2013	211.01	11.23	555,256	239.72	48,584.22	12,133.90	-17,419.28
2014	216.99	9.38	560,809	246.63	50,484.83	13,784.75	-10,899.92
2015	245.78	5.04	566,417	278.17	57,509.67	20,181.83	6,918.42
2016	213.62	13.16	572,081	243.99	50,947.56	13,973.38	-20,658.84
2017	208.79	11.39	577,802	239.25	50,457.46	13,401.87	-16,572.37
2018	208.85	12.63	583,580	239.78	51,075.74	13,854.38	-19,383.08
2019	214.17	9.56	589,416	246.04	52,932.60	15,442.79	-9,715.57
2020	220.86	6.89	595,310	253.83	55,153.63	17,357.60	-774.32
2021	242.42	5.05	601,263	277.92	60,992.74	22,570.38	9,280.66
2022	206.21	11.6	607,276	238.75	52,921.21	15,075.66	-15,451.22
2023	227.18	5.9	613,348	262.26	58,712.70	20,226.64	4,700.04
2024	212.93	9.24	619,482	247.07	55,864.65	17,514.44	-6,801.80
2025	235.28	5.3	625,677	272.22	62,166.59	23,098.29	9,150.66
2026	205.21	11.32	631,934	239.45	55,230.23	16,701.52	-13,088.50
2027	249.53	4.66	638,253	289.08	67,345.63	27,499.83	15,236.44
2028	240.61	4.98	644,635	279.71	65,813.55	25,981.62	12,876.11
2029	203.08	12.13	651,082	238.39	56,652.31	17,629.60	-14,292.05
2030	215.91	7.03	657,593	253.15	60,761.61	21,189.87	2,689.52
2031	247.57	4.66	664,169	289.08	70,080.18	29,384.77	17,121.38
2032	203.21	11.2	670,810	239.82	58,718.54	19,124.25	-10,349.98
2033	243.28	4.78	677,518	285.33	70,560.33	29,530.63	16,951.45
2034	231.38	5.29	684,293	272.42	68,042.72	27,159.00	13,237.69
2035	204.57	10.46	691,136	242.61	61,202.23	20,973.96	-6,552.87
2036	204.77	10.3	698,048	243.26	61,978.65	21,540.96	-5,564.81
2037	239.4	4.86	705,028	282.99	72,823.11	30,975.00	18,185.29
2038	212.32	7.14	712,079	252.68	65,673.40	24,552.31	5,762.49
2039	217.2	6.22	719,199	258.67	67,901.84	26,383.57	10,014.84
2040	199.02	11.97	726,391	238.34	63,191.03	22,134.13	-9,366.45
2041	203.73	10.08	733,655	244.13	65,374.02	23,924.45	-2,602.36
2042	245.49	4.56	740,992	292.45	79,095.54	35,764.85	23,764.63
2043	238.35	4.8	748,402	284.73	77,779.48	34,477.41	21,845.59
2044	210.98	6.92	755,886	253.67	69,988.38	27,575.74	9,364.88
2045	197.56	12.28	763,445	238.6	66,486.89	24,418.81	-7,897.58
2046	211.89	6.6	771,079	255.55	71,923.86	29,002.49	11,633.75
2047	241.03	4.64	778,790	289.74	82,360.68	37,882.06	25,671.31
2048	215.11	6.08	786,578	260.12	74,679.28	31,126.73	15,126.43
2049	209.72	6.81	794,443	254.26	73,727.13	30,181.55	12,260.16

WDP1 Scenario – Run 5						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	209.1	6.87	802,388	253.93	74,369.29	30,608.17	12,528.89
2051	207.42	7.22	810,412	252.36	74,649.40	30,723.99	11,723.64
2052	212.73	6.19	818,516	258.96	77,366.91	32,922.45	16,632.67
2053	217.59	5.7	826,701	265.06	79,981.28	35,025.29	20,025.02
2054	194.5	11.97	834,968	238.34	72,636.48	28,644.93	-2,855.66
2055	197.05	10.69	843,318	241.69	74,394.53	30,022.00	1,889.90
2056	197.12	10.58	851,751	242.13	75,274.90	30,650.48	2,807.86
2057	212.72	6.01	860,268	260.91	81,925.07	36,160.45	20,344.36
2058	215.15	5.76	868,871	264.17	83,778.91	37,599.14	22,440.97
2059	194.26	11.21	877,560	239.79	76,805.83	31,590.32	2,089.78
2060	199.52	9.46	886,335	246.38	79,705.53	33,913.95	9,018.75
2061	226.58	5.01	895,199	278.93	91,140.55	43,401.28	30,216.83
2062	200.98	8.58	904,151	248.81	82,112.14	35,693.03	13,113.66
2063	206.68	6.54	913,192	255.97	85,320.02	38,257.27	21,046.42
2064	199.18	9.14	922,324	247.36	83,274.09	36,422.42	12,369.34
2065	202.31	7.49	931,547	251.45	85,496.89	38,156.16	18,445.27
2066	212.74	5.75	940,863	264.32	90,770.47	42,425.62	27,293.76
2067	194.02	10.57	950,271	242.17	83,995.70	36,663.73	8,847.43
2068	235.2	4.57	959,774	292.1	102,327.68	51,761.79	39,735.25
2069	203.11	6.9	969,372	253.78	89,791.14	41,230.85	23,072.61
2070	206.71	6.24	979,066	258.47	92,367.91	43,238.65	26,817.29
2071	191.56	11.01	988,856	240.47	86,793.45	38,508.53	9,534.31
2072	204.85	6.42	998,745	256.89	93,647.56	44,042.69	27,147.64
2073	206.44	6.17	1,008,732	259.16	95,420.46	45,376.75	29,139.61
2074	199.88	7.47	1,018,820	251.51	93,529.44	43,696.05	24,037.79
2075	204.37	6.37	1,029,008	257.3	96,640.51	46,126.13	29,362.66
2076	219.02	5.15	1,039,298	275.51	104,514.38	52,451.36	38,898.48
2077	190.01	11.03	1,049,691	240.4	92,105.54	42,166.64	13,139.79
2078	196.16	8.82	1,060,188	248.23	96,056.71	45,276.25	22,065.29
2079	188.31	11.53	1,070,790	238.9	93,372.11	42,965.93	12,623.27
2080	189.38	11	1,081,498	240.51	94,939.04	44,125.10	15,177.20
2081	225.83	4.77	1,092,312	285.63	113,879.40	59,405.51	46,852.65
2082	200.21	6.78	1,103,236	254.43	102,452.53	49,990.45	32,148.02
2083	202.72	6.31	1,114,268	257.83	104,860.21	51,817.75	35,212.18
2084	215.16	5.24	1,125,411	273.49	112,343.50	57,748.31	43,958.58
2085	201.22	6.46	1,136,665	256.57	106,448.04	52,850.47	35,850.16
2086	198.89	6.86	1,148,031	253.98	106,427.33	52,708.52	34,655.55
2087	203.24	6.12	1,159,512	259.68	109,903.28	55,385.44	39,279.88
2088	186.57	12.51	1,171,107	239.26	102,270.69	49,117.17	16,195.51
2089	186.2	11.46	1,182,818	239.07	103,212.58	49,757.19	19,598.74
2090	191.36	9.64	1,194,646	245.77	107,165.11	52,811.89	27,443.00
2091	195.88	7.42	1,206,592	251.67	110,836.23	55,633.40	36,106.73
2092	197.82	6.79	1,218,658	254.37	113,145.86	57,358.59	39,489.83
2093	224.82	4.68	1,230,845	288.44	129,582.85	70,368.32	58,052.30
2094	191.74	9.16	1,243,153	247.3	112,214.53	56,368.32	32,262.61
2095	200.58	6.22	1,255,585	258.67	118,543.74	61,291.24	44,922.51
2096	200.13	6.25	1,268,141	258.38	119,596.14	62,002.49	45,554.82
2097	187.12	10.54	1,280,822	242.29	113,269.93	56,848.53	29,111.18
2098	194.86	7.24	1,293,630	252.29	119,124.53	61,377.17	42,324.18

WDP15 Scenario

All five runs of the WDP15 Scenario used the following input:

Please enter the type of weather pattern:
       PDO(type 1),
       Wet Dry Pattern, (type 2) or
       Custom (type 3): 2
Please enter the population: 483053
Please enter the growth rate: 0.015
Please enter the current year: 1999
Please enter the number of years the program is to run for: 100
Please enter the fixed compliance for low flow showerheads: 0.1
Please enter the fixed compliance for low flow toilets: 0.1
Please enter the fixed compliance for outdoor water savings: 0.4
Please enter the Water On Request compliance: 0.4
Please enter the year that San Juan Chama goes into effect: 2005

WDP15 Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	219.84	10.67	483,053	241.77	42,627.22	38,760.58	10,681.11
2000	248.23	5.31	490,298	272.01	48,678.43	44,422.62	30,448.68
2001	218.03	12.9	497,653	241.51	43,869.44	39,604.32	5,656.32
2002	229.46	6.81	505,118	254.26	46,876.74	42,305.48	24,384.10
2003	222.67	8.92	512,694	247.97	46,403.41	41,669.25	18,195.13
2004	257.36	4.78	520,385	285.33	54,195.66	48,882.42	36,303.24
2005	227.31	6.77	528,191	254.48	49,061.82	13,190.87	-4,625.25
2006	222.06	8.18	536,113	249.72	48,865.42	12,820.59	-8,706.13
2007	257.62	4.68	544,155	288.44	57,288.41	20,535.46	8,219.45
2008	226.85	6.48	552,317	256.42	51,693.09	15,100.05	-1,952.90
2009	223.2	7	560,602	253.29	51,827.76	15,038.49	-3,382.90
2010	217.35	9	569,011	247.76	51,456.03	14,509.47	-9,175.18
2011	232.09	5.74	577,546	264.46	55,750.07	18,293.12	3,187.58
2012	241.52	5.15	586,210	275.51	58,950.73	21,044.16	7,491.27
2013	209.39	12.87	595,003	241.28	52,400.72	14,841.52	-19,027.53
2014	218.12	7.46	603,928	251.54	55,448.44	17,448.18	-2,183.76
2015	250.73	4.69	612,987	288.12	64,463.39	25,465.43	13,123.10
2016	211.05	9.8	622,181	245.19	55,682.26	17,296.28	-8,493.68
2017	216.51	7.34	631,514	251.93	58,071.09	19,275.21	-40.94
2018	216.74	7.09	640,987	252.89	59,165.56	20,076.71	1,418.47
2019	203.11	11.86	650,602	238.39	56,610.23	17,600.53	-13,610.57
2020	226.93	5.66	660,361	265.68	64,037.26	24,065.49	9,170.48
2021	213.58	7.5	670,266	251.42	61,509.28	21,619.93	1,882.72
2022	211.88	7.98	680,320	250.17	62,122.27	21,980.98	980.59
2023	201.31	12.4	690,525	238.89	60,209.07	20,105.69	-12,526.49
2024	203.55	10.6	700,883	242.05	61,921.17	21,441.75	-6,453.51
2025	217.62	6.22	711,396	258.67	67,165.13	25,875.76	9,507.03
2026	229.84	5.25	722,067	273.28	72,022.86	29,944.46	16,128.41
2027	207.08	8.94	732,898	247.92	66,319.67	24,763.01	1,236.26
2028	218.81	5.92	743,891	262.01	71,139.66	28,780.02	13,200.78
2029	203.39	9.88	755,050	244.9	67,491.67	25,421.94	-578.54
2030	233.24	4.97	766,376	279.97	78,316.17	34,612.70	21,533.52
2031	203.43	9.54	777,871	246.11	69,876.06	27,125.33	2,019.60
2032	214.98	6.08	789,539	260.12	74,960.40	31,320.49	15,320.19
2033	210.6	6.59	801,382	255.62	74,770.46	30,968.04	13,625.61
2034	207.75	7.09	813,403	252.89	75,080.22	31,046.75	12,388.50
2035	209.65	6.58	825,604	255.69	77,051.26	32,543.61	15,227.50
2036	205.37	7.56	837,988	251.24	76,846.96	32,183.56	12,288.46
2037	209.22	6.49	850,558	256.34	79,582.81	34,320.81	17,241.54
2038	240.16	4.53	863,316	293.5	92,484.12	45,045.49	33,124.21
2039	193.11	11.88	876,266	238.37	76,241.12	31,131.47	-132.27
2040	196.45	10.4	889,410	242.85	78,838.64	33,142.75	5,773.82
2041	232.94	4.73	902,751	286.86	94,520.77	46,122.00	33,674.40
2042	191.93	12.2	916,292	238.47	79,754.44	33,557.75	1,451.89
2043	191.47	11.84	930,037	238.41	80,930.05	34,365.10	3,206.62
2044	193.61	10.75	943,987	241.45	83,193.75	36,075.68	7,785.68
2045	221.68	5.14	958,147	275.75	96,435.12	46,893.78	33,367.21
2046	214.51	5.54	972,519	267.66	95,010.29	45,512.83	30,933.62
2047	204.66	6.5	987,107	256.27	92,331.93	43,105.11	25,999.53
2048	189.49	12.09	1,001,914	238.36	87,168.63	38,663.21	6,846.83
2049	195.37	9.58	1,016,942	245.97	91,301.31	41,887.13	16,676.14

WDP15 Scenario – Run 1						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	203.43	6.5	1,032,197	256.27	96,549.56	46,012.35	28,906.77
2051	230.7	4.63	1,047,680	290.07	110,923.54	57,586.86	45,402.43
2052	208.19	5.84	1,063,395	263.05	102,100.79	50,173.28	34,804.57
2053	199.27	7.16	1,079,346	252.6	99,513.77	47,874.63	29,032.17
2054	197.58	7.66	1,095,536	250.97	100,354.06	48,373.40	28,215.13
2055	205.18	6.02	1,111,969	260.79	105,847.78	52,644.73	36,802.33
2056	191.49	13.19	1,128,648	244.33	100,654.80	48,253.69	13,542.52
2057	197.26	7.35	1,145,578	251.9	105,327.81	51,847.78	32,505.32
2058	192.35	9.5	1,162,762	246.24	104,507.71	51,003.68	26,003.22
2059	230.28	4.52	1,180,203	293.85	126,584.10	68,568.26	56,673.30
2060	186.06	11.4	1,197,906	239.22	104,597.18	50,719.27	20,718.72
2061	185.11	11.82	1,215,875	238.42	105,811.38	51,516.81	20,410.97
2062	226.85	4.6	1,234,113	291.07	131,115.03	71,554.50	59,449.01
2063	190.09	13.28	1,252,625	245.44	112,216.69	56,277.85	21,329.84
2064	194.84	7.38	1,271,414	251.8	116,851.00	59,785.82	40,364.41
2065	183.9	12.16	1,290,485	238.42	112,301.84	55,990.45	23,989.86
2066	186.87	10.48	1,309,842	242.53	115,951.96	58,709.19	31,129.73
2067	202.29	5.89	1,329,490	262.39	127,328.06	67,529.87	52,029.58
2068	210.91	5.23	1,349,432	273.71	134,813.72	73,247.88	59,484.46
2069	225.07	4.57	1,369,674	292.1	146,029.76	81,885.81	69,859.27
2070	185.73	10.48	1,390,219	242.53	123,067.23	63,613.78	36,034.32
2071	210.99	5.17	1,411,072	275.05	141,663.52	78,035.69	64,430.17
2072	213.12	5.04	1,432,238	278.17	145,418.55	80,777.78	67,514.38
2073	182.21	11.46	1,453,722	239.07	126,851.64	66,051.69	35,893.24
2074	199.48	5.96	1,475,528	261.51	140,839.60	76,799.96	61,115.46
2075	181.15	12.08	1,497,661	238.36	130,296.64	68,391.25	36,601.19
2076	190.24	7.9	1,520,125	250.36	138,911.92	74,921.67	54,131.81
2077	214.24	4.91	1,542,927	281.59	158,582.59	90,020.37	77,099.08
2078	191.3	7.21	1,566,071	252.4	144,277.11	78,720.53	59,746.49
2079	215.4	4.83	1,589,562	283.85	164,688.20	94,340.52	81,629.76
2080	183.63	10.33	1,613,406	243.14	143,180.89	77,508.04	50,323.32
2081	180.05	12.37	1,637,607	238.8	142,738.59	76,989.53	44,436.29
2082	185.61	9.48	1,662,171	246.31	149,434.27	81,975.01	57,027.18
2083	191.04	6.92	1,687,103	253.67	156,210.87	87,009.24	68,798.38
2084	203.51	5.4	1,712,410	270.21	168,891.96	96,565.81	82,355.02
2085	180.43	12.75	1,738,096	240.46	152,546.71	83,831.84	50,278.59
2086	216.47	4.7	1,764,167	287.8	185,319.87	108,756.60	96,387.95
2087	180.67	10.78	1,790,630	241.34	157,732.00	87,449.42	59,080.48
2088	190.41	6.79	1,817,489	254.37	168,744.09	95,682.67	77,813.92
2089	196.4	5.88	1,844,752	262.52	176,763.52	101,612.35	86,138.38
2090	179.78	12.83	1,872,423	240.99	164,700.18	92,235.54	58,471.76
2091	216.65	4.64	1,900,509	289.74	200,987.71	119,652.14	107,441.39
2092	194.07	6.06	1,929,017	260.34	183,301.06	106,011.10	90,063.44
2093	179.21	10.86	1,957,952	241.03	172,250.68	97,442.01	68,862.53
2094	179.83	12.97	1,987,321	242.1	175,610.48	99,810.68	65,678.47
2095	191.95	6.25	2,017,131	258.38	190,232.07	110,692.12	94,244.45
2096	176.65	12.13	2,047,388	238.39	178,148.46	101,377.38	69,455.74
2097	180.91	10.04	2,078,099	244.29	185,291.96	106,592.06	80,170.52
2098	213.75	4.69	2,109,270	288.12	221,816.62	133,929.64	121,587.31

Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
			WDP15 Scenario – Run 2				
1999	228.75	7.66	483,053	250.97	44,248.96	40,331.94	20,173.67
2000	231.97	6.66	490,298	255.16	45,662.33	41,512.70	23,986.06
2001	226.72	7.82	497,653	250.56	45,511.67	41,182.05	20,602.72
2002	249.58	5.16	505,118	275.28	50,753.27	46,014.22	32,435.02
2003	226.48	7.33	512,694	251.97	47,151.37	42,381.89	23,092.06
2004	212.88	12.19	520,385	238.45	45,292.06	40,434.06	8,354.51
2005	262.21	4.59	528,191	291.41	56,181.68	19,919.38	7,840.20
2006	224.41	7.26	536,113	252.22	49,353.78	13,280.26	-5,825.36
2007	249.93	4.96	544,155	280.24	55,659.93	19,008.71	5,955.84
2008	221.96	7.58	552,317	251.19	50,638.24	14,114.96	-5,832.78
2009	222.67	7.13	560,602	252.72	51,711.41	14,930.26	-3,833.25
2010	210.16	12.67	569,011	239.99	49,843.74	13,015.38	-20,327.35
2011	210.88	10.74	577,546	241.49	50,907.50	13,822.57	-14,441.11
2012	215.46	9.2	586,210	247.19	52,889.74	15,469.72	-8,741.25
2013	227.05	6.04	595,003	260.56	56,588.08	18,678.48	2,783.45
2014	222.43	6.5	603,928	256.27	56,490.17	18,399.24	1,293.66
2015	241.22	5.06	612,987	277.67	62,126.43	23,339.59	10,023.56
2016	242.34	4.98	622,181	279.71	63,521.13	24,401.44	11,295.93
2017	218.92	6.75	631,514	254.6	58,686.09	19,830.67	2,067.18
2018	203.9	12.29	640,987	238.62	55,826.87	17,071.78	-15,270.92
2019	204.11	11.3	650,602	239.51	56,875.81	17,838.74	-11,898.65
2020	215.85	7	660,361	253.29	61,050.50	21,395.77	2,974.38
2021	203.31	12.65	670,266	239.89	58,687.51	19,106.22	-14,183.87
2022	204.52	10.64	680,320	241.89	60,064.78	20,154.24	-7,846.28
2023	214.96	6.8	690,525	254.31	64,097.29	23,546.43	5,651.36
2024	213.43	7.01	700,883	253.24	64,784.94	23,967.66	5,519.95
2025	208.58	8.76	711,396	248.38	64,494.06	23,527.41	474.35
2026	201.03	12.74	722,067	240.39	63,357.08	22,350.02	-11,176.91
2027	224.32	5.54	732,898	267.66	71,600.50	29,376.38	14,797.16
2028	198.21	12.05	743,891	238.34	64,715.15	23,185.03	-8,526.08
2029	213.67	6.44	755,050	256.73	70,753.32	28,253.70	11,306.02
2030	200.14	10.68	766,376	241.73	67,618.07	25,352.92	-2,752.87
2031	216.2	6.01	777,871	260.91	74,078.23	30,751.59	14,935.51
2032	224.34	5.36	789,539	271	78,096.37	34,018.63	19,913.10
2033	205.07	8.42	801,382	249.18	72,886.71	29,352.05	7,193.75
2034	195.99	11.43	813,403	239.14	71,000.12	27,556.77	-2,522.73
2035	196.69	11	825,604	240.51	72,475.44	28,640.85	-307.06
2036	194.71	11.62	837,988	238.72	73,014.81	28,924.35	-1,655.17
2037	205.81	7.23	850,558	252.33	78,335.66	33,263.08	14,236.41
2038	222.7	5.27	863,316	272.85	85,976.83	39,541.86	25,673.19
2039	194.38	12.65	876,266	239.89	76,724.57	31,539.23	-1,750.86
2040	193.79	11.24	889,410	239.69	77,812.07	32,279.23	2,699.74
2041	192.69	11.54	902,751	238.88	78,711.88	32,859.47	2,490.48
2042	220.17	5.3	916,292	272.22	91,041.78	43,002.07	29,054.44
2043	221.12	5.22	930,037	273.93	92,989.05	44,428.81	30,691.71
2044	198.23	9.26	943,987	247.01	85,107.56	37,668.72	13,299.85
2045	192.1	11.11	958,147	240.12	83,975.05	36,548.45	7,311.07
2046	202.24	7.1	972,519	252.84	89,752.15	41,158.07	22,473.51
2047	190.76	11.32	987,107	239.45	86,271.90	38,098.66	8,308.64
2048	203.07	6.71	1,001,914	254.84	93,195.12	43,629.76	25,971.54
2049	202.37	6.77	1,016,942	254.48	94,460.20	44,484.14	26,668.02

WDP15 Scenario – Run 2						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	199.46	7.5	1,032,197	251.42	94,723.14	44,514.38	24,777.17
2051	206.65	6.03	1,047,680	260.68	99,683.95	48,390.28	32,521.57
2052	202.47	6.53	1,063,395	256.05	99,381.71	47,953.63	30,769.10
2053	197.78	7.74	1,079,346	250.76	98,788.24	47,283.72	26,914.92
2054	189.23	10.95	1,095,536	240.69	96,244.52	45,034.00	16,217.67
2055	198.88	7.06	1,111,969	253.02	102,691.73	50,085.88	31,506.59
2056	202.78	6.26	1,128,648	258.28	106,402.04	52,903.10	36,429.11
2057	186.4	11.79	1,145,578	238.46	99,707.04	47,310.62	16,283.73
2058	217.47	5.07	1,162,762	277.43	117,741.58	61,663.17	48,320.82
2059	190.99	9.86	1,180,203	244.97	105,527.02	51,643.54	25,695.69
2060	197.69	6.91	1,197,906	253.72	110,937.57	55,804.66	37,620.11
2061	185.23	12.27	1,215,875	238.58	105,879.72	51,571.51	19,281.44
2062	199.23	6.47	1,234,113	256.5	115,539.11	59,113.16	42,086.53
2063	191.19	9.32	1,252,625	246.82	112,849.38	56,782.20	32,255.43
2064	195.6	7.12	1,271,414	252.76	117,297.77	60,141.25	41,404.06
2065	198.19	6.48	1,290,485	256.42	120,780.56	62,722.33	45,669.38
2066	221.75	4.74	1,309,842	286.55	136,996.37	75,385.34	62,911.42
2067	197.1	6.56	1,329,490	255.83	124,145.57	65,012.83	47,749.35
2068	198.95	6.23	1,349,432	258.57	127,356.51	67,361.15	50,966.11
2069	182.85	12.24	1,369,674	238.53	119,246.62	60,782.79	28,571.67
2070	184.93	12.9	1,390,219	241.51	122,551.52	63,208.19	29,260.19
2071	214.85	4.97	1,411,072	279.97	144,197.83	80,025.19	66,946.00
2072	185.66	13.08	1,432,238	243.14	127,103.37	66,425.75	32,004.06
2073	189.57	8.72	1,453,722	248.48	131,844.53	69,957.23	47,009.44
2074	192.08	7.31	1,475,528	252.04	135,738.57	72,816.84	53,579.64
2075	195.98	6.36	1,497,661	257.39	140,701.11	76,501.47	59,764.32
2076	191.68	7.26	1,520,125	252.22	139,940.48	75,722.04	56,616.43
2077	181.69	11.24	1,542,927	239.69	134,986.50	71,689.79	42,110.30
2078	188.84	8.4	1,566,071	249.23	142,462.01	77,312.82	55,207.15
2079	185.75	9.7	1,589,562	245.55	142,468.04	77,135.90	51,609.11
2080	191.48	7	1,613,406	253.29	149,159.69	82,129.79	63,708.40
2081	181.79	12.84	1,637,607	241.06	144,088.30	78,031.22	44,241.12
2082	197.7	5.92	1,662,171	262.01	158,956.45	89,312.50	73,733.26
2083	194.59	6.26	1,687,103	258.28	159,049.76	89,193.39	72,719.40
2084	200.02	5.66	1,712,410	265.68	166,057.72	94,388.60	79,493.59
2085	179.45	12.49	1,738,096	239.18	151,737.12	83,210.87	50,341.84
2086	210.68	4.96	1,764,167	280.24	180,451.20	105,027.83	91,974.96
2087	178.49	11.76	1,790,630	238.49	155,873.67	86,028.29	55,080.35
2088	206.03	5.18	1,817,489	274.82	182,314.21	106,045.12	92,413.29
2089	191.09	6.6	1,844,752	255.55	172,072.75	98,035.52	80,666.78
2090	198.23	5.69	1,872,423	265.21	181,256.62	104,842.32	89,868.36
2091	178.59	11.24	1,900,509	239.69	166,270.39	93,253.90	63,674.41
2092	186.8	7.74	1,929,017	250.76	176,555.25	100,888.83	80,520.03
2093	188.17	7.1	1,957,952	252.84	180,696.12	103,846.12	85,161.56
2094	178.94	12.82	1,987,321	240.92	174,755.59	99,163.30	65,425.83
2095	183.53	9.18	2,017,131	247.25	182,035.43	104,493.27	80,334.93
2096	189.07	6.71	2,047,388	254.84	190,442.06	110,662.47	93,004.24
2097	213.26	4.72	2,078,099	287.17	217,819.73	131,127.84	118,706.56
2098	176.26	12.07	2,109,270	238.35	183,502.96	105,066.34	73,302.60

Year	New GPCD	Rainfall	Population	GPCD	Total	New GPCD	Drawdown
WDP15 Scenario – Run 3							
1999	220.3	10.55	483,053	242.25	42,711.86	38,842.60	11,078.93
2000	226.25	8.4	490,298	249.23	44,601.32	40,489.04	18,383.37
2001	244.88	5.44	497,653	269.46	48,944.77	44,480.32	30,164.26
2002	215.13	11.38	505,118	239.28	44,115.26	39,663.53	9,715.60
2003	213.85	11.62	512,694	238.72	44,671.59	40,019.24	9,439.73
2004	229.57	6.53	520,385	256.05	48,633.63	43,604.77	26,420.24
2005	240.25	5.51	528,191	268.18	51,702.78	15,686.67	1,186.40
2006	211.6	11.68	536,113	238.61	46,691.32	10,774.21	-19,963.20
2007	211.66	12.55	544,155	239.42	47,552.13	11,407.39	-21,619.54
2008	210.11	11.76	552,317	238.49	48,078.99	11,724.97	-19,222.98
2009	213.75	13.08	560,602	243.14	49,750.39	13,106.02	-21,315.67
2010	219.3	8.12	569,011	249.85	51,891.95	14,913.43	-6,455.39
2011	237.58	5.39	577,546	270.41	57,003.11	19,449.91	5,265.44
2012	211.25	10.46	586,210	242.61	51,910.71	14,569.29	-12,957.54
2013	249.2	4.8	595,003	284.73	61,837.12	23,488.27	10,856.46
2014	254.83	4.58	603,928	291.76	64,312.85	25,541.07	13,488.21
2015	224.86	6.12	612,987	259.68	58,101.41	19,678.21	3,572.64
2016	217.83	7.14	622,181	252.68	57,382.32	18,837.21	47.39
2017	225.84	5.9	631,514	262.26	60,451.64	21,425.31	5,898.70
2018	249.03	4.67	640,987	288.76	67,558.23	27,630.38	15,340.68
2019	207.48	10.3	650,602	243.26	57,765.99	18,637.15	-8,468.61
2020	231.33	5.38	660,361	270.6	65,223.84	25,126.11	10,967.95
2021	203.05	11.27	670,266	239.6	58,617.01	19,043.41	-10,615.03
2022	201.97	12.44	680,320	239.01	59,349.65	19,519.31	-13,218.13
2023	247.79	4.59	690,525	291.41	73,448.53	31,821.48	19,742.31
2024	212.18	7.37	700,883	251.83	64,424.07	23,649.36	4,254.27
2025	216.28	6.39	711,396	257.14	66,768.05	25,526.65	8,710.55
2026	210.64	7.52	722,067	251.36	66,247.27	24,882.90	5,093.06
2027	211.73	7.01	732,898	253.24	67,744.19	26,007.48	7,559.77
2028	206.59	8.92	743,891	247.97	67,328.82	25,461.22	1,987.10
2029	199.58	11	755,050	240.51	66,281.88	24,371.61	-4,576.30
2030	208.56	7.49	766,376	251.45	70,337.59	27,706.81	7,995.91
2031	213.93	6.26	777,871	258.28	73,332.92	30,108.43	13,634.44
2032	209.39	6.93	789,539	253.62	73,089.97	29,711.20	11,474.02
2033	207.18	7.43	801,382	251.64	73,604.77	29,968.04	10,415.04
2034	231.6	4.94	813,403	280.77	83,359.36	38,128.43	25,128.18
2035	201.06	9.68	825,604	245.63	74,018.00	29,956.51	4,482.35
2036	196.59	12.82	837,988	240.92	73,688.69	29,497.48	-4,239.99
2037	221.82	5.35	850,558	271.2	84,193.90	38,231.52	24,152.31
2038	209.34	6.4	863,316	257.05	81,000.43	35,333.01	18,490.59
2039	209.59	6.3	876,266	257.92	82,491.34	36,403.23	19,823.97
2040	208.61	6.37	889,410	257.3	83,530.00	37,089.00	20,325.53
2041	195.48	10.56	902,751	242.21	79,808.59	33,779.53	5,989.54
2042	204.74	6.9	916,292	253.78	84,874.43	37,841.73	19,683.50
2043	198.23	9.42	930,037	246.51	83,679.73	36,659.81	11,869.88
2044	206.73	6.38	943,987	257.22	88,626.63	40,597.97	23,808.19
2045	190.96	11.6	958,147	238.75	83,497.95	36,152.33	5,625.44
2046	193.06	12.93	972,519	241.76	85,816.27	37,898.39	3,871.44
2047	218.53	5.26	987,107	273.06	98,381.94	48,103.28	34,260.91
2048	216.88	5.33	1,001,914	271.6	99,323.63	48,680.39	34,653.82
2049	199.95	7.46	1,016,942	251.54	93,368.48	43,586.61	23,954.67

			WDP15 Scenario – Run 3				
Year	New GPCD	Rainfall	Population	GPCD	Total	New GPCD	Drawdown
2050	206.15	6.13	1,032,197	259.58	97,796.01	47,034.64	30,902.76
2051	199.12	7.48	1,047,680	251.48	96,167.13	45,512.71	25,828.14
2052	230.79	4.61	1,063,395	290.74	112,846.64	58,945.40	46,813.59
2053	192.94	9.9	1,079,346	244.82	96,449.93	45,379.29	19,326.17
2054	189.71	12.87	1,095,536	241.28	96,481.66	45,226.69	11,357.64
2055	191.99	9.98	1,111,969	244.52	99,241.73	47,288.70	21,025.05
2056	203.49	6.17	1,128,648	259.16	106,763.85	53,195.80	36,958.65
2057	197.89	7.14	1,145,578	252.68	105,654.02	52,111.10	33,321.28
2058	186.97	11.28	1,162,762	239.57	101,674.52	48,721.63	19,036.87
2059	191.37	13.28	1,180,203	245.44	105,728.75	51,805.68	16,857.67
2060	194.51	8.16	1,197,906	249.76	109,205.85	54,415.71	32,941.63
2061	195.86	7.36	1,215,875	251.86	111,776.17	56,291.01	36,922.23
2062	192.98	8.64	1,234,113	248.67	112,014.33	56,297.73	33,560.46
2063	189.71	9.86	1,252,625	244.97	112,002.58	56,107.18	30,159.33
2064	213.16	5.18	1,271,414	274.82	127,536.86	68,286.88	54,655.05
2065	204.35	5.76	1,290,485	264.17	124,432.08	65,621.54	50,463.36
2066	186.11	10.72	1,309,842	241.57	115,492.98	58,345.48	30,134.43
2067	211.41	5.22	1,329,490	273.93	132,928.06	71,958.92	58,221.83
2068	194.3	7.14	1,349,432	252.68	124,455.00	65,070.69	46,280.87
2069	187.9	13.24	1,369,674	244.93	122,449.76	63,306.62	28,463.87
2070	184.4	10.91	1,390,219	240.84	122,208.46	62,938.39	34,227.33
2071	188.68	9.38	1,411,072	246.63	127,026.73	66,545.39	41,860.72
2072	184.21	12.87	1,432,238	241.28	126,134.32	65,666.39	31,797.34
2073	188.7	9.14	1,453,722	247.36	131,252.55	69,494.17	45,441.10
2074	224.73	4.52	1,475,528	293.85	158,259.54	90,402.27	78,507.31
2075	215.72	4.87	1,497,661	282.71	154,539.95	87,288.77	74,472.74
2076	217.45	4.78	1,520,125	285.33	158,313.91	90,019.53	77,440.35
2077	183.15	10.72	1,542,927	241.57	136,044.83	72,511.96	44,300.91
2078	186.68	9.44	1,566,071	246.44	140,869.58	76,077.81	51,235.24
2079	200.16	5.76	1,589,562	264.17	153,269.90	85,499.56	70,341.38
2080	183.51	10.37	1,613,406	242.97	143,086.01	77,434.70	50,144.72
2081	204.44	5.39	1,637,607	270.41	161,629.90	91,569.59	77,385.12
2082	179.51	12.13	1,662,171	238.39	144,629.74	78,272.80	46,351.15
2083	191.24	6.87	1,687,103	253.93	156,369.04	87,130.93	69,051.65
2084	179.66	11.42	1,712,410	239.17	149,488.73	81,660.57	51,607.39
2085	186.54	8.74	1,738,096	248.43	157,604.50	87,711.25	64,710.83
2086	180.46	12.8	1,764,167	240.78	155,043.91	85,569.17	51,884.33
2087	188.72	7.36	1,790,630	251.86	164,613.77	92,712.17	73,343.39
2088	185.91	8.72	1,817,489	248.48	164,836.18	92,698.50	69,750.71
2089	189.73	6.9	1,844,752	253.78	170,875.96	97,122.94	78,964.71
2090	188.47	7.21	1,872,423	252.4	172,500.35	98,174.93	79,200.89
2091	206.01	5.14	1,900,509	275.75	191,281.51	112,271.78	98,745.21
2092	197.89	5.68	1,929,017	265.37	186,843.43	108,700.92	93,753.27
2093	190.44	6.56	1,957,952	255.83	182,830.32	105,464.46	88,200.98
2094	187	7.45	1,987,321	251.57	182,484.43	105,016.14	85,410.51
2095	183.35	9.26	2,017,131	247.01	181,859.61	104,360.31	79,991.43
2096	214.21	4.69	2,047,388	288.12	215,308.94	129,443.88	117,101.54
2097	196.59	5.7	2,078,099	265.06	201,050.95	118,479.10	103,478.82
2098	177.64	11.09	2,109,270	240.19	184,916.18	106,130.98	76,946.23

WDP15 Scenario – Run 4						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	248.55	5.34	483,053	271.4	47,851.23	43,822.28	29,769.39
2000	232.83	6.53	490,298	256.05	45,821.78	41,666.54	24,482.01
2001	215.23	11.69	497,653	238.59	43,338.81	39,094.53	8,330.80
2002	229.96	6.72	505,118	254.78	46,973.35	42,397.90	24,713.36
2003	238.96	5.7	512,694	265.06	49,601.88	44,716.64	29,716.36
2004	216.9	10.44	520,385	242.69	46,097.03	41,197.87	13,723.68
2005	230.22	6.34	528,191	257.56	49,655.33	13,751.76	-2,932.76
2006	242.65	5.33	536,113	271.6	53,146.97	16,850.62	2,824.04
2007	219.22	9.1	544,155	247.48	49,153.01	12,908.27	-11,039.54
2008	235.06	5.69	552,317	265.21	53,466.08	16,755.77	1,781.81
2009	224.76	6.69	560,602	254.97	52,170.92	15,357.72	-2,247.87
2010	254.75	4.69	569,011	288.12	59,838.76	22,277.64	9,935.31
2011	223.15	6.72	577,546	254.78	53,708.77	16,408.64	-1,275.90
2012	235.77	5.45	586,210	269.27	57,614.63	19,815.31	5,472.94
2013	206.72	11.89	595,003	238.37	51,767.93	14,261.69	-17,028.37
2014	230.6	5.69	603,928	265.21	58,462.19	20,199.62	5,225.66
2015	210.78	10.06	612,987	244.21	54,639.08	16,528.66	-9,945.51
2016	231.1	5.56	622,181	267.31	60,706.12	21,849.92	7,218.07
2017	208.02	10.48	631,514	242.53	55,903.91	17,317.82	-10,261.64
2018	203.85	11.71	640,987	238.56	55,813.98	17,060.17	-13,756.19
2019	210.73	9.3	650,602	246.88	58,627.64	19,409.98	-5,064.16
2020	222.46	6.03	660,361	260.68	62,831.58	22,987.80	7,119.08
2021	205.05	12.94	670,266	241.84	59,165.46	19,531.98	-14,521.28
2022	210.42	8.7	680,320	248.53	61,713.38	21,617.95	-1,277.21
2023	200.98	11.74	690,525	238.52	60,116.62	20,023.87	-10,871.44
2024	202.07	11.04	700,883	240.36	61,490.14	21,061.56	-7,991.61
2025	200.13	11.59	711,396	238.77	61,999.97	21,334.67	-9,165.90
2026	230.23	5.23	722,067	273.71	72,137.42	30,044.85	16,281.44
2027	216.99	6.16	732,898	259.26	69,355.39	27,415.03	11,204.20
2028	228.25	5.27	743,891	272.85	74,083.41	31,343.68	17,475.00
2029	203.2	9.94	755,050	244.67	67,429.27	25,367.77	-790.61
2030	200.84	10.48	766,376	242.53	67,842.38	25,547.07	-2,032.39
2031	197.89	11.24	777,871	239.69	68,053.82	25,552.83	-4,026.67
2032	204.1	9.1	789,539	247.48	71,318.32	28,186.90	4,239.09
2033	209.93	6.71	801,382	254.84	74,542.22	30,772.24	13,114.01
2034	196.8	11.12	813,403	240.08	71,279.09	27,795.39	-1,468.31
2035	202.74	9.06	825,604	247.59	74,610.00	30,461.44	6,618.89
2036	196.25	12.76	837,988	240.52	73,566.51	29,393.56	-4,186.01
2037	212.32	6.09	850,558	260.01	80,719.64	35,284.97	19,258.35
2038	195.47	10.96	863,316	240.65	75,832.02	30,961.75	2,119.11
2039	224.83	5.13	876,266	275.98	88,269.05	41,276.45	27,776.19
2040	219.63	5.39	889,410	270.41	87,783.73	40,667.12	26,482.65
2041	205.02	6.94	902,751	253.58	83,554.05	36,921.70	18,658.21
2042	195.11	12.99	916,292	242.27	81,027.90	34,623.27	438.43
2043	197.34	13.28	930,037	245.44	83,317.57	36,357.57	1,409.56
2044	191.1	12.18	943,987	238.44	82,156.30	35,212.11	3,158.88
2045	209.26	6.02	958,147	260.79	91,205.53	42,551.77	26,709.37
2046	196.66	9.54	972,519	246.11	87,361.27	39,177.95	14,072.23
2047	190.04	12.27	987,107	238.58	85,958.36	37,839.63	5,549.56
2048	205.38	6.33	1,001,914	257.65	94,222.09	44,476.11	27,817.91

WDP15 Scenario – Run 4						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2049	195.7	9.46	1,016,942	246.38	91,450.64	42,009.90	17,114.70
2050	203.81	6.44	1,032,197	256.73	96,723.88	46,155.32	29,207.63
2051	213.83	5.44	1,047,680	269.46	103,040.58	51,136.78	36,820.73
2052	206.83	5.97	1,063,395	261.39	101,454.14	49,645.40	33,934.58
2053	198.88	7.29	1,079,346	252.11	99,320.34	47,717.09	28,532.52
2054	187.81	11.51	1,095,536	238.95	95,548.20	44,468.17	14,178.13
2055	187.13	12.24	1,111,969	238.53	96,810.30	45,317.35	13,106.22
2056	188.51	10.96	1,128,648	240.65	99,138.27	47,026.85	18,184.21
2057	188.33	10.91	1,145,578	240.84	100,703.08	48,114.64	19,403.58
2058	204.75	5.95	1,162,762	261.63	111,038.06	56,263.69	40,605.50
2059	223.68	4.77	1,180,203	285.63	123,042.50	65,721.68	53,168.82
2060	204.53	5.9	1,197,906	262.26	114,669.49	58,797.89	43,271.28
2061	185.42	11.57	1,215,875	238.82	105,984.85	51,655.66	21,207.73
2062	220.62	4.85	1,234,113	283.27	127,601.55	68,748.09	55,984.69
2063	184.71	11.63	1,252,625	238.7	109,134.01	53,820.54	23,214.71
2064	201.9	6.03	1,271,414	260.68	120,971.65	63,063.98	47,195.26
2065	187.07	10.51	1,290,485	242.41	114,181.41	57,482.77	29,824.37
2066	198.25	6.42	1,309,842	256.89	122,817.64	64,149.74	47,254.69
2067	195.55	6.88	1,329,490	253.88	123,198.29	64,263.62	46,158.02
2068	199.03	6.22	1,349,432	258.67	127,404.12	67,398.73	51,030.01
2069	205.67	5.55	1,369,674	267.49	133,724.30	72,190.07	57,584.54
2070	216.89	4.89	1,390,219	282.14	143,168.27	79,422.53	66,553.87
2071	184.52	10.78	1,411,072	241.34	124,297.71	64,403.03	36,034.08
2072	185	10.54	1,432,238	242.29	126,660.46	66,078.68	38,341.32
2073	209.48	5.22	1,453,722	273.93	145,349.30	80,520.93	66,783.83
2074	192.4	7.2	1,475,528	252.44	135,956.37	72,986.91	54,039.19
2075	192.1	7.21	1,497,661	252.4	137,974.73	74,376.28	55,402.24
2076	186.93	9.54	1,520,125	246.11	136,552.66	73,085.78	47,980.05
2077	189.55	8.14	1,542,927	249.81	140,684.59	76,116.34	54,694.89
2078	211.48	5.03	1,566,071	278.42	159,151.03	90,256.06	77,018.97
2079	181.02	11.32	1,589,562	239.45	138,925.70	74,393.14	44,603.12
2080	182.06	10.84	1,613,406	241.1	141,984.28	76,583.04	48,056.19
2081	212.86	4.92	1,637,607	281.32	168,149.96	96,601.68	83,654.08
2082	207.23	5.2	1,662,171	274.37	166,460.52	95,094.89	81,410.43
2083	190.74	7	1,687,103	253.29	155,972.99	86,826.23	68,404.83
2084	183.83	9.96	1,712,410	244.59	152,878.09	84,264.22	58,053.21
2085	193.89	6.29	1,738,096	258.01	163,681.24	92,372.22	75,819.28
2086	189.39	7.2	1,764,167	252.44	162,551.81	91,319.24	72,371.52
2087	180.52	10.83	1,790,630	241.14	157,605.58	87,352.74	58,852.22
2088	188.37	7.41	1,817,489	251.7	166,973.85	94,330.88	74,830.51
2089	178.88	11.29	1,844,752	239.54	161,288.91	89,812.58	60,101.51
2090	191.3	6.52	1,872,423	256.12	175,041.07	100,109.53	82,951.32
2091	179.02	11.07	1,900,509	240.26	166,662.77	93,552.26	64,420.14
2092	178.54	12.65	1,929,017	239.89	168,901.90	95,077.44	61,787.35
2093	184.79	8.76	1,957,952	248.38	177,504.89	101,426.24	78,373.18
2094	216.92	4.6	1,987,321	291.07	211,137.59	126,714.36	114,608.88
2095	191.47	6.32	2,017,131	257.74	189,760.19	110,335.25	93,703.37
2096	176.62	12.07	2,047,388	238.35	178,119.33	101,355.38	69,591.63
2097	177.9	11.06	2,078,099	240.29	182,262.92	104,307.25	75,201.44
2098	191.86	6.18	2,109,270	259.06	199,447.40	117,077.96	100,814.50

WDP15 Scenario – Run 5						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
1999	243.78	5.61	483,053	266.48	46,984.40	42,982.39	28,218.96
2000	216.55	11.42	490,298	239.17	42,801.68	38,752.75	8,699.56
2001	228.31	7.26	497,653	252.22	45,813.21	41,471.74	22,366.13
2002	227.73	7.2	505,118	252.44	46,541.99	41,985.22	23,037.50
2003	230.09	6.57	512,694	255.76	47,861.33	43,058.30	25,768.51
2004	226.11	7.21	520,385	252.4	47,941.41	42,947.94	23,973.91
2005	231.45	6.2	528,191	258.86	49,905.97	13,988.62	-2,327.48
2006	221.59	8.4	536,113	249.23	48,769.01	12,729.85	-9,375.83
2007	215.22	10.31	544,155	243.22	48,306.74	12,114.87	-15,017.22
2008	225.92	6.62	552,317	255.42	51,491.19	14,911.50	-2,509.88
2009	230.73	5.97	560,602	261.39	53,484.73	16,579.88	869.07
2010	213.66	13.14	569,011	243.77	50,628.10	13,742.24	-20,837.35
2011	225.88	6.32	577,546	257.74	54,332.24	16,984.21	352.33
2012	221.03	7.01	586,210	253.24	54,185.33	16,661.31	-1,786.40
2013	208.64	11.01	595,003	240.47	52,224.35	14,679.92	-14,294.31
2014	207.53	11.16	603,928	239.95	52,892.99	15,115.15	-14,253.81
2015	228.17	5.82	612,987	263.32	58,916.40	20,419.56	5,103.49
2016	205.76	11.35	622,181	239.36	54,358.18	16,096.13	-13,772.84
2017	205.33	12.58	631,514	239.55	55,216.33	16,696.81	-16,409.07
2018	206.2	10.82	640,987	241.18	56,426.65	17,611.60	-10,862.61
2019	225.48	5.82	650,602	263.32	62,531.71	22,911.61	7,595.54
2020	214.52	7.38	660,361	251.8	60,691.36	21,074.76	1,653.35
2021	228.2	5.53	670,266	267.83	65,524.11	25,196.44	10,643.54
2022	213.38	7.36	680,320	251.86	62,542.25	22,353.86	2,985.08
2023	210.66	8.3	690,525	249.45	62,872.12	22,462.26	619.75
2024	201.67	11.17	700,883	239.92	61,376.00	20,960.89	-8,434.39
2025	223.93	5.65	711,396	265.84	69,027.21	27,512.85	12,644.15
2026	243.13	4.68	722,067	288.44	76,018.92	33,446.48	21,130.46
2027	216.22	6.25	732,898	258.38	69,118.31	27,207.92	10,760.25
2028	199.87	11.07	743,891	240.26	65,234.59	23,637.40	-5,494.71
2029	209.27	7.42	755,050	251.67	69,358.08	27,042.35	7,515.68
2030	198.78	12.7	766,376	240.16	67,178.85	24,972.75	-8,448.92
2031	198.11	11.16	777,871	239.95	68,127.20	25,616.15	-3,752.82
2032	200.54	10.28	789,539	243.34	70,125.14	27,160.32	107.19
2033	196.82	11.28	801,382	239.57	70,074.64	26,939.70	-2,745.06
2034	195.58	12.31	813,403	238.66	70,855.84	27,433.36	-4,961.97
2035	195.2	11.6	825,604	238.75	71,947.46	28,190.53	-2,336.35
2036	205.87	7.37	837,988	251.83	77,026.55	32,336.30	12,941.20
2037	211.7	6.16	850,558	259.26	80,489.76	35,090.00	18,879.17
2038	215.12	5.78	863,316	263.88	83,152.85	37,153.44	21,942.63
2039	239.3	4.54	876,266	293.14	93,758.57	45,906.59	33,959.00
2040	208.75	6.35	889,410	257.48	83,585.47	37,135.66	20,424.82
2041	195.41	10.58	902,751	242.13	79,782.12	33,757.32	5,914.70
2042	204.91	6.86	916,292	253.98	84,944.15	37,900.07	19,847.10
2043	203.25	7.18	930,037	252.52	85,720.82	38,363.18	19,468.09
2044	213.38	5.69	943,987	265.21	91,381.00	42,890.68	27,916.72
2045	194.97	10.22	958,147	243.58	85,184.45	37,552.59	10,657.36
2046	191.96	11.02	972,519	240.43	85,346.76	37,509.55	8,509.01
2047	223.59	5	987,107	279.19	100,590.50	49,927.87	36,769.73
2048	209.61	5.86	1,001,914	262.78	96,099.58	46,023.39	30,602.05
2049	194.55	9.86	1,016,942	244.97	90,929.15	41,581.17	15,633.32

WDP15 Scenario – Run 5						
Year	New GPCD	Rainfall	Population	GPCD	Total	New Total	Drawdown
2050	202.58	6.65	1,032,197	255.22	96,154.74	45,688.53	28,188.20
2051	188.65	11.64	1,047,680	238.68	91,271.32	41,506.81	10,874.67
2052	190.71	10.7	1,063,395	241.65	93,793.58	43,391.90	15,233.48
2053	188.26	12.46	1,079,346	239.07	94,185.95	43,535.39	10,745.31
2054	198.36	7.34	1,095,536	251.93	100,740.40	48,687.34	29,371.19
2055	196.53	8	1,111,969	250.13	101,518.80	49,134.90	28,081.87
2056	189.45	10.66	1,128,648	241.81	99,614.39	47,412.02	19,358.87
2057	187.89	11.06	1,145,578	240.29	100,474.71	47,930.30	18,824.49
2058	206.33	5.8	1,162,762	263.6	111,875.08	56,937.88	41,674.44
2059	185.98	12.34	1,180,203	238.73	102,837.38	49,481.74	17,007.45
2060	188.58	10.52	1,197,906	242.37	105,972.45	51,822.32	24,137.60
2061	185.21	12.26	1,215,875	238.56	105,871.67	51,565.07	19,301.31
2062	196.12	7.16	1,234,113	252.6	113,783.01	57,710.47	38,868.02
2063	191.58	9.16	1,252,625	247.3	113,069.54	56,957.69	32,851.98
2064	184.88	11.38	1,271,414	239.28	111,040.90	55,163.63	25,215.71
2065	206.18	5.61	1,290,485	266.48	125,519.69	66,485.07	51,721.64
2066	187.06	10.42	1,309,842	242.77	116,067.76	58,800.95	31,379.39
2067	195.55	6.88	1,329,490	253.88	123,198.29	64,263.62	46,158.02
2068	183.14	12.25	1,349,432	238.54	117,492.51	59,574.50	27,337.06
2069	217.44	4.88	1,369,674	282.42	141,192.41	78,074.36	65,232.02
2070	193.47	7.22	1,390,219	252.36	128,057.11	67,538.14	48,537.79
2071	190.78	8.36	1,411,072	249.32	128,408.49	67,630.11	45,629.70
2072	193.58	7.01	1,432,238	253.24	132,386.50	70,565.69	52,117.98
2073	192.38	7.3	1,453,722	252.07	133,751.23	71,448.69	52,237.80
2074	194.83	6.6	1,475,528	255.55	137,632.68	74,295.85	56,927.10
2075	213.79	4.96	1,497,661	280.24	153,191.12	86,237.36	73,184.49
2076	182.63	10.98	1,520,125	240.58	133,484.16	70,697.99	41,802.71
2077	194.87	6.45	1,542,927	256.65	144,538.30	79,110.09	62,136.09
2078	210.71	5.07	1,566,071	277.43	158,580.75	89,813.78	76,471.43
2079	191.88	6.96	1,589,562	253.48	147,065.23	80,695.40	62,379.28
2080	199.45	5.8	1,613,406	263.6	155,233.76	86,825.20	71,561.75
2081	202.59	5.52	1,637,607	268.01	160,194.33	90,461.64	75,935.05
2082	185.13	9.66	1,662,171	245.7	149,061.66	81,687.89	56,266.37
2083	193.21	6.47	1,687,103	256.5	157,948.56	88,346.16	71,319.53
2084	219.53	4.6	1,712,410	291.07	181,930.41	106,581.74	94,476.25
2085	181.8	10.55	1,738,096	242.25	153,683.59	84,703.85	56,940.18
2086	190.41	6.9	1,764,167	253.78	163,411.53	91,977.67	73,819.44
2087	187.05	8.2	1,790,630	249.67	163,182.40	91,617.55	70,038.20
2088	196.24	5.92	1,817,489	262.01	173,809.80	99,550.96	83,971.73
2089	195	6.03	1,844,752	260.68	175,523.22	100,666.59	84,797.88
2090	206.42	5.13	1,872,423	275.98	188,615.11	110,445.39	96,945.14
2091	178.54	11.26	1,900,509	239.63	166,227.21	93,221.08	63,588.95
2092	177.37	11.96	1,929,017	238.34	167,812.56	94,250.28	62,776.01
2093	187.3	7.41	1,957,952	251.7	179,878.28	103,225.96	83,725.59
2094	202.64	5.3	1,987,321	272.22	197,458.07	116,355.25	102,407.62
2095	177.59	11.34	2,017,131	239.39	176,252.03	100,119.47	70,276.81
2096	212.56	4.76	2,047,388	285.93	213,678.05	128,212.09	115,685.54
2097	176.43	12.03	2,078,099	238.34	180,781.20	103,189.58	71,531.10
2098	180.13	10.24	2,109,270	243.5	187,464.06	108,050.40	81,102.53

Appendix C: Population/Weather Data

CITY OF ALBUQUERQUE PLANNING DEPARTMENT
POPULATION PROJECTIONS

YEAR	CITY POPULATION	COUNTY POPULATION	METROPOLITAN STATISTICAL AREA*	NEW MEXICO POPULATION	UNITED STATES of AMERICA**
2000	446,871	558,589	718,572	1,821,078	275,306,000
2005	475,454	594,317	780,614	1,956,725	287,716,000
2010	497,552	621,940	837,911	2,090,678	299,862,000
2015	520,627	650,784	898,479	2,232,424	312,268,000
2020	543,630	679,538	962,646	2,380,802	324,927,000
2025	567,590	709,487	1,030,907	2,534,964	337,815,000
2030	592,517	740,646	1,104,397	2,691,578	351,070,000

Projections are as of July 1 of each respective year. City population projections are assumed to be 80% of county population projections.
*Includes Bernalillo, Sandoval, and Valencia counties.
**Middle series population projections.
Figures are subject to revision.

Sources: Bureau of the Census, Bureau of Business and Economic Research (UNM), and City of Albuquerque.

source : http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nmalbu
Western Regional Climate Center
ALBUQUERQUE WSFO AIRPOR, NEW MEXICO
Monthly Total Precipitation (inches)
(290234)

File last updated on Oct 19, 2000
*** Note *** Provisional Data *** After Year/Month 200007
a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,
z = 26 or more days missing, A = Accumulations present
Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.
MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1914	0.02	0.40	0.40	0.84	1.02	0.14	2.01	2.00	0.20	1.93	0.00z	2.43 a	11.39
1915	0.68	0.50	0.51 a	2.05	0.00z	0.00z	2.92	0.83	0.00z	0.00z	0.00z	0.00z	7.49
1916	2.16 a	0.00z	0.00	0.00z	0.00	0.00z	0.00z	1.95	0.34	2.77	0.00	0.00	7.22
1917	0.35	0.73	0.00	0.12	0.50	0.18	0.25	0.56	0.60	0.00	0.00	0.00	3.29
1918	0.29	0.31	0.98	0.33	0.49	0.34	0.95	1.46	0.15	1.79	0.24	0.30	7.63
1919	0.00	0.13	1.25	1.93	1.34	0.84	4.12	0.98	1.36	1.61	0.68	0.79	15.03
1920	0.04	0.30	0.43	0.38	1.07	0.67	0.15	0.76	0.29	1.12	0.08	0.23	5.52
1921	0.12	0.18	0.86	0.00	0.28	2.46	2.77	2.60	0.37	0.37	0.00	0.28	10.29
1922	0.03	0.07	0.47	0.16	0.31	0.33	0.25	1.28	0.12	0.13	0.89	0.05	4.09
1923	0.14	0.34	0.99	0.70	0.35	0.00	0.34	2.34	0.45	0.84	1.10	0.36	7.95
1924	0.00z	0.00z	0.00z	0.00z	0.22	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.22
1925	0.52	0.00	0.07	0.26	0.22	0.57	0.58	0.49	1.13	1.23	0.26	0.15	5.48
1926	0.15	0.04	1.08	0.63	1.99	0.34	1.16	0.47	1.04	1.21	0.00	1.10	9.21
1927	0.03	0.42	0.35	0.21	0.00	1.61	1.93	1.63	1.14	0.22	0.00	0.16 a	7.70
1928	0.00	0.21	0.10	0.57	1.63	0.00	2.54	1.96	0.05	0.88	0.27	0.20	8.41
1929	0.05	0.35	0.08	0.08	3.56	0.00	1.23	1.44	3.31	1.56	0.74	0.18	12.58
1930	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00
1931	0.20	1.02	0.52	2.58	0.99	0.53	0.69	0.23	2.18	0.57	1.19	0.07	10.77
1932	0.45	0.40	0.27	0.34	1.41	0.09	2.01	2.20	0.78	1.46	0.00	0.37	9.78
1933	0.08	0.01	0.09	0.39	0.23	3.81	2.04	2.42	1.12	0.24	0.91	0.05	11.39
1934	0.06	0.04	0.01	0.13	0.72	0.37	0.61	2.10	1.08	0.24	0.84	0.78	6.98
1935	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00
1936	0.55	0.12	0.11	0.09	0.27	0.43	0.67	0.62	2.05	0.17	0.00	0.13	5.21
1937	0.21	0.11	0.63	0.42	2.78	1.91	1.02	0.22	0.87	0.79	0.01	0.48	9.45
1938	0.12	0.49	0.22	0.20	0.02	1.51	1.45	0.17	2.36	0.63	0.02	0.36	7.55
1939	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00 z	0.00
1940	0.52	0.58	0.48	0.21	1.71	1.32	0.62	3.25	1.99	0.36	1.45	0.87	13.36
1941	1.17	0.20	1.00	1.20	3.07	0.90	2.15	1.07	1.85	2.67	0.37	0.23	15.88
1942	0.13	0.54	0.39	1.97	0.00	0.22	0.20	1.42	1.55	0.73	0.00	1.10	8.25
1943	0.25	0.26	0.23	0.06	1.41	1.20	1.19	1.33	0.39	0.22	0.14	0.94	7.62
1944	0.00 z	0.00 z	0.49	0.91	0.57	0.85	1.58	1.44	0.65	0.86	0.56	0.76	8.67
1945	0.34	0.32	0.50	0.77	0.00	0.00	1.09	2.27	0.26	0.43	0.00	0.38	6.36
1946	0.25	0.33	1.03	0.26	0.31	0.03	2.28	1.49	0.57	1.02	0.54	0.12	8.23
1947	0.00	0.00	0.03	0.03	0.48	0.23	0.38	1.45	0.67	0.31	0.36	0.91	4.85

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1948	0.00 j	1.31 e	0.41	0.33	0.94	0.57	0.46 f	0.51	0.80	0.60	0.11	0.11 a	5.69
1949	0.58 e	0.29	0.65	0.67	1.35	0.25 a	2.21	0.72	0.87	0.14	0.00	0.59	8.32
1950	0.02	0.38	0.04	0.27	0.06	0.23	2.00	0.08	1.01	0.01	0.00	0.00	4.10
1951	0.41	0.27	0.29	0.38	0.10	0.02	0.85	2.22	0.05	0.37	0.14	0.28	5.38
1952	0.20	0.17	0.59	0.76	0.65	1.64	1.91 a	1.10	0.34	0.00	0.53	0.20	8.09
1953	0.00	0.43	0.74	0.69	0.03	0.35	0.53	0.59	0.06	0.46	0.91	0.29 a	5.08
1954	0.20	0.03 a	0.24	0.00	0.51	0.01	1.45	0.65	0.77	0.25	0.22	0.14	4.47
1955	0.29	0.18	0.00	0.04	0.53	0.33	1.60	1.32	1.94	0.06	0.00	0.22	6.51
1956	0.46	0.49	0.00	0.00	0.18	0.43	1.49	0.62	0.02	0.34	0.03	0.00	4.06
1957	0.78	0.59	0.52	0.38	0.35	0.04	2.48	1.32	0.00	2.59	1.24	0.32	10.61
1958	0.21	0.27	1.71	0.62	0.43	0.22	0.14	1.74	1.34	1.72	0.37	1.35	10.12
1959	0.17	0.04	0.42	0.43	0.80	0.78	0.73	2.79	0.36	1.70	0.07	1.85	10.14
1960	0.34	0.38	0.44	0.19	0.71	0.91	0.47	0.78	0.56	2.88	0.07	0.39	8.12
1961	0.23	0.10	0.61	0.73	0.01	0.11	2.70	1.69	1.09	0.47	0.48	0.65	8.87
1962	1.01	0.11	0.18	0.07	0.01	0.19	1.24	0.00	0.71	0.75	0.61	0.51	5.39
1963	0.29	0.24	0.55	0.14	0.03	0.11	1.43	3.00	0.63	0.76	0.29	0.00	7.47
1964	0.07	1.12	0.13	0.61	0.35	0.00	1.87	0.98	1.57	0.04	0.21	0.49	7.44
1965	0.47	0.60	0.49	0.49	0.19	0.99	1.65	0.61	1.18	0.89	0.33	1.42	9.31
1966	0.42	0.30	0.00	0.04	0.02	1.66	1.63	1.06	1.04	0.54	0.09	0.01	6.81
1967	0.01	0.44	0.25	0.00	0.04	1.71	0.61	3.30	0.79	0.18	0.15	0.56	8.04
1968	0.01	0.98	1.48	0.51	0.99	0.05	3.33	1.49	0.30	0.12	0.59	0.82	10.67
1969	0.08	0.34	0.41	1.76	1.31	0.59	0.94	0.95	1.08	2.37	0.01	0.72	10.56
1970	0.00	0.27	0.42	0.05	0.33	0.40	1.22	2.24	0.79	0.25	0.08	0.23	6.28
1971	0.27	0.21	0.03	0.78	0.16	0.02	1.05	0.87	1.44	1.15	0.67	1.40	8.05
1972	0.12	0.12	0.08	0.00	0.18	0.55	1.00	2.93	1.00	3.08	0.69	0.36	10.11
1973	0.85	0.33	2.18	0.91	0.66	1.37	1.80	1.19	1.13	0.35	0.08	0.03	10.88
1974	0.88	0.11	0.85	0.14	0.01	0.22	2.40	0.79	1.58	1.96	0.38	0.51	9.83
1975	0.26	0.99	0.95	0.10	0.66	0.00	1.43	1.40	1.66	0.00	0.28	0.28	8.01
1976	0.00	0.40	0.09	0.31	0.82	0.60	1.32	0.73	0.45	0.03	0.24	0.20	5.19
1977	0.88	0.13	0.63	1.07	0.10	0.04	0.69	2.28	0.78	0.76	0.42	0.13	7.91
1978	1.32	1.02	0.54	0.05	0.69	1.05	0.24	2.49	0.59	1.22	1.00	0.76	10.97
1979	1.07	0.62	0.14	0.24	2.48	1.02	0.80	1.53	0.40	0.27	0.91	0.87	10.35
1980	0.87	0.58	0.60	0.60	0.56	0.01	0.08	2.61	1.83	0.09	0.30	0.74	8.87
1981	0.05	0.67	0.80	0.30	0.53	0.35	1.07	1.68	0.41	1.43	0.37	0.00	7.66
1982	0.32	0.20	0.84	0.05	0.52	0.09	1.32	1.09	1.34	0.26	0.60	0.78	7.41
1983	1.10	0.71	0.61	0.02	0.32	1.21	0.55	0.27	0.91	1.20	0.44	0.42	7.76
1984	0.33	0.00	0.62	0.50	0.16	0.48	1.13	2.70	1.13	3.04	0.63	1.36	12.08
1985	0.49	0.54	0.70	1.69	1.12	0.53	1.16	0.49	1.53	2.15	0.19	0.16	10.75
1986	0.22	1.01	0.17	0.33	1.11	2.57	1.51	2.26	0.53	1.54	1.29	0.44	12.98
1987	0.66	0.61	0.07	1.00	0.58	0.13	0.91	2.98	0.20	0.44	0.42	0.34	8.34
1988	0.15	0.07	0.85	1.42	0.62	1.25	2.26	3.29	2.63	0.32	0.22	0.03	13.11
1989	0.57	0.35	0.48	0.00	0.02	0.02	1.51	0.48	0.31	0.97	0.00	0.28	4.99
1990	0.21	0.49	0.41	1.71	0.45	0.27	2.36	1.79	0.96	0.15	0.86	0.59	10.25
1991	0.60	0.06	0.14	0.00	1.14	0.65	2.63	1.26	1.43	0.26	1.93	1.49	11.59
1992	0.60	0.20	0.63	0.22	1.81	0.67	2.01	2.17	0.79	0.70	1.12	1.16	12.08
1993	0.94	1.82	0.22	0.00	0.20	0.44	0.23	3.05	0.49	0.64	0.97	0.03	9.03
1994	0.02	0.26	0.59	0.07	1.87	0.28	0.61	2.70	1.21	1.54	1.38	0.62	11.15
1995	0.55	0.39	0.16	0.69	0.08	0.20	0.35	0.74	2.32	0.00	0.03	0.17	5.68
1996	0.17	0.19	0.02	0.00	0.02	2.86	1.03	1.54	1.45	1.52	0.95	0.00	9.75
1997	0.55	0.12	0.11	1.65	0.42	1.03	2.04	1.96	2.43	0.32	0.73	1.00	12.36
1998	0.14	0.66	2.34	0.64	0.00	0.17	2.37	0.88	0.15	1.80	0.46	0.22	9.83
1999	0.12	0.00	1.10	0.59	0.54	0.60	1.47	3.04	0.54	0.26	0.00	0.03	8.29

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2000	0.30	0.30	1.27	0.00	0.07	0.72	0.83	0.58	0.40 a	1.44 n	0.00 z	0.00 z	4.47

Period of Record Statistics

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
MEAN	0.37	0.38	0.51	0.51	0.66	0.64	1.36	1.49	0.95	0.88	0.43	0.49	8.62
S.D.	0.38	0.33	0.46	0.57	0.73	0.72	0.83	0.88	0.69	0.82	0.43	0.48	2.67
SKEW	1.87	1.67	1.61	1.60	1.82	1.95	0.65	0.36	0.95	1.08	1.05	1.52	0.24
MAX	2.16	1.82	2.34	2.58	3.56	3.81	4.12	3.30	3.31	3.08	1.93	2.43	15.88
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	3.29
NO YRS	81	81	83	82	83	81	81	83	82	81	80	81	77