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Prediction of Lake-level Changes for Various Climatic Scenarios using a Water-balance Model, Waubay Lakes Chain, Northeastern South Dakota (Task 2)

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Prediction of lake-level changes for various climatic scenarios using a water-balance model, Waubay Lakes Chain, Northeastern South Dakota

Task 2

Prepared for
Day County Risk Assessment Study
Federal Emergency Management Agency

Northern Great Plains Water Resources Research Center
South Dakota State University

Executive Summary

Prediction of lake-level changes for various climate scenarios using a water-balance model, Waubay Lakes Chain, Northeastern South Dakota

Task 2

The closed basins area, which includes parts of Day, Marshall, Roberts, Codington, and Clark Counties, in northeastern South Dakota, was declared a Federal Disaster Area in 1990. Under the sponsorship of Region 8 of the Federal Emergency management Agency, an interagency study team was formed to conduct an interdisciplinary scientific investigation of the flooding in the closed basins area. Agencies represented include Federal Emergency Management Agency, U.S. Geological Survey, U.S. Army Corp of Engineers, South Dakota State University, Natural Resources Conservation Service, South Dakota Department of Environment and Natural Resources, and the South Dakota Geological Survey. Task 2 focuses on predictions of lake-level and corresponding surface-area, and water-volume changes of the 10 major lakes in the Waubay Lakes Chain closed basin using the water-balance model, developed by the U.S. Geological Survey, as part of task 4.

Northeastern South Dakota is situated in a unique geographic setting, the result of glaciation which ended about 10,000 years ago. The area is dominated by the Coteau des Prairies, a flat-iron shaped topographic high, rising up to 400 feet above the James River Basin to the west, and 900 feet above the Minnesota River - Red River Lowland to the east. Drainage on the Coteau is poorly developed, resulting in internal drainage only, producing areas called closed basins.

The closed basins area consists of several internally drained basins that are not connected to each other, or to either the James River or Big Sioux drainages, under normal climatic conditions. The closed basins area contains thousands of temporary and permanent ponds (potholes) and lakes. Streams may connect two or three of the potholes, but typically flow only during periods of high water levels in the ponds. All of the lakes and ponds in the closed basins area have experienced water level increases and corresponding surface-water inundation, but the greatest flooding has been within the Waubay Lakes Chain closed basin. Beginning in 1983, a period of above normal precipitation began whose duration and magnitude has not been observed previously in the modern instrumental record. The precipitation event, coupled with below normal evaporation, has resulted in a water surplus within the closed basins area. This net increase in available water has resulted in flooding which has not been observed in the modern record. During the 1990's, many potholes have filled to capacity and are either spilling into other ponds or lakes, or have coalesced into larger surface water bodies.

The closed basins area has a sub-humid continental climate with an annual temperature range from over 100°F in the summer to less than -20°F in the winter, and precipitation normally

ranging between 17 and 25 inches. Land surface processes must distribute the water, which falls as precipitation, until it can be moved, either in liquid form to the subsurface or to storage in lakes or ponds. This water is returned to the atmosphere by evaporation from the surface water bodies or through plants by transpiration. The combined runoff, infiltration, and/or surface storage process, which takes place before water can be returned to the atmosphere, is defined as Land Surface Hydrologic Loading (LSHL).

For the period 1991-1998, the precipitation at Webster, South Dakota, averaged 27.35 inches annually, which is 6.29 inches above the 1960-1990 normal. Based on the 1960-1990 normal period, the net lake evaporation, which is precipitation minus lake evaporation, is 11.6 inches per year. During the period 1991-1998, the net lake evaporation was calculated to be 1.3 inches per year. The combined effect of reduced evaporation and increased precipitation resulted in 88.90 inches of additional LSHL from the atmosphere during the period from 1991-1998, compared to a period with normal climatic conditions.

During periods of near normal climate conditions, a normal hydrologic condition will be established. In northeastern South Dakota, a normal hydrologic condition produces quasi-stable lake levels that change slowly, if at all, over several years. The normal LSHL, for northeastern South Dakota is a condition, when the evaporation exceeds the precipitation by 18-19 inches annually.

The regional evaporation influences during extended drier conditions, amplify the effects of the precipitation departures and can bring the change in LSHL to the 10-12 inch per year range, which has been the case in the 1990's. The climate record does demonstrate that rapid transitions have taken place for shorter episodes, and typically are the defining event for longer-term periods, although their occurrence is not a guarantee of a change. The hydrologic condition that exists at the current time (1992-1998) is likely to take a dry episode before a return to long-term average LSHL conditions.

The timing of a future episode of drier conditions cannot be determined from the climate record, but persistence of the consistent trend of 30-plus years should not be unexpected, even when a dry spell takes place. While a shorter dry episode does not necessarily indicate a reversal of the current wet trend, it would be the first indicator that a change is possible.

The climate record has a multi-year characteristic that appears to be about 7 to 10 years in duration. This characteristic is a shorter-term feature that is part of a longer term periodicity of 30-plus years in duration. For purposes of simulating lake change in the Waubay Lakes Chain, an 8-year period was selected to capture the climate episodes that are in the climate record. Actual 8-year periods, from the climate record were used to illustrate how the lake levels respond to the changes in LSHL, resulting from atmospheric conditions, that existed under those climate conditions.

A water-balance model, developed by the U.S. Geological Survey, simulated the lakes' levels and corresponding surface areas and water volumes of the 10 major lakes in the Waubay Lakes chain closed basin. This report focuses on Bitter and Waubay Lakes, because they are the most responsive to climate change and represent the change occurring in all the lakes with the

exception of Pickerel Lake and Enemy Swim Lake/Campbell Slough. Five 8-year net lake evaporation segments, based on 5 historical climate periods, were simulated. The very low net lake evaporation segment, which is the 1991-1998 climate, represents a wet period. The very high net lake evaporation segment, the 1969-1976 climate, represents a dry period. The 1961-1968 climate represents low net lake evaporation or a moderately wet period, the 1953-1960, 1977-1984, and 1985-1992 represent average conditions, and the 1968-75 climate, a moderately dry period. The model simulated 25 hypothetical 16-year climate periods using all combinations of the five 8-year net lake evaporation segments.

The dry climate scenario represents drought or near drought conditions. This climate scenario produces the largest lake level declines at the end of 8-year period, with Waubay declining 8.45 feet below the Fall of 1999 lake level of 1,803.75 feet above sea level, and Bitter rising 1.75 feet above the level of 1,792.05 feet above sea level (Fall 2007). This simulated lake level decline would result in the surface area of Waubay Lake decreasing by 3,523 acres to 12,200 acres, and Bitter Lake increasing 1,289 acres to 11,082 acres, after 8 years (Fall 2007). Lake water volumes for Waubay would decline about 118,000 acre-feet, and for Bitter would increase about 18,300 acre-feet by the end of this period. If combined with a second 8-year (Fall 2015) dry scenario, Waubay and Bitter Lakes decline 14.65 and 2.95 feet respectively, below the Fall 1999 lake levels. Surface areas for Waubay and Bitter decrease 6,161 and 2,476 acres and water volumes decrease about 185,500 and 32,800 acre-feet, respectively, from the Fall 1999 values. If the first 8-year dry scenario is followed by a wet climate scenario, water levels in Waubay Lake would rise during the second 8 years such that the lake level, at the end of 16 years, would be 0.95 feet above the Fall 1999 level. The water level in Bitter Lake would be up 11.25 feet above the Fall 1999 level. Surface areas and water volumes would increase in corresponding amounts.

The wet climate scenario would result in simulated 8-year (Fall 2007) lake level rises in Waubay and Bitter Lakes, of 4.75 and 15.35 feet, respectively, above the Fall 1999 levels. As a result of these lake-level rises, the surface areas of Waubay Lake would increase by about 1,941 acres and Bitter would increase about 13,629 acres, above their Fall 1999 surface areas. Water volumes would increase about 79,300 acre-feet for Waubay and about 248,900 acre-feet for Bitter. There is no historical instrumented climate data showing two climate periods, like the 1991 through 1998 period, occurring in sequence, which are the simulations that start with the wet climate scenario.

Combining a wet scenario with a second wet scenario would result in Waubay and Bitter Lakes having the same lake level of about 1813.5 feet above sea level, at the end of 16 years (Fall 2015). This is 2.4 feet above the level at which Bitter would begin to flow out of the closed basin. The second wet scenario would result in Waubay Lake rising 9.93 feet and Bitter Lake 21.45 feet above the Fall 1999 starting model lake levels. Corresponding increases in simulated lake area and lake volume would occur. If the first 8-year wet scenario is combined with an 8-year dry scenario, the simulated lake levels, after 16 years (Fall 2015) would be 1801.9 and 1801.6 feet above sea level, for Waubay and Bitter, respectively. This would be a water level rise of 9.55 feet for Bitter Lake and a decline of 1.85 feet for Waubay Lake from the initial Fall 1999 lake levels.

Although some fluctuation occurs, the simulated lake levels change very little with the average climate scenario. After 8 years (Fall 2007), Waubay would have decreased 3.75 feet and Bitter increased 7.35 feet above the Fall 1999 lake levels, respectively. Again, this fluctuation mainly results from the levels of the two lakes equalizing following the removal of the farm crossing. The simulated surface area of Waubay Lake would decrease about 1,553 acres and Bitter would increase 5,938 acres above the Fall 1999 areas. The addition of a second 8-year average climate scenario had little additional effect on lake levels. At the end of 16 years (Fall 2015), Waubay lake level would have decreased 4.55 feet and Bitter increased 6.45 feet above the Fall 1999 lake levels. Lake area and water volume changes would vary accordingly.

The moderately dry climate scenario would result, by the Fall of 2007, in Waubay Lake declining by 6.35 feet and Bitter increasing by 3.95 feet. This would reduce the surface area of Waubay Lake by about 2,902 acres and increase Bitter by 3,028 acres. The water volumes for Waubay and Bitter would decrease by about 91,500 and increase by about 44,500 acre-feet, respectively. The moderately wet scenario would result, by Fall 2006, in Waubay Lake decreasing 1.15 feet to 1802.6 feet above sea level and Bitter rising 10.15 feet to 1802.2 feet above sea level. These simulated lake level changes would decrease the surface area of Waubay by about 3,200 acres and increase Bitter by about 8,500 acres, above their Fall 1999 areas. Water volumes in Waubay would decrease by about 17,800 acre-feet and in Bitter would increase by about 140,600 acre-feet.

Significant lake level fluctuation and corresponding surface area and water volume changes occurs with the various climate scenarios. Simulated lake levels at the end of the first 8-year period, range from a decline of 8.45 to a rise of 4.75 for Waubay, and a rise of 1.75 to a rise of 15.35 feet for Bitter, above the initial Fall 1999 lake levels. If the dry and wet climate scenarios are removed, and only the first 8 years of the moderately dry, average, and moderately wet climate scenarios are considered, lake level changes for Waubay range from a decline of 6.35 feet to a rise of 1.15 feet. Lake level changes for bitter range from a rise of 3.95 to a rise of 10.15 feet, from the Fall 1999 levels. The water-balance model simulations indicate that lake level decline will likely occur in Waubay Lake over the next 8 years (Fall 2007), but lake levels are likely to rise in Bitter Lake over the same period. Several climate scenarios indicate Bitter Lake could rise over 15 feet by Fall 2015.

Prediction of lake-level changes for various climatic scenarios using a water-balance model, Waubay Lakes Chain, Northeastern South Dakota

Task 2 Report

Prepared for the Day County Risk Assessment Study
Federal Emergency Management Agency, Region VIII
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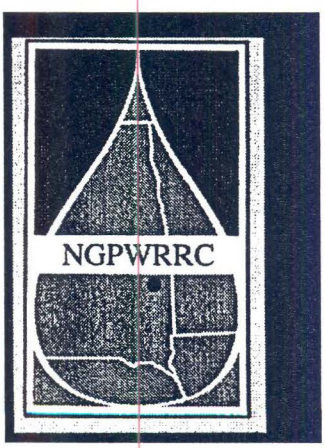

December 1999

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Introduction

Background

Northeastern South Dakota is situated in a unique geographic setting, the result of glaciation which ended about 10,000 years ago. The area is dominated topographically by the Coteau des Prairies, a flat-iron shaped, roughly north-south trending, highland plateau. The Coteau which averages 50 miles in width, is situated between the Minnesota River - Red River lowland to the east and the James River lowland to the west (fig. 1.1). This topographic high rises as much as 900 feet above the Minnesota River - Red River lowland the east and as much as 400 feet above the James River lowland to the west. The Coteau des Prairies or Prairie Hills begins just inside North Dakota and extends southward where it eventually merges with the generally higher ground in southwestern Minnesota and northwestern Iowa (Gilbertson and Lehr, 1989).

The topography of the Coteau des Prairies is characterized as hummocky to rolling, containing thousands of temporary and permanent ponds and lakes. Drainage is poorly developed. Streams may connect some of the lakes, ponds, and wetlands (depressions of glacial origin) which typically flow only during periods of abnormally high water levels from snow melt or heavy rains. Even during periods of high water the streams do not flow out of the basin (Leap, 1988). The U.S. Geological Survey (USGS) has identified these areas as noncontributing to either the James River drainage to the west or the Big Sioux River drainage to the east and south (Amundson and others, 1985; Benson and others, 1987). These noncontributing areas are referred to in this report as the closed basins area and are shown in Figure 1.2.

The closed basins map (fig. 1.2) was derived from high-resolution (10-meter posting) Digital Elevation Models (DEM's) and was prepared specifically for this project by the EROS Data Center, Sioux Falls, South Dakota. The boundaries of the closed basins differ from the 1978 Hydrologic Unit Map code (HUC) 10160010 (U.S. Geological Survey, 1978), the drainage area maps for the James River basin (Amundson and others, 1985), and the Big Sioux River basin (Benson and others, 1987). A detailed discussion of the development and use of DEM's in this study is included in the Task 1 report.

The climate of northeastern South Dakota is continental, which in general, is characterized by cold winters and warm to hot summers (Spuhler and others, 1971). Precipitation is moderate with both rainfall and snowfall being well distributed (Hogan, 1997). Precipitation patterns tend however to be cyclic. Beginning in 1983, a period of above normal precipitation began whose duration and magnitude has not been observed previously in the modern instrumental record. The precipitation event coupled with below normal evaporation has resulted in a water surplus within the closed basins area. This net increase in available water has resulted in flooding, which has not been observed in the modern record. A detailed discussion of climate is contained in the chapter 2 of this report and in the Task 1 report.

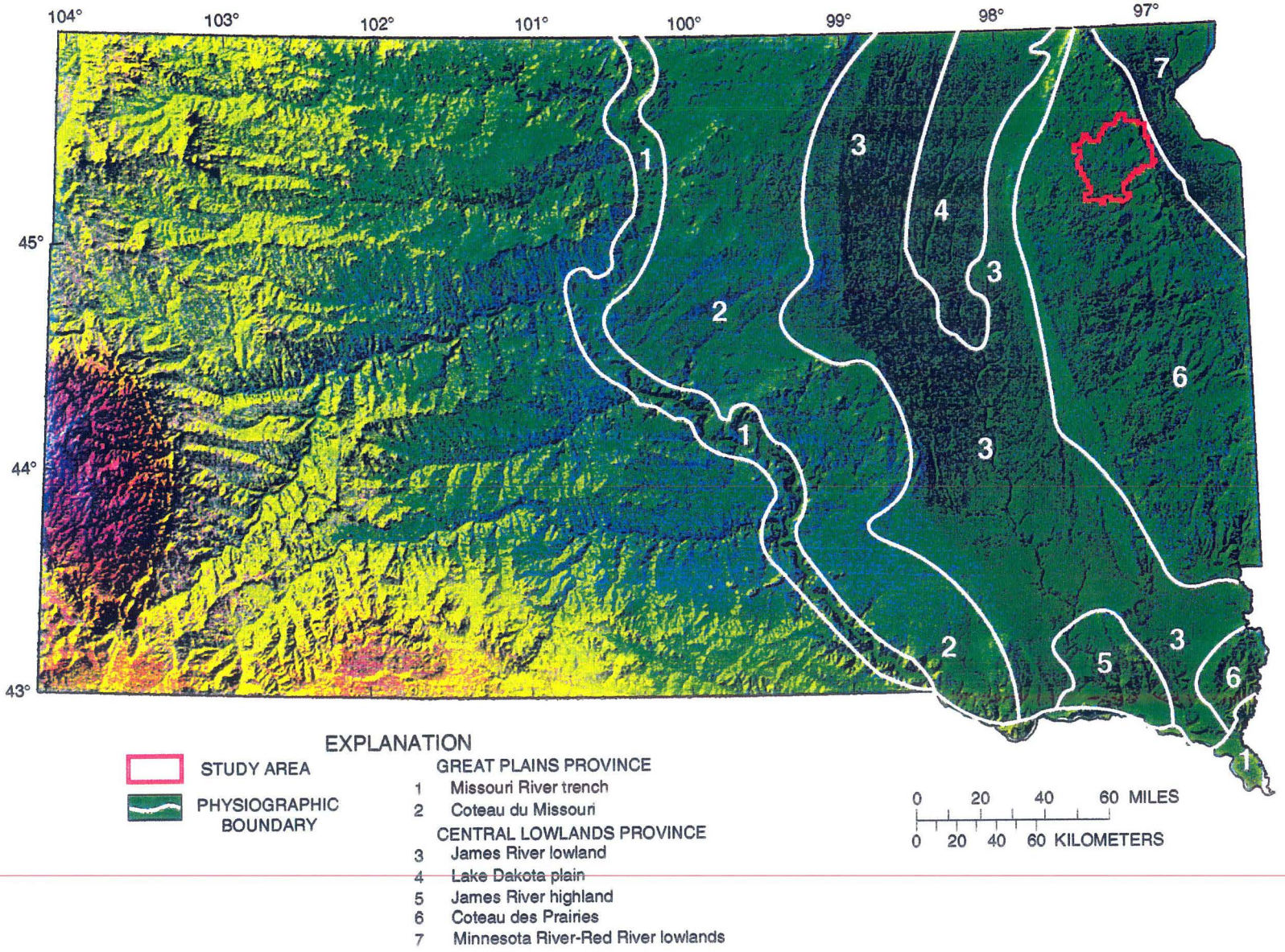
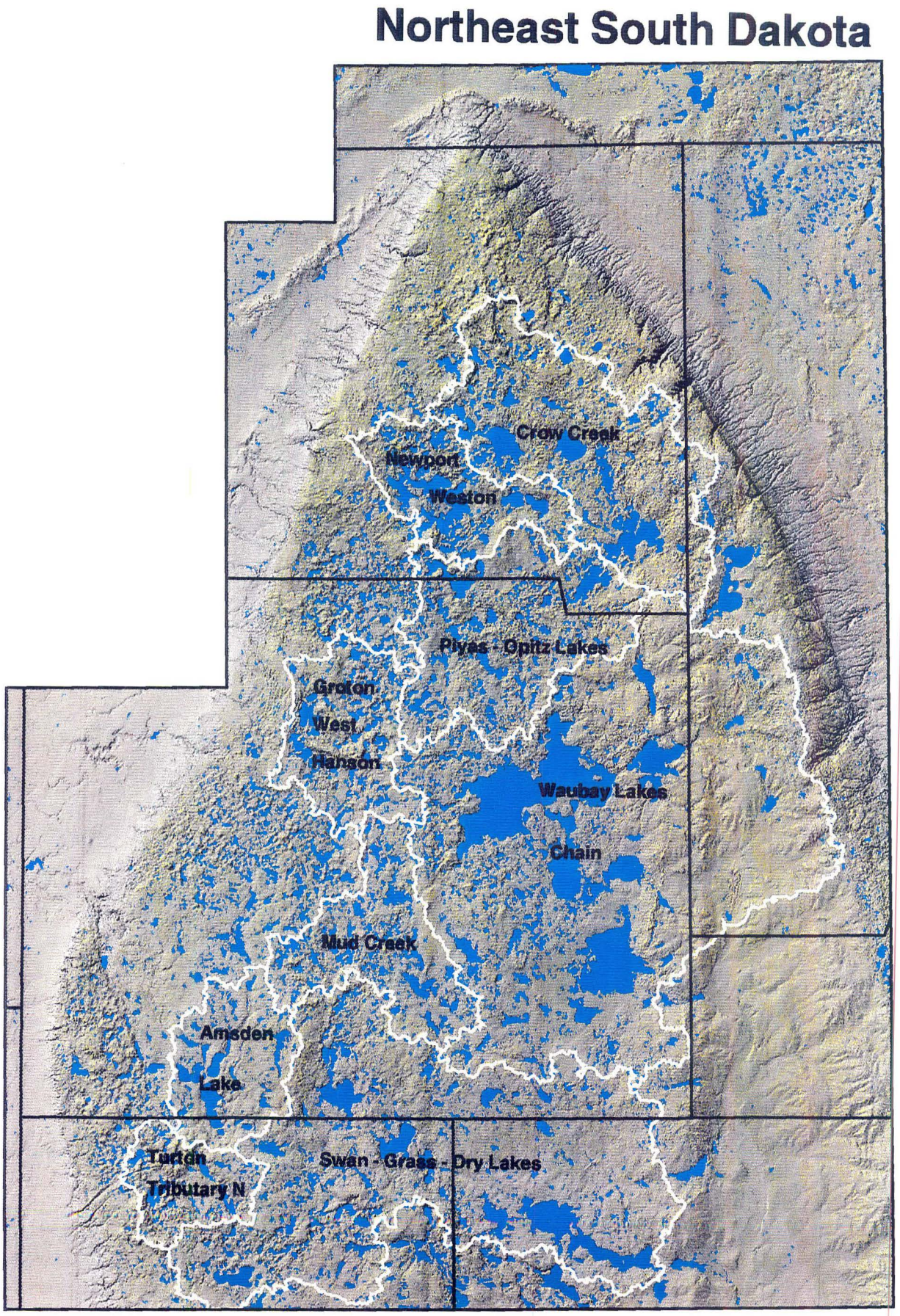


Figure 1.1 Major physiographic divisions in eastern South Dakota (Flint, 1955), and location of study area.

Figure 1.2 Location of closed basins area in northeastern South Dakota.



Purpose

Due to the flooding, the Counties of Day, Clark, Marshall, and Spink, located in northeastern South Dakota, were declared a Federal Disaster Area on June 1, 1998 (FEMA-1218-DR) by the Federal Emergency Management Agency (FEMA). On July 22, 1998, Brown, Roberts, and Codington Counties were added to the disaster declaration. Under the sponsorship of Region 8 of the Federal Emergency Management Agency, an interagency study team was formed to conduct a scientific investigation of the flooding in the closed basins area. The interdisciplinary team consisted of representatives from FEMA, USGS, U.S. Army Corps of Engineers (COE), South Dakota State University (SDSU), Natural Resources Conservation Service (NRCS), South Dakota Department of Environmnent and Natural Resouces (DENR), and the South Dakota Geological Survey (SDGS).

The investigation has been divided in to five investigative tasks:

Task 1. -- Examination of the history of inundation in the closed basins from 1992 through 1998.

Task 2. -- Development of a predictive model for water-level changes, based on climate scenarios.

Task 3. -- Development of long-term estimates of historical lake-level chronologies.

Task 4. -- Conduct water-balance and lake-level frequency analysis on the Waubay Lakes Chain.

Task 5. -- Develop a hydrologic model of the lake system, analyze wind and wave action, and identify and evaluate alternative mitigation strategies.

Scope

This report documents the results of Task 2. The scope of Task 2 includes a descriptive examination of the hydro-climatic factors leading up to current climate conditions (1999) and an examination of short-term (8-year) historical climate patterns. These climate patterns were used to develop climate scenarios, which were used in the USGS water-balance model, to predict lake level, surface area, and water volume for the major lakes in the Waubay Lakes Chain closed basin. The results of the predictive model simulations are presented and analyzed in this report. A detailed discussion of the water-balance model is presented in Task 4.

Geology and ground water

Continental glaciation covered eastern South Dakota, depositing a blanket of glacial drift over the eroded preglacial bedrock surface (Pierre Shale). The glaciation radically altered the topography, by partially filling major valleys and entirely obliterating many small valleys, forcing the cutting of

new valleys, and forming massive end moraines. Successive thrusting of drift-laden ice has piled up to 800 feet of glacial drift forming the Coteau des Prairies. As the ice beneath the drift melted over a long period of time, geomorphoric features developed as a result of collapsing and slumping to produce many of the present day potholes and lake depressions (Flint, 1955). Glacial outwash, which was deposited by the actions of water, tends to have higher hydraulic conductivity (permeability) than the surrounding glacial drift. Therefore, aquifers are generally associated with outwash deposits. Leap (1988) identified a number of outwash layers within the glacial drift. These layers can be categorized as basal, intermediate or surficial outwash. The basal outwash rests directly on the bedrock Pierre Shale. The intermediate outwash represents a period of glacial stagnation or recession when water from melting ice deposited the outwash, followed by glacial advances which covered the outwash. Surficial outwash represents the last deposits from glacial melt waters. The basal, intermediate or surface aquifer systems, in northeastern South Dakota, are associated with these outwash deposits.

Infiltration and subsequent ground-water recharge of surface water can be an important component of the water budget for a closed basin. As soils and aquifers become saturated, infiltration and recharge decrease to near zero, resulting in increased surface flooding. Problems are also associated with saturated soils and high ground-water tables. These include waterlogged land becomes unfit for most uses, water in basements, foundation and infrastructure problems. Knowledge of the ground water is important to the overall understanding of the flooding in closed basins area. A detailed discussion of the geology, soils and ground water of the closed basins area is contained in the Task 1 report.

Surface-water hydrology

Surface drainage on the Coteau des Prairies is poorly developed. As a result, the Coteau contains thousands of temporary, seasonal, and semipermanent wetlands (potholes) and numerous lakes. Streams may connect some of the lakes, ponds, and wetlands, but typically flow only during periods of abnormally high surface-water levels from snow melt or heavy rainfall events. Even during periods of high water the streams do not flow out of the basin (Leap, 1988).

Waubay Lakes Chain closed basin

Beginning in 1983, a period of above normal precipitation began, whose duration and magnitude has not been observed previously in the modern instrumental record. The precipitation event coupled with below normal evaporation has resulted in a water surplus within the closed basins area. This net increase in available water has resulted in flooding, which has not been observed in the modern record. During the 1990's, many potholes have filled to capacity and are either spilling into other ponds or lakes, or have coalesced into larger surface water bodies. The Waubay Lakes Chain closed basin and Day County are the basin and county most impacted by flooding, although the other counties adjacent to the Waubay Lakes Chain closed basin are also experiencing similar flooding problems. By 1995, water from the closed basin part of Crow Creek (fig. 1.2), located immediately north of the Waubay Lakes Chain closed basin, had begun spilling into the James River drainage basin.

Table 1.1 shows the lowest and highest water level recorded for the 10 major lakes in the Waubay Lakes Chain. These data show, with the exception of Enemy Swim and Pickerel Lakes which have controlled outlets, the highest lake levels occurred in 1999. Table 1.2 summarizes the lake characteristics and shows lake level, area, and volume for Fall 1991 and Fall 1999. Figure 1.3 shows the internal drainage basins of the 10 major lakes within the Waubay Lakes Chain closed basin and Figure 1.4 is schematic diagram showing the relationships between the lakes. The change in lake level, area, and volume are shown in Table 1.3.

Examination of the lakes' characteristics indicates a rather complex surface drainage relationship. Pickerel and Enemy Swim Lakes, which are the uppermost lakes in the chain, have constructed outlets and drain into Waubay and Blue Dog Lakes, respectively. Because of their location in the basin and their outlets, Pickerel and Enemy Swim Lakes water levels have risen only 0.64 and 1.48 feet, respectively, between Fall 1991 and 1999. Bitter Lake, the terminus lake in the chain, has no outlet, except to flow out of the closed basin, and until recently, no inflow except for runoff within its surface drainage area. Because there is no outlet, lake levels have risen over 19 feet and the surface area increased by 6,559 acres or 10.2 mi^2 between Fall 1991 and 1999. Bitter Lake began receiving water from Rush Lake through Little Rush Lake in the spring of 1999 when the lake level in Rush exceeded 1803.6 feet above sea level. In August 1999, the farm-road crossing which formed the spill point was removed from the drainage way between Little Rush and Bitter Lakes because it was impeding the flow of water. With the farm-road crossing removed, the control structure between Little Rush and Bitter Lake is now a culvert invert at 1798.69 feet above sea level (Niehus and others, in press). Hillebrands, Minnewasta, Spring, Swan Pond, and Waubay (North and South) Lakes coalesced into one large lake in the fall of 1998. Waubay Lake has risen 19.45 feet between the Fall of 1991 and 1999, and has increased its surface area by 8,234 acres or 12.9 mi^2. Rush and Blue Dog Lakes have merged through connecting channels, with lake levels at 1803.47 and 1803.68 feet above sea level, respectively. The Rush-Blue Dog Lake complex is also flowing into Waubay Lake. Rush and Blue Dog Lakes have increased 4.67 and 3.58 feet, respectively, and increased their surface areas by 1,112 acres or 1.7 mi^2, between Fall 1991 and 1999. Within the Waubay Lakes Chain closed basin, the 10 major lakes have increased their surface area by 17,540 acres or 27.4 mi^2, and increased the water in storage by 443,705 acre-feet between Fall 1991 and 1999.

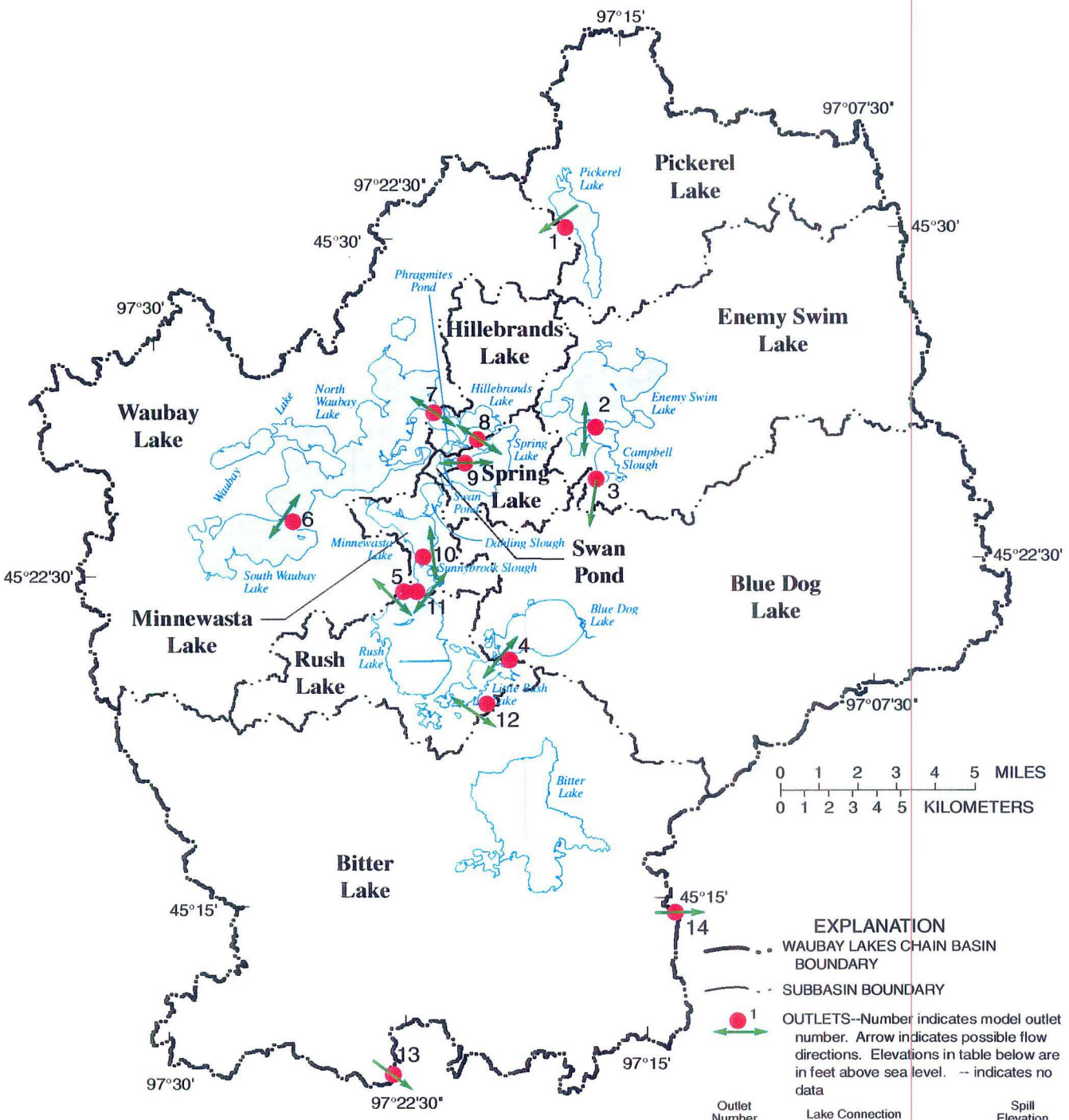
Table 1.1 Major lakes in the Waubay Lakes Chain Closed Basin

Name	Period of Record	Lowest Lake Level (feet above mean sea level)		Highest Lake Level (feet above mean sea level)	
		Elevation	Date	Elevation	Date
Bitter	1970-1999	1,769.2 (dry)	October 11, 1983	1,792.05	September 13, 1999
Blue Dog	1933-1999	1,794.3	October 19, 1935	1,803.68	September 13, 1999
Enemy Swim	1925-1999	1,837.95	October 25, 1940	1,856.3	April 14, 1997
Hillebrands	1960-1999	1,781.06	October 1, 1976	1,803.75	September 13, 1999
Minnewasta	1934-1999	1,783.5 (dry)	November 18, 1939	1,803.47	September 13, 1999
Pickerel	1928-1999	1,838.2	November 21, 1936	1,846.7	October 8, 1996
Rush	1970-1999	1,796.5	September 21, 1988	1,803.47	September 13, 1999
Spring	1960-1999	1,783.89	October 1, 1977	1,803.75	September 13, 1999
Swan	1962-1999	1,780.2 (dry)	May 1, 1976	1,803.75	September 13, 1999
Waubay	1934-1999	1,772.5 (dry)	June 15, 1934	1,803.75	September 13, 1999

Table 1.2 Characteristics of lakes in the Waubay Lakes Chain.

Lake Name	Description	Bottom Elevation (Feet above mean sea level)	Outlet or Spill Elevation (Feet above mean sea level)	Lake Level (Feet above mean sea level)		Lake Area (Acres)		Lake Volume (Acre-feet)	
				Fall 1991	Fall 1999	Fall 1991	Fall 1999	Fall 1991	Fall 1999
Bitter	Terminus lake in closed basin. Very shallow, flat-bottomed, with large surface area at shallow depths.	1,7692	1811.1	1,773.0	1,792.05	3,234	9,793	7,820	141,980
Blue Dog	Very shallow, flat-bottomed, with large surface area at shallow depths.	1,791.7	1,800.3	1,800.1	1803.68	1,603	1,758	10,398	16,415
Enemy Swim	Steep-sided, flat-bottomed, shallower toward northeast end. Joins Campbell Slough at southern end.	1,823.9	1853.6	1,852.1	1,853.58	2,656	2,826	34,349	38,406
Hillebrands	Steep-sided, flat-bottomed in western half, more v-shaped and deeper in eastern half.	1,766.6		1,785.0	1803.75	538	923	5,222	18,667
Minnewasta	Shallow, flat-bottomed	1,783.5		1,792.9	1803.47	734	1,281	3,688	14,377
Pickerel	Steep-sided, v-shaped bottom, deepest lake.	1,804.0	1,844.9	1,844.9	1,845.54	963	985	15,393	16,016
Rush	Very shallow, flat-bottomed, with large surface area at shallow depths.	1,792.6	1,798.2[1] 1,797.1[1] 1,803.5[2]/1,798.69[3]	1,784.3	1,803.75	7,489	15,723	50,827	277,281
Spring	Steep-sided, flat-bottomed.	1,776.2		1,787.1	1,803.75	940	1,340	7,672	26,703
Swan Pond	Flat-bottomed, smallest lake in chain	1,779.7		1,784.5	1,803.75	96	207	253	3,235
Waubay	Shallow, flat-bottomed, relatively steep sides, with large surface area at shallow depths.	1,772.5	1,798.2[1] 1,797.1[1] 1803.5[2]/1798.69[3]	1,784.3	1803.75	7,489	15,723	50,827	277,281

[1]Between Waubay, South Waubay, and Rush Lakes
[2]Spill elevation between Little Rush and Bitter Lakes
[3]A farm crossing obstructing the drainageway was removed in August 1999, lowering the outlet to 1798.69



Outlet Number	Lake Connection	Spill Elevation
1	Pickerel Lake to Waubay Lake	1,844.9
2	Enemy Swim Lake and Campbell Slough	1,850
3	Campbell Slough to Blue Dog Lake	1,853.6
4	Blue Dog Lake and Little Rush Lake	1,800.2
5	Rush Lake and Waubay Lake	1,797.3 & 1,798.2
6	South Waubay Lake and North Waubay Lake	--
7	Waubay Lake and Hillebrands Lake	1,791.2
8	Hillebrands Lake and Spring Lake	1,797.6
9	Spring Lake and Swan Pond	1,788
10	Sunnybrook Slough and Minnewasta Lake	1,796.7
11	Rush Lake and Sunnybrook Slough	1,799
12	Little Rush Lake and Bitter Lake	1,798.69/1803.6
13	Bitter Lake to Big Sioux River through Grass, Dry, and Still Lakes (fig. 1)	1,811.1
14	Bitter Lake to Big Sioux River	1,812.1

Lake extents from U.S. Geological Survey digital bathymetric data, 1999.
Study area and drainage basins delineated by Earth Resources Observation System Data Center from 10-meter digital elevation model data

Figure 1.3 Subbasins for the Waubay Lakes Chain.

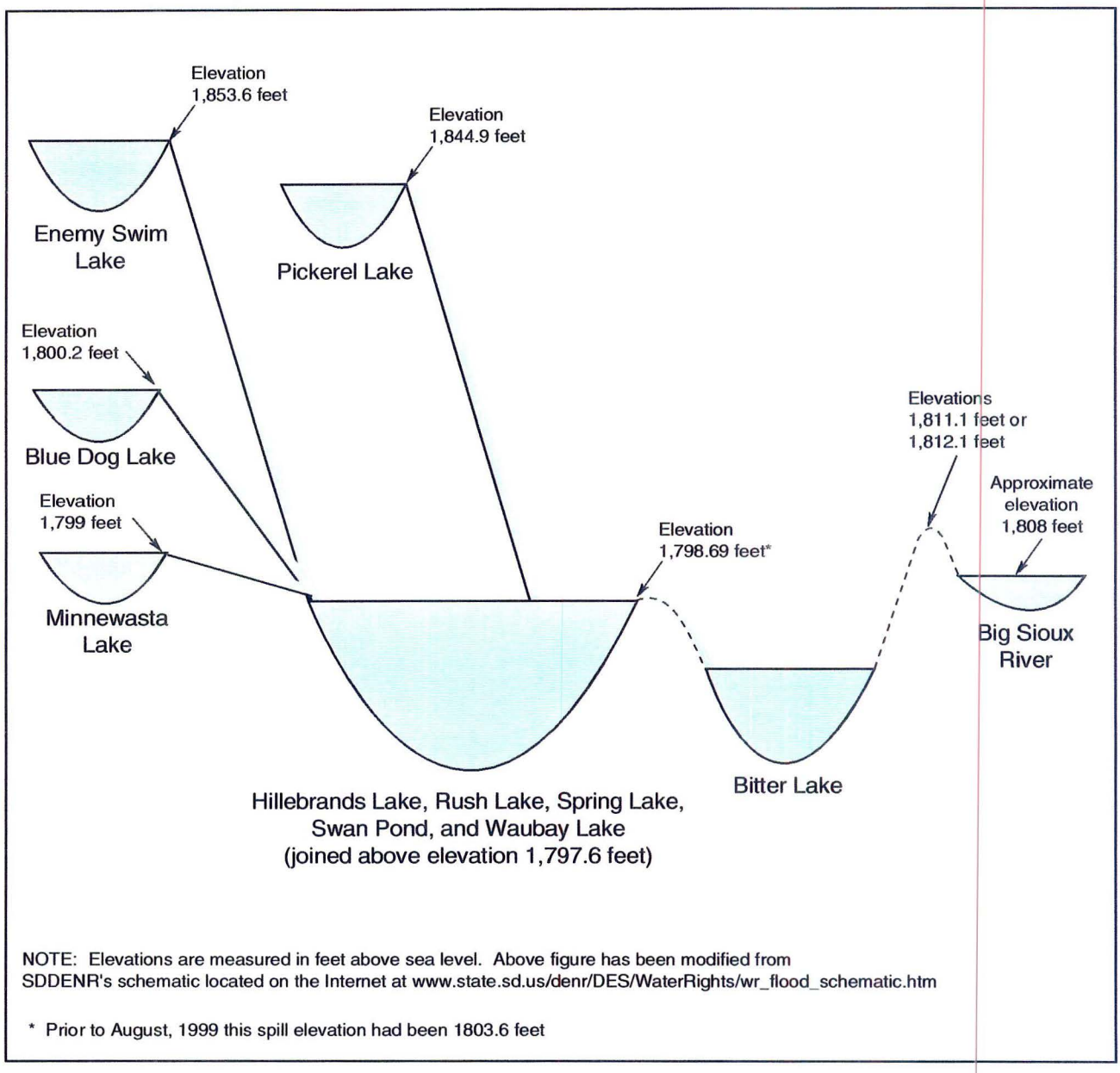


Figure 1.4 Diagrammatic cross section for the major lakes in the Waubay Lakes Chain closed basin.

Table 1.3 Summary of lake level, area, and volume changes from Fall 1991 through Fall 1999 in the Waubay Lakes chain. [*na - not applicable*]

Lake Name	Change in lake level (feet)	Change in lake area (acres)	Change in lake volume (acre-feet)
Bitter	19.05	6,559	134,160
Blue Dog	3.58	155	6,017
Enemy Swim	1.48	170	4,057
Hillebrands	18.75	385	13,445
Minnewasta	10.57	547	10,689
Pickerel	0.64	22	623
Rush	4.67	957	16,247
Spring	16.65	400	19,031
Swan Pond	19.25	111	2,982
Waubay	19.45	8,234	226,454
Total	*na*	17,540	433,705

Climate

General Climate Characteristics

Northeastern South Dakota has a sub-humid continental climate with an annual temperature range from over 100 ° Fahrenheit (F) in the summer to less than -20 °F in the winter and precipitation between 17-25 inches (in.) for 85 percent of the years.

January is the coldest month with an average temperature of 10.1 °F and July is the warmest month with an average of 72.2 °F degrees. The precipitation is highly seasonal, with 85 percent of the annual total occurring in the warm season, from April through October. The annual potential evaporation typically exceeds the annual precipitation in this area. The estimated mean annual potential evaporation is 39.9 in. at Brookings based on the normal period. The estimated annual evaporation estimate is equivalent to the total measured May through September pan evaporation. The estimated annual lake evaporation in the Day Country area is estimated at 32.5 in. or 82 percent of the potential evaporation.

The station at Webster began in 1899 and continues today. The record for Webster was used to characterize both temporal and spatial variability in precipitation, in the closed basins area. Figure 2.1 shows the departure from normal (21.07 in.). During the period 1991-1998, the Webster station has averaged 27.35 in. or 6.29 in. above normal per year.

The mean annual temperature in the closed basins differs by only small amounts across the stations because of the similarity of terrain, surface vegetation, and air mass source zones. The average annual temperature has temporal variability but little spatial variability. However, the evaluation of evaporation, which is dependent upon temperature, humidity, radiation, and local surface moisture conditions, is critical to the understanding of hydrologic setting of the closed basins. There are 2 stations with a record of wind, humidity, barometric pressure, and weather in northeastern South Dakota, Aberdeen and Huron National Weather Service Offices. The Brookings 2NE Cooperative Observer Station (39107607) is the only location with data records of both solar radiation and pan-evaporation, which are necessary to estimate and verify evaporation estimates with measured data. The average annual temperature for Brookings is 0.7 °F cooler than Webster and the May through September normal temperature is 1.5 °F cooler. The summer temperature is about 1 standard deviation lower in Brookings as compared to Webster, but the magnitude has a small impact on evaporation estimates. The record of humidity at Huron begins in 1915 and continues to the present. The humidity is expected to be slightly lower at Huron, than at Brookings or Webster, based on a known east-west gradient, but the differences were not adjusted for the potential evaporation estimates for this study.

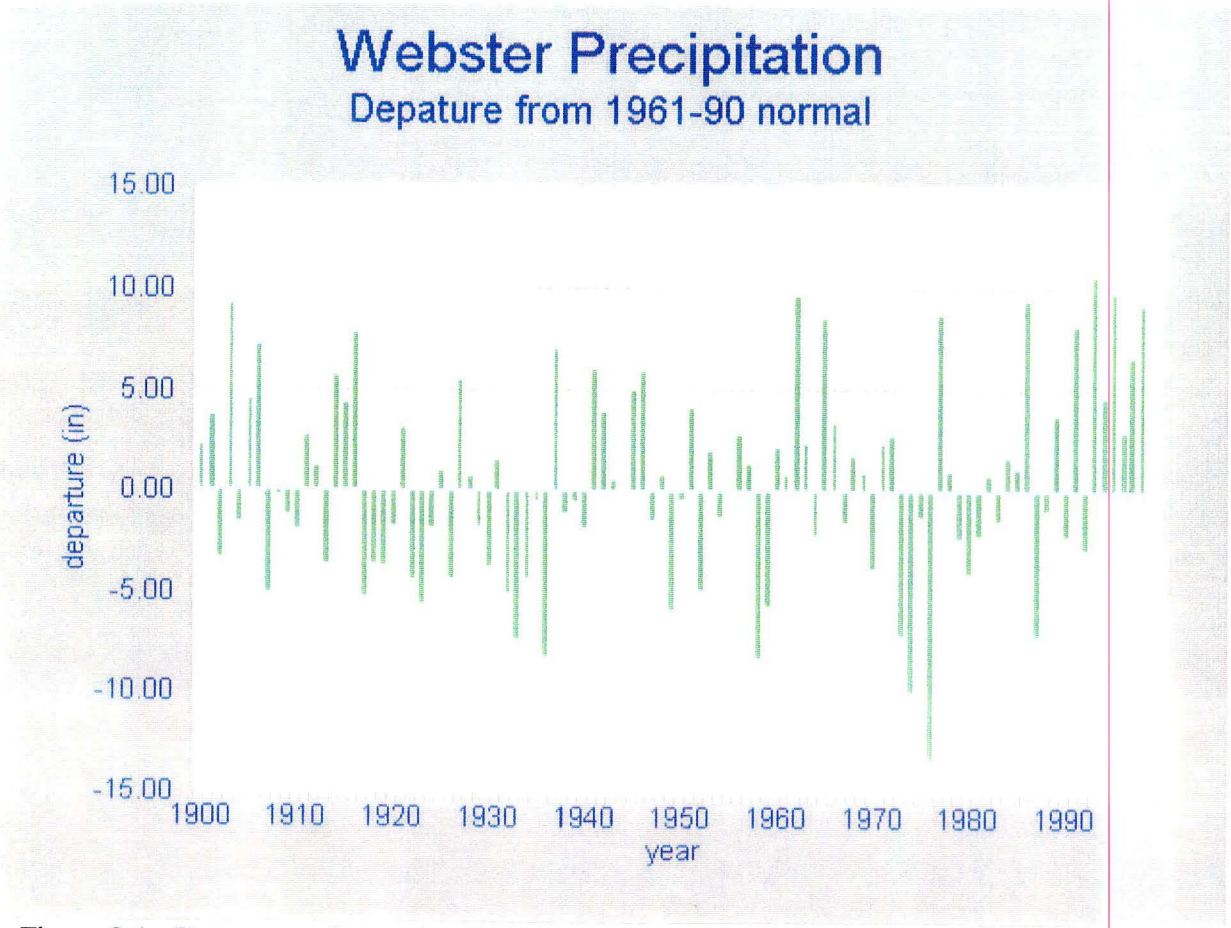


Figure 2.1 Departure of annual precipitation from normal, Webster, South Dakota.

Potential Evaporation Model

A potential evaporation model, based on methods suggested by Morton (1979), was used, because it considers both local and regional evaporation effects. The model, referred to in this report, as the modified Morton method (MMM), incorporated measurements of temperature, incoming solar radiation, and the relative humidity measurements at Huron, applied to the Brookings data, to estimate both local and regional effects on potential evaporation. The data used in the MMM, for the calibration period of 1991-1998, when both solar radiation and pan evaporation data were available at the Brookings 2NE station. The May through September pan evaporation total was equal to the annual MMM estimate. Based on the results for the calibration period, the May through September pan evaporation total was used as the estimate of the annual potential evaporation at the Brookings site.

A temperature based model by Richardson (Shriever, 1996) with coefficients developed from solar radiation and humidity measurements at Brookings was used for estimating potential evaporation for 1900 to 1960. The pan evaporation data, the MMM, and the Temperature Model produced similar results for the calibration period (figure 2.2). The lake evaporation presented in the South Dakota Climate Atlas (1971), for the geographical location of the closed basins, was 32.5 in. per year based on the 1946-1955 period, which was comparable to the observed normal temperature and precipitation conditions for northeastern South Dakota. A factor relating the annual potential evaporation at Brookings and the annual lake evaporation for the closed basins area was computed to use the Brookings data for estimating lake effects.

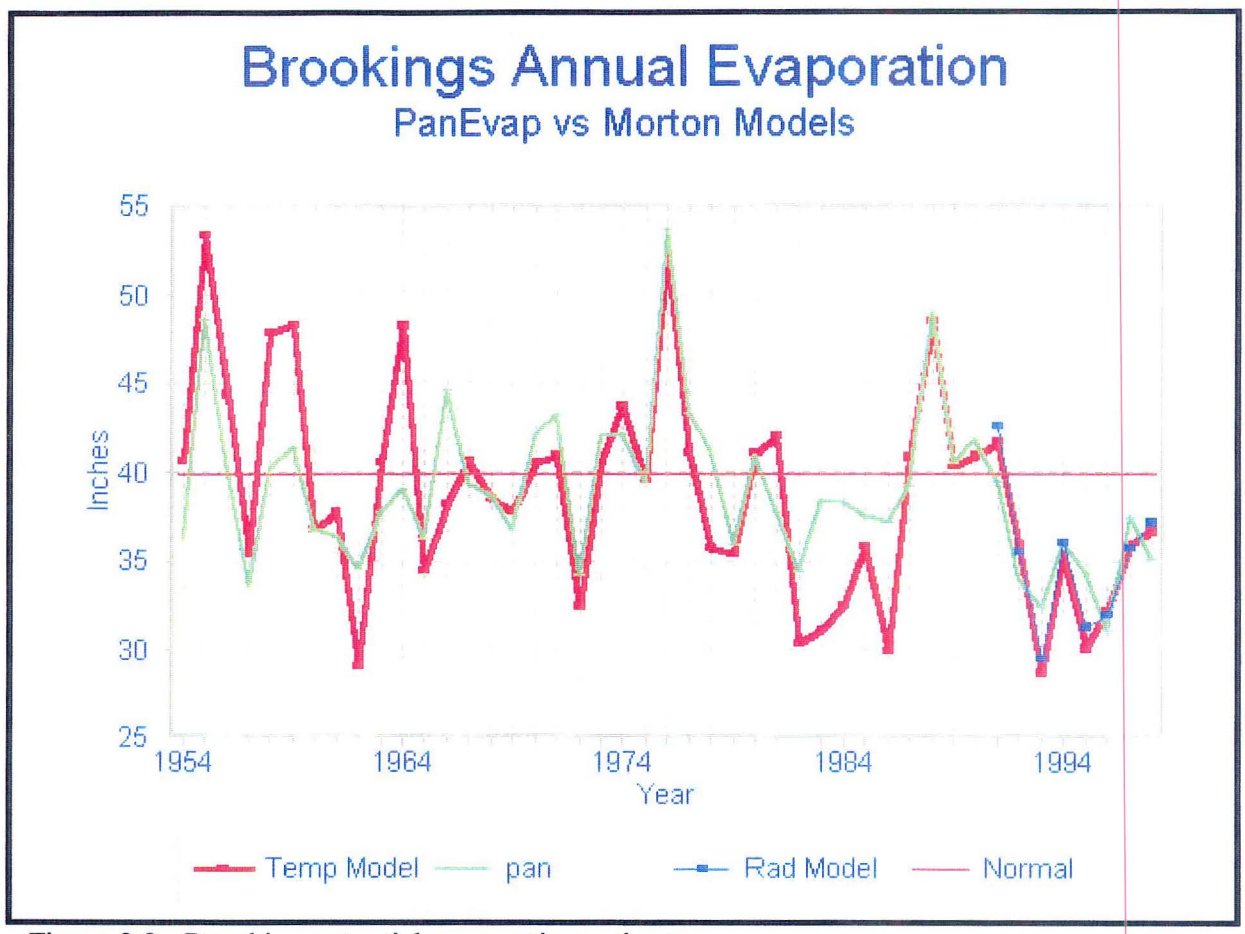


Figure 2.2 Brooking potential evaporation estimates.

Potential evaporation

The potential evaporation based on the model was lowered 4.4 inches per year for cool wet period beginning in the 1990's (figure 2.2). Although it is difficult to categorize, with high confidence at this level of analysis, it appears that the precipitation variability was about 60-65 percent from temporal and 35-40 percent from spatial origin. Evaporation is more of a regional phenomena, but the combined effect of reduced evaporation and increased precipitation, from temporal and spatial variability, resulted in 88.90 in. of additional Land Surface Hydrologic Loading (LSHL) from the atmosphere during the period from 1991-1998, as compared to a period with normal climatic conditions.

Land Surface Hydrologic Loading

The magnitude of the climate impacts becomes most apparent when the differences between evaporation and precipitation are compared, but it does not explain the hydrologic changes set in action by the atmospheric processes. Land surface processes must distribute the water, which falls as precipitation, until it can be moved either in liquid form to the subsurface or storage in lakes or ponds. The water is returned to atmosphere by evaporation from the surface water bodies or through plants by evapotranspiration. The combined runoff, infiltration, and/or surface storage process, which takes place before water can be returned to the atmosphere, is defined as Land Surface Hydrologic Loading (LSHL), for this report. This has been done to evaluate the changes at the land surface, resulting from the variability in the atmospheric processes that change precipitation and evaporation amounts over periods of several years.

LSHL does not partition the liquid water, but it does give a magnitude for the increase in liquid water that is available, to move to the lakes and ponds or to restore the soil-moisture profile. The soil moisture condition, after several years of excess loading, is near capacity; thus a large percentage of the precipitation becomes runoff resulting in rises in the water levels of lakes and ponds. During periods of near normal climate conditions, a hydrologic condition is established that could be called normal. In northeastern South Dakota, a normal condition produces quasi-stable lake levels, that change slowly, if at all, over several years. The normal LSHL is a condition, when the evaporation exceeds the precipitation by 18-19 in. annually. The greatest LSHL departure from normal occurred in 1993, with 18.15 in. or 20.4 percent of the 88.90 in. of the total departure from normal for the 8-period (figure 2.3). Regional climate conditions account for approximately 75 percent of the abnormal increase in LSHL in the closed basins during the 1990's, and about 25 percent of the land surface loading results from spatial variability. While there is no evidence that higher local precipitation can be attributed to local flooding conditions, a change in the climate conditions would need to persist for several years before the runoff portion of the LSHL would return to normal conditions.

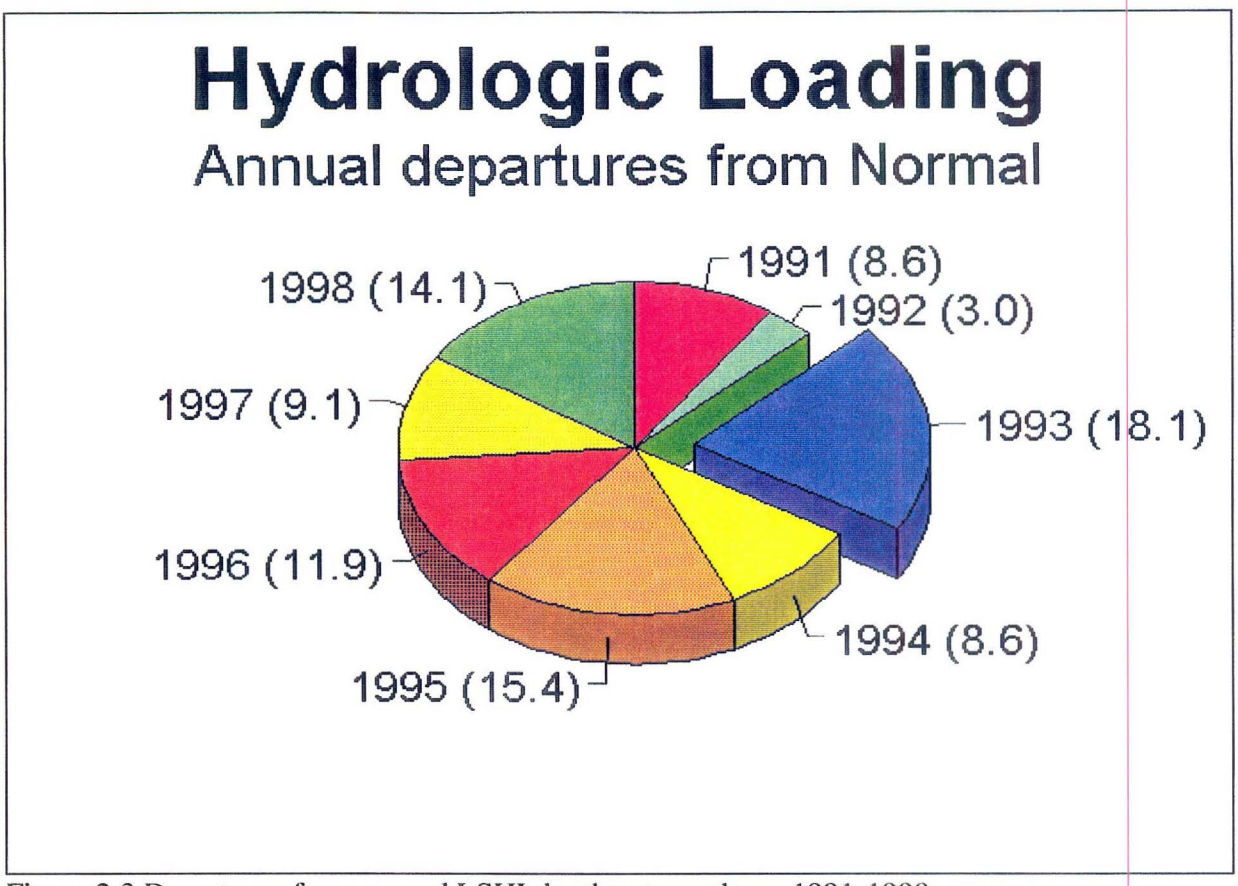


Figure 2.3 Departures from normal LSHL by the atmosphere, 1991-1998.

The other significant influence on hydrologic loading is the amount and timing of the spring runoff event, from the winter snow pack. Measurement of snowfall and snow depth are not nearly as reliable, or as easily compared to the water equivalent of liquid precipitation events, thus the data is not as useful, in a quantitative sense. No attempt has been made to evaluate the significance of snow from a climatic perspective, because of the difficulty of interpreting the data in a quantitative sense. None-the-less, the 1997 spring flood was one of the largest on record for the area. A new record stage height was established on the James River, at Huron, South Dakota and the second highest on the Red River, at Fargo, North Dakota and the spring runoff from the snowmelt (Webster/Waubay area reported 75-80 in. of snowfall or about twice the normal) surely had a significant impact on the overall flooding in the closed basins.

Net Lake Evaporation

Based on the normal period, there is a net loss of water from the lake surface of 11.6 in. per year, but during the 1991-1998 period the net loss is estimated at only 1.3 in. per year. This number should be used with care because losses from small water bodies could be as much as 120 percent greater than lake evaporation. Reductions in lake level elevations will only take place, when the climate condition produces lower LSHL. Reductions in LSHL imply the combined effect of lower precipitation and higher potential evaporation that translate into larger amounts of evaporation from the lake surface. The frequency distribution of the normal lake evaporation for the normal period tells us something about the probability of conditions for reducing lake level elevations (figure 2.4). Approximately one third of the years would fall into the lake level lowering category and one third in the lake level rising category. When LSHL is considered, a warmer and dryer period of several years would be required to move conditions, that result in lake level rises, to near the normal conditions. During this period of LSHL change, lake levels are not likely to make much of a change. For example, a year like 1976 would lower lake levels by approximately 3 feet, if runoff was near zero as existed that year, and the net evaporation was the only impact on the lake levels. Under the conditions of the 1990's, the impact on lake levels would be much less, as it would take several years to reduce the soil and pond storage to normal conditions. Further, the probability of several years, in succession, similar to 1976 is rather low based on the period of machine record and, such conditions, would constitute major drought conditions (figure 2.5.).

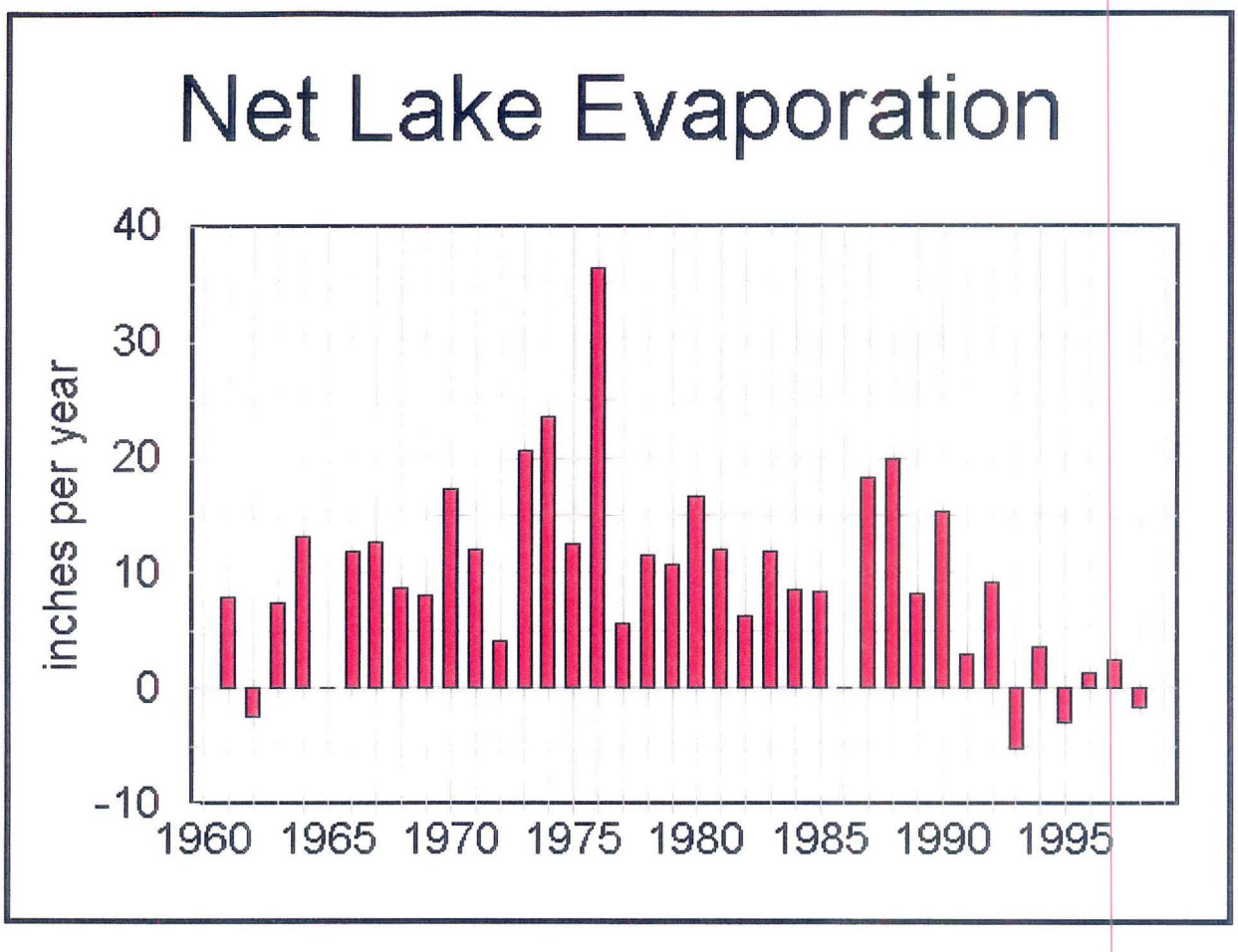


Figure 2.4 Estimated annual net lake evaporation.

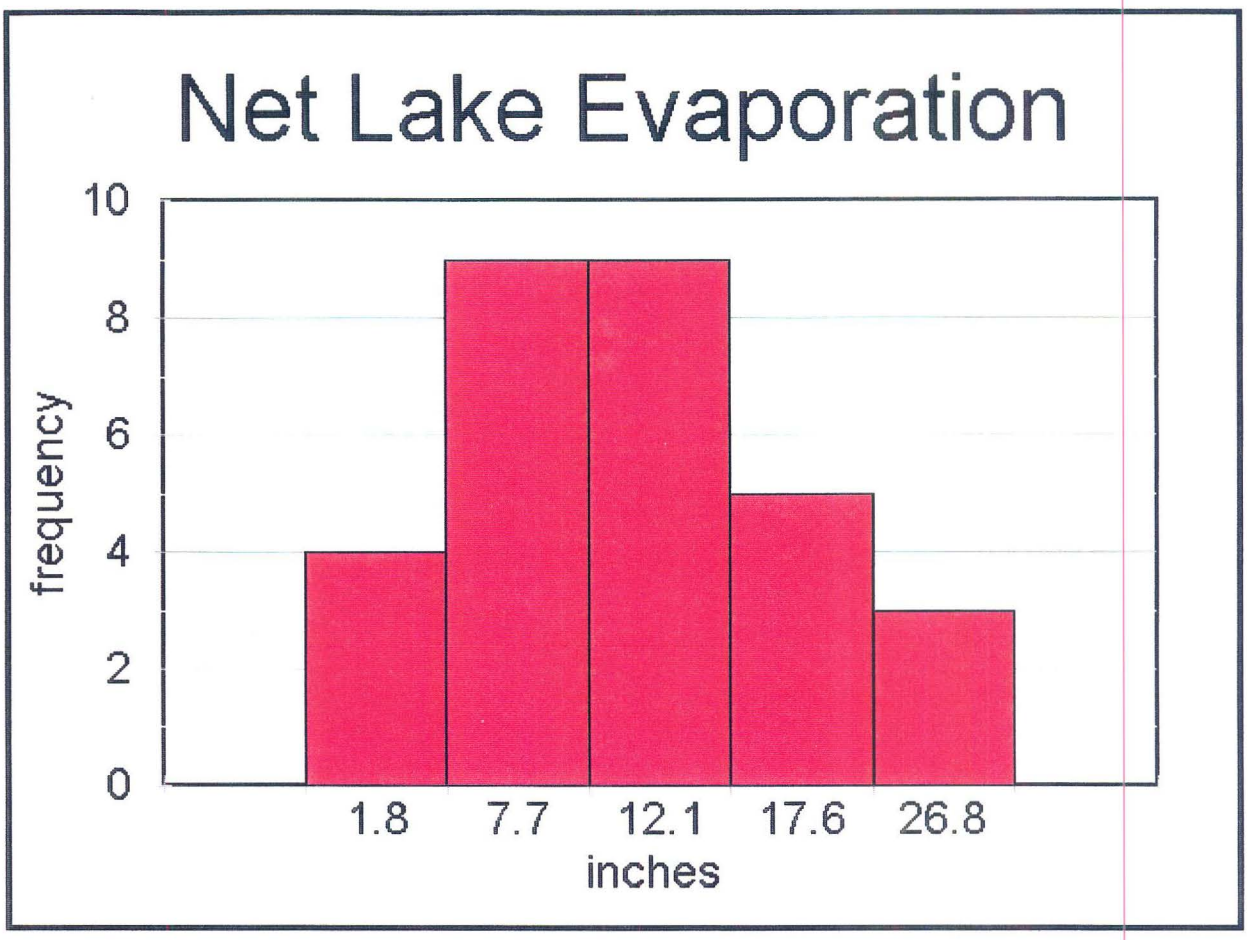


Figure 2.5 Frequency and magnitude of annual lake evaporation events.

Climate Scenarios

Variability

The climate record has a multi-year characteristic that appears to be approximately 7-10 years in duration. This characteristic is a shorter-term feature, which is a part of a longer-term periodicity that is 30-plus years in duration. For example, a drier period in the Webster record (fig 2.1) reached its nadir in 1936, when the cumulative departures below the long-term average, exceeded 44 in., in the 30-year period of 1917-1936. The driest period, during that time, was the 9 years from 1928-1936, when the cumulative departure was 34.21 in., or nearly 4 in. per year. Although the cumulative above normal departure in 1916 was 35.46 in., the record began in 1899 and probably does not include all of the above normal period. The 10-year period from 1937-1946 had a cumulative above normal departure of 18 in., or about one half of the cumulative deficit by 1936, which demonstrates the impact of an 8-10 year episode on a longer period of 30-plus years. The rate of departure from normal has been 1-2 in. per year with a maximum for a short episode of nearly 4 in. per year in the 1930's. The wet spell, in the 1990's, has had a departure from average of more than 6 in. per year, which is clearly an episode that has not been recorded previously, except for a shorter 4-year spell, 1973-1976, when the cumulative below normal departure totaled 31.84 inches or nearly 8 inches per year. If this spell were characterized as a 7-year episode, it would be about 4 in. per year, such as the 1930's.

The regional evaporation influences, during extended drier conditions, amplify the effects of the precipitation departures and can bring the change in LSHL to the 10-12 inch per year range, which has been the case, in the 1990's. The climate record does demonstrate that rapid transitions have taken place, for shorter episodes, and typically are the defining event for the longer-term periods, although their occurrence is not a guarantee of a change. The hydrologic condition, that exists at the current time (1992-1998), is likely to take a dry episode, before a return to a long-term average LSHL conditions.

The timing of a future episode of drier conditions cannot be determined from the climate record, but persistence of the consistent trend of 30-plus years should not be unexpected, even when a dry spell takes place. While a shorter dry episode does not necessarily indicate a reversal of the current wet trend, it would be the first indicator that a change is possible. However, even an early indicator such as the mid 1970's episode is not a reliable predictor of a longer-term trend to drier conditions.

Scenarios

For purposes of simulating lake changes in the Waubay Lakes Chain, an 8-year period was selected to capture the climate episodes that are in the climate record. Actual 8-year periods, from the climate record were used to illustrate how the lake levels respond to the changes in LSHL resulting from atmospheric conditions that existed under those climate conditions.

The net lake evaporation, for any period, is equal to the calculated lake evaporation minus the measured precipitation, for the same period. Visual examination of the precipitation data, lake evaporation data, and the estimated annual net lake evaporation (fig.2.4) produced the following 8-year net lake evaporation segments shown in table 3.1 There is significant difference between very low net lake evaporation segment, which averages 1.3 in., and the very high net lake evaporation segment, which averages 16.84 in. per year. Figure 2.4, also shows the considerable variability which occurs within the 8-year segments. These net lake evaporation segments, which are used in the water-balance model, represent five 8-year climate scenarios.

Table 3.1 Net lake evaporation.

Period	Total Net Lake Evaporation (Inches)	Average Annual Net Lake Evaporation (Inches)	Descriptive Net Lake Evaporation	Descriptive Climate Scenarios
1991 - 1998	10.4	1.30	Very Low	Wet
1961 - 1968	59.7	7.46	Low	Moderately Wet
1985 - 1992	83.0	10.38	Average	Average
1977 - 1984	83.5	10.44	Average	Average
1953 - 1960	89.8	11.19	Average	Average
1968 - 1975	107.1	13.39	High	Moderately Dry
1969 - 1976	134.7	16.84	Very High	Dry

Predictive Simulations

Introduction

A water-balance model was developed by the USGS to simulate the 10 major lakes in the Waubay Lakes Chain closed basin, as part of Task 4 (Niehus and others, 1999). The model was used to simulate 25 hypothetical 16-year periods using all combinations of the 5 descriptive 8-year climate scenario segments (table 3.1). The model output consists of lake level (stage), surface area, and water volume, in 32 timesteps, representing 16 years of simulation. Two timesteps represent one year; timestep one represents the period October 1 through April 30 and timestep two, May 1 through September 30. The Fall 1999 lake levels, for the 10 major lakes were used as the initial lake levels, for the model simulations. Summaries of simulated lake levels, surface areas, and water volumes, for the 10 lakes are summarized in Tables 4.1-4.3. The numerical results of each simulation is shown in Appendices A, B, and C.

The two lakes, most responsive to changes in climate, are Bitter and Waubay Lakes. At low lake levels, Waubay becomes two lakes, Waubay Lake and South Waubay Lake. As lake levels rise, Waubay and South Waubay combine. The term Waubay Lake, used in this report, includes both Waubay and South Waubay Lakes. As lake levels continue to rise, Spring Lake, Swan Pond, Hillebrands Lake, and Rush Lake will coalesce. With further lake level rises, the Waubay Lakes complex will spill into and eventually merge with Bitter Lake and if the Waubay Lakes complex rises high enough, Blue Dog and Minnewasta lakes will join into the complex. Higher elevation, location within the basin, and outlet control structures, prevent major lake level, surface area, and water volume changes in Pickerel Lake and Enemy Swim Lake/Campbell Slough.

The discussion, in this chapter, will focus on Bitter and Waubay Lakes, because they are the most responsive to climate change and represent the change occurring in all the lakes with the exception of Pickerel Lake and Enemy Swim Lake/Campbell Slough, which change very little with the various climate scenarios. With removal of the farm-road crossing in August, 1999, Waubay Lake is spilling more rapidly into Bitter Lake than before the crossing was removed. The results of the scenarios are somewhat masked by this flow of water from Waubay Lake into Bitter Lake. This flow will amplify declines in Waubay Lake and rises in Bitter Lake until Waubay drops below the new spill elevation or equalizes with Bitter Lake. Figures 4.1 and 4.2 show the lake-level hydrographs for the 25 scenarios for Waubay and Bitter Lakes, respectively. Figures 4.3 through 4.6 show the corresponding surface areas and water volumes for Waubay and Bitter Lakes. Graphs showing lake levels, surface areas, and water volumes for all 10 lakes are shown in Appendices A, B, and C.

Since each climate scenario is based on an actual 8-year historical climate period, the fluctuation within each scenario will probably not represent the actual sequence of events that will occur, but indicate the type and magnitude of change that could be expected within each climate scenario (tables 4.1-4.3). Although the sequence of events within each 8-year scenario is unknown, the end result of each scenario should approximate the lake conditions, at that point in time.

Table 4.1 Summary of simulated lake levels for the 10 major lakes in the Waubay Lakes Chain.

Lake name and Climate Scenario	Initial measured lake level used in model (Fall 1999)	Simulated lake levels, in feet above sea level,					
		For the first 8-year climate scenario Spring 2000 - Fall 2007 (Model time steps 1-16)			For the second 8-year climate scenario Spring 2008 – Fall 2015 (Model time steps 17-32)		
		Minimum[1]	Maximum[2]	End[3] (Fall 2007)	Minimum[4]	Maximum[5]	End[3] (Fall 2015)
Pickerel	1845.54						
Dry-Dry		1843.2	1845.7	1843.2	1843.2	1845.3	1843.2
Dry-Wet		1843.2	1845.7	1843.2	1843.3	1846.1	1845.3
Average-Average		1844.7	1845.7	1844.9	1844.7	1845.5	1844.9
Wet-Dry		1845.0	1846.1	1845.3	1843.1	1845.6	1843.1
Wet-Wet		1845.0	1846.1	1845.3	1845.0	1846.0	1845.3
Enemy Swim	1853.58						
Dry-Dry		1849.8	1854.1	1849.8	1848.0	1851.5	1848.0
Dry-Wet		1849.8	1854.1	1849.8	1849.8	1854.8	1854.0
Average-Average		1852.5	1854.2	1853.3	1852.4	1854.0	1853.3
Wet-Dry		1853.6	1854.8	1853.9	1849.8	1854.3	1849.8
Wet-Wet		1853.6	1854.8	1853.9	1853.6	1854.9	1854.0
Blue Dog	1803.68						
Dry-Dry		1798.8	1804.2	1798.8	1798.8	1800.8	1798.8
Dry-Wet		1798.8	1804.2	1798.8	1799.0	1805.0	1804.7
Average-Average		1800.0	1804.2	1800.0	1799.9	1801.6	1799.9
Wet-Dry		1803.1	1808.9	1808.6	1801.9	1809.3	1801.9
Wet-Wet		1803.1	1808.9	1808.6	1809.1	1813.9	1813.6
Rush	1803.47						
Dry-Dry		1795.7	1804.2	1795.7	1794.8	1798.6	1794.8
Dry-Wet		1795.7	1804.2	1795.7	1795.6	1805.0	1804.7
Average-Average		1799.6	1804.2	1800.0	1798.6	1801.6	1799.2
Wet-Dry		1803.1	1808.9	1808.6	1801.9	1809.3	1801.9
Wet-Wet		1803.1	1808.9	1808.6	1809.1	1813.9	1813.5
Waubay	1803.75						
Dry-Dry		1795.3	1804.2	1795.3	1789.1	1795.4	1789.1
Dry-Wet		1795.3	1804.2	1795.3	1795.2	1805.0	1804.7
Average-Average		1799.6	1804.2	1800.0	1798.8	1801.6	1799.2
Wet-Dry		1803.1	1808.9	1808.5	1801.9	1809.3	1801.9
Wet-Wet		1803.1	1808.9	1808.5	1809.1	1814.0	1813.6
Hillebrands	1803.75						
Dry-Dry		1795.3	1804.2	1795.3	1789.1	1795.4	1789.1
Dry-Wet		1795.3	1804.2	1795.3	1795.2	1805.1	1804.7
Average-Average		1799.6	1804.2	1800.1	1798.8	1801.6	1799.2
Wet-Dry		1803.1	1809.0	1808.6	1801.9	1809.4	1801.9
Wet-Wet		1803.1	1809.0	1808.6	1809.1	1814.0	1813.6
Spring	1803.75						
Dry-Dry		1795.6	1804.2	1795.6	1791.3	1795.8	1791.3
Dry-Wet		1795.6	1804.2	1795.6	1795.7	1805.1	1804.7
Average-Average		1799.7	1804.2	1800.1	1798.6	1801.6	1799.2
Wet-Dry		1803.1	1809.0	1808.6	1801.9	1809.4	1801.9
Wet-Wet		1803.1	1809.0	1808.6	1809.1	1814.0	1813.6

Lake name and Climate Scenario	Initial measured lake level used in model (Fall 1999)	Simulated lake levels, in feet above sea level,					
		For the first 8-year climate scenario Spring 2000 - Fall 2007 (Model time steps 1-16)			For the second 8-year climate scenario Spring 2008 – Fall 2015 (Model time steps 17-32)		
		Minimum[1]	Maximum[2]	End[3] (Fall 2007)	Minimum[4]	Maximum[5]	End[3] (Fall 2015)
Swan Pond	1803.75						
Dry-Dry		1795.6	1804.2	1795.6	1791.3	1795.8	1791.3
Dry-Wet		1795.6	1804.2	1795.6	1795.7	1805.1	1804.7
Average-Average		1799.7	1804.2	1800.1	1798.6	1801.6	1799.2
Wet-Dry		1803.1	1809.0	1808.6	1801.9	1809.4	1801.9
Wet-Wet		1803.1	1809.0	1808.6	1809.1	1814.0	1813.6
Minnewasta	1803.47						
Dry-Dry		1795.9	1804.2	1795.9	1791.8	1796.2	1791.8
Dry-Wet		1795.9	1804.2	1795.9	1796.0	1805.0	1804.7
Average-Average		1799.6	1804.2	1800.0	1799.0	1801.6	1799.2
Wet-Dry		1803.1	1808.9	1808.6	1801.9	1809.3	1801.9
Wet-Wet		1803.1	1808.9	1808.6	1809.1	1814.0	1813.6
Bitter	1792.05						
Dry-Dry		1793.8	1798.9	1793.8	1788.2	1793.9	1788.2
Dry-Wet		1793.7	1798.8	1793.7	1793.6	1803.3	1803.3
Average-Average		1794.4	1799.8	1799.4	1798.3	1800.8	1798.5
Wet-Dry		1794.4	1807.6	1807.4	1801.6	1808.2	1801.6
Wet-Wet		1794.4	1807.5	1807.4	1808.0	1813.9	1813.5

[1]Minimum simulated lake level which occurs during the first 8-year climate scenario.
[2]Maximum simulated lake level which occurs during the first 8-year climate scenario.
[3]Lake level at the end of the 8-year climate scenario.
[4]Minimum simulated lake level which occurs during the second 8-year climate scenario.
[5]Maximum simulated lake level which occurs during the second 8-year climate scenario.

Table 4.2 Summary of simulated lake surface areas for the 10 major lakes in the Waubay Lakes Chain.

Lake name and Climate Scenario	Initial measured lake surface area used in model (Fall 1999)	Simulated lake surface areas, in acres,					
		For the first 8-year climate scenario Spring 2000 - Fall 2007 (Model time steps 1-16)			For the second 8-year climate scenario Spring 2008 – Fall 2015 (Model time steps 17-32)		
		Minimum[1]	Maximum[2]	End[3] (Fall 2007)	Minimum[4]	Maximum[5]	End[3] (Fall 2015)
Pickerel	985						
Dry-Dry		904	990	904	904	976	904
Dry-Wet		904	990	904	908	1004	976
Average-Average		956	990	963	956	983	963
Wet-Dry		966	1004	976	901	987	901
Wet-Wet		966	1004	976	966	1001	976
Enemy Swim	2826						
Dry-Dry		2395	2886	2395	2195	2587	2195
Dry-Wet		2395	2886	2395	2395	2967	2875
Average-Average		2702	2898	2794	2691	2875	2794
Wet-Dry		2829	2967	2863	2395	2909	2395
Wet-Wet		2829	2967	2863	2829	2978	2875
Blue Dog	1758						
Dry-Dry		1539	1783	1539	1539	1634	1539
Dry-Wet		1539	1783	1539	1550	1823	1808
Average-Average		1599	1783	1599	1594	1668	1594
Wet-Dry		1732	2097	2070	1681	2134	1681
Wet-Wet		1732	2097	2070	2115	2688	2645
Rush	3952						
Dry-Dry		2290	4096	2290	1953	2953	1953
Dry-Wet		2290	4096	2290	2260	4250	4193
Average-Average		3163	4096	3246	2953	3577	3079
Wet-Dry		3879	4972	4918	3638	5043	3638
Wet-Wet		3879	4972	4918	5007	5826	5760
Waubay	15723						
Dry-Dry		12200	15908	12200	9512	12242	9562
Dry-Wet		12200	15908	12200	12158	16236	16113
Average-Average		14003	15908	14170	13670	14835	13837
Wet-Dry		15455	17826	17664	14959	17988	14959
Wet-Wet		15455	17826	17664	17907	19877	19717
Hillebrands	934						
Dry-Dry		729	934	729	608	732	608
Dry-Wet		729	934	729	727	956	946
Average-Average		824	934	836	806	871	815
Wet-Dry		907	1056	1045	878	1066	878
Wet-Wet		907	1056	1045	1058	1187	1177
Spring	1340						
Dry-Dry		1149	1350	1149	1043	1154	1043
Dry-Wet		1149	1350	1149	1152	1370	1361
Average-Average		1248	1350	1257	1222	1292	1236
Wet-Dry		1326	1454	1445	1298	1462	1298

Lake name and Climate Scenario	Initial measured lake surface area used in model (Fall 1999)	Simulated lake surface areas, in acres,					
		For the first 8-year climate scenario Spring 2000 - Fall 2007 (Model time steps 1-16)			For the second 8-year climate scenario Spring 2008 – Fall 2015 (Model time steps 17-32)		
		Minimum[1]	Maximum[2]	End[3] (Fall 2007)	Minimum[4]	Maximum[5]	End[3] (Fall 2015)
Wet-Wet		1326	1454	1445	1456	1555	1548
Swan Pond	207						
Dry-Dry		164	209	164	140	165	140
Dry-Wet		164	209	164	165	214	212
Average-Average		186	209	188	180	196	184
Wet-Dry		204	233	231	198	235	198
Wet-Wet		204	233	231	233	256	254
Minnewasta	1281						
Dry-Dry		895	1318	895	671	911	671
Dry-Wet		895	1318	895	900	1359	1344
Average-Average		1085	1318	1105	1054	1186	1064
Wet-Dry		1263	1556	1541	1202	1577	1202
Wet-Wet		1263	1556	1541	1567	1812	1792
Bitter	9793						
Dry-Dry		11082	15288	11082	7317	11158	7317
Dry-Wet		11006	15200	11006	10930	19344	19344
Average-Average		11544	16089	15731	14763	16996	14937
Wet-Dry		11544	23629	23422	17736	24251	17736
Wet-Wet		11544	23525	23422	24043	30500	30040

[1]Minimum simulated lake surface area which occurs during the first 8-year climate scenario.
[2]Maximum simulated lake surface area which occurs during the first 8-year climate scenario.
[3]Lake surface area at the end of the 8-year climate scenario.
[4]Minimum simulated lake surface area which occurs during the second 8-year climate scenario.
[5]Maximum simulated lake surface area which occurs during the second 8-year climate scenario.

Table 4.3 Summary of simulated lake water volumes for the 10 major lakes in the Waubay Lakes Chain.

Lake name and Climate Scenario	Initial measured lake water volume used in model (Fall 1999)	Simulated lake water volumes, in acre-feet,					
		For the first 8-year climate scenario Spring 2000 - Fall 2007 (Model time steps 1-16)			For the second 8-year climate scenario Spring 2008 – Fall 2015 (Model time steps 17-32)		
		Minimum[1]	Maximum[2]	End[3] (Fall 2007)	Minimum[4]	Maximum[5]	End[3] (Fall 2015)
Pickerel	16016						
Dry-Dry		13806	16174	13806	13806	15781	13806
Dry-Wet		13806	16174	13806	13897	16573	15781
Average-Average		15201	16174	15393	15201	15977	15393
Wet-Dry		15490	16573	15781	13716	16075	13716
Wet-Wet		15490	16573	15781	15490	16473	15781
Enemy Swim	38406						
Dry-Dry		28541	39891	28541	24410	32776	24410
Dry-Wet		28541	39891	28541	28541	41940	39603
Average-Average		35420	40180	37619	35151	39603	37619
Wet-Dry		38462	41940	39316	28541	40471	28541
Wet-Wet		38462	41940	39316	38462	42237	39603
Blue Dog	16415						
Dry-Dry		8354	17336	8354	8354	11531	8354
Dry-Wet		8354	17336	8354	8663	18778	18233
Average-Average		10238	17336	10238	10078	12853	10078
Wet-Dry		15403	26374	25749	13355	27220	13355
Wet-Wet		15403	26374	25749	26796	38225	37425
Rush	28905						
Dry-Dry		4413	31842	4413	2491	12063	2491
Dry-Wet		4413	31842	4413	4186	35181	33914
Average-Average		15122	31842	16404	12063	21863	13873
Wet-Dry		27456	53181	4918	22945	55184	22945
Wet-Wet		27456	53181	4918	54179	80205	77888
Waubay	277281						
Dry-Dry		159247	284398	159247	91764	160469	91764
Dry-Wet		159247	284398	159247	158029	16236	292403
Average-Average		221227	284398	221227	204523	244431	210024
Wet-Dry		267148	363683	356585	248900	370845	248900
Wet-Wet		267148	363683	356585	367256	459839	451920
Hillebrands	19084						
Dry-Dry		11706	19084	11706	7569	11779	7569
Dry-Wet		11706	19084	11706	11633	19935	19554
Average-Average		15043	19084	15458	14391	16738	14715
Wet-Dry		18072	23857	23437	17001	24281	17001
Wet-Wet		18072	23857	23437	23963	29463	28990
Spring	26703						
Dry-Dry		16547	27309	16547	11834	16777	11834
Dry-Wet		16547	27309	16547	16662	28533	27987
Average-Average		21462	27309	21962	20104	23874	20841
Wet-Dry		25837	34041	33461	24262	34625	24262

Lake name and Climate Scenario	Initial measured lake water volume used in model (Fall 1999)	Simulated lake water volumes, in acre-feet,					
		For the first 8-year climate scenario Spring 2000 - Fall 2007 (Model time steps 1-16)			For the second 8-year climate scenario Spring 2008 – Fall 2015 (Model time steps 17-32)		
		Minimum[1]	Maximum[2]	End[3] (Fall 2007)	Minimum[4]	Maximum[5]	End[3] (Fall 2015)
Wet-Wet		25837	34041	33461	34187	41567	40947
Swan Pond	3235						
Dry-Dry		1719	3329	1719	1066	1752	1066
Dry-Wet		1719	3329	1719	1736	3519	3434
Average-Average		2438	3329	2513	2236	2802	2346
Wet-Dry		3102	4390	4298	2861	4484	2861
Wet-Wet		3102	4390	4298	4414	5611	5511
Minnewasta	14377						
Dry-Dry		6136	15326	6136	2915	6406	2915
Dry-Wet		6136	15326	6136	6225	16397	15991
Average-Average		9799	15326	10237	9157	12070	9369
Wet-Dry		13906	22083	21618	12428	22709	12428
Wet-Wet		13906	22083	21618	22395	30673	29953
Bitter	112260						
Dry-Dry		130513	197498	130513	79494	131625	79494
Dry-Wet		129408	195973	129408	128311	273559	273559
Average-Average		137300	211616	205252	188483	228157	191453
Wet-Dry		137300	365840	361134	242049	380203	242049
Wet-Wet		137300	363482	361134	375374	535941	523834

[1]Minimum simulated lake water volume which occurs during the first 8-year climate scenario.
[2]Maximum simulated lake water volume which occurs during the first 8-year climate scenario.
[3]Lake water volume at the end of the 8-year climate scenario.
[4]Minimum simulated lake water volume which occurs during the second 8-year climate scenario.
[5]Maximum simulated lake water volume which occurs during the second 8-year climate scenario.

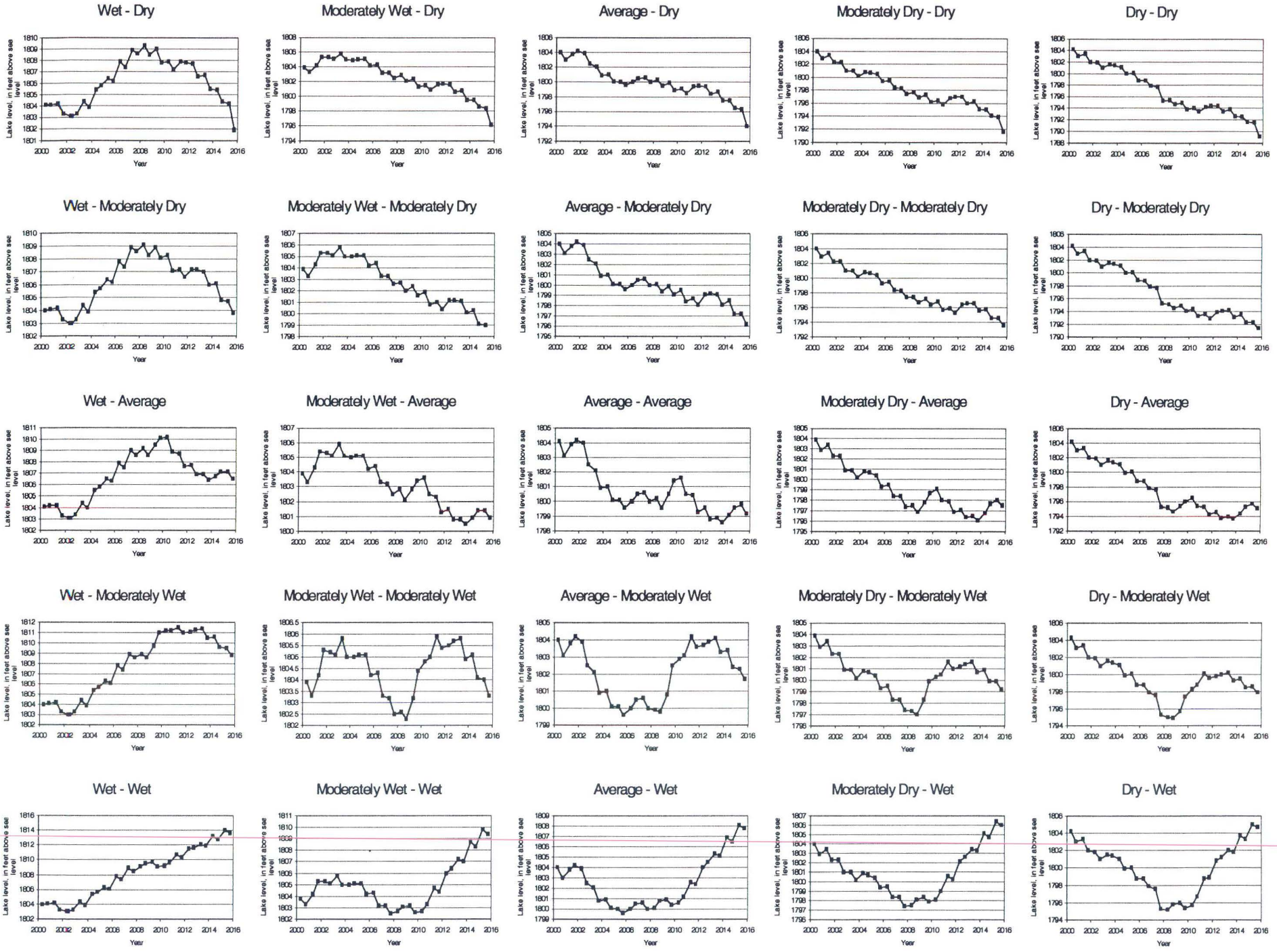


Figure 4.1 Simulated lake levels for Waubay Lake.

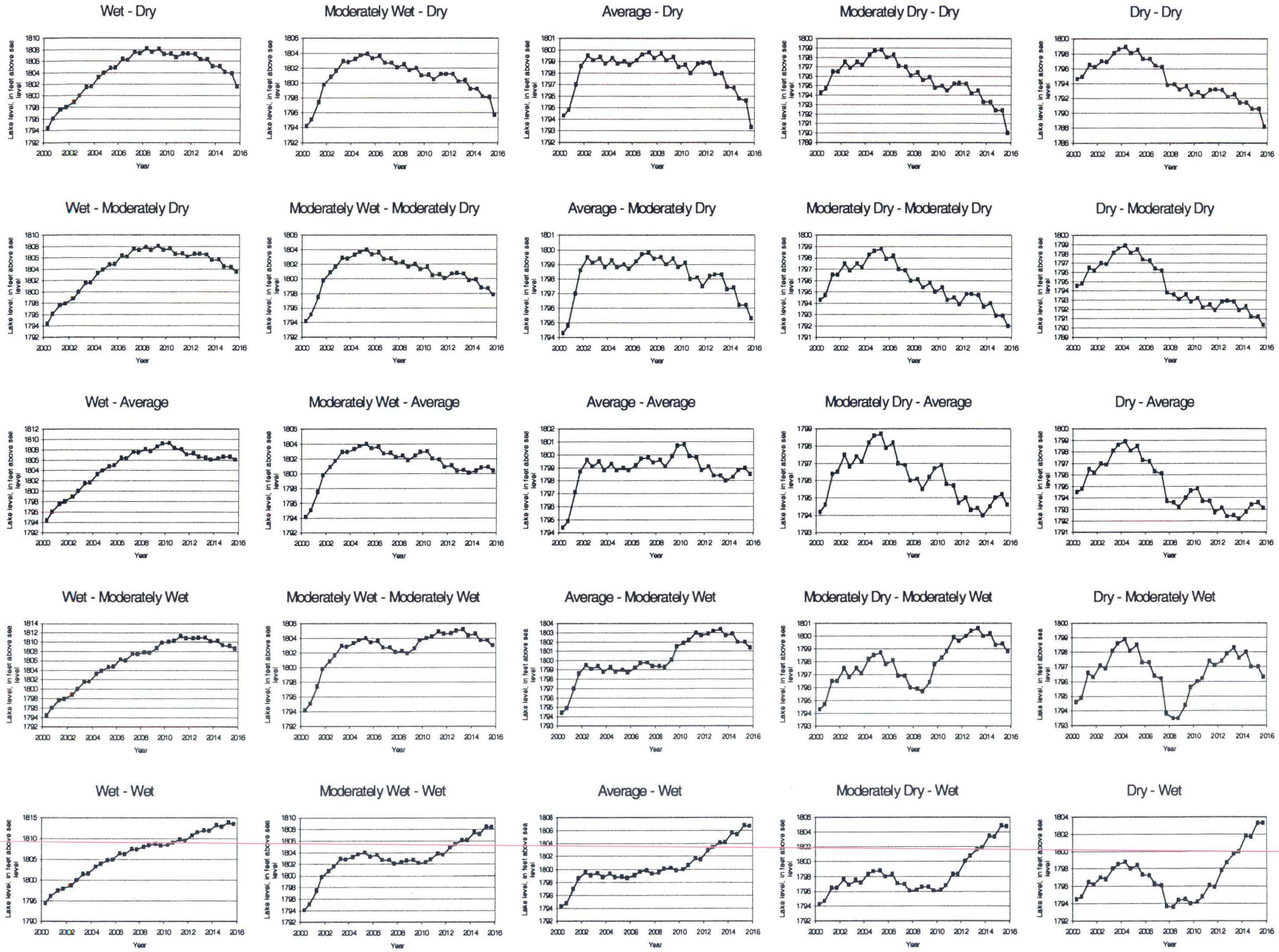


Figure 4.2. Simulated lake levels for Bitter Lake.

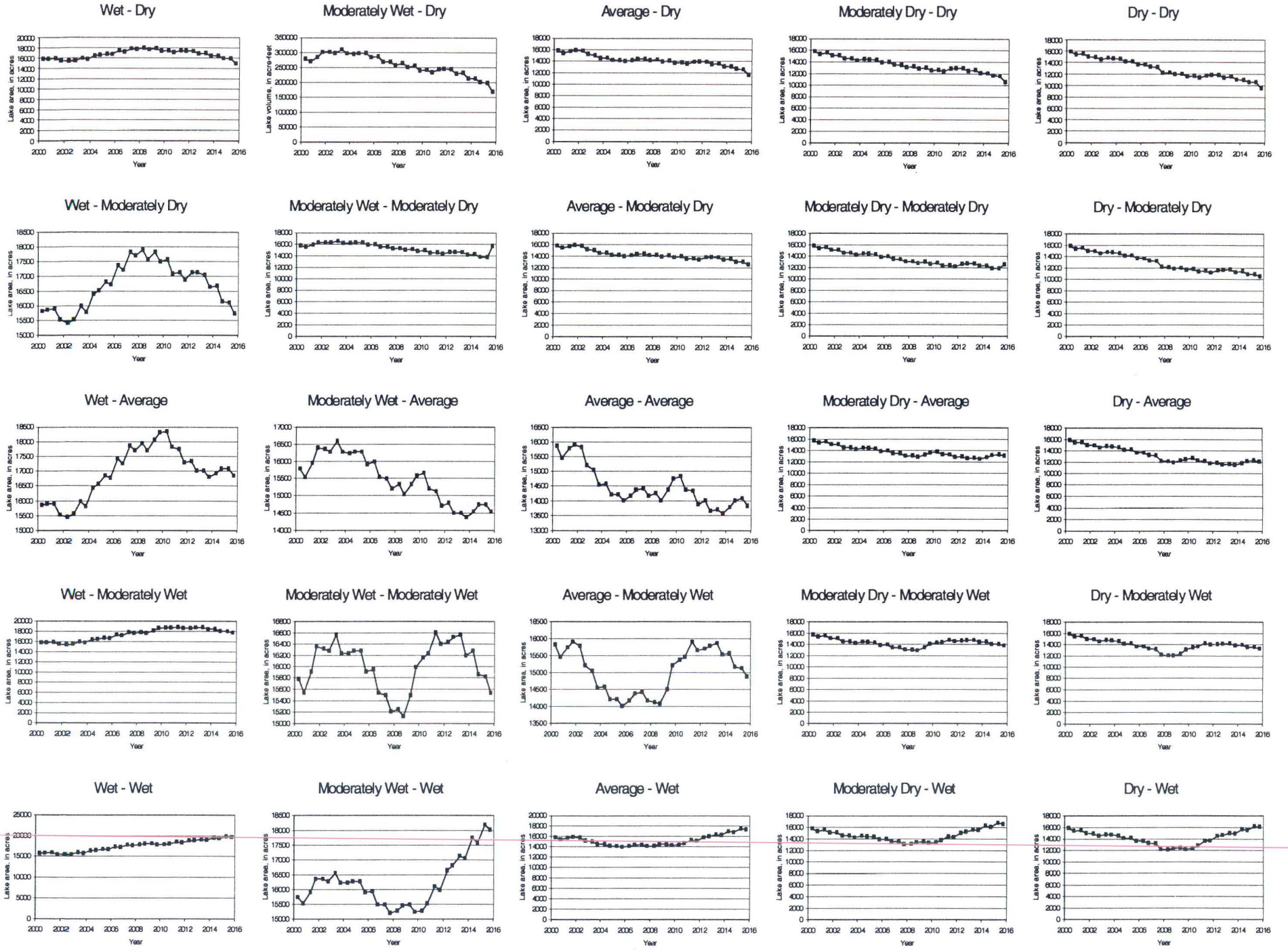


Figure 4.3 Simulated lake areas for Waubay Lake.

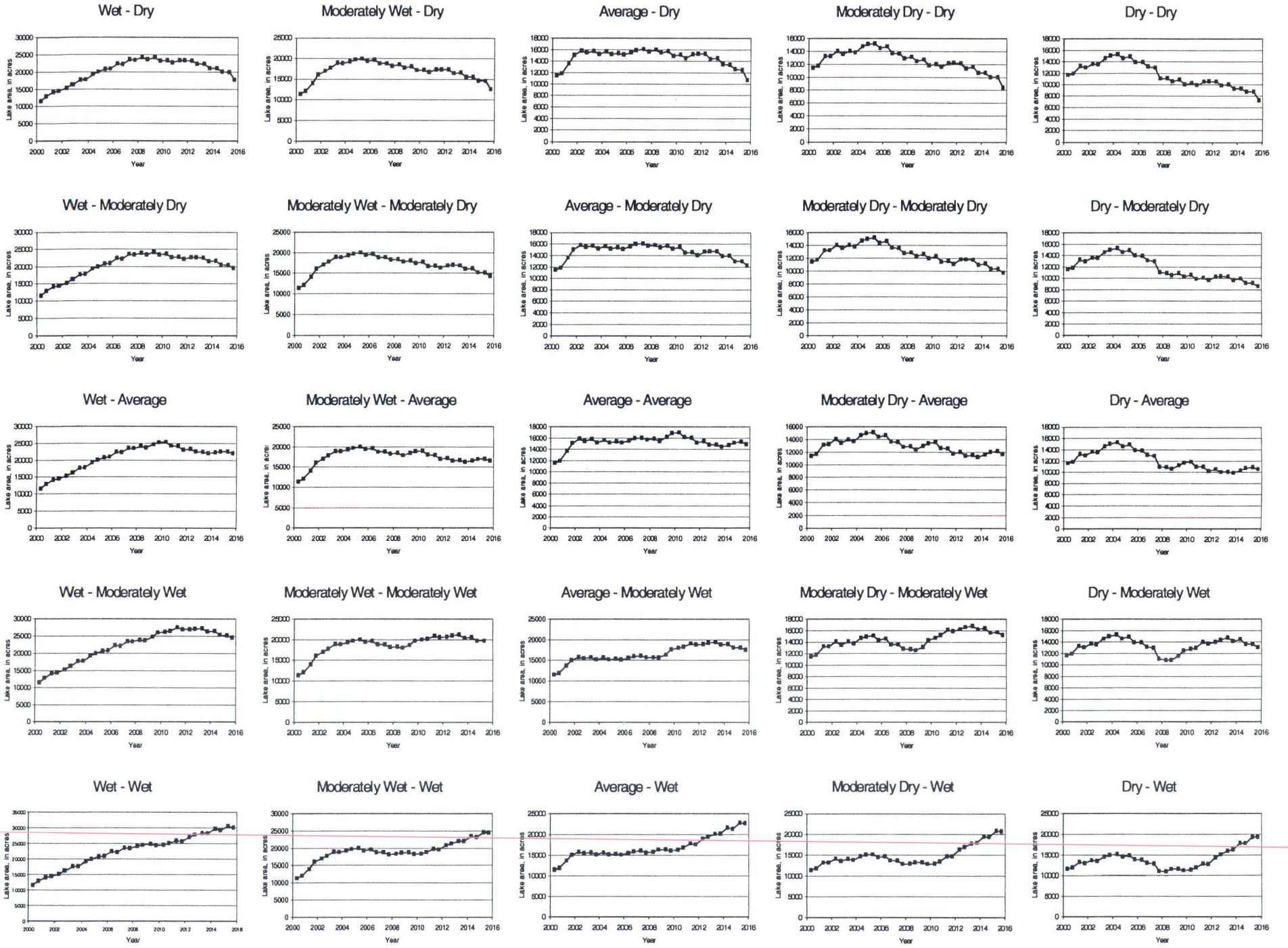


Figure 4.4 Simulated lake areas for Bitter Lake.

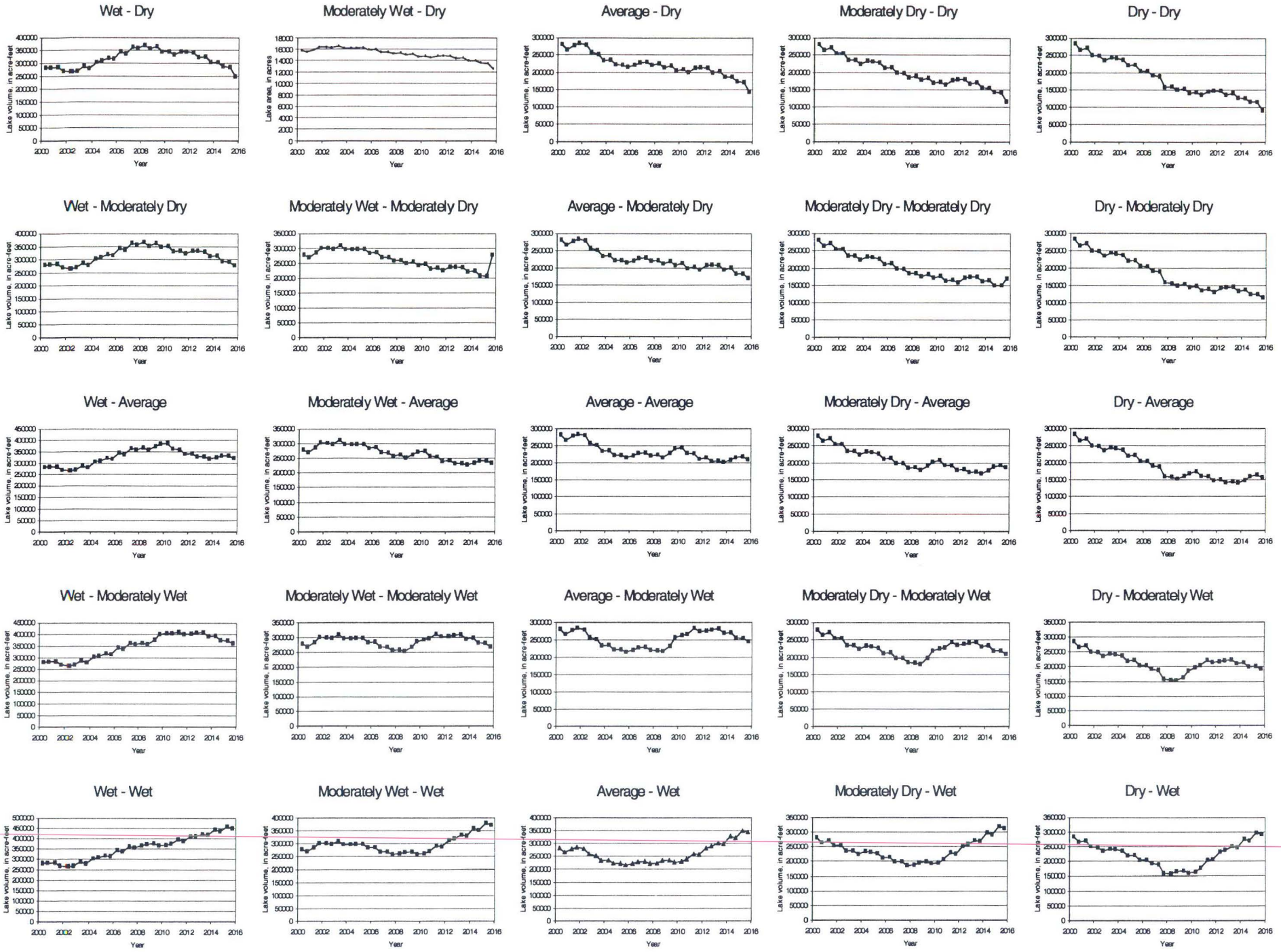


Figure 4.5 Simulated water volumes for Waubay Lake.

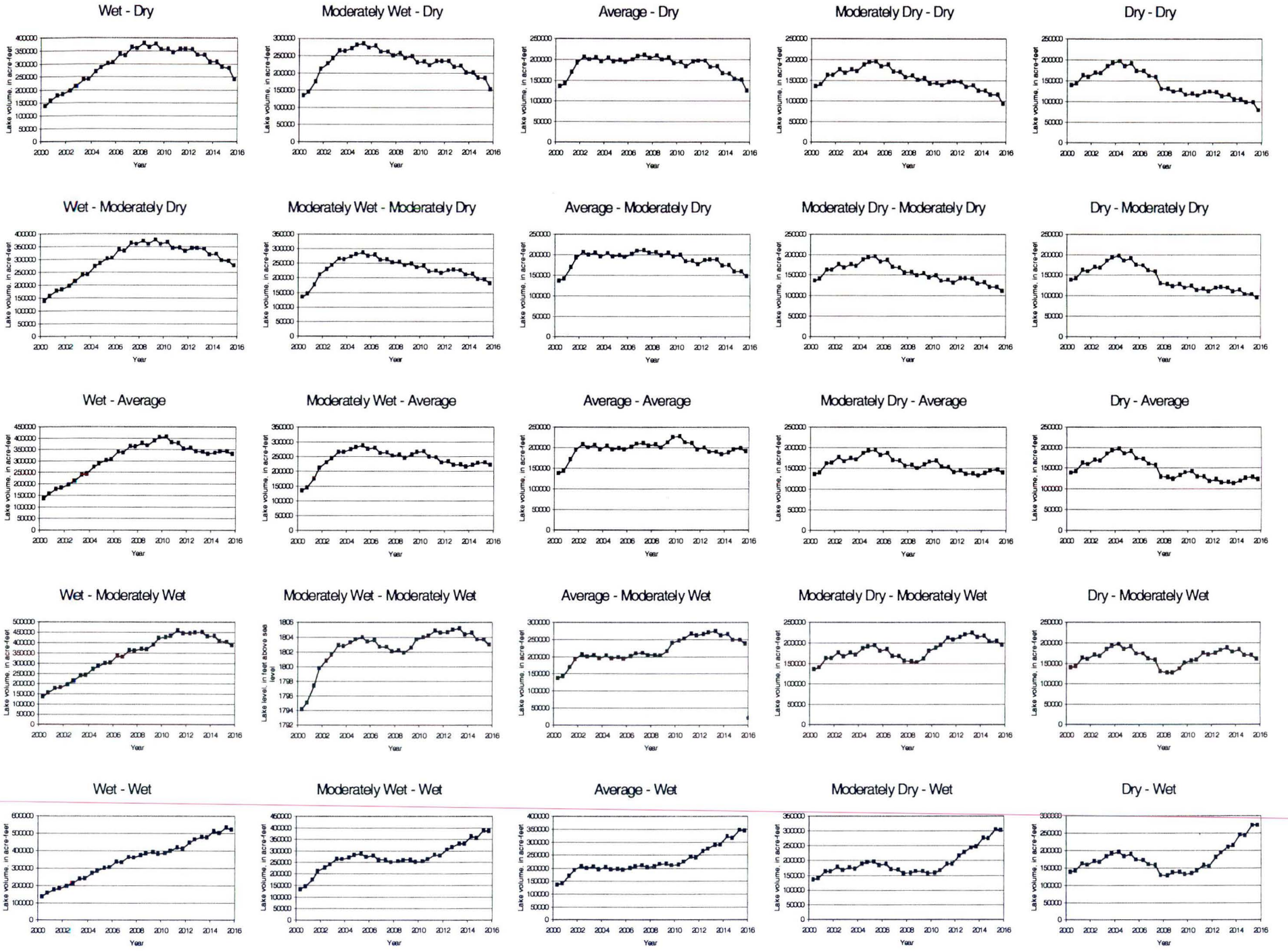


Figure 4.6 Simulated water volumes for Bitter Lake.

Examination of the hydrographs (figs. 4.1 and 4.2) indicates that for each scenario, the shape of the hydrograph for Waubay and Bitter Lakes are similar, although the first several years of water levels for Bitter and Waubay Lakes are heavily influenced by the removal of the farm crossing. The flow from Waubay to Bitter lake will continue until their levels equalize. This can be noted in figures 4.1 and 4.2 by the initial decreases in the level of Waubay Lake and the initial rises in the level of Bitter Lake under nearly all scenarios.

Of the 25 scenarios, ten end with the level of Waubay Lake below the 1798.69 spill point to Bitter Lake. Only one climate scenario, the wet-wet ends with the level of Bitter lake above the 1811.1 spill elevation to the Big Sioux River. The hydrograph for climate scenario wet-wet indicates that the Waubay Lakes Chain closed basin has filled, that is Bitter and Waubay will reach the same lake level during the 16-year simulation period. In this scenario, Bitter Lake will reach a lake level of about 1813.5 feet above sea level, which exceeds its spill elevation of 1811.1 feet, by over two feet. Under this scenario, the Waubay Lakes Chain (Bitter Lake) would begin to spill into the Big Sioux drainage. This is the only climate scenario, where Bitter Lake would spill into the Big Sioux drainage. The probability, of an additional 16 years of climate similar to the 1991-1998 (wet scenario) period, is highly unlikely and has not been seen in the historical instrumented climate record for the area.

Closer examination of the results of the model simulations for the dry-dry, dry-wet wet-dry and wet-wet climate scenarios for Bitter and Waubay Lakes, show the effects of these extreme climate scenarios on the two lakes (figs. 4.7-4.14). In addition, the average-average climate scenario will be looked at in more detail (figs. 4.15-4.16). Model output and thumbnail graphs for all of the lakes are shown in Appendices A, B, and C.

Dry Climate Scenarios

The dry climate scenario, which is based on the 1969-1976 period, represents drought or near conditions. This climate scenario produces the largest lake level declines, at the end of 8-year period, with Waubay declining 8.45 feet below the Fall 1999 lake level of 1,803.75 feet above sea level and Bitter declining 1.75 feet below the level of 1,792.05 feet above sea level (Fall 2007) (tables 4.1-4.3) (figs. 4.7-4.8 and 4.11 and 4.12). This simulated lake level decline would result in the surface area of Waubay Lake decreasing by 3,523 acres to 12,200 acres and Bitter increasing 1,289 acres to 11,082 acres, after 8 years (Fall 2007). Figures 4.17-4.18 show the simulated inundation patterns of the 10 lakes, under the dry-dry and dry-wet climate scenarios, respectively. Lake water volumes, for Waubay would decline about 118,000, and Bitter would increase about 18,300 acre-feet due to inflow from Waubay, at the end of the this period. If combined with a second 8-year (Fall 2015) dry scenario Waubay and Bitter Lakes decline 14.65 and 2.95 feet respectively, below the Fall 1999 lake levels. Surface areas, for Waubay and Bitter, decrease 6,161 and 2,476 acres and water volumes decrease about 185,500 and 32,800 acre-feet, respectively from the Fall 1999 values.

Waubay and Bitter lake levels, for Fall 1991, were 1,784.3 and 1,773.0 feet above sea level,

Dry – Dry

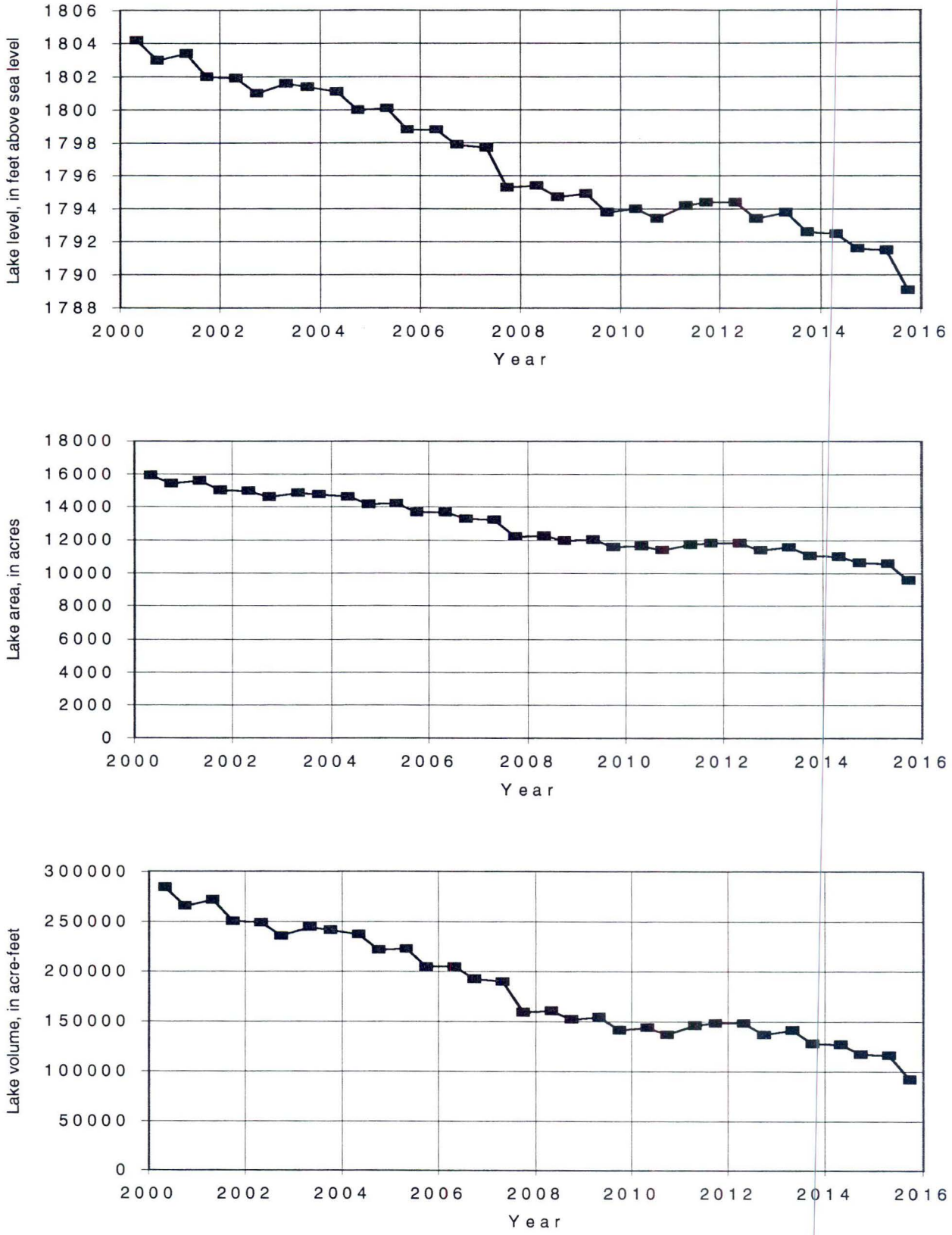
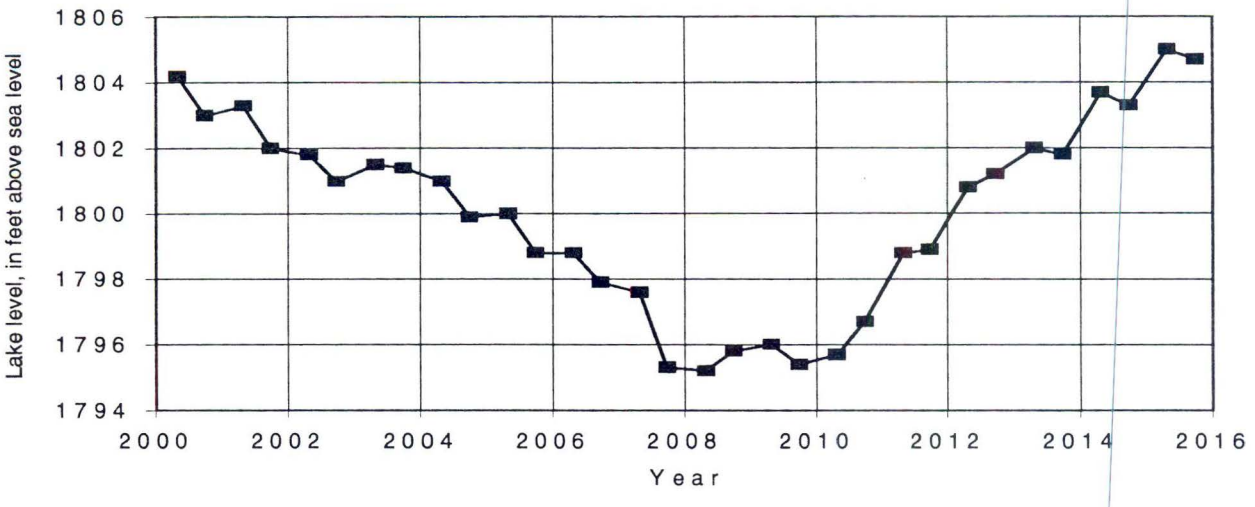
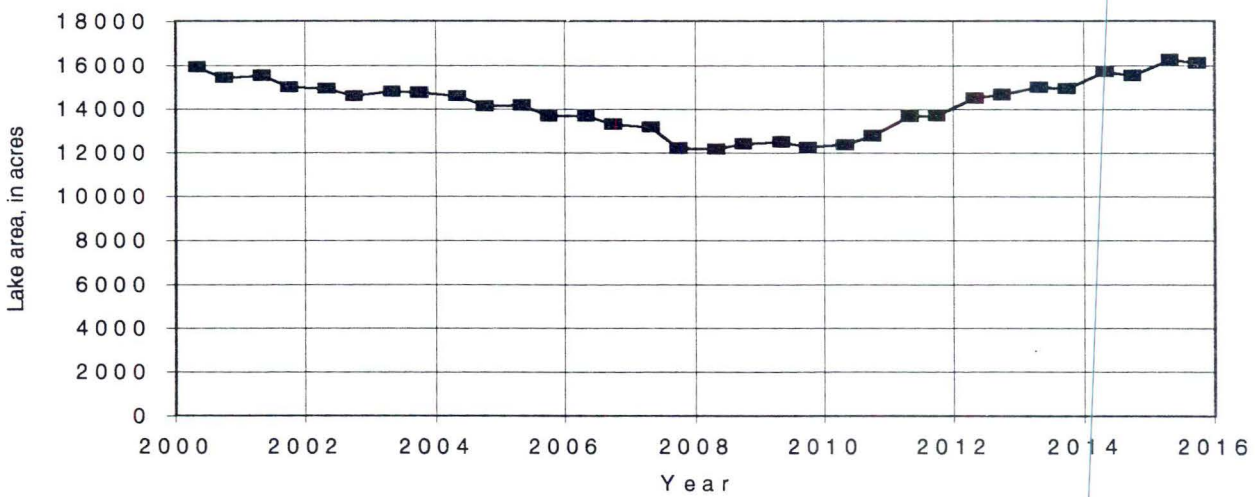


Figure 4.7 Simulated lake level, surface area, and water volume for Waubay Lake, for the Dry-Dry climate scenario.

Dry – Wet





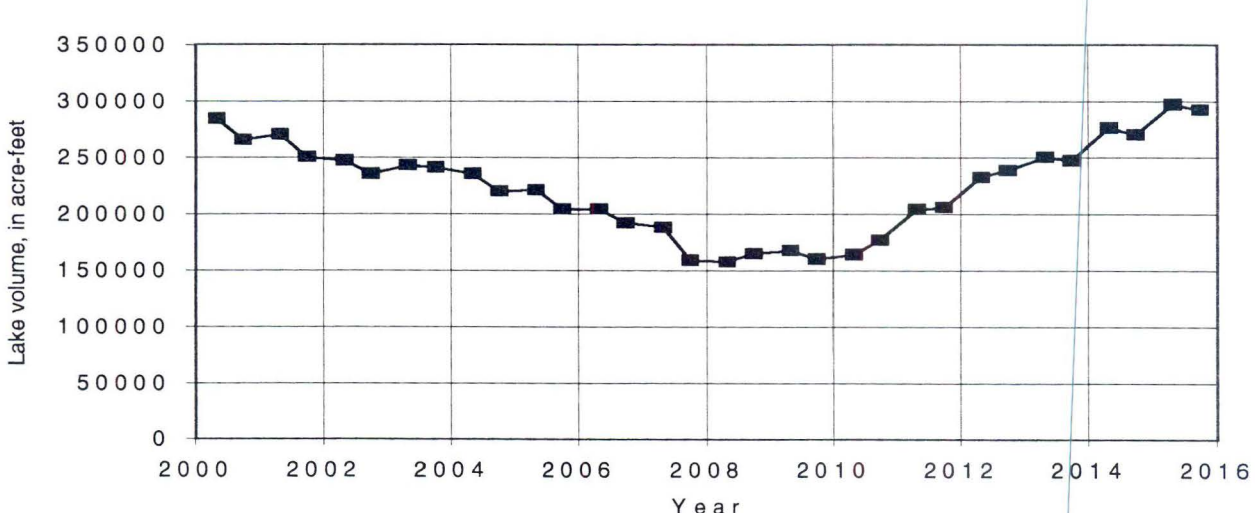
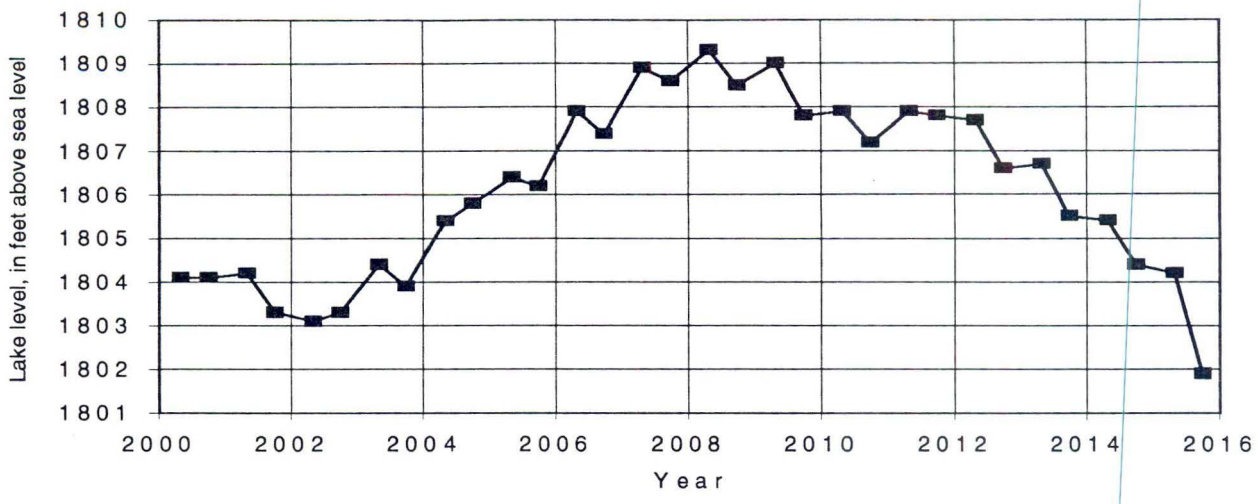
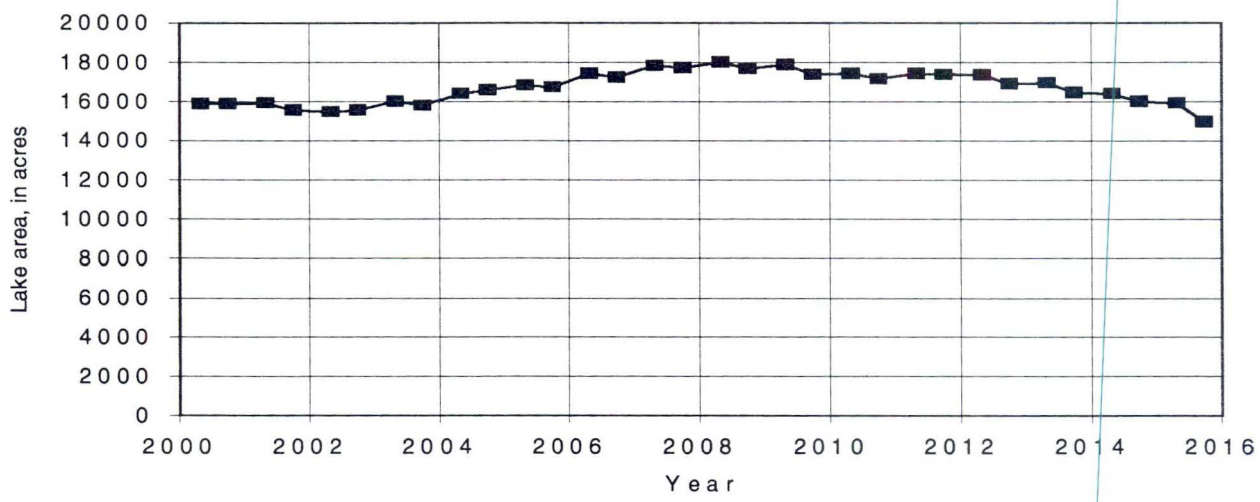


Figure 4.8 Simulated lake levels, surface area, and water volume for Waubay Lake, for the Dry-Wet climate scenario.

Wet – Dry





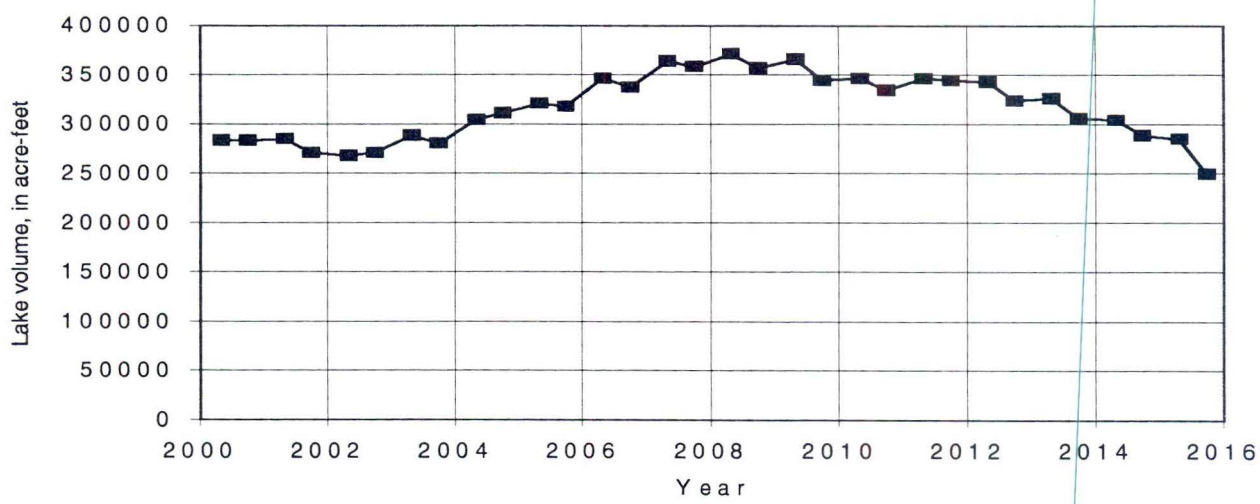


Figure 4.9 Simulated lake levels, surface area, and water volume for Waubay Lake, for the Wet-Dry climate scenario.

Wet – Wet

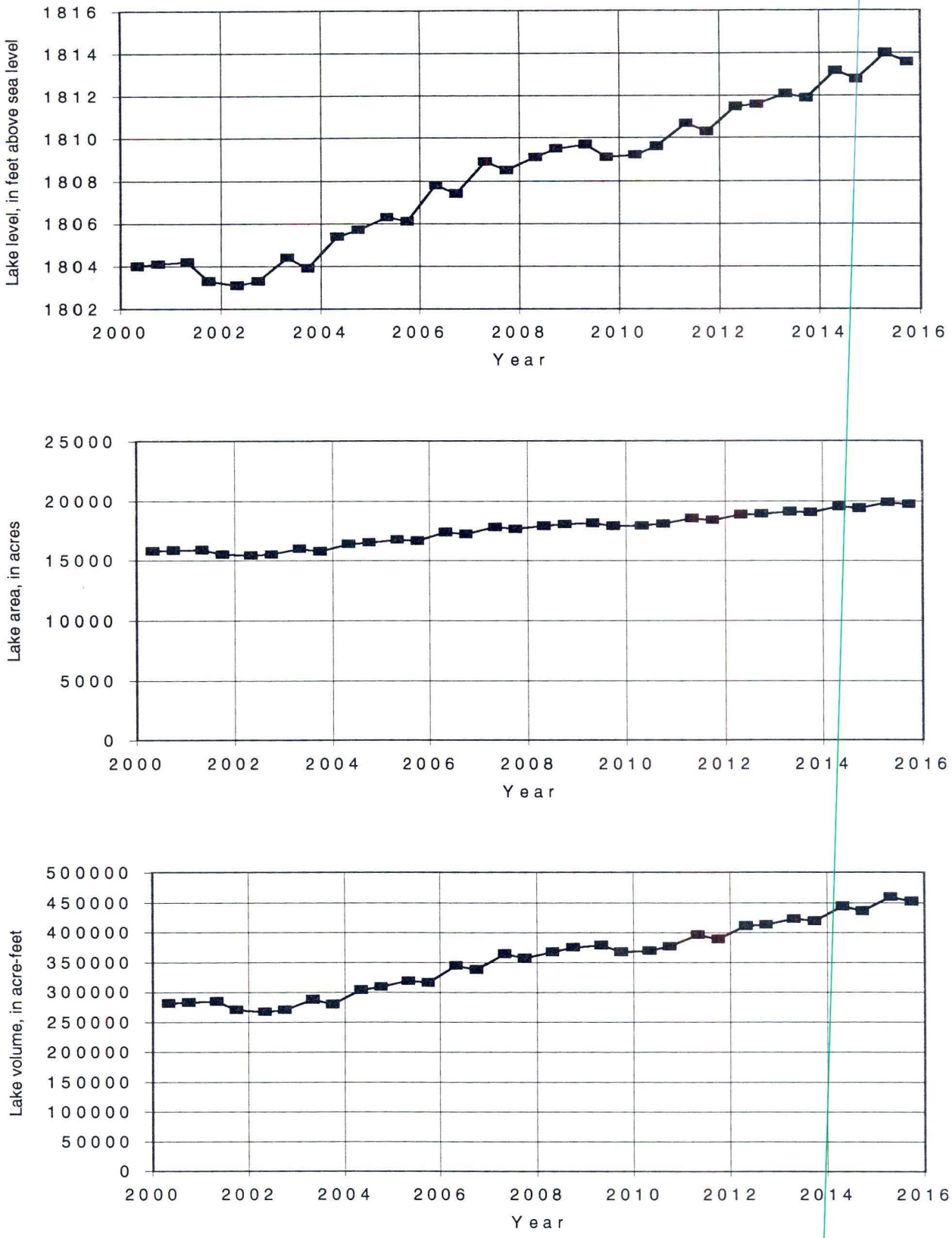
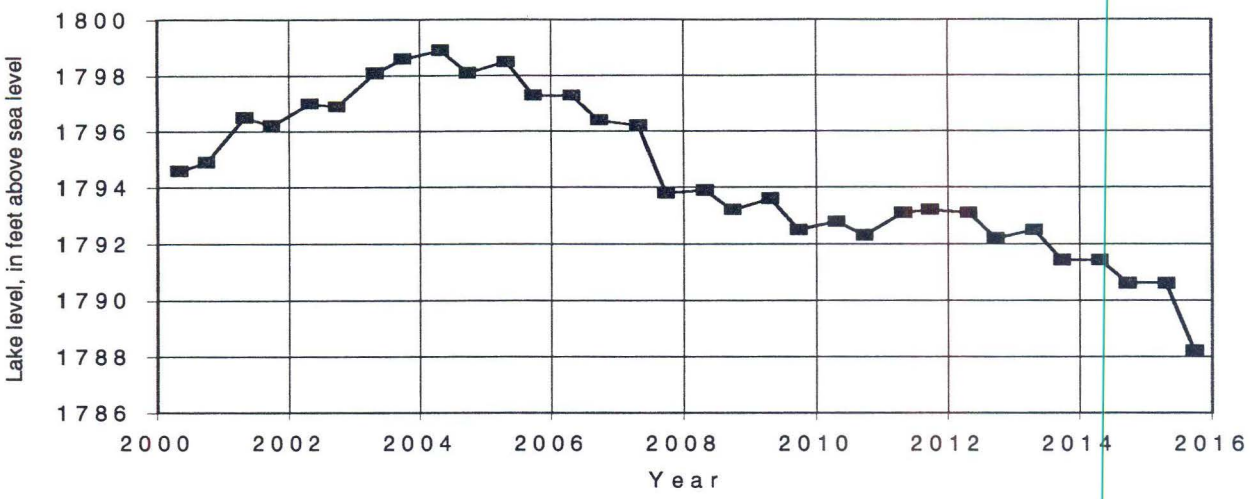
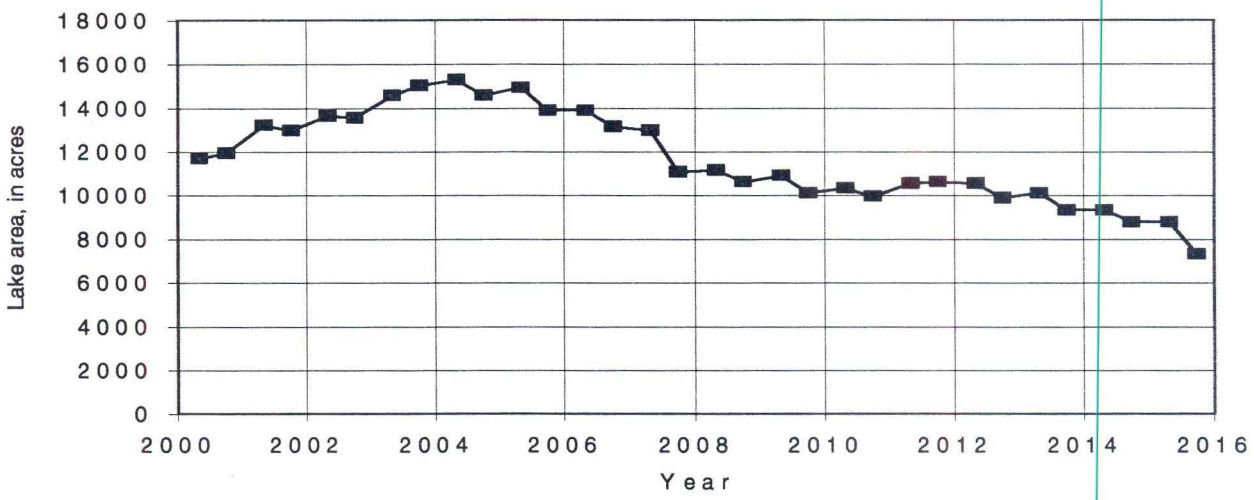


Figure 4.10 Simulated lake levels, surface area, and water volume for Waubay Lake, for the Wet-Wet climate scenario.

Dry – Dry





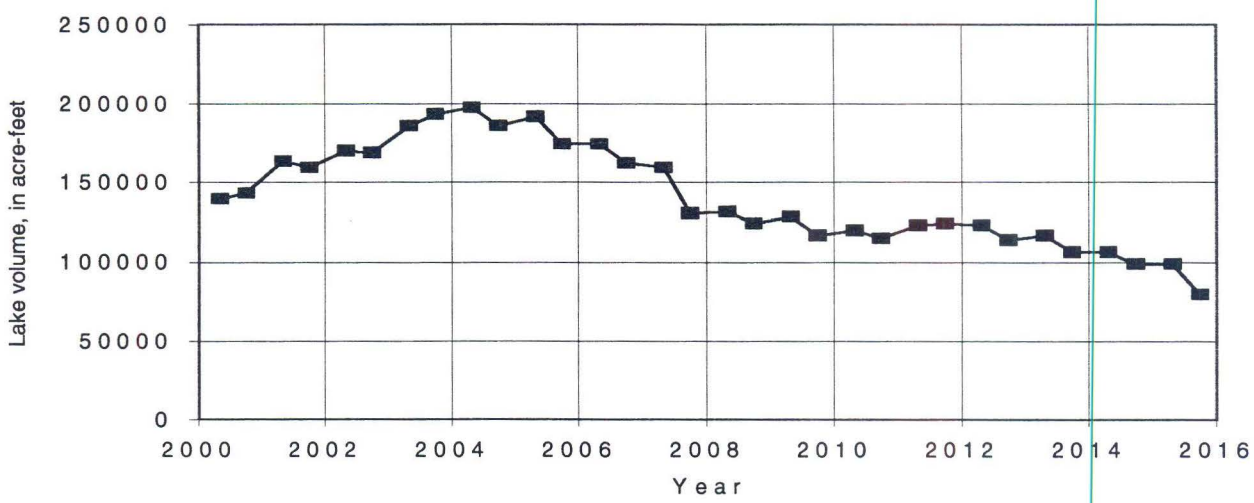


Figure 4.11 Simulated lake levels, surface area, and water volume for Bitter Lake, for the Dry-Dry climate scenario.

Dry – Wet

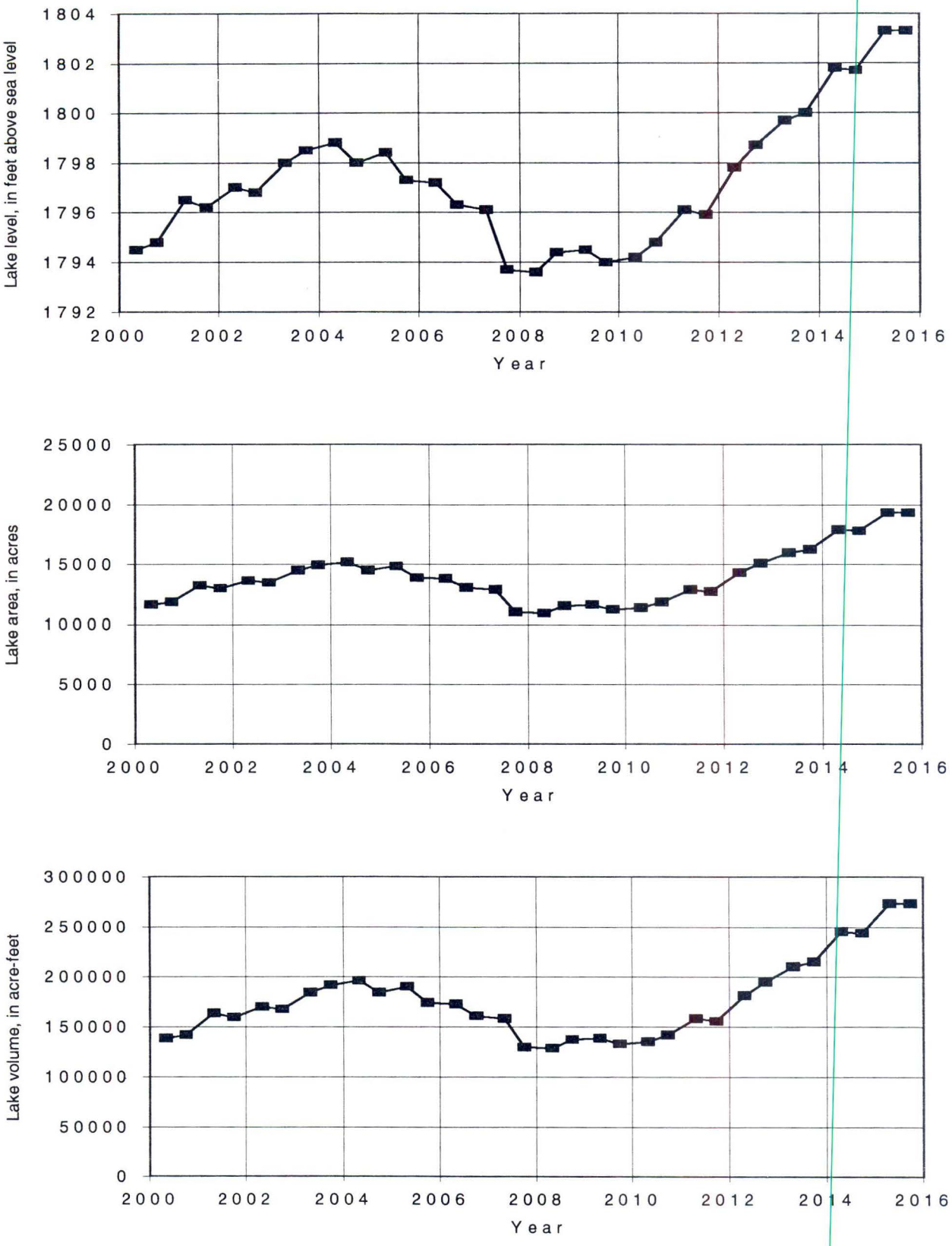
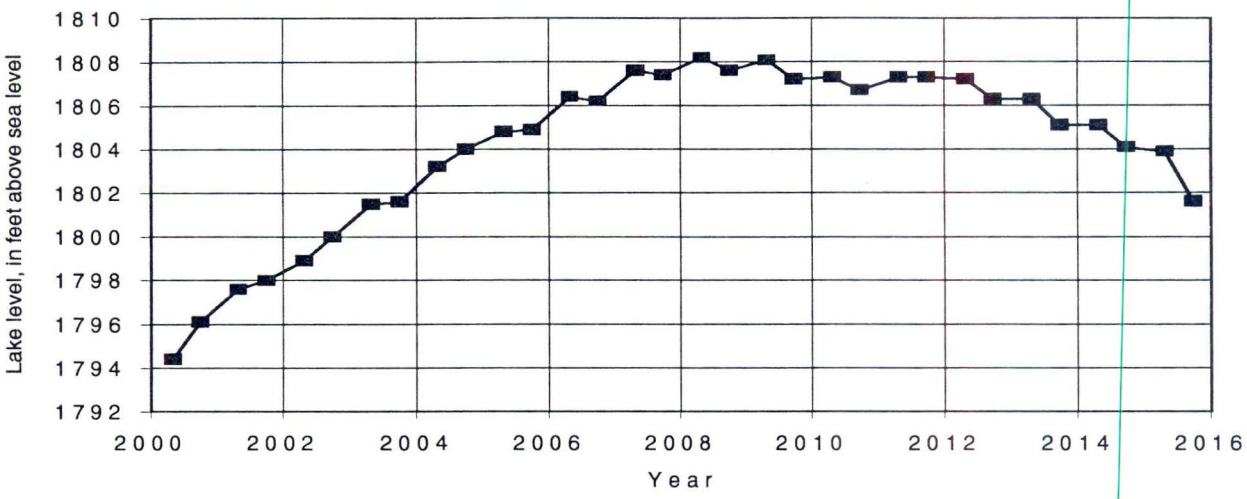
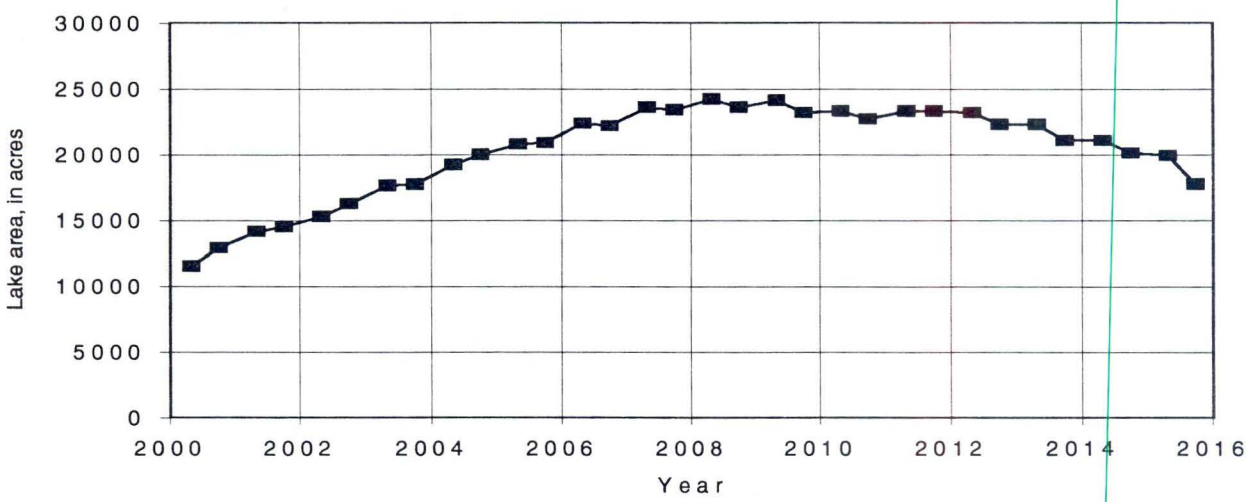


Figure 4.12 Simulated lake levels, surface area, and water volume for Bitter Lake, for the Dry-Wet climate scenario

Wet – Dry





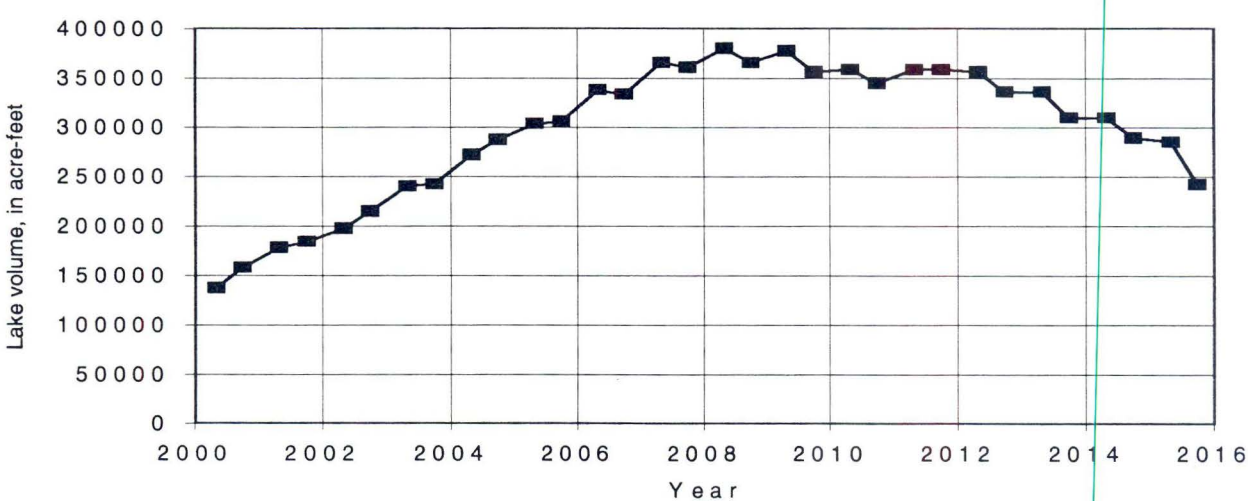


Figure 4.13 Simulated lake levels, surface area, and water volume for Bitter Lake, for the Wet-Dry climate scenario.

Wet – Wet

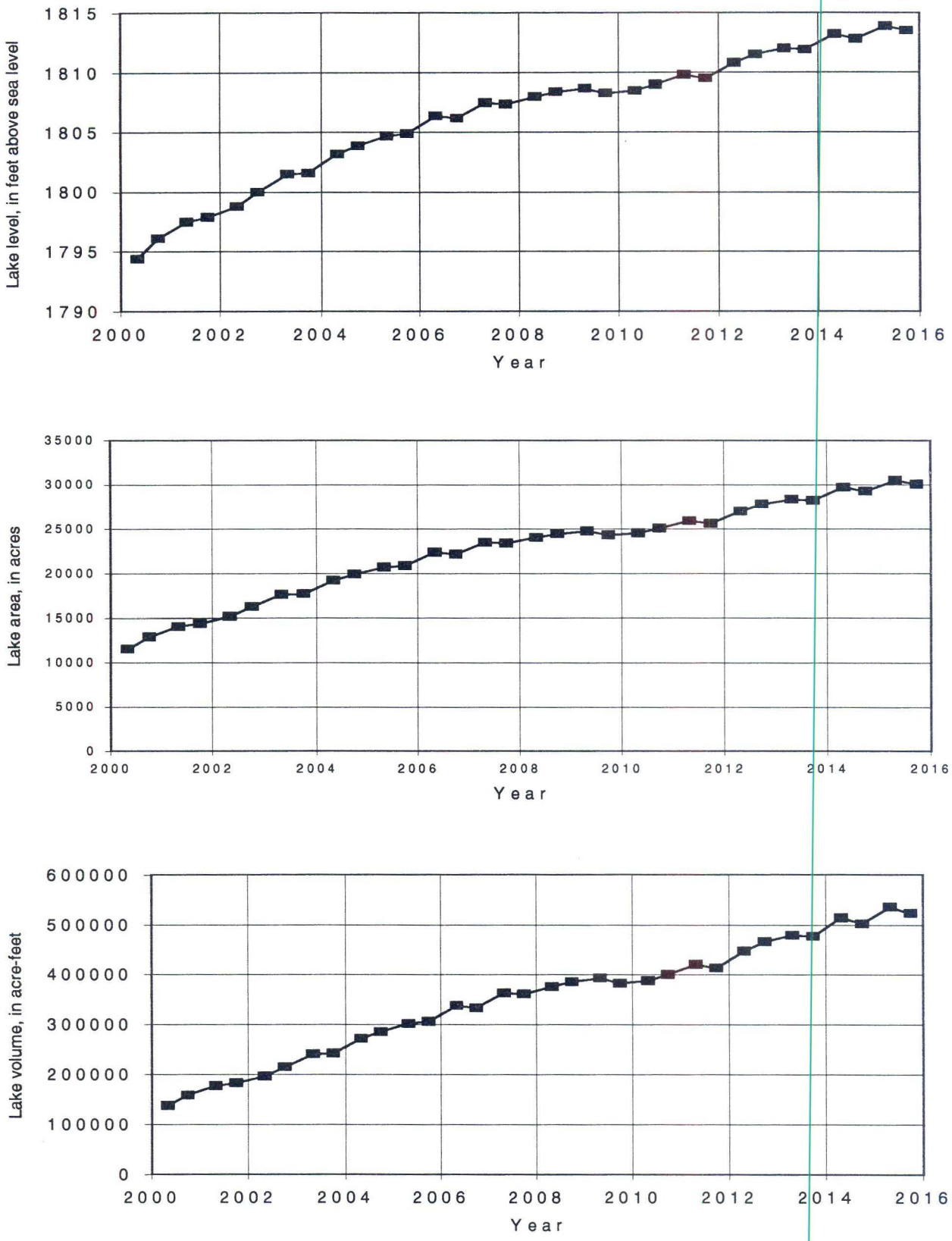


Figure 4.14 Simulated lake levels, surface area, and water volume for Bitter Lake, for the Wet-Wet climate scenario.

Average – Average

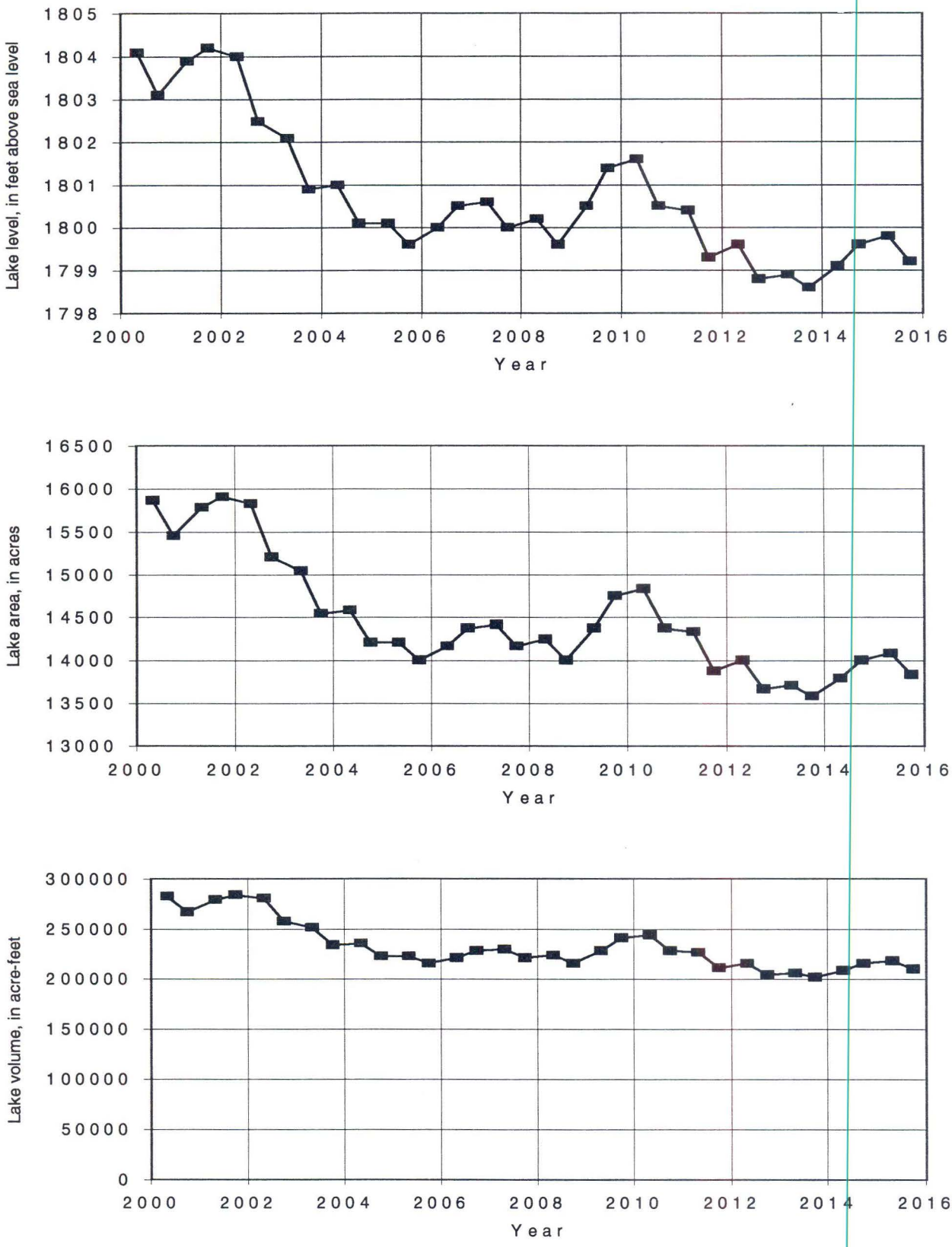


Figure 4.15 Simulate lake levels, surface area, and water volume for Waubay Lake, for the Average-Average climate scenario.

Average – Average

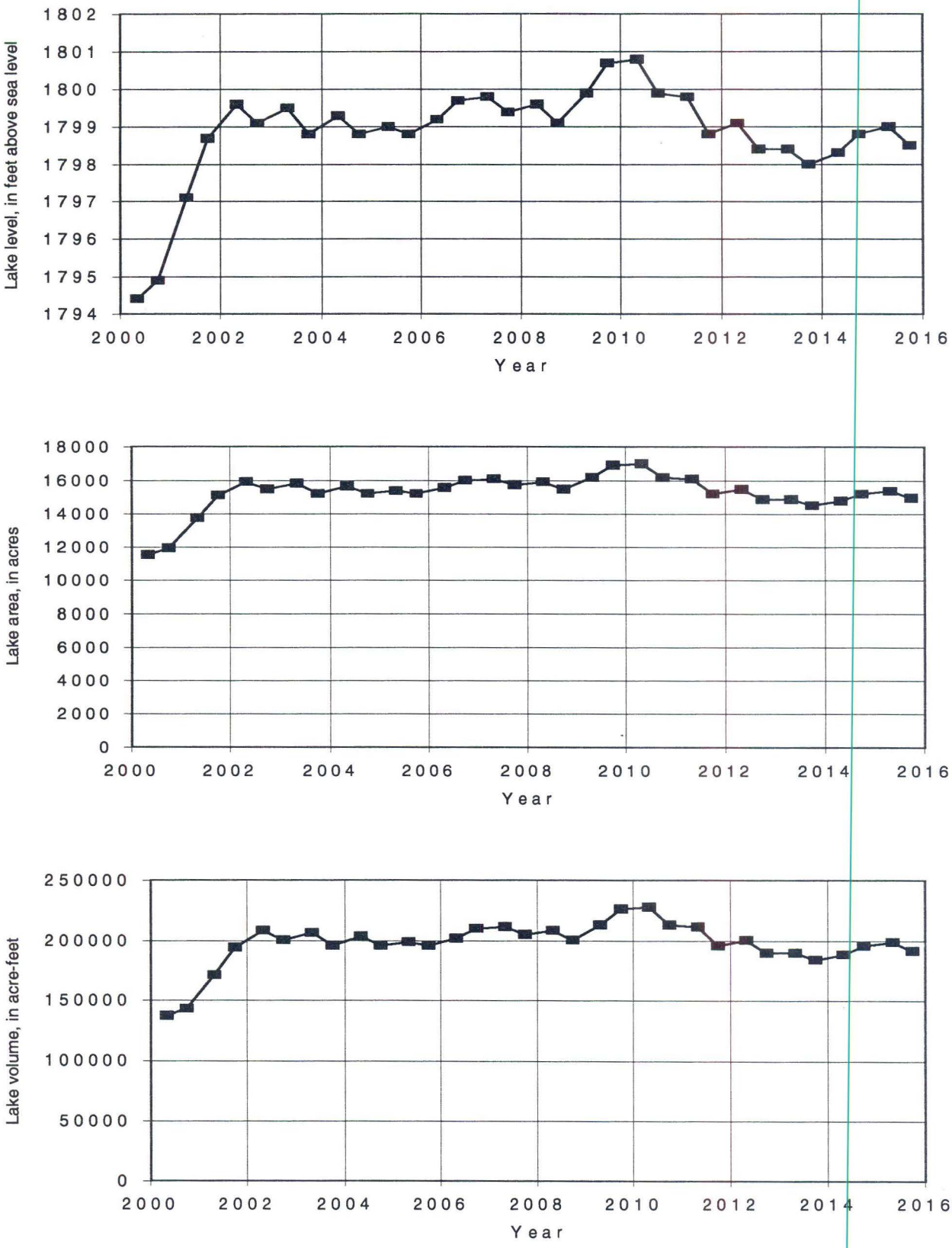


Figure 4.16 simulated lake levels, surface area, and water volume for Bitter Lake, for the Average-Average climate scenario.

Figure 4.17 Simulated flood inundation by the 10 major lakes, in the Waubay Lakes Chain, for the Dry-Dry climate scenario.

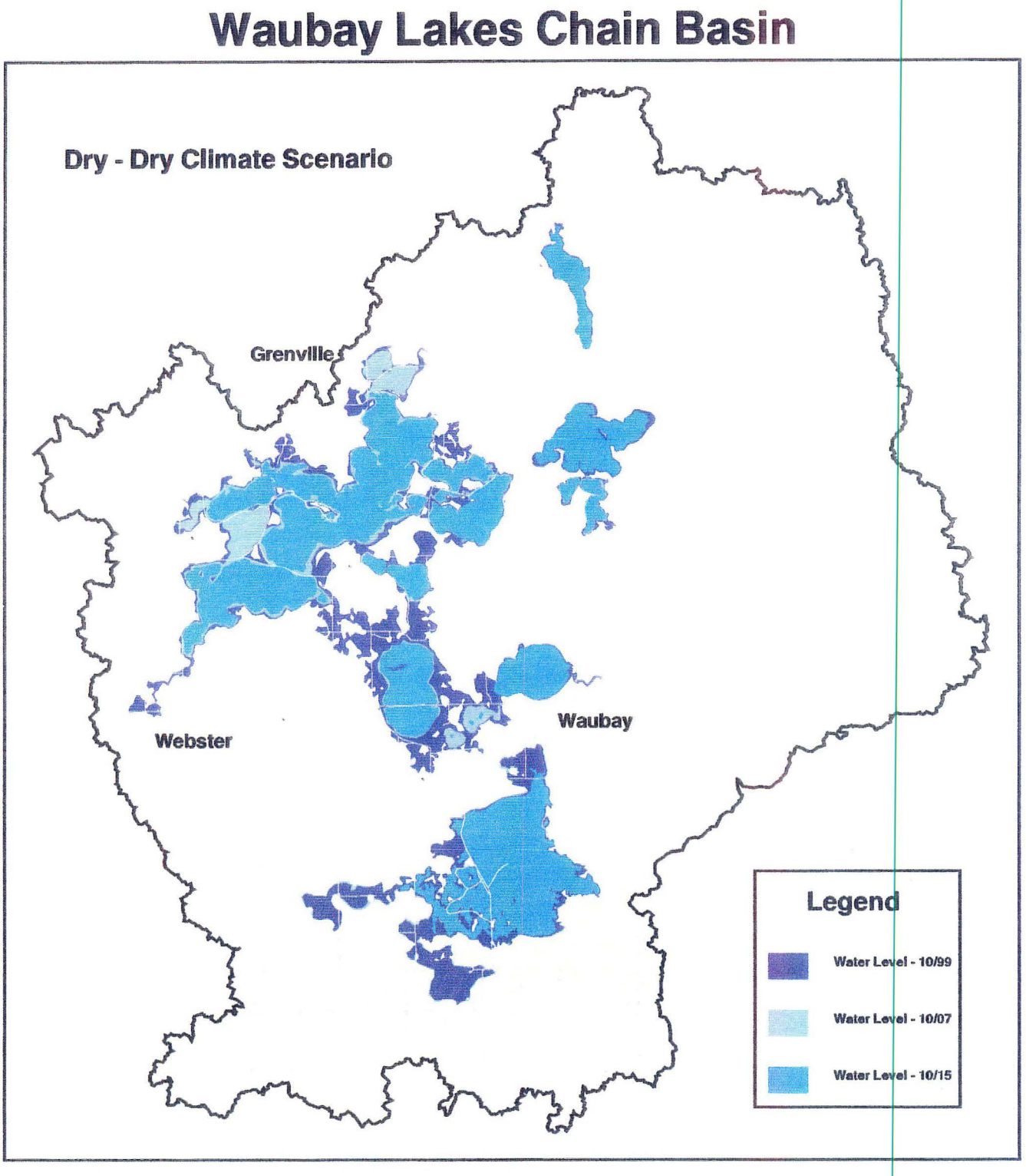
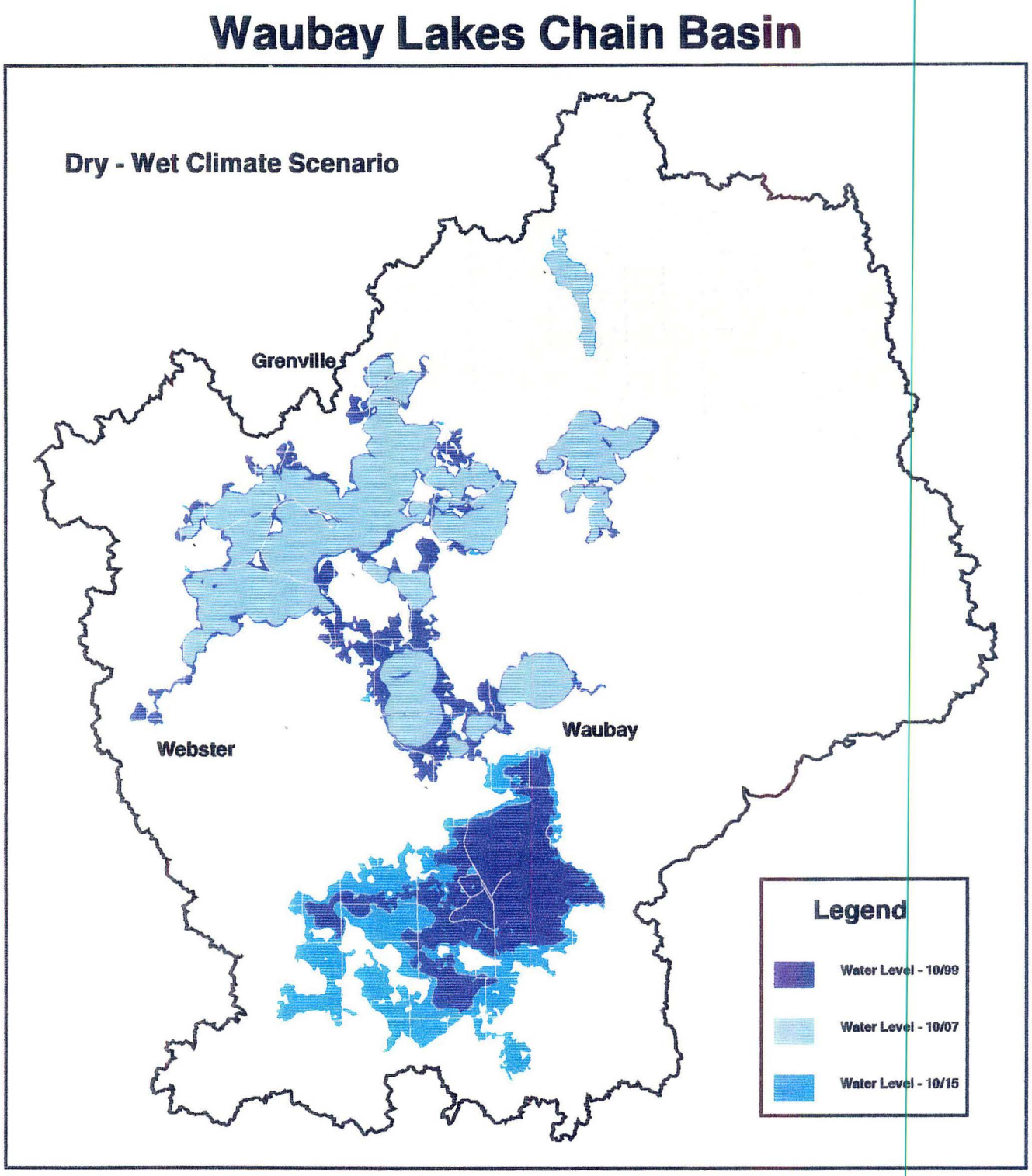


Figure 4.18 Simulated flood inundation by the 10 major lakes, in the Waubay Lakes Chain, for the Dry-Wet climate scenario.



respectively. At the end of the 8-year (Fall 2007) dry climate scenario, the simulated lake levels, for Waubay and Bitter are 11.0 and 20.8 feet above the Fall 1991 levels. At the end of 16 years (Fall 2015), the lake level for Waubay would still be 4.8 feet and Bitter, 15.2 feet, above the Fall 1991 levels. This scenario provides the maximum lake level decline but still leaves the lake levels much higher than the 1991 levels. It also represents an unprecedented 16-year drought.

If the first 8-year dry scenario is followed by a wet climate scenario (figs. 4.8 and 4.12), water levels in Waubay Lake would rise during the second 8 years such that the lake level, at the end of 16 years, would be 0.95 feet above the Fall 1999 level. The water level in Bitter Lake would be up 11.25 feet above the Fall 1999 level. Surface areas and water volumes would increase in corresponding amounts.

Wet Climate Scenarios

The wet climate scenario is represented by the 1991-1998 climate period. This climate scenario would result in simulated 8-year (Fall 2007) lake level rises, in Waubay and Bitter Lakes, of 4.75 and 15.35 feet, respectively, above the Fall 1999 levels (tables 4.1-4.3) (figs. 4.9-4.10 and 4.13-4.14). This is a 24.3-foot rise for Waubay and 34.4-foot rise for Bitter Lake, above their Fall 1991 lake levels of 1784.3 and 1773.0 feet above sea level, respectively. As a result of these lake-level rises, the surface areas of Waubay Lake would increase by about 1,900 acres and Bitter would increase about 13,600 acres above their Fall 1999 surface areas. Water volumes would increase about 79,300 acre-feet for Waubay and about 248,900 acre-feet for Bitter. There is no historical instrumented climate data showing two climate periods, like the 1991 through 1998 period, occurring in sequence, which are the simulations that start with the wet climate scenario.

Combining a wet scenario with a second wet scenario would result in Waubay and Bitter Lakes having the same lake level of about 1,813.5 feet above sea level, at the end of 16 years (Fall 2015). Figure 4.19 shows the inundation patterns of the 10 lakes under the wet-wet climate scenario. This is 2.4 feet above the level at which Bitter would begin to flow out of the closed basin. The second wet scenario would result in Waubay Lake rising 9.85 feet and Bitter Lake, 21.45 feet above the Fall 1999 starting model lake levels. Corresponding increases in simualted lake area and lake volume would occur (tables 3.2 and 3.3).

If the first 8-year wet scenario is combined with an 8-year dry scenario, the simulated lakes levels, after 16 years (Fall 2015) would be 1,801.9 and 1,801.6 feet above sea level, for Waubay and Bitter, respectively. Figure 4.20 shows the inundation patterns of the 10 lakes, under the wet-dry climate scenario. This would be a water level rise of 9.55 feet for Bitter Lake and decline of 1.85 feet for Waubay Lake, from the initial Fall 1999 lake levels.

Average Climate Scenario

The average climate scenario is based on the 1953-1969, 1977-1984, and 1985-1992 climate periods, (table 3.1). Although some fluctuation occurs, the simulated lake levels change very little

Figure 4.19 Simulated flood inundation by the 10 major lakes, in the Waubay Lakes Chain, for the Wet-Wet climate scenario.

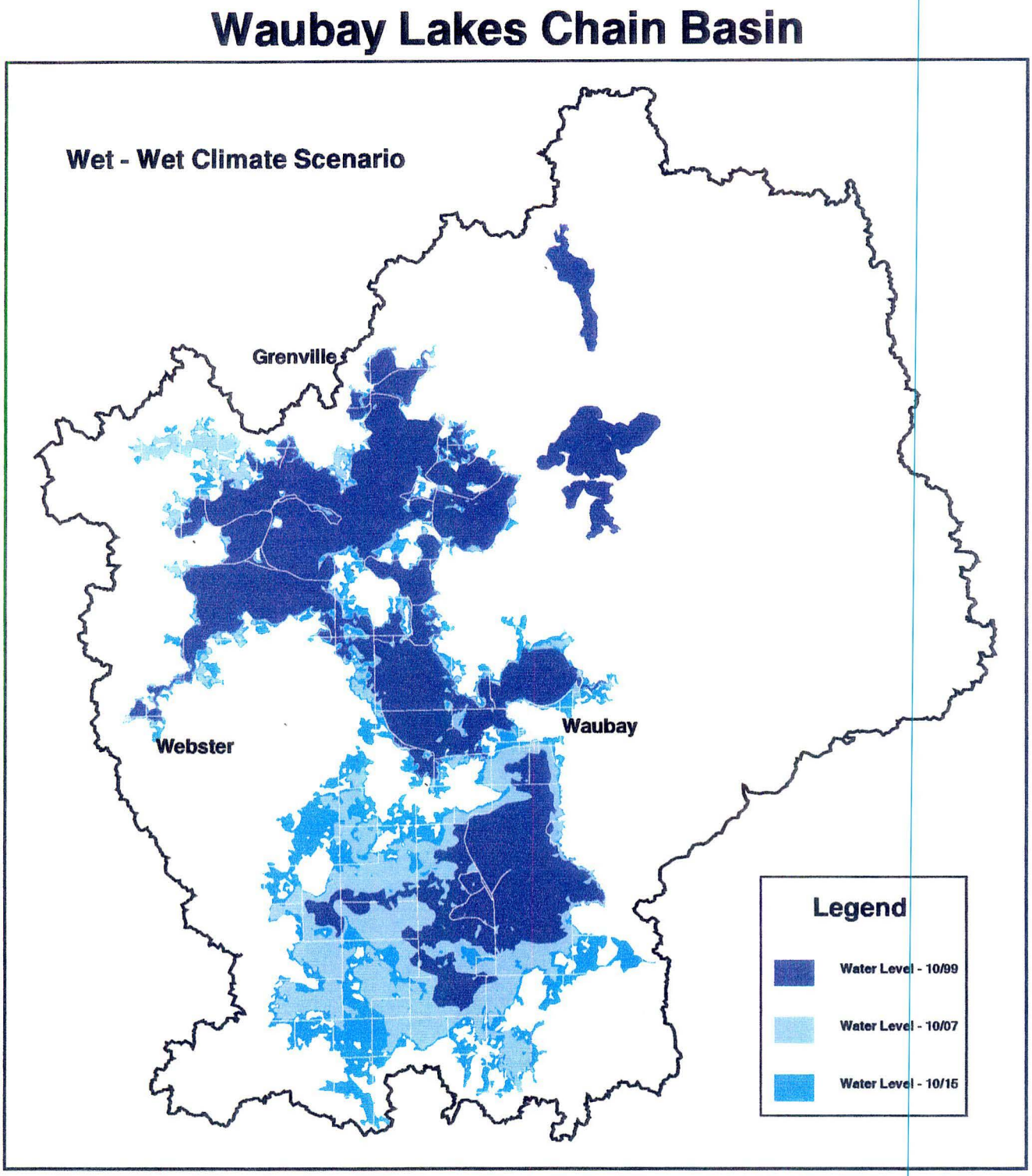
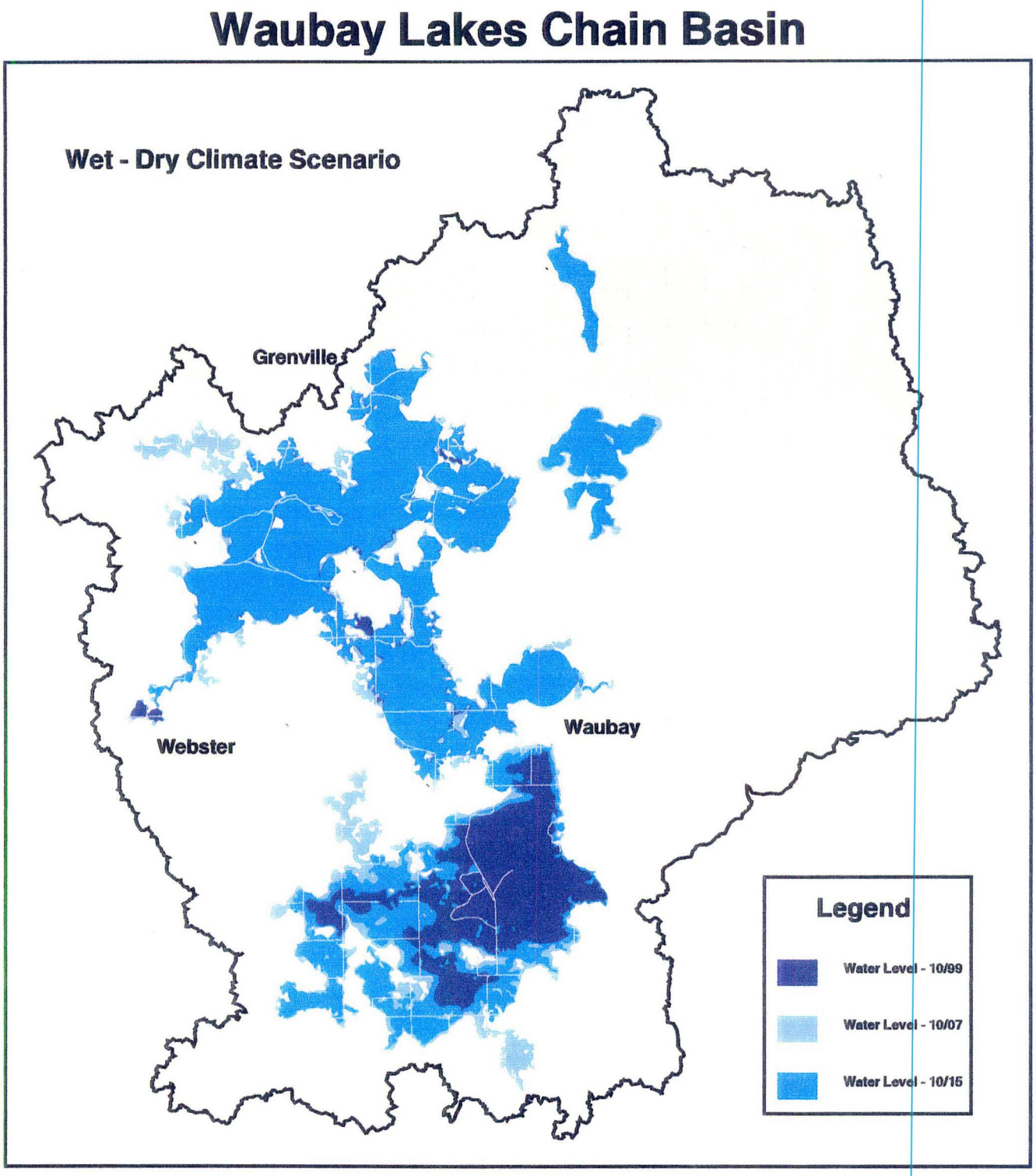


Figure 4.20 Simulated flood inundation by the 10 major lakes, in the Waubay Lakes Chain, for the Wet-Dry climate scenario.



with the average climate scenario (tables 4.1-4.3 and figs. 4.15 and 4.16). After 8 years (Fall 2007), Waubay would have decreased 3.75 feet, and Bitter increased 7.35 feet from the Fall 1999 lake levels of 1802.1 and 1791.0 feet above sea level, respectively. The simulated surface area of Waubay Lake would decrease about 1,550 acres and Bitter would increase about 5,938 acres above the Fall 1999 areas.

The addition of a second 8-year average climate scenario had little additional effect on lake levels. At the end of 16 years (Fall 2015), Waubay lake level would have decreased 4.55 feet, and Bitter increased 6.45 feet from the Fall 1999 lake levels. Lake area and water volume would vary accordingly.

Moderately Dry and Moderately Wet Climate Scenarios

Moderately dry is intermediate between the average and dry climate scenarios, and moderately wet is intermediate between the average and wet climate scenarios. The moderately dry climate scenario is the 1968-1975 climate period. This climate scenario would result, by the Fall of 2007, in Waubay Lake declining by 6.35 feet, and Bitter increasing 3.95 feet. This would reduce the surface areas of Waubay Lake by about 2,900 acres and increase Bitter by about 3,030 acres. The water volumes for Waubay and Bitter would decrease by about 91,500, and increase by about 44,500 acre-feet, respectively.

The moderately wet scenario, which is the 1961-1968 weather pattern, would result, by Fall 2007, in Waubay Lake decreasing 1.15 feet to 1,802.6 feet above sea level and Bitter rising 10.15 feet to 1,802.2 feet above sea level. These simulated lake level rises would decrease the surface area of Waubay by about 3,200 acres, and increase Bitter by about 8,500 acres above their Fall 1999 areas. Water volumes in Waubay would decrease by about 17,800 and in Bitter would increase by about 140,000 acre-feet.

Conclusions

Although significant lake level fluctuation and corresponding surface area and water volume changes occurs with the various climate scenarios, simulated lake levels at the end of the first 8-year period, range from a decline of 8.45 to a rise of 4.75 feet for Waubay and a rise of 1.75 to rise of 15.35 feet for Bitter, above the initial Fall 1999 lakes levels. If the dry and wet climate scenarios are removed, and only the first 8 years of the moderately dry, average, and moderately wet climate scenarios are considered, lake levels for Waubay range from a decline of 6.35 to a rise of 1.15 feet. Lake levels for Bitter range from a rise of 3.95 to a rise of 10.15 feet, from the Fall 1999 levels. The water-balance model simulations indicate that lake level decline will likely occur in Waubay Lake over the next 8 years (Fall 2007), but lake levels are likely to rise in Bitter Lake over the same period. Several climate scenarios indicate Bitter Lake could rise over 15 feet by Fall 2007.

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Appendix A

Simulated Lake Levels

Table A1. Simulated lake levels for the Wet-Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1794.4
2	Fall 2000	1845.4	1854.0	1804.1	1804.1	1804.1	1804.2	1804.2	1804.2	1804.1	1796.1
3	Spring 2001	1845.5	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1797.6
4	Fall 2001	1845.0	1853.6	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1798.0
5	Spring 2002	1845.1	1853.7	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1798.9
6	Fall 2002	1845.3	1853.8	1803.3	1803.3	1803.3	1803.4	1803.4	1803.4	1803.3	1800.0
7	Spring 2003	1845.8	1854.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1801.5
8	Fall 2003	1845.2	1853.8	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1801.6
9	Spring 2004	1845.9	1854.6	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1803.2
10	Fall 2004	1845.5	1854.3	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1804.0
11	Spring 2005	1845.6	1854.4	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1804.8
12	Fall 2005	1845.2	1853.8	1806.2	1806.2	1806.2	1806.2	1806.2	1806.2	1806.2	1804.9
13	Spring 2006	1846.1	1854.8	1807.9	1807.9	1807.9	1807.9	1807.9	1807.9	1807.9	1806.4
14	Fall 2006	1845.3	1854.0	1807.4	1807.4	1807.4	1807.4	1807.5	1807.5	1807.4	1806.2
15	Spring 2007	1846.0	1854.8	1808.9	1808.9	1808.9	1809.0	1809.0	1809.0	1808.9	1807.6
16	Fall 2007	1845.3	1853.9	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1807.4
17	Spring 2008	1845.6	1854.3	1809.3	1809.3	1809.3	1809.4	1809.4	1809.4	1809.3	1808.2
18	Fall 2008	1845.0	1853.6	1808.5	1808.5	1808.5	1808.5	1808.5	1808.5	1808.5	1807.6
19	Spring 2009	1845.4	1853.9	1809.0	1809.0	1809.0	1809.0	1809.0	1809.0	1809.0	1808.1
20	Fall 2009	1844.9	1853.0	1807.8	1807.8	1807.8	1807.9	1807.9	1807.9	1807.8	1807.2
21	Spring 2010	1845.2	1853.6	1807.9	1807.9	1807.9	1807.9	1807.9	1807.9	1807.9	1807.3
22	Fall 2010	1845.0	1853.2	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1806.7
23	Spring 2011	1845.4	1853.8	1807.9	1807.9	1807.9	1807.9	1807.9	1807.9	1807.9	1807.3
24	Fall 2011	1845.2	1853.7	1807.8	1807.8	1807.8	1807.9	1807.9	1807.9	1807.8	1807.3
25	Spring 2012	1845.0	1853.6	1807.7	1807.7	1807.7	1807.7	1807.7	1807.7	1807.7	1807.2
26	Fall 2012	1844.6	1852.7	1806.6	1806.6	1806.6	1806.6	1806.6	1806.6	1806.6	1806.3
27	Spring 2013	1845.2	1853.5	1806.7	1806.7	1806.7	1806.7	1806.7	1806.7	1806.7	1806.3
28	Fall 2013	1844.6	1852.5	1805.5	1805.5	1805.5	1805.5	1805.5	1805.5	1805.5	1805.1
29	Spring 2014	1845.0	1852.7	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1805.1
30	Fall 2014	1844.6	1851.9	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.1
31	Spring 2015	1845.0	1852.0	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1803.9
32	Fall 2015	1843.1	1849.8	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.6

Table A2. Simulated lake levels for the Moderately Wet-Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.8	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1794.2
2	Fall 2000	1845.1	1853.7	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1795.1
3	Spring 2001	1845.8	1854.4	1804.2	1804.2	1804.2	1804.3	1804.3	1804.3	1804.2	1797.4
4	Fall 2001	1845.8	1854.7	1805.3	1805.3	1805.3	1805.4	1805.4	1805.4	1805.3	1799.8
5	Spring 2002	1845.5	1854.2	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1800.8
6	Fall 2002	1845.3	1853.9	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1801.6
7	Spring 2003	1845.8	1854.4	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1802.9
8	Fall 2003	1845.1	1853.7	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1802.8
9	Spring 2004	1845.2	1853.7	1804.9	1804.9	1804.9	1805.0	1805.0	1805.0	1804.9	1803.2
10	Fall 2004	1845.2	1853.7	1805.0	1805.0	1805.0	1805.1	1805.1	1805.1	1805.0	1803.7
11	Spring 2005	1845.2	1853.7	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1803.9
12	Fall 2005	1844.9	1853.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1803.3
13	Spring 2006	1845.2	1853.6	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1803.6
14	Fall 2006	1844.8	1852.8	1803.2	1803.2	1803.2	1803.3	1803.3	1803.3	1803.2	1802.7
15	Spring 2007	1845.0	1853.0	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1802.7
16	Fall 2007	1844.9	1852.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.1
17	Spring 2008	1845.2	1853.3	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1802.5
18	Fall 2008	1844.8	1852.6	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1801.7
19	Spring 2009	1845.1	1853.3	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.0
20	Fall 2009	1844.5	1852.3	1801.3	1801.3	1801.3	1801.3	1801.3	1801.3	1801.3	1801.0
21	Spring 2010	1845.1	1852.9	1801.5	1801.5	1801.5	1801.5	1801.5	1801.5	1801.5	1801.1
22	Fall 2010	1845.0	1852.5	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.5
23	Spring 2011	1845.4	1853.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.2
24	Fall 2011	1845.2	1853.6	1801.7	1801.7	1801.7	1801.7	1801.7	1801.7	1801.7	1801.2
25	Spring 2012	1845.0	1853.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.2
26	Fall 2012	1844.6	1852.8	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.2
27	Spring 2013	1845.2	1853.5	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.4
28	Fall 2013	1844.6	1852.5	1800.1	1799.5	1799.5	1799.5	1799.6	1799.6	1799.5	1799.2
29	Spring 2014	1845.0	1852.7	1800.1	1799.5	1799.5	1799.5	1799.5	1799.5	1799.5	1799.2
30	Fall 2014	1844.6	1851.9	1799.9	1798.6	1798.6	1798.6	1798.6	1798.6	1798.7	1798.2
31	Spring 2015	1845.0	1852.1	1800.4	1798.4	1798.4	1798.4	1798.4	1798.4	1798.6	1798.1
32	Fall 2015	1843.2	1849.9	1798.8	1796.0	1796.1	1796.1	1796.3	1796.3	1796.4	1795.7

Table A3. Simulated lake levels for the Average-Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1794.3
2	Fall 2000	1845.0	1853.6	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1794.8
3	Spring 2001	1845.6	1854.2	1803.8	1803.8	1803.8	1803.8	1803.9	1803.9	1803.8	1797.0
4	Fall 2001	1845.5	1854.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1798.6
5	Spring 2002	1845.3	1853.9	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1799.5
6	Fall 2002	1844.7	1852.9	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1799.1
7	Spring 2003	1845.1	1853.4	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1799.4
8	Fall 2003	1844.7	1852.5	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1798.8
9	Spring 2004	1845.1	1853.2	1800.9	1800.9	1801.0	1801.0	1801.0	1801.0	1800.9	1799.3
10	Fall 2004	1844.9	1852.6	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.8
11	Spring 2005	1845.1	1853.0	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1799.0
12	Fall 2005	1845.0	1852.9	1800.1	1799.6	1799.6	1799.6	1799.6	1799.6	1799.6	1798.7
13	Spring 2006	1845.3	1853.6	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1799.1
14	Fall 2006	1845.3	1853.8	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1799.6
15	Spring 2007	1845.2	1853.7	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1799.8
16	Fall 2007	1844.9	1853.3	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1799.3
17	Spring 2008	1845.1	1853.6	1800.3	1800.3	1800.3	1800.3	1800.3	1800.3	1800.3	1799.7
18	Fall 2008	1844.9	1853.1	1800.2	1799.5	1799.5	1799.6	1799.6	1799.6	1799.5	1799.1
19	Spring 2009	1845.1	1853.6	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.4
20	Fall 2009	1844.9	1852.8	1800.0	1798.9	1798.9	1798.9	1798.9	1798.9	1799.0	1798.5
21	Spring 2010	1845.2	1853.4	1800.6	1799.1	1799.1	1799.1	1799.1	1799.1	1799.1	1798.7
22	Fall 2010	1845.0	1853.0	1800.3	1798.5	1798.5	1798.5	1798.5	1798.5	1798.6	1798.0
23	Spring 2011	1845.3	1853.7	1800.9	1799.4	1799.4	1799.4	1799.4	1799.4	1799.4	1798.8
24	Fall 2011	1845.2	1853.6	1800.6	1799.5	1799.5	1799.5	1799.5	1799.5	1799.5	1798.9
25	Spring 2012	1845.0	1853.6	1800.1	1799.4	1799.4	1799.4	1799.4	1799.4	1799.4	1798.9
26	Fall 2012	1844.6	1852.7	1799.9	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1797.9
27	Spring 2013	1845.2	1853.5	1800.7	1798.7	1798.7	1798.7	1798.7	1798.7	1798.7	1798.0
28	Fall 2013	1844.6	1852.5	1800.1	1797.7	1797.5	1797.5	1797.6	1797.6	1797.7	1796.8
29	Spring 2014	1845.0	1852.7	1800.4	1798.1	1797.5	1797.5	1797.6	1797.6	1797.7	1796.7
30	Fall 2014	1844.6	1851.9	1800.1	1797.2	1796.5	1796.5	1796.8	1796.8	1797.0	1795.8
31	Spring 2015	1845.0	1852.0	1800.4	1797.5	1796.3	1796.3	1796.8	1796.8	1796.9	1795.6
32	Fall 2015	1843.1	1849.8	1798.8	1795.0	1794.0	1794.0	1794.7	1794.7	1794.7	1793.3

Table A4. Simulated lake levels for the Moderately Dry-Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1794.3
2	Fall 2000	1845.0	1853.6	1802.9	1802.9	1802.9	1803.0	1803.0	1803.0	1802.9	1794.7
3	Spring 2001	1845.5	1854.0	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.5
4	Fall 2001	1845.0	1853.4	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1796.5
5	Spring 2002	1845.2	1853.6	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1797.5
6	Fall 2002	1844.5	1852.7	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1796.9
7	Spring 2003	1845.1	1853.3	1800.9	1800.9	1801.0	1801.0	1801.0	1801.0	1800.9	1797.5
8	Fall 2003	1845.0	1852.9	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1797.2
9	Spring 2004	1845.4	1853.7	1800.8	1800.8	1800.8	1800.9	1800.9	1800.9	1800.8	1798.3
10	Fall 2004	1845.1	1853.6	1800.7	1800.7	1800.7	1800.8	1800.8	1800.8	1800.7	1798.7
11	Spring 2005	1845.0	1853.6	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1798.8
12	Fall 2005	1844.6	1852.7	1800.0	1799.4	1799.4	1799.4	1799.4	1799.4	1799.4	1798.0
13	Spring 2006	1845.2	1853.5	1800.6	1799.5	1799.5	1799.6	1799.6	1799.6	1799.5	1798.3
14	Fall 2006	1844.6	1852.5	1800.0	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1797.1
15	Spring 2007	1845.0	1852.6	1800.4	1798.3	1798.3	1798.3	1798.3	1798.3	1798.5	1797.0
16	Fall 2007	1844.6	1851.9	1800.0	1797.5	1797.4	1797.4	1797.6	1797.6	1797.7	1796.1
17	Spring 2008	1845.1	1852.5	1800.5	1798.3	1797.7	1797.7	1797.7	1797.7	1798.1	1796.4
18	Fall 2008	1844.8	1851.9	1800.1	1797.7	1796.9	1796.9	1797.2	1797.2	1797.5	1795.6
19	Spring 2009	1845.1	1852.5	1800.6	1798.5	1797.3	1797.3	1797.6	1797.6	1797.9	1795.9
20	Fall 2009	1844.5	1851.6	1800.0	1797.5	1796.2	1796.2	1796.7	1796.7	1797.0	1794.8
21	Spring 2010	1845.1	1852.2	1800.6	1798.3	1796.4	1796.4	1796.9	1796.9	1797.2	1795.0
22	Fall 2010	1844.9	1851.8	1800.3	1798.0	1795.8	1795.8	1796.4	1796.4	1796.7	1794.5
23	Spring 2011	1845.3	1853.1	1800.3	1798.7	1796.8	1796.8	1797.1	1797.1	1797.5	1795.2
24	Fall 2011	1845.1	1853.4	1800.5	1798.7	1797.0	1797.0	1797.2	1797.2	1797.6	1795.3
25	Spring 2012	1845.0	1853.4	1800.3	1798.5	1797.0	1797.0	1797.3	1797.3	1797.6	1795.2
26	Fall 2012	1844.6	1852.5	1800.0	1797.6	1796.0	1796.0	1796.5	1796.5	1796.8	1794.2
27	Spring 2013	1845.2	1853.3	1800.7	1798.5	1796.3	1796.3	1796.6	1796.6	1797.0	1794.5
28	Fall 2013	1844.7	1852.3	1800.1	1797.5	1795.1	1795.1	1795.7	1795.7	1796.0	1793.3
29	Spring 2014	1845.0	1852.5	1800.4	1797.9	1795.0	1795.0	1795.7	1795.7	1796.1	1793.3
30	Fall 2014	1844.6	1851.8	1800.1	1797.1	1794.1	1794.1	1795.0	1795.0	1795.3	1792.4
31	Spring 2015	1845.0	1851.9	1800.4	1797.4	1793.9	1793.9	1795.0	1795.0	1795.3	1792.4
32	Fall 2015	1843.2	1849.7	1798.8	1794.9	1791.6	1791.6	1792.9	1792.9	1793.2	1790.0

Table A5. Simulated lake levels for the Dry-Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.7	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1794.6
2	Fall 2000	1845.0	1853.5	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1794.9
3	Spring 2001	1845.4	1853.9	1803.3	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.5
4	Fall 2001	1844.9	1853.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1796.2
5	Spring 2002	1845.2	1853.6	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1797.0
6	Fall 2002	1845.0	1853.2	1801.0	1801.0	1801.0	1801.1	1801.1	1801.1	1801.0	1796.9
7	Spring 2003	1845.4	1853.8	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1798.1
8	Fall 2003	1845.1	1853.6	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1798.6
9	Spring 2004	1845.0	1853.6	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1798.9
10	Fall 2004	1844.6	1852.8	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1798.1
11	Spring 2005	1845.2	1853.5	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.5
12	Fall 2005	1844.6	1852.5	1799.8	1798.8	1798.8	1798.9	1798.9	1798.9	1799.0	1797.3
13	Spring 2006	1845.0	1852.7	1800.3	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.3
14	Fall 2006	1844.6	1851.9	1800.0	1797.9	1797.9	1797.9	1797.9	1797.9	1798.2	1796.4
15	Spring 2007	1845.0	1852.0	1800.4	1798.2	1797.7	1797.7	1797.7	1797.7	1798.1	1796.2
16	Fall 2007	1843.2	1849.8	1798.8	1795.7	1795.3	1795.3	1795.6	1795.6	1795.9	1793.8
17	Spring 2008	1843.4	1849.9	1799.2	1795.8	1795.4	1795.4	1795.8	1795.8	1796.2	1793.9
18	Fall 2008	1843.6	1849.5	1799.7	1795.1	1794.7	1794.7	1795.3	1795.3	1795.6	1793.2
19	Spring 2009	1844.9	1850.3	1800.5	1796.1	1794.9	1794.9	1795.7	1795.7	1796.1	1793.6
20	Fall 2009	1844.3	1849.3	1799.9	1795.1	1793.8	1793.8	1794.8	1794.8	1795.2	1792.5
21	Spring 2010	1845.1	1850.0	1800.6	1796.3	1794.0	1794.0	1795.1	1795.1	1795.5	1792.8
22	Fall 2010	1844.9	1849.7	1800.3	1796.2	1793.4	1793.4	1794.7	1794.7	1795.0	1792.3
23	Spring 2011	1845.3	1851.1	1800.8	1798.4	1794.2	1794.2	1795.4	1795.4	1795.8	1793.1
24	Fall 2011	1845.1	1851.4	1800.6	1798.6	1794.4	1794.4	1795.5	1795.5	1796.0	1793.2
25	Spring 2012	1845.0	1851.5	1800.4	1798.5	1794.4	1794.4	1795.5	1795.5	1796.0	1793.1
26	Fall 2012	1844.6	1850.7	1800.1	1797.6	1793.4	1793.4	1794.7	1794.7	1795.2	1792.2
27	Spring 2013	1845.2	1851.5	1800.7	1798.5	1793.8	1793.8	1794.9	1794.9	1795.5	1792.5
28	Fall 2013	1844.7	1850.6	1800.1	1797.5	1792.6	1792.6	1794.0	1794.0	1794.5	1791.4
29	Spring 2014	1845.0	1850.8	1800.4	1797.9	1792.5	1792.5	1794.1	1794.1	1794.6	1791.4
30	Fall 2014	1844.6	1850.0	1800.0	1797.0	1791.6	1791.6	1793.3	1793.3	1793.9	1790.6
31	Spring 2015	1845.0	1850.2	1800.4	1797.4	1791.5	1791.5	1793.3	1793.3	1793.9	1790.6
32	Fall 2015	1843.2	1848.0	1798.8	1794.8	1789.1	1789.1	1791.3	1791.3	1791.8	1788.2

Table A6. Simulated lake levels for the Wet-Moderately Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.0	1804.0	1804.0	1804.1	1804.1	1804.1	1804.0	1794.4
2	Fall 2000	1845.4	1854.0	1804.1	1804.1	1804.1	1804.2	1804.2	1804.2	1804.1	1796.1
3	Spring 2001	1845.5	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1797.6
4	Fall 2001	1845.0	1853.6	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1797.9
5	Spring 2002	1845.1	1853.6	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1798.8
6	Fall 2002	1845.3	1853.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1800.0
7	Spring 2003	1845.8	1854.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1801.5
8	Fall 2003	1845.2	1853.8	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1801.6
9	Spring 2004	1845.9	1854.7	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1803.3
10	Fall 2004	1845.5	1854.3	1805.7	1805.7	1805.7	1805.8	1805.8	1805.8	1805.7	1803.9
11	Spring 2005	1845.6	1854.3	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1804.8
12	Fall 2005	1845.2	1853.8	1806.2	1806.2	1806.2	1806.2	1806.2	1806.2	1806.2	1804.9
13	Spring 2006	1846.1	1854.8	1807.8	1807.8	1807.8	1807.9	1807.9	1807.9	1807.8	1806.4
14	Fall 2006	1845.3	1854.0	1807.4	1807.4	1807.4	1807.4	1807.4	1807.4	1807.4	1806.2
15	Spring 2007	1846.0	1854.8	1808.9	1808.9	1808.9	1809.0	1809.0	1809.0	1808.9	1807.6
16	Fall 2007	1845.3	1853.9	1808.5	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1807.4
17	Spring 2008	1845.6	1854.2	1809.0	1809.1	1809.1	1809.1	1809.1	1809.1	1809.1	1807.9
18	Fall 2008	1845.0	1853.6	1808.3	1808.3	1808.3	1808.3	1808.3	1808.3	1808.3	1807.4
19	Spring 2009	1845.5	1854.0	1808.9	1808.9	1808.9	1809.0	1809.0	1809.0	1808.9	1808.1
20	Fall 2009	1845.0	1853.4	1808.1	1808.1	1808.1	1808.1	1808.1	1808.1	1808.1	1807.4
21	Spring 2010	1845.2	1853.7	1808.3	1808.3	1808.3	1808.3	1808.3	1808.3	1808.3	1807.7
22	Fall 2010	1844.5	1852.7	1807.1	1807.1	1807.1	1807.2	1807.2	1807.2	1807.1	1806.7
23	Spring 2011	1845.1	1853.3	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1806.8
24	Fall 2011	1845.0	1852.9	1806.5	1806.6	1806.6	1806.6	1806.6	1806.6	1806.6	1806.2
25	Spring 2012	1845.3	1853.7	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1806.7
26	Fall 2012	1845.1	1853.6	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1806.7
27	Spring 2013	1845.0	1853.6	1807.0	1807.0	1807.0	1807.0	1807.0	1807.0	1807.0	1806.6
28	Fall 2013	1844.6	1852.7	1806.0	1806.0	1806.0	1806.0	1806.0	1806.0	1806.0	1805.6
29	Spring 2014	1845.2	1853.5	1806.1	1806.1	1806.1	1806.1	1806.1	1806.1	1806.1	1805.7
30	Fall 2014	1844.6	1852.5	1804.8	1804.8	1804.8	1804.9	1804.9	1804.9	1804.8	1804.5
31	Spring 2015	1845.0	1852.6	1804.7	1804.7	1804.7	1804.7	1804.7	1804.7	1804.7	1804.4
32	Fall 2015	1844.6	1851.9	1803.8	1803.8	1803.8	1803.8	1803.8	1803.8	1803.8	1803.5

Table A7. Simulated lake levels for the Moderately Wet-Moderately Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1794.2
2	Fall 2000	1845.2	1853.7	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1795.1
3	Spring 2001	1845.8	1854.4	1804.2	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1797.5
4	Fall 2001	1845.8	1854.7	1805.3	1805.3	1805.3	1805.4	1805.4	1805.4	1805.3	1799.8
5	Spring 2002	1845.5	1854.2	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1800.9
6	Fall 2002	1845.3	1853.9	1805.1	1805.1	1805.1	1805.1	1805.2	1805.2	1805.1	1801.7
7	Spring 2003	1845.8	1854.4	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1802.9
8	Fall 2003	1845.1	1853.7	1805.0	1805.0	1805.0	1805.1	1805.1	1805.1	1805.0	1802.8
9	Spring 2004	1845.2	1853.7	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1803.3
10	Fall 2004	1845.2	1853.7	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1803.7
11	Spring 2005	1845.2	1853.7	1805.1	1805.1	1805.1	1805.2	1805.2	1805.2	1805.1	1804.0
12	Fall 2005	1844.9	1853.1	1804.2	1804.2	1804.2	1804.3	1804.3	1804.3	1804.2	1803.4
13	Spring 2006	1845.2	1853.6	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1803.6
14	Fall 2006	1844.8	1852.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1802.7
15	Spring 2007	1845.0	1853.0	1803.2	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1802.8
16	Fall 2007	1844.9	1852.5	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.2
17	Spring 2008	1845.2	1853.1	1802.7	1802.7	1802.7	1802.7	1802.7	1802.7	1802.7	1802.3
18	Fall 2008	1844.8	1852.5	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1801.7
19	Spring 2009	1845.2	1853.3	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.0
20	Fall 2009	1844.8	1852.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.3
21	Spring 2010	1845.1	1853.2	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.6
22	Fall 2010	1844.5	1852.2	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.5
23	Spring 2011	1845.1	1852.8	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1800.6
24	Fall 2011	1845.0	1852.5	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1800.1
25	Spring 2012	1845.4	1853.6	1801.2	1801.2	1801.2	1801.2	1801.2	1801.2	1801.2	1800.7
26	Fall 2012	1845.1	1853.6	1801.2	1801.2	1801.2	1801.2	1801.2	1801.2	1801.2	1800.8
27	Spring 2013	1845.0	1853.6	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1800.7
28	Fall 2013	1844.7	1852.8	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1799.8
29	Spring 2014	1845.2	1853.5	1800.3	1800.3	1800.3	1800.3	1800.3	1800.3	1800.3	1799.9
30	Fall 2014	1844.7	1852.5	1800.0	1799.1	1799.1	1799.1	1799.1	1799.1	1799.1	1798.8
31	Spring 2015	1845.0	1852.7	1800.3	1799.0	1799.0	1799.0	1799.0	1799.0	1799.0	1798.7
32	Fall 2015	1844.6	1851.9	1800.0	1798.1	1798.1	1798.1	1798.1	1798.1	1798.2	1797.8

Table A8. Simulated lake levels for the Average-Moderately Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1804.0	1804.0	1804.0	1804.1	1804.1	1804.1	1804.0	1794.3
2	Fall 2000	1845.0	1853.6	1803.0	1803.0	1803.1	1803.1	1803.1	1803.1	1803.0	1794.8
3	Spring 2001	1845.6	1854.2	1803.8	1803.8	1803.8	1803.8	1803.8	1803.8	1803.8	1797.0
4	Fall 2001	1845.5	1854.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1798.6
5	Spring 2002	1845.3	1853.9	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1799.5
6	Fall 2002	1844.7	1852.9	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1799.1
7	Spring 2003	1845.1	1853.4	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1799.4
8	Fall 2003	1844.7	1852.5	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1798.8
9	Spring 2004	1845.1	1853.2	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1799.3
10	Fall 2004	1844.9	1852.7	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.8
11	Spring 2005	1845.1	1853.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1799.0
12	Fall 2005	1845.0	1853.0	1800.1	1799.6	1799.6	1799.6	1799.7	1799.7	1799.6	1798.7
13	Spring 2006	1845.3	1853.6	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1799.2
14	Fall 2006	1845.3	1853.8	1800.5	1800.5	1800.5	1800.6	1800.6	1800.6	1800.5	1799.7
15	Spring 2007	1845.2	1853.7	1800.6	1800.6	1800.6	1800.7	1800.7	1800.7	1800.6	1799.8
16	Fall 2007	1844.9	1853.3	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1799.4
17	Spring 2008	1845.1	1853.6	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1799.5
18	Fall 2008	1844.9	1853.1	1800.1	1799.4	1799.4	1799.4	1799.4	1799.4	1799.4	1799.0
19	Spring 2009	1845.2	1853.6	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.4
20	Fall 2009	1844.9	1853.1	1800.0	1799.1	1799.1	1799.2	1799.2	1799.2	1799.1	1798.8
21	Spring 2010	1845.2	1853.6	1800.3	1799.5	1799.5	1799.5	1799.5	1799.5	1799.5	1799.1
22	Fall 2010	1844.5	1852.6	1799.8	1798.4	1798.4	1798.4	1798.4	1798.4	1798.6	1798.0
23	Spring 2011	1845.1	1853.2	1800.6	1798.7	1798.7	1798.7	1798.7	1798.7	1798.8	1798.1
24	Fall 2011	1845.0	1852.8	1800.3	1798.3	1798.1	1798.1	1798.1	1798.1	1798.3	1797.5
25	Spring 2012	1845.4	1853.7	1800.8	1799.1	1799.1	1799.1	1799.1	1799.1	1799.1	1798.2
26	Fall 2012	1845.1	1853.6	1800.3	1799.2	1799.2	1799.2	1799.2	1799.2	1799.2	1798.3
27	Spring 2013	1845.0	1853.6	1800.3	1799.1	1799.1	1799.1	1799.1	1799.1	1799.1	1798.3
28	Fall 2013	1844.6	1852.8	1800.0	1798.2	1798.1	1798.1	1798.1	1798.1	1798.2	1797.3
29	Spring 2014	1845.2	1853.6	1800.7	1798.5	1798.5	1798.4	1798.4	1798.4	1798.4	1797.4
30	Fall 2014	1844.7	1852.5	1800.1	1797.4	1797.2	1797.2	1797.4	1797.4	1797.4	1796.2
31	Spring 2015	1845.0	1852.7	1800.4	1797.8	1797.2	1797.2	1797.5	1797.5	1797.4	1796.2
32	Fall 2015	1844.6	1852.0	1800.1	1797.0	1796.2	1796.2	1796.8	1796.8	1796.7	1795.3

Table A9. Simulated lake levels for the Moderately Dry-Moderately Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1794.3
2	Fall 2000	1845.0	1853.6	1802.9	1802.9	1802.9	1803.0	1803.0	1803.0	1802.9	1794.7
3	Spring 2001	1845.5	1854.0	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.5
4	Fall 2001	1845.0	1853.4	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1796.5
5	Spring 2002	1845.2	1853.6	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1797.5
6	Fall 2002	1844.5	1852.7	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1796.9
7	Spring 2003	1845.1	1853.3	1800.9	1800.9	1801.0	1801.0	1801.0	1801.0	1800.9	1797.5
8	Fall 2003	1845.0	1852.9	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1797.2
9	Spring 2004	1845.3	1853.7	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1798.3
10	Fall 2004	1845.1	1853.6	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1798.6
11	Spring 2005	1845.0	1853.6	1800.4	1800.4	1800.4	1800.5	1800.5	1800.5	1800.4	1798.8
12	Fall 2005	1844.6	1852.8	1800.1	1799.3	1799.3	1799.4	1799.4	1799.4	1799.3	1797.9
13	Spring 2006	1845.2	1853.5	1800.5	1799.5	1799.5	1799.6	1799.6	1799.6	1799.5	1798.2
14	Fall 2006	1844.7	1852.5	1800.1	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1797.0
15	Spring 2007	1845.0	1852.7	1800.3	1798.3	1798.3	1798.3	1798.3	1798.3	1798.5	1796.9
16	Fall 2007	1844.6	1851.9	1800.0	1797.5	1797.4	1797.4	1797.6	1797.6	1797.7	1796.0
17	Spring 2008	1845.0	1852.2	1800.4	1798.0	1797.4	1797.4	1797.6	1797.6	1797.8	1796.1
18	Fall 2008	1844.8	1851.7	1800.1	1797.6	1796.7	1796.7	1797.1	1797.1	1797.3	1795.4
19	Spring 2009	1845.2	1852.5	1800.6	1798.5	1797.2	1797.2	1797.6	1797.6	1797.8	1795.8
20	Fall 2009	1844.8	1851.8	1800.1	1797.9	1796.4	1796.4	1797.0	1797.0	1797.2	1795.0
21	Spring 2010	1845.1	1852.5	1800.6	1798.5	1796.8	1796.8	1797.3	1797.3	1797.6	1795.4
22	Fall 2010	1844.5	1851.5	1800.0	1797.5	1795.7	1795.7	1796.5	1796.5	1796.6	1794.3
23	Spring 2011	1845.1	1852.1	1800.6	1798.3	1795.9	1795.9	1796.7	1796.7	1796.9	1794.5
24	Fall 2011	1845.0	1851.7	1800.3	1798.1	1795.3	1795.3	1796.2	1796.2	1796.4	1793.9
25	Spring 2012	1845.4	1853.1	1800.4	1798.7	1796.4	1796.4	1796.9	1796.9	1797.2	1794.8
26	Fall 2012	1845.1	1853.4	1800.5	1798.7	1796.6	1796.6	1797.0	1797.0	1797.3	1794.8
27	Spring 2013	1845.0	1853.4	1800.4	1798.5	1796.6	1796.6	1797.1	1797.1	1797.3	1794.7
28	Fall 2013	1844.6	1852.6	1800.0	1797.6	1795.6	1795.6	1796.3	1796.3	1796.5	1793.7
29	Spring 2014	1845.2	1853.3	1800.7	1798.5	1795.8	1795.8	1796.5	1796.5	1796.7	1794.0
30	Fall 2014	1844.6	1852.3	1800.1	1797.4	1794.6	1794.6	1795.5	1795.5	1795.7	1792.9
31	Spring 2015	1845.0	1852.5	1800.4	1797.8	1794.6	1794.6	1795.6	1795.6	1795.8	1792.9
32	Fall 2015	1844.6	1851.7	1800.1	1797.0	1793.6	1793.6	1794.8	1794.8	1795.1	1792.0

Table A10. Simulated lake levels for the Dry-Moderately Dry climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1794.5
2	Fall 2000	1845.0	1853.5	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1794.8
3	Spring 2001	1845.4	1853.9	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.5
4	Fall 2001	1844.9	1853.1	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1796.2
5	Spring 2002	1845.2	1853.6	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1797.0
6	Fall 2002	1845.0	1853.2	1801.0	1801.0	1801.0	1801.1	1801.1	1801.1	1801.0	1796.9
7	Spring 2003	1845.4	1853.8	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1798.1
8	Fall 2003	1845.1	1853.7	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1798.6
9	Spring 2004	1845.0	1853.6	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1798.9
10	Fall 2004	1844.6	1852.7	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1798.1
11	Spring 2005	1845.2	1853.5	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.5
12	Fall 2005	1844.6	1852.5	1799.8	1798.9	1798.9	1798.9	1798.9	1798.9	1799.0	1797.4
13	Spring 2006	1845.0	1852.7	1800.3	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.3
14	Fall 2006	1844.6	1851.9	1800.0	1798.0	1797.9	1797.9	1797.9	1797.9	1798.2	1796.4
15	Spring 2007	1845.0	1852.0	1800.4	1798.2	1797.7	1797.7	1797.7	1797.7	1798.1	1796.2
16	Fall 2007	1843.2	1849.8	1798.8	1795.7	1795.3	1795.3	1795.6	1795.6	1795.9	1793.8
17	Spring 2008	1843.2	1849.7	1798.9	1795.5	1795.1	1795.1	1795.6	1795.6	1795.9	1793.6
18	Fall 2008	1843.5	1849.4	1799.6	1794.9	1794.5	1794.5	1795.2	1795.2	1795.5	1793.1
19	Spring 2009	1845.0	1850.4	1800.6	1796.3	1794.9	1794.9	1795.7	1795.7	1796.0	1793.6
20	Fall 2009	1844.5	1849.7	1800.1	1795.7	1794.1	1794.1	1795.1	1795.1	1795.4	1792.8
21	Spring 2010	1845.1	1850.4	1800.5	1796.8	1794.4	1794.4	1795.5	1795.5	1795.8	1793.2
22	Fall 2010	1844.4	1849.4	1800.0	1795.8	1793.3	1793.3	1794.6	1794.6	1794.9	1792.2
23	Spring 2011	1845.1	1850.2	1800.6	1797.0	1793.6	1793.6	1794.9	1794.9	1795.3	1792.5
24	Fall 2011	1845.0	1849.8	1800.3	1796.8	1792.9	1792.9	1794.4	1794.4	1794.8	1791.9
25	Spring 2012	1845.4	1851.2	1800.8	1798.6	1793.9	1793.9	1795.1	1795.1	1795.7	1792.8
26	Fall 2012	1845.1	1851.6	1800.6	1798.7	1794.1	1794.1	1795.3	1795.3	1795.8	1792.9
27	Spring 2013	1845.0	1851.6	1800.4	1798.6	1794.2	1794.2	1795.3	1795.3	1795.9	1792.8
28	Fall 2013	1844.6	1850.8	1800.0	1797.6	1793.1	1793.1	1794.5	1794.5	1795.1	1791.9
29	Spring 2014	1845.2	1851.7	1800.7	1798.5	1793.5	1793.5	1794.7	1794.7	1795.4	1792.3
30	Fall 2014	1844.7	1850.7	1800.1	1797.5	1792.3	1792.3	1793.8	1793.8	1794.4	1791.2
31	Spring 2015	1845.0	1850.9	1800.4	1797.9	1792.3	1792.3	1793.9	1793.9	1794.5	1791.2
32	Fall 2015	1844.6	1850.1	1800.0	1797.0	1791.4	1791.4	1793.1	1793.1	1793.8	1790.3

Table A11. Simulated lake levels for the Wet-Average climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1794.4
2	Fall 2000	1845.4	1854.0	1804.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1796.1
3	Spring 2001	1845.5	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1797.6
4	Fall 2001	1845.0	1853.6	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1798.0
5	Spring 2002	1845.1	1853.7	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1798.9
6	Fall 2002	1845.3	1853.9	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1800.0
7	Spring 2003	1845.8	1854.4	1804.4	1804.4	1804.4	1804.5	1804.5	1804.5	1804.4	1801.5
8	Fall 2003	1845.2	1853.8	1803.9	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1801.7
9	Spring 2004	1845.9	1854.7	1805.5	1805.5	1805.5	1805.5	1805.5	1805.5	1805.5	1803.3
10	Fall 2004	1845.5	1854.3	1805.8	1805.8	1805.8	1805.9	1805.9	1805.9	1805.8	1804.0
11	Spring 2005	1845.6	1854.4	1806.5	1806.5	1806.5	1806.5	1806.5	1806.5	1806.5	1804.8
12	Fall 2005	1845.2	1853.8	1806.2	1806.2	1806.3	1806.3	1806.3	1806.3	1806.2	1805.0
13	Spring 2006	1846.1	1854.9	1807.9	1807.9	1807.9	1808.0	1808.0	1808.0	1807.9	1806.5
14	Fall 2006	1845.3	1854.0	1807.5	1807.5	1807.5	1807.5	1807.5	1807.5	1807.5	1806.3
15	Spring 2007	1846.0	1854.8	1809.0	1809.0	1809.0	1809.1	1809.1	1809.1	1809.0	1807.6
16	Fall 2007	1845.3	1854.0	1808.6	1808.6	1808.6	1808.7	1808.7	1808.7	1808.6	1807.5
17	Spring 2008	1845.6	1854.2	1809.2	1809.2	1809.2	1809.3	1809.3	1809.3	1809.2	1808.1
18	Fall 2008	1845.0	1853.6	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1807.7
19	Spring 2009	1845.6	1854.2	1809.5	1809.5	1809.5	1809.6	1809.6	1809.6	1809.5	1808.6
20	Fall 2009	1845.5	1854.2	1810.1	1810.1	1810.1	1810.1	1810.1	1810.1	1810.1	1809.2
21	Spring 2010	1845.3	1853.9	1810.1	1810.2	1810.2	1810.2	1810.2	1810.2	1810.2	1809.3
22	Fall 2010	1844.7	1852.9	1808.9	1808.9	1808.9	1809.0	1809.0	1809.0	1808.9	1808.3
23	Spring 2011	1845.1	1853.4	1808.7	1808.7	1808.7	1808.7	1808.7	1808.7	1808.7	1808.1
24	Fall 2011	1844.7	1852.5	1807.6	1807.6	1807.6	1807.6	1807.6	1807.6	1807.6	1807.1
25	Spring 2012	1845.1	1853.1	1807.7	1807.7	1807.7	1807.7	1807.7	1807.7	1807.7	1807.3
26	Fall 2012	1844.9	1852.6	1806.9	1806.9	1806.9	1806.9	1806.9	1806.9	1806.9	1806.6
27	Spring 2013	1845.1	1853.0	1806.9	1806.9	1806.9	1806.9	1806.9	1806.9	1806.9	1806.5
28	Fall 2013	1845.0	1853.0	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1806.1
29	Spring 2014	1845.3	1853.6	1806.7	1806.7	1806.7	1806.7	1806.7	1806.7	1806.7	1806.3
30	Fall 2014	1845.3	1853.8	1807.1	1807.1	1807.1	1807.1	1807.1	1807.1	1807.1	1806.6
31	Spring 2015	1845.2	1853.7	1807.1	1807.1	1807.1	1807.1	1807.1	1807.1	1807.1	1806.6
32	Fall 2015	1844.9	1853.3	1806.5	1806.5	1806.5	1806.5	1806.5	1806.5	1806.5	1806.1

Table A12. Simulated lake levels for the Moderately Wet-Average climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1794.2
2	Fall 2000	1845.1	1853.7	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1795.1
3	Spring 2001	1845.8	1854.4	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1797.5
4	Fall 2001	1845.8	1854.7	1805.3	1805.3	1805.4	1805.4	1805.4	1805.4	1805.3	1799.8
5	Spring 2002	1845.5	1854.2	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1800.9
6	Fall 2002	1845.3	1853.9	1805.1	1805.1	1805.1	1805.2	1805.2	1805.2	1805.1	1801.7
7	Spring 2003	1845.8	1854.4	1805.8	1805.9	1805.9	1805.9	1805.9	1805.9	1805.9	1802.9
8	Fall 2003	1845.1	1853.7	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1802.9
9	Spring 2004	1845.2	1853.7	1805.0	1805.0	1805.0	1805.1	1805.1	1805.1	1805.0	1803.3
10	Fall 2004	1845.2	1853.7	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1803.7
11	Spring 2005	1845.2	1853.7	1805.1	1805.1	1805.1	1805.2	1805.2	1805.2	1805.1	1804.0
12	Fall 2005	1844.9	1853.1	1804.2	1804.2	1804.2	1804.3	1804.3	1804.3	1804.2	1803.4
13	Spring 2006	1845.2	1853.6	1804.3	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1803.6
14	Fall 2006	1844.8	1852.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1802.7
15	Spring 2007	1845.0	1853.0	1803.2	1803.2	1803.2	1803.3	1803.3	1803.3	1803.2	1802.8
16	Fall 2007	1844.9	1852.5	1802.5	1802.5	1802.5	1802.6	1802.6	1802.6	1802.5	1802.2
17	Spring 2008	1845.2	1853.2	1802.8	1802.8	1802.8	1802.8	1802.8	1802.8	1802.8	1802.4
18	Fall 2008	1844.9	1852.6	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1801.8
19	Spring 2009	1845.3	1853.6	1802.8	1802.8	1802.8	1802.8	1802.8	1802.8	1802.8	1802.4
20	Fall 2009	1845.3	1853.8	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1802.9
21	Spring 2010	1845.3	1853.8	1803.6	1803.6	1803.6	1803.6	1803.6	1803.6	1803.6	1803.0
22	Fall 2010	1844.7	1852.8	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.0
23	Spring 2011	1845.1	1853.2	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1801.9
24	Fall 2011	1844.7	1852.4	1801.3	1801.3	1801.3	1801.3	1801.3	1801.3	1801.3	1800.9
25	Spring 2012	1845.1	1853.0	1801.5	1801.5	1801.5	1801.5	1801.5	1801.5	1801.5	1801.1
26	Fall 2012	1844.9	1852.5	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.4
27	Spring 2013	1845.1	1852.9	1800.8	1800.8	1800.8	1800.9	1800.9	1800.9	1800.8	1800.5
28	Fall 2013	1845.0	1852.8	1800.4	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.1
29	Spring 2014	1845.3	1853.6	1800.8	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.4
30	Fall 2014	1845.3	1853.8	1801.3	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1800.8
31	Spring 2015	1845.2	1853.7	1801.4	1801.4	1801.4	1801.5	1801.5	1801.5	1801.4	1800.9
32	Fall 2015	1844.9	1853.3	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.4

Table A13. Simulated lake levels for the Average-Average climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.7	1854.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1794.4
2	Fall 2000	1845.0	1853.6	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1794.9
3	Spring 2001	1845.6	1854.2	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1797.1
4	Fall 2001	1845.5	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1798.7
5	Spring 2002	1845.3	1853.9	1803.9	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1799.6
6	Fall 2002	1844.7	1852.9	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1799.1
7	Spring 2003	1845.1	1853.3	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1799.5
8	Fall 2003	1844.7	1852.5	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1798.8
9	Spring 2004	1845.1	1853.1	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1799.3
10	Fall 2004	1844.9	1852.6	1800.1	1800.1	1800.1	1800.2	1800.2	1800.2	1800.1	1798.8
11	Spring 2005	1845.1	1853.0	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1799.0
12	Fall 2005	1845.0	1853.0	1800.1	1799.6	1799.6	1799.6	1799.7	1799.7	1799.6	1798.8
13	Spring 2006	1845.3	1853.6	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1799.2
14	Fall 2006	1845.3	1853.8	1800.5	1800.5	1800.5	1800.6	1800.6	1800.6	1800.5	1799.7
15	Spring 2007	1845.2	1853.7	1800.6	1800.6	1800.6	1800.7	1800.7	1800.7	1800.6	1799.8
16	Fall 2007	1844.9	1853.3	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1799.4
17	Spring 2008	1845.1	1853.6	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1799.6
18	Fall 2008	1844.9	1853.2	1800.2	1799.6	1799.6	1799.6	1799.6	1799.6	1799.6	1799.1
19	Spring 2009	1845.3	1853.8	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1799.9
20	Fall 2009	1845.5	1854.0	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1800.7
21	Spring 2010	1845.3	1853.9	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1800.8
22	Fall 2010	1844.7	1852.9	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1799.9
23	Spring 2011	1845.1	1853.3	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1799.8
24	Fall 2011	1844.7	1852.4	1800.0	1799.3	1799.3	1799.3	1799.3	1799.3	1799.3	1798.8
25	Spring 2012	1845.1	1853.1	1800.3	1799.6	1799.6	1799.6	1799.6	1799.6	1799.6	1799.1
26	Fall 2012	1844.9	1852.5	1800.2	1798.8	1798.8	1798.8	1798.8	1798.8	1798.9	1798.4
27	Spring 2013	1845.1	1853.0	1800.6	1798.9	1798.9	1798.9	1798.9	1798.9	1799.0	1798.4
28	Fall 2013	1845.1	1852.9	1800.5	1798.6	1798.6	1798.6	1798.6	1798.6	1798.7	1798.0
29	Spring 2014	1845.3	1853.6	1800.4	1799.1	1799.1	1799.1	1799.1	1799.1	1799.1	1798.3
30	Fall 2014	1845.3	1853.8	1801.0	1799.6	1799.6	1799.6	1799.7	1799.7	1799.6	1798.8
31	Spring 2015	1845.2	1853.7	1799.9	1799.8	1799.8	1799.9	1799.9	1799.9	1799.8	1799.0
32	Fall 2015	1844.9	1853.3	1799.9	1799.2	1799.2	1799.2	1799.2	1799.2	1799.2	1798.5

Table A14. Simulated lake levels for the Moderately Dry-Average climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1794.2
2	Fall 2000	1845.0	1853.5	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1794.6
3	Spring 2001	1845.5	1854.0	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.4
4	Fall 2001	1845.0	1853.4	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1796.5
5	Spring 2002	1845.1	1853.6	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1797.5
6	Fall 2002	1844.5	1852.7	1800.9	1800.9	1800.9	1801.0	1801.0	1801.0	1800.9	1796.8
7	Spring 2003	1845.1	1853.2	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1797.4
8	Fall 2003	1845.0	1852.9	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1797.1
9	Spring 2004	1845.3	1853.7	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1798.2
10	Fall 2004	1845.1	1853.6	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1798.6
11	Spring 2005	1845.0	1853.6	1800.4	1800.4	1800.4	1800.5	1800.5	1800.5	1800.4	1798.7
12	Fall 2005	1844.6	1852.8	1800.1	1799.3	1799.3	1799.4	1799.4	1799.4	1799.3	1797.9
13	Spring 2006	1845.2	1853.5	1800.6	1799.5	1799.5	1799.6	1799.6	1799.6	1799.5	1798.2
14	Fall 2006	1844.7	1852.5	1800.1	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1797.0
15	Spring 2007	1845.0	1852.7	1800.4	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1796.9
16	Fall 2007	1844.6	1851.9	1800.0	1797.5	1797.4	1797.4	1797.6	1797.6	1797.7	1796.0
17	Spring 2008	1845.0	1852.4	1800.5	1798.2	1797.5	1797.5	1797.6	1797.6	1797.9	1796.1
18	Fall 2008	1844.9	1851.9	1800.2	1797.8	1796.9	1796.9	1797.2	1797.2	1797.5	1795.5
19	Spring 2009	1845.3	1853.0	1800.7	1798.7	1797.8	1797.8	1797.8	1797.8	1798.2	1796.2
20	Fall 2009	1845.3	1853.6	1800.8	1798.7	1798.7	1798.7	1798.7	1798.7	1798.8	1796.7
21	Spring 2010	1845.3	1853.7	1800.6	1799.1	1799.1	1799.1	1799.1	1799.1	1799.0	1796.9
22	Fall 2010	1844.6	1852.7	1800.0	1798.0	1798.0	1798.0	1798.0	1798.0	1798.0	1795.8
23	Spring 2011	1845.1	1853.1	1800.6	1798.5	1797.9	1797.9	1797.9	1797.9	1798.0	1795.7
24	Fall 2011	1844.6	1852.3	1800.1	1797.6	1796.9	1796.9	1797.1	1797.1	1797.1	1794.7
25	Spring 2012	1845.1	1852.9	1800.6	1798.4	1797.1	1797.1	1797.3	1797.3	1797.4	1795.0
26	Fall 2012	1844.9	1852.4	1800.3	1798.0	1796.4	1796.4	1796.7	1796.7	1796.8	1794.3
27	Spring 2013	1845.1	1852.8	1800.6	1798.5	1796.5	1796.5	1796.8	1796.8	1796.9	1794.4
28	Fall 2013	1845.1	1852.8	1800.5	1798.5	1796.1	1796.1	1796.6	1796.6	1796.7	1794.0
29	Spring 2014	1845.3	1853.6	1800.2	1798.7	1796.8	1796.8	1796.9	1796.9	1797.1	1794.5
30	Fall 2014	1845.3	1853.8	1800.8	1798.7	1797.7	1797.7	1797.7	1797.7	1797.6	1795.0
31	Spring 2015	1845.2	1853.7	1800.4	1798.7	1798.0	1798.0	1798.0	1798.0	1797.7	1795.2
32	Fall 2015	1844.9	1853.3	1800.1	1798.3	1797.5	1797.5	1797.6	1797.6	1797.3	1794.6

Table A15. Simulated lake levels for the the Dry-Average climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1794.5
2	Fall 2000	1845.0	1853.5	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1794.8
3	Spring 2001	1845.4	1853.9	1803.3	1803.3	1803.3	1803.4	1803.4	1803.4	1803.3	1796.5
4	Fall 2001	1844.9	1853.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1796.2
5	Spring 2002	1845.2	1853.6	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1797.0
6	Fall 2002	1845.0	1853.2	1801.0	1801.0	1801.0	1801.1	1801.1	1801.1	1801.0	1796.9
7	Spring 2003	1845.4	1853.8	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1798.1
8	Fall 2003	1845.1	1853.7	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1798.6
9	Spring 2004	1845.0	1853.6	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1798.9
10	Fall 2004	1844.6	1852.7	1799.9	1799.9	1799.9	1800.0	1800.0	1800.0	1799.9	1798.1
11	Spring 2005	1845.2	1853.5	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.5
12	Fall 2005	1844.6	1852.5	1799.8	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.3
13	Spring 2006	1845.0	1852.6	1800.3	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.2
14	Fall 2006	1844.6	1851.8	1800.0	1797.9	1797.8	1797.8	1797.8	1797.8	1798.2	1796.3
15	Spring 2007	1845.0	1852.0	1800.4	1798.2	1797.6	1797.6	1797.6	1797.6	1798.1	1796.1
16	Fall 2007	1843.1	1849.8	1798.8	1795.7	1795.3	1795.3	1795.6	1795.6	1795.9	1793.7
17	Spring 2008	1843.3	1849.7	1799.0	1795.6	1795.2	1795.2	1795.6	1795.6	1796.0	1793.6
18	Fall 2008	1843.7	1849.6	1799.8	1795.1	1794.7	1794.7	1795.3	1795.3	1795.7	1793.2
19	Spring 2009	1845.1	1850.9	1800.7	1797.1	1795.4	1795.4	1796.1	1796.1	1796.5	1794.0
20	Fall 2009	1845.3	1851.9	1800.8	1798.5	1796.0	1796.0	1796.6	1796.6	1797.0	1794.6
21	Spring 2010	1845.3	1852.6	1800.2	1798.7	1796.5	1796.5	1796.8	1796.8	1797.2	1794.8
22	Fall 2010	1844.6	1851.6	1799.8	1797.6	1795.4	1795.4	1795.9	1795.9	1796.3	1793.7
23	Spring 2011	1845.1	1852.1	1800.6	1798.2	1795.3	1795.3	1795.8	1795.8	1796.3	1793.7
24	Fall 2011	1844.6	1851.2	1800.1	1797.3	1794.3	1794.3	1795.0	1795.0	1795.4	1792.7
25	Spring 2012	1845.1	1851.9	1800.6	1798.3	1794.6	1794.6	1795.3	1795.3	1795.8	1793.1
26	Fall 2012	1844.9	1851.4	1800.3	1797.9	1793.8	1793.8	1794.7	1794.7	1795.2	1792.4
27	Spring 2013	1845.1	1851.9	1800.6	1798.4	1794.0	1794.0	1794.8	1794.8	1795.4	1792.5
28	Fall 2013	1845.1	1851.8	1800.5	1798.4	1793.7	1793.7	1794.6	1794.6	1795.2	1792.2
29	Spring 2014	1845.3	1852.7	1800.2	1798.7	1794.4	1794.4	1794.9	1794.9	1795.6	1792.8
30	Fall 2014	1845.3	1853.6	1800.4	1798.7	1795.3	1795.3	1795.4	1795.4	1796.2	1793.4
31	Spring 2015	1845.2	1853.7	1800.2	1798.7	1795.7	1795.7	1795.5	1795.5	1796.3	1793.6
32	Fall 2015	1844.9	1853.2	1800.1	1798.2	1795.1	1795.1	1795.1	1795.1	1795.9	1793.1

Table A16. Simulated lake levels for the the Wet-Moderately Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.0	1804.0	1804.0	1804.1	1804.1	1804.1	1804.0	1794.4
2	Fall 2000	1845.4	1854.0	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1796.0
3	Spring 2001	1845.5	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1797.6
4	Fall 2001	1845.0	1853.6	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1797.9
5	Spring 2002	1845.1	1853.7	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1798.8
6	Fall 2002	1845.3	1853.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1800.0
7	Spring 2003	1845.8	1854.4	1804.3	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1801.5
8	Fall 2003	1845.2	1853.8	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1801.6
9	Spring 2004	1845.9	1854.7	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1803.2
10	Fall 2004	1845.5	1854.2	1805.7	1805.7	1805.7	1805.7	1805.7	1805.7	1805.7	1803.9
11	Spring 2005	1845.6	1854.3	1806.3	1806.3	1806.3	1806.3	1806.4	1806.4	1806.3	1804.7
12	Fall 2005	1845.2	1853.8	1806.1	1806.1	1806.1	1806.1	1806.1	1806.1	1806.1	1804.8
13	Spring 2006	1846.1	1854.8	1807.8	1807.8	1807.8	1807.8	1807.8	1807.8	1807.8	1806.3
14	Fall 2006	1845.3	1854.0	1807.4	1807.4	1807.4	1807.4	1807.4	1807.4	1807.4	1806.1
15	Spring 2007	1846.0	1854.9	1808.9	1808.9	1808.9	1809.0	1809.0	1809.0	1808.9	1807.5
16	Fall 2007	1845.3	1854.0	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1807.4
17	Spring 2008	1845.5	1854.1	1808.9	1808.9	1808.9	1809.0	1809.0	1809.0	1808.9	1807.8
18	Fall 2008	1845.1	1853.7	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1808.6	1807.7
19	Spring 2009	1845.8	1854.4	1809.7	1809.7	1809.7	1809.8	1809.8	1809.8	1809.7	1808.7
20	Fall 2009	1845.8	1854.7	1811.0	1811.0	1811.0	1811.0	1811.0	1811.0	1811.0	1809.9
21	Spring 2010	1845.5	1854.2	1811.2	1811.2	1811.2	1811.2	1811.2	1811.2	1811.2	1810.1
22	Fall 2010	1845.3	1853.9	1811.2	1811.2	1811.2	1811.2	1811.2	1811.2	1811.2	1810.3
23	Spring 2011	1845.8	1854.4	1811.5	1811.5	1811.5	1811.5	1811.5	1811.5	1811.5	1811.3
24	Fall 2011	1845.1	1853.7	1811.0	1811.0	1811.0	1811.0	1811.0	1811.0	1811.0	1810.8
25	Spring 2012	1845.2	1853.7	1811.1	1811.1	1811.1	1811.1	1811.1	1811.1	1811.1	1810.8
26	Fall 2012	1845.2	1853.7	1811.3	1811.3	1811.3	1811.3	1811.3	1811.3	1811.3	1810.9
27	Spring 2013	1845.2	1853.7	1811.4	1811.4	1811.4	1811.4	1811.4	1811.4	1811.4	1811.0
28	Fall 2013	1844.9	1853.1	1810.5	1810.5	1810.5	1810.5	1810.5	1810.5	1810.5	1810.2
29	Spring 2014	1845.2	1853.6	1810.6	1810.6	1810.6	1810.6	1810.6	1810.6	1810.6	1810.3
30	Fall 2014	1844.8	1852.8	1809.6	1809.6	1809.6	1809.6	1809.6	1809.6	1809.6	1809.3
31	Spring 2015	1845.0	1853.0	1809.5	1809.5	1809.5	1809.5	1809.5	1809.5	1809.5	1809.2
32	Fall 2015	1844.9	1852.5	1808.8	1808.8	1808.8	1808.8	1808.8	1808.8	1808.8	1808.6

Table A17. Simulated lake levels for the Moderately Wet-Moderately Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1794.2
2	Fall 2000	1845.1	1853.7	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1795.1
3	Spring 2001	1845.8	1854.4	1804.2	1804.2	1804.2	1804.3	1804.3	1804.3	1804.2	1797.4
4	Fall 2001	1845.8	1854.7	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1799.8
5	Spring 2002	1845.5	1854.2	1805.2	1805.2	1805.2	1805.3	1805.3	1805.3	1805.2	1800.8
6	Fall 2002	1845.3	1853.9	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1801.6
7	Spring 2003	1845.8	1854.4	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1802.9
8	Fall 2003	1845.1	1853.7	1805.0	1805.0	1805.0	1805.1	1805.1	1805.1	1805.0	1802.8
9	Spring 2004	1845.2	1853.7	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1803.3
10	Fall 2004	1845.2	1853.7	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1803.7
11	Spring 2005	1845.2	1853.7	1805.1	1805.1	1805.1	1805.2	1805.2	1805.2	1805.1	1804.0
12	Fall 2005	1844.9	1853.1	1804.2	1804.2	1804.2	1804.3	1804.3	1804.3	1804.2	1803.4
13	Spring 2006	1845.2	1853.6	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1803.6
14	Fall 2006	1844.8	1852.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1802.7
15	Spring 2007	1845.0	1853.0	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1802.7
16	Fall 2007	1844.9	1852.5	1802.5	1802.5	1802.5	1802.6	1802.6	1802.6	1802.5	1802.1
17	Spring 2008	1845.1	1853.0	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.2
18	Fall 2008	1845.0	1852.9	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1801.9
19	Spring 2009	1845.4	1853.7	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1802.6
20	Fall 2009	1845.6	1854.2	1804.4	1804.4	1804.4	1804.5	1804.5	1804.5	1804.4	1803.7
21	Spring 2010	1845.4	1854.0	1804.8	1804.8	1804.8	1804.8	1804.8	1804.8	1804.8	1804.0
22	Fall 2010	1845.3	1853.8	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1804.2
23	Spring 2011	1845.8	1854.4	1805.9	1805.9	1805.9	1806.0	1806.0	1806.0	1805.9	1804.9
24	Fall 2011	1845.1	1853.7	1805.3	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1804.6
25	Spring 2012	1845.2	1853.7	1805.5	1805.5	1805.5	1805.5	1805.5	1805.5	1805.5	1804.7
26	Fall 2012	1845.2	1853.7	1805.7	1805.7	1805.7	1805.7	1805.7	1805.7	1805.7	1805.0
27	Spring 2013	1845.2	1853.7	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.2
28	Fall 2013	1844.9	1853.1	1804.9	1804.9	1804.9	1805.0	1805.0	1805.0	1804.9	1804.4
29	Spring 2014	1845.2	1853.6	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1804.6
30	Fall 2014	1844.8	1852.8	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1803.7
31	Spring 2015	1845.0	1853.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1803.7
32	Fall 2015	1844.9	1852.5	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.0

Table A18. Simulated lake levels for the Average-Moderately Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.0	1804.0	1804.0	1804.1	1804.1	1804.1	1804.0	1794.4
2	Fall 2000	1845.0	1853.6	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1794.9
3	Spring 2001	1845.6	1854.2	1803.8	1803.8	1803.8	1803.9	1803.9	1803.9	1803.8	1797.0
4	Fall 2001	1845.5	1854.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1798.6
5	Spring 2002	1845.3	1853.9	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1799.5
6	Fall 2002	1844.7	1852.9	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1799.1
7	Spring 2003	1845.2	1853.4	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1799.4
8	Fall 2003	1844.7	1852.5	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1798.8
9	Spring 2004	1845.1	1853.2	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1799.3
10	Fall 2004	1844.9	1852.6	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.8
11	Spring 2005	1845.1	1853.0	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1799.0
12	Fall 2005	1845.0	1852.9	1800.1	1799.6	1799.6	1799.6	1799.6	1799.6	1799.6	1798.7
13	Spring 2006	1845.3	1853.6	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1799.2
14	Fall 2006	1845.3	1853.8	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1799.7
15	Spring 2007	1845.2	1853.7	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1799.8
16	Fall 2007	1844.9	1853.3	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1799.4
17	Spring 2008	1845.1	1853.5	1799.9	1799.9	1799.9	1800.0	1800.0	1800.0	1799.9	1799.4
18	Fall 2008	1845.1	1853.6	1799.8	1799.8	1799.8	1799.8	1799.8	1799.8	1799.8	1799.3
19	Spring 2009	1845.4	1854.0	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.1
20	Fall 2009	1845.8	1854.6	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1801.5
21	Spring 2010	1845.5	1854.2	1802.9	1802.9	1802.9	1803.0	1803.0	1803.0	1802.9	1801.9
22	Fall 2010	1845.3	1853.9	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1802.2
23	Spring 2011	1845.8	1854.4	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1803.0
24	Fall 2011	1845.1	1853.7	1803.6	1803.6	1803.6	1803.6	1803.6	1803.6	1803.6	1802.7
25	Spring 2012	1845.2	1853.7	1803.7	1803.7	1803.7	1803.7	1803.7	1803.7	1803.7	1802.9
26	Fall 2012	1845.2	1853.7	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1803.2
27	Spring 2013	1845.2	1853.7	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1804.1	1803.4
28	Fall 2013	1844.9	1853.1	1803.2	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1802.7
29	Spring 2014	1845.2	1853.6	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1802.9
30	Fall 2014	1844.8	1852.8	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.0
31	Spring 2015	1845.0	1853.0	1802.3	1802.3	1802.3	1802.4	1802.4	1802.4	1802.3	1802.0
32	Fall 2015	1844.9	1852.5	1801.7	1801.7	1801.7	1801.7	1801.7	1801.7	1801.7	1801.4

Table A19. Simulated lake levels for the Moderately Dry-Moderately Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1794.3
2	Fall 2000	1845.0	1853.5	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1794.7
3	Spring 2001	1845.5	1854.0	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.5
4	Fall 2001	1845.0	1853.4	1802.2	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1796.5
5	Spring 2002	1845.2	1853.6	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1797.5
6	Fall 2002	1844.5	1852.7	1800.9	1800.9	1800.9	1801.0	1801.0	1801.0	1800.9	1796.8
7	Spring 2003	1845.1	1853.2	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1797.5
8	Fall 2003	1845.0	1852.8	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1797.1
9	Spring 2004	1845.3	1853.7	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1798.2
10	Fall 2004	1845.1	1853.6	1800.6	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1798.5
11	Spring 2005	1845.0	1853.6	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1798.7
12	Fall 2005	1844.6	1852.7	1800.0	1799.3	1799.3	1799.3	1799.3	1799.3	1799.3	1797.8
13	Spring 2006	1845.2	1853.5	1800.5	1799.5	1799.5	1799.5	1799.5	1799.5	1799.5	1798.1
14	Fall 2006	1844.7	1852.5	1800.1	1798.3	1798.3	1798.3	1798.3	1798.3	1798.5	1796.9
15	Spring 2007	1845.0	1852.7	1800.4	1798.3	1798.3	1798.3	1798.3	1798.3	1798.5	1796.9
16	Fall 2007	1844.6	1851.9	1800.0	1797.5	1797.4	1797.4	1797.6	1797.6	1797.7	1796.0
17	Spring 2008	1845.0	1852.2	1800.4	1797.9	1797.3	1797.3	1797.6	1797.6	1797.7	1795.9
18	Fall 2008	1845.0	1852.1	1800.4	1798.1	1797.0	1797.0	1797.5	1797.5	1797.6	1795.7
19	Spring 2009	1845.4	1853.6	1800.6	1798.3	1798.3	1798.3	1798.3	1798.3	1798.4	1796.4
20	Fall 2009	1845.6	1854.1	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1797.8
21	Spring 2010	1845.4	1854.0	1800.3	1800.3	1800.3	1800.3	1800.3	1800.3	1800.3	1798.3
22	Fall 2010	1845.3	1853.8	1800.4	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1798.8
23	Spring 2011	1845.8	1854.4	1801.6	1801.6	1801.6	1801.6	1801.7	1801.7	1801.6	1799.9
24	Fall 2011	1845.1	1853.7	1801.0	1801.0	1801.0	1801.1	1801.1	1801.1	1801.0	1799.6
25	Spring 2012	1845.2	1853.7	1801.2	1801.2	1801.2	1801.2	1801.2	1801.2	1801.2	1800.0
26	Fall 2012	1845.2	1853.7	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1800.4
27	Spring 2013	1845.2	1853.7	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1800.6
28	Fall 2013	1844.9	1853.1	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1800.7	1800.0
29	Spring 2014	1845.2	1853.6	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.2
30	Fall 2014	1844.8	1852.8	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.3
31	Spring 2015	1845.0	1853.0	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.4
32	Fall 2015	1844.9	1852.5	1799.9	1799.2	1799.2	1799.2	1799.2	1799.2	1799.2	1798.8

Table A20. Simulated lake levels for the Dry-Moderately Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.7	1854.2	1804.2	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1794.6
2	Fall 2000	1845.0	1853.5	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1794.9
3	Spring 2001	1845.4	1853.9	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1796.6
4	Fall 2001	1844.9	1853.1	1802.0	1802.0	1802.0	1802.1	1802.1	1802.1	1802.0	1796.3
5	Spring 2002	1845.2	1853.6	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1801.9	1797.1
6	Fall 2002	1845.0	1853.2	1801.0	1801.0	1801.0	1801.1	1801.1	1801.1	1801.0	1796.9
7	Spring 2003	1845.3	1853.8	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1801.6	1798.1
8	Fall 2003	1845.1	1853.7	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1798.6
9	Spring 2004	1845.0	1853.6	1801.0	1801.1	1801.1	1801.1	1801.1	1801.1	1801.1	1798.9
10	Fall 2004	1844.6	1852.7	1799.9	1799.9	1799.9	1800.0	1800.0	1800.0	1799.9	1798.1
11	Spring 2005	1845.2	1853.5	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.5
12	Fall 2005	1844.6	1852.5	1799.8	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.3
13	Spring 2006	1845.0	1852.7	1800.3	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.3
14	Fall 2006	1844.6	1851.9	1800.0	1797.9	1797.9	1797.9	1797.9	1797.9	1798.2	1796.4
15	Spring 2007	1845.0	1852.0	1800.4	1798.1	1797.6	1797.6	1797.6	1797.6	1798.1	1796.2
16	Fall 2007	1843.2	1849.8	1798.8	1795.7	1795.3	1795.3	1795.6	1795.6	1795.9	1793.8
17	Spring 2008	1843.1	1849.5	1798.8	1795.3	1795.0	1795.0	1795.5	1795.5	1795.8	1793.5
18	Fall 2008	1844.3	1850.0	1800.2	1795.6	1794.9	1794.9	1795.5	1795.5	1795.8	1793.5
19	Spring 2009	1845.3	1851.5	1800.8	1798.2	1795.7	1795.7	1796.2	1796.2	1796.7	1794.4
20	Fall 2009	1845.5	1853.4	1801.1	1798.7	1797.4	1797.4	1797.3	1797.3	1797.9	1795.6
21	Spring 2010	1845.4	1853.7	1801.1	1798.3	1798.3	1798.3	1798.3	1798.3	1798.2	1796.0
22	Fall 2010	1845.3	1853.7	1800.5	1798.8	1798.8	1798.8	1798.8	1798.8	1798.4	1796.2
23	Spring 2011	1845.8	1854.3	1800.1	1800.1	1800.1	1800.2	1800.2	1800.2	1800.1	1797.4
24	Fall 2011	1845.1	1853.6	1800.1	1799.6	1799.6	1799.6	1799.6	1799.6	1799.6	1797.1
25	Spring 2012	1845.2	1853.7	1799.8	1799.8	1799.8	1799.8	1799.8	1799.8	1799.8	1797.4
26	Fall 2012	1845.2	1853.7	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1797.9
27	Spring 2013	1845.2	1853.7	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1798.3
28	Fall 2013	1844.9	1853.1	1800.1	1799.3	1799.3	1799.3	1799.3	1799.3	1799.3	1797.6
29	Spring 2014	1845.2	1853.6	1800.4	1799.5	1799.5	1799.5	1799.5	1799.5	1799.5	1798.0
30	Fall 2014	1844.8	1852.8	1800.1	1798.5	1798.5	1798.5	1798.5	1798.5	1798.7	1797.0
31	Spring 2015	1845.0	1853.0	1800.4	1798.6	1798.6	1798.6	1798.6	1798.6	1798.7	1797.0
32	Fall 2015	1844.9	1852.5	1800.2	1798.1	1797.9	1797.9	1798.0	1798.0	1798.2	1796.3

Table A21. Simulated lake levels for the Wet-Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.0	1804.0	1804.0	1804.1	1804.1	1804.1	1804.0	1794.4
2	Fall 2000	1845.4	1854.0	1804.1	1804.1	1804.1	1804.2	1804.2	1804.2	1804.1	1796.1
3	Spring 2001	1845.5	1854.0	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1797.5
4	Fall 2001	1845.0	1853.6	1803.2	1803.2	1803.3	1803.3	1803.3	1803.3	1803.2	1797.9
5	Spring 2002	1845.1	1853.7	1803.0	1803.0	1803.1	1803.1	1803.1	1803.1	1803.0	1798.8
6	Fall 2002	1845.3	1853.8	1803.3	1803.3	1803.3	1803.4	1803.4	1803.4	1803.3	1800.0
7	Spring 2003	1845.8	1854.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1801.5
8	Fall 2003	1845.2	1853.8	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1803.9	1801.6
9	Spring 2004	1845.9	1854.7	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1805.4	1803.2
10	Fall 2004	1845.5	1854.2	1805.7	1805.7	1805.7	1805.7	1805.8	1805.8	1805.7	1803.9
11	Spring 2005	1845.6	1854.3	1806.3	1806.3	1806.3	1806.4	1806.4	1806.4	1806.3	1804.7
12	Fall 2005	1845.2	1853.8	1806.1	1806.1	1806.1	1806.1	1806.1	1806.1	1806.1	1804.9
13	Spring 2006	1846.1	1854.9	1807.8	1807.8	1807.8	1807.9	1807.9	1807.9	1807.8	1806.4
14	Fall 2006	1845.3	1854.0	1807.4	1807.4	1807.4	1807.4	1807.4	1807.4	1807.4	1806.2
15	Spring 2007	1846.0	1854.8	1808.9	1808.9	1808.9	1808.9	1808.9	1808.9	1808.9	1807.5
16	Fall 2007	1845.3	1853.9	1808.5	1808.5	1808.5	1808.5	1808.5	1808.5	1808.5	1807.4
17	Spring 2008	1845.6	1854.2	1809.1	1809.1	1809.1	1809.1	1809.1	1809.1	1809.1	1808.0
18	Fall 2008	1845.4	1854.1	1809.4	1809.5	1809.5	1809.5	1809.5	1809.5	1809.5	1808.4
19	Spring 2009	1845.5	1854.1	1809.7	1809.7	1809.7	1809.8	1809.8	1809.8	1809.7	1808.7
20	Fall 2009	1845.0	1853.6	1809.1	1809.1	1809.1	1809.1	1809.1	1809.1	1809.1	1808.3
21	Spring 2010	1845.1	1853.7	1809.2	1809.2	1809.2	1809.2	1809.2	1809.2	1809.2	1808.5
22	Fall 2010	1845.3	1853.8	1809.6	1809.6	1809.6	1809.7	1809.7	1809.7	1809.6	1809.0
23	Spring 2011	1845.8	1854.4	1810.7	1810.7	1810.7	1810.7	1810.7	1810.7	1810.7	1809.8
24	Fall 2011	1845.2	1853.8	1810.3	1810.3	1810.3	1810.3	1810.3	1810.3	1810.3	1809.5
25	Spring 2012	1845.9	1854.6	1811.5	1811.5	1811.5	1811.5	1811.5	1811.5	1811.5	1810.8
26	Fall 2012	1845.5	1854.2	1811.5	1811.5	1811.6	1811.6	1811.6	1811.6	1811.6	1811.5
27	Spring 2013	1845.6	1854.3	1812.0	1812.0	1812.1	1812.1	1812.1	1812.1	1812.1	1812.0
28	Fall 2013	1845.2	1853.8	1811.9	1811.9	1811.9	1812.0	1812.0	1812.0	1811.9	1811.9
29	Spring 2014	1846.0	1854.8	1813.2	1813.2	1813.2	1813.3	1813.3	1813.3	1813.2	1813.2
30	Fall 2014	1845.3	1854.0	1812.8	1812.8	1812.8	1812.9	1812.9	1812.9	1812.8	1812.8
31	Spring 2015	1846.0	1854.9	1813.9	1813.9	1814.0	1814.0	1814.0	1814.0	1814.0	1813.9
32	Fall 2015	1845.3	1854.0	1813.6	1813.5	1813.6	1813.6	1813.6	1813.6	1813.6	1813.5

Table A22. Simulated lake levels for the Moderately Wet-Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1803.8	1803.8	1803.8	1803.8	1803.9	1803.9	1803.8	1794.1
2	Fall 2000	1845.1	1853.7	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1795.1
3	Spring 2001	1845.8	1854.4	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1797.4
4	Fall 2001	1845.8	1854.7	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1799.8
5	Spring 2002	1845.5	1854.2	1805.2	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1800.8
6	Fall 2002	1845.3	1853.9	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1801.6
7	Spring 2003	1845.8	1854.4	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1805.8	1802.9
8	Fall 2003	1845.1	1853.7	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1802.8
9	Spring 2004	1845.2	1853.7	1804.9	1805.0	1805.0	1805.0	1805.0	1805.0	1805.0	1803.2
10	Fall 2004	1845.2	1853.7	1805.0	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1803.7
11	Spring 2005	1845.2	1853.7	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1805.1	1804.0
12	Fall 2005	1844.9	1853.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1803.3
13	Spring 2006	1845.2	1853.6	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1804.3	1803.6
14	Fall 2006	1844.8	1852.8	1803.2	1803.2	1803.2	1803.3	1803.3	1803.3	1803.2	1802.7
15	Spring 2007	1845.0	1853.0	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1802.7
16	Fall 2007	1844.9	1852.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.1
17	Spring 2008	1845.2	1853.2	1802.7	1802.7	1802.7	1802.7	1802.7	1802.7	1802.7	1802.3
18	Fall 2008	1845.2	1853.6	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1803.1	1802.6
19	Spring 2009	1845.2	1853.7	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1803.2	1802.7
20	Fall 2009	1844.9	1853.2	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.2
21	Spring 2010	1845.1	1853.6	1802.7	1802.7	1802.7	1802.7	1802.7	1802.7	1802.7	1802.3
22	Fall 2010	1845.3	1853.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1802.8
23	Spring 2011	1845.8	1854.5	1804.7	1804.7	1804.7	1804.7	1804.7	1804.7	1804.7	1803.8
24	Fall 2011	1845.2	1853.8	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1804.4	1803.6
25	Spring 2012	1845.9	1854.7	1806.0	1806.0	1806.0	1806.0	1806.0	1806.0	1806.0	1804.9
26	Fall 2012	1845.5	1854.3	1806.4	1806.4	1806.4	1806.5	1806.5	1806.5	1806.4	1805.4
27	Spring 2013	1845.6	1854.3	1807.1	1807.2	1807.2	1807.2	1807.2	1807.2	1807.2	1806.1
28	Fall 2013	1845.2	1853.8	1807.0	1807.0	1807.0	1807.0	1807.0	1807.0	1807.0	1806.1
29	Spring 2014	1846.1	1854.9	1808.7	1808.7	1808.7	1808.7	1808.7	1808.7	1808.7	1807.5
30	Fall 2014	1845.3	1854.0	1808.3	1808.3	1808.3	1808.3	1808.3	1808.3	1808.3	1807.2
31	Spring 2015	1846.0	1854.8	1809.8	1809.8	1809.8	1809.8	1809.8	1809.8	1809.8	1808.5
32	Fall 2015	1845.3	1853.9	1809.4	1809.4	1809.4	1809.5	1809.5	1809.5	1809.4	1808.4

Table A23. Simulated lake levels for the Average-Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1804.0	1804.0	1804.0	1804.0	1804.1	1804.1	1804.0	1794.3
2	Fall 2000	1845.0	1853.6	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1794.8
3	Spring 2001	1845.6	1854.2	1803.8	1803.8	1803.8	1803.8	1803.9	1803.9	1803.8	1797.0
4	Fall 2001	1845.5	1854.2	1804.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1798.6
5	Spring 2002	1845.3	1853.9	1803.9	1803.9	1803.9	1804.0	1804.0	1804.0	1803.9	1799.5
6	Fall 2002	1844.7	1852.9	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1802.5	1799.1
7	Spring 2003	1845.1	1853.3	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1802.1	1799.4
8	Fall 2003	1844.7	1852.5	1800.8	1800.8	1800.8	1800.9	1800.9	1800.9	1800.8	1798.8
9	Spring 2004	1845.1	1853.1	1800.9	1800.9	1800.9	1801.0	1801.0	1801.0	1800.9	1799.3
10	Fall 2004	1844.9	1852.6	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1800.1	1798.8
11	Spring 2005	1845.1	1853.0	1800.0	1800.0	1800.0	1800.0	1800.1	1800.1	1800.0	1798.9
12	Fall 2005	1845.1	1852.9	1800.1	1799.6	1799.6	1799.6	1799.6	1799.6	1799.6	1798.7
13	Spring 2006	1845.3	1853.6	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1799.1
14	Fall 2006	1845.3	1853.8	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1800.5	1799.6
15	Spring 2007	1845.2	1853.7	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1799.8
16	Fall 2007	1844.9	1853.3	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1800.0	1799.3
17	Spring 2008	1845.1	1853.6	1800.1	1800.1	1800.1	1800.2	1800.2	1800.2	1800.1	1799.5
18	Fall 2008	1845.4	1853.9	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.1
19	Spring 2009	1845.2	1853.7	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.9	1800.2
20	Fall 2009	1845.0	1853.5	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1800.4	1799.8
21	Spring 2010	1845.1	1853.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.0
22	Fall 2010	1845.3	1853.8	1801.2	1801.2	1801.2	1801.3	1801.3	1801.3	1801.2	1800.6
23	Spring 2011	1845.8	1854.4	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1802.6	1801.7
24	Fall 2011	1845.2	1853.8	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1802.4	1801.5
25	Spring 2012	1845.9	1854.6	1804.0	1804.0	1804.0	1804.1	1804.1	1804.1	1804.0	1802.9
26	Fall 2012	1845.5	1854.2	1804.5	1804.5	1804.5	1804.5	1804.6	1804.6	1804.5	1803.4
27	Spring 2013	1845.6	1854.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1805.3	1804.1
28	Fall 2013	1845.2	1853.8	1805.1	1805.1	1805.1	1805.2	1805.2	1805.2	1805.1	1804.2
29	Spring 2014	1846.1	1854.8	1806.9	1806.9	1806.9	1806.9	1806.9	1806.9	1806.9	1805.7
30	Fall 2014	1845.3	1854.0	1806.5	1806.5	1806.5	1806.6	1806.6	1806.6	1806.5	1805.4
31	Spring 2015	1846.0	1854.8	1808.1	1808.1	1808.1	1808.1	1808.1	1808.1	1808.1	1806.8
32	Fall 2015	1845.3	1853.9	1807.7	1807.7	1807.8	1807.8	1807.8	1807.8	1807.7	1806.7

Table A24. Simulated lake levels for the Moderately Dry-Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1804.0	1794.3
2	Fall 2000	1845.0	1853.5	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1802.9	1794.7
3	Spring 2001	1845.5	1854.0	1803.4	1803.4	1803.4	1803.5	1803.5	1803.5	1803.4	1796.5
4	Fall 2001	1845.0	1853.4	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1802.3	1796.5
5	Spring 2002	1845.2	1853.7	1802.3	1802.3	1802.3	1802.4	1802.4	1802.4	1802.3	1797.6
6	Fall 2002	1844.5	1852.7	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1796.9
7	Spring 2003	1845.1	1853.2	1800.9	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1797.5
8	Fall 2003	1845.0	1852.8	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1800.2	1797.2
9	Spring 2004	1845.4	1853.7	1800.8	1800.8	1800.9	1800.9	1800.9	1800.9	1800.8	1798.3
10	Fall 2004	1845.1	1853.6	1800.7	1800.7	1800.7	1800.8	1800.8	1800.8	1800.7	1798.7
11	Spring 2005	1845.0	1853.6	1800.4	1800.4	1800.4	1800.5	1800.5	1800.5	1800.4	1798.8
12	Fall 2005	1844.7	1852.8	1800.1	1799.4	1799.4	1799.4	1799.4	1799.4	1799.4	1798.0
13	Spring 2006	1845.2	1853.5	1800.5	1799.5	1799.5	1799.6	1799.6	1799.6	1799.5	1798.3
14	Fall 2006	1844.7	1852.5	1800.1	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1797.1
15	Spring 2007	1845.0	1852.7	1800.4	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1797.0
16	Fall 2007	1844.6	1851.9	1800.0	1797.5	1797.4	1797.4	1797.6	1797.6	1797.7	1796.1
17	Spring 2008	1845.0	1852.4	1800.5	1798.2	1797.5	1797.5	1797.6	1797.6	1798.0	1796.2
18	Fall 2008	1845.3	1853.2	1800.7	1798.7	1798.1	1798.1	1798.1	1798.1	1798.4	1796.6
19	Spring 2009	1845.2	1853.6	1800.7	1798.4	1798.4	1798.4	1798.4	1798.4	1798.5	1796.6
20	Fall 2009	1844.9	1853.1	1800.3	1798.2	1797.9	1797.9	1797.9	1797.9	1798.0	1796.1
21	Spring 2010	1845.1	1853.6	1800.6	1798.6	1798.1	1798.1	1798.1	1798.1	1798.3	1796.2
22	Fall 2010	1845.3	1853.8	1800.9	1799.0	1799.0	1799.0	1799.0	1799.0	1798.9	1796.8
23	Spring 2011	1845.8	1854.5	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1800.6	1798.3
24	Fall 2011	1845.2	1853.8	1800.3	1800.3	1800.3	1800.4	1800.4	1800.4	1800.3	1798.3
25	Spring 2012	1846.0	1854.7	1802.1	1802.1	1802.1	1802.2	1802.2	1802.2	1802.1	1800.1
26	Fall 2012	1845.5	1854.3	1802.6	1802.6	1802.6	1802.7	1802.7	1802.7	1802.6	1800.8
27	Spring 2013	1845.6	1854.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1803.4	1801.7
28	Fall 2013	1845.2	1853.8	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1803.3	1801.9
29	Spring 2014	1846.1	1854.9	1805.1	1805.1	1805.1	1805.2	1805.2	1805.2	1805.1	1803.5
30	Fall 2014	1845.3	1854.0	1804.7	1804.7	1804.7	1804.7	1804.8	1804.8	1804.7	1803.4
31	Spring 2015	1846.0	1854.8	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1806.4	1804.9
32	Fall 2015	1845.3	1853.9	1806.0	1806.0	1806.0	1806.0	1806.0	1806.0	1806.0	1804.8

Table A25. Simulated lake levels for the Dry-Wet climate scenario (in feet above sea level).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	1845.6	1854.1	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1804.2	1794.5
2	Fall 2000	1845.0	1853.5	1803.0	1803.0	1803.0	1803.1	1803.1	1803.1	1803.0	1794.8
3	Spring 2001	1845.4	1853.9	1803.3	1803.3	1803.3	1803.4	1803.4	1803.4	1803.3	1796.5
4	Fall 2001	1844.9	1853.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1796.2
5	Spring 2002	1845.2	1853.6	1801.8	1801.8	1801.8	1801.9	1801.9	1801.9	1801.8	1797.0
6	Fall 2002	1845.0	1853.2	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1801.0	1796.8
7	Spring 2003	1845.3	1853.8	1801.5	1801.5	1801.5	1801.6	1801.6	1801.6	1801.5	1798.0
8	Fall 2003	1845.1	1853.7	1801.3	1801.4	1801.4	1801.4	1801.4	1801.4	1801.4	1798.5
9	Spring 2004	1845.0	1853.6	1801.0	1801.0	1801.0	1801.1	1801.1	1801.1	1801.0	1798.8
10	Fall 2004	1844.6	1852.7	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1799.9	1798.0
11	Spring 2005	1845.2	1853.5	1800.0	1800.0	1800.0	1800.1	1800.1	1800.1	1800.0	1798.4
12	Fall 2005	1844.7	1852.5	1799.8	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.3
13	Spring 2006	1845.0	1852.7	1800.3	1798.8	1798.8	1798.8	1798.8	1798.8	1799.0	1797.2
14	Fall 2006	1844.6	1851.9	1800.0	1797.9	1797.9	1797.9	1797.9	1797.9	1798.2	1796.3
15	Spring 2007	1845.0	1852.0	1800.4	1798.1	1797.6	1797.6	1797.6	1797.6	1798.1	1796.1
16	Fall 2007	1843.2	1849.8	1798.8	1795.7	1795.3	1795.3	1795.6	1795.6	1795.9	1793.7
17	Spring 2008	1843.3	1849.8	1799.0	1795.6	1795.2	1795.2	1795.7	1795.7	1796.0	1793.6
18	Fall 2008	1845.2	1851.4	1800.8	1797.7	1795.8	1795.8	1796.2	1796.2	1796.7	1794.4
19	Spring 2009	1845.2	1851.9	1800.7	1798.5	1796.0	1796.0	1796.3	1796.3	1796.8	1794.5
20	Fall 2009	1844.9	1851.5	1800.3	1798.2	1795.4	1795.4	1796.0	1796.0	1796.4	1794.0
21	Spring 2010	1845.1	1852.0	1800.6	1798.6	1795.7	1795.7	1796.2	1796.2	1796.7	1794.2
22	Fall 2010	1845.3	1853.0	1800.5	1798.7	1796.7	1796.7	1796.8	1796.8	1797.3	1794.8
23	Spring 2011	1845.8	1854.1	1802.0	1798.8	1798.8	1798.8	1798.8	1798.8	1798.4	1796.1
24	Fall 2011	1845.2	1853.7	1800.5	1798.9	1798.9	1798.9	1798.9	1798.9	1798.2	1795.9
25	Spring 2012	1845.9	1854.6	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1800.8	1797.8
26	Fall 2012	1845.5	1854.2	1801.2	1801.2	1801.2	1801.3	1801.3	1801.3	1801.2	1798.7
27	Spring 2013	1845.6	1854.3	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1802.0	1799.7
28	Fall 2013	1845.2	1853.8	1801.8	1801.8	1801.8	1801.9	1801.9	1801.9	1801.8	1800.0
29	Spring 2014	1846.1	1854.8	1803.7	1803.7	1803.7	1803.8	1803.8	1803.8	1803.7	1801.8
30	Fall 2014	1845.3	1854.0	1803.3	1803.3	1803.3	1803.4	1803.4	1803.4	1803.3	1801.7
31	Spring 2015	1846.0	1854.8	1805.0	1805.0	1805.0	1805.1	1805.1	1805.1	1805.0	1803.3
32	Fall 2015	1845.3	1854.0	1804.7	1804.7	1804.7	1804.7	1804.7	1804.7	1804.7	1803.3

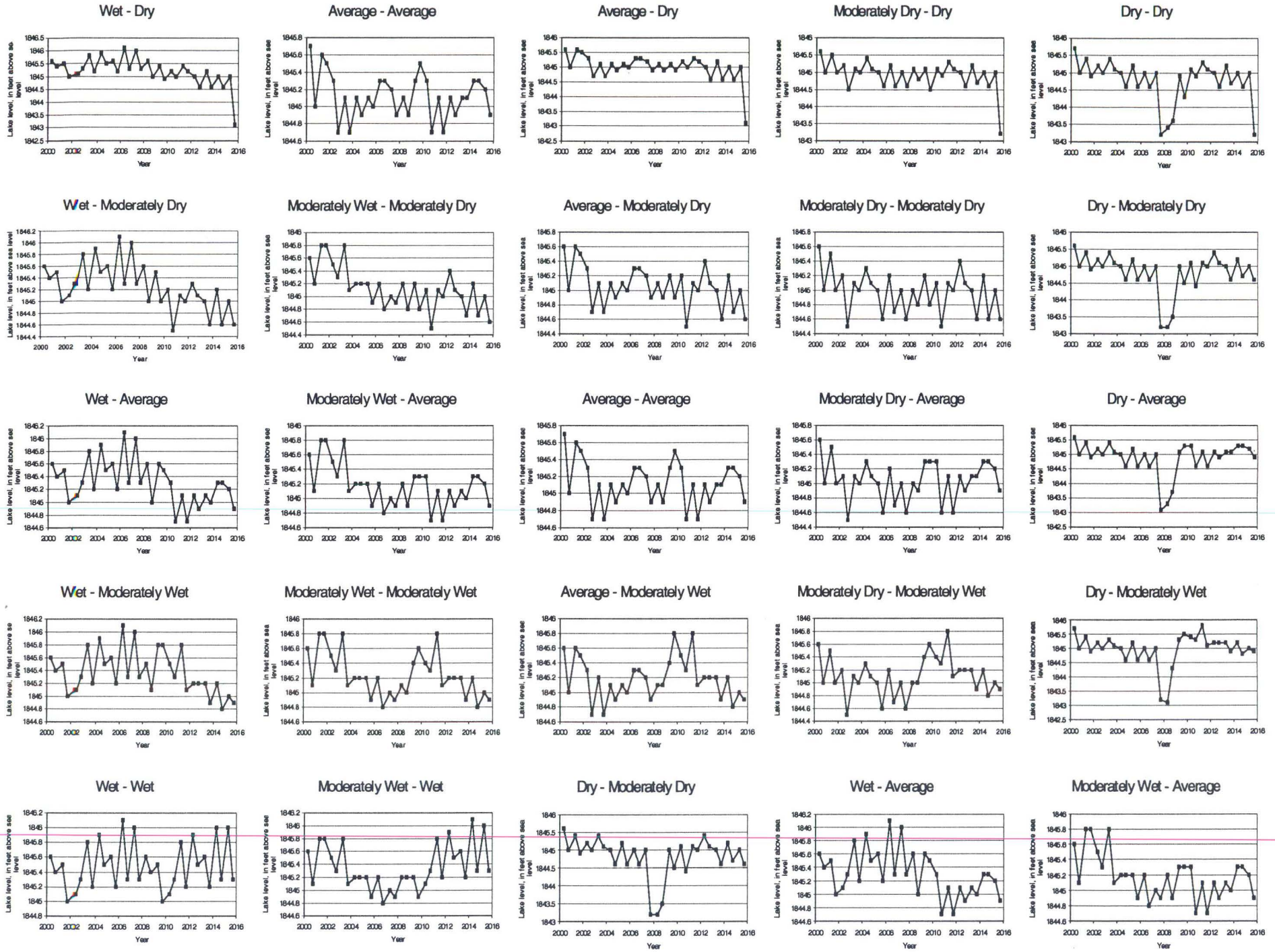

Figure A1. Simulated lake levels for Pickerel Lake.

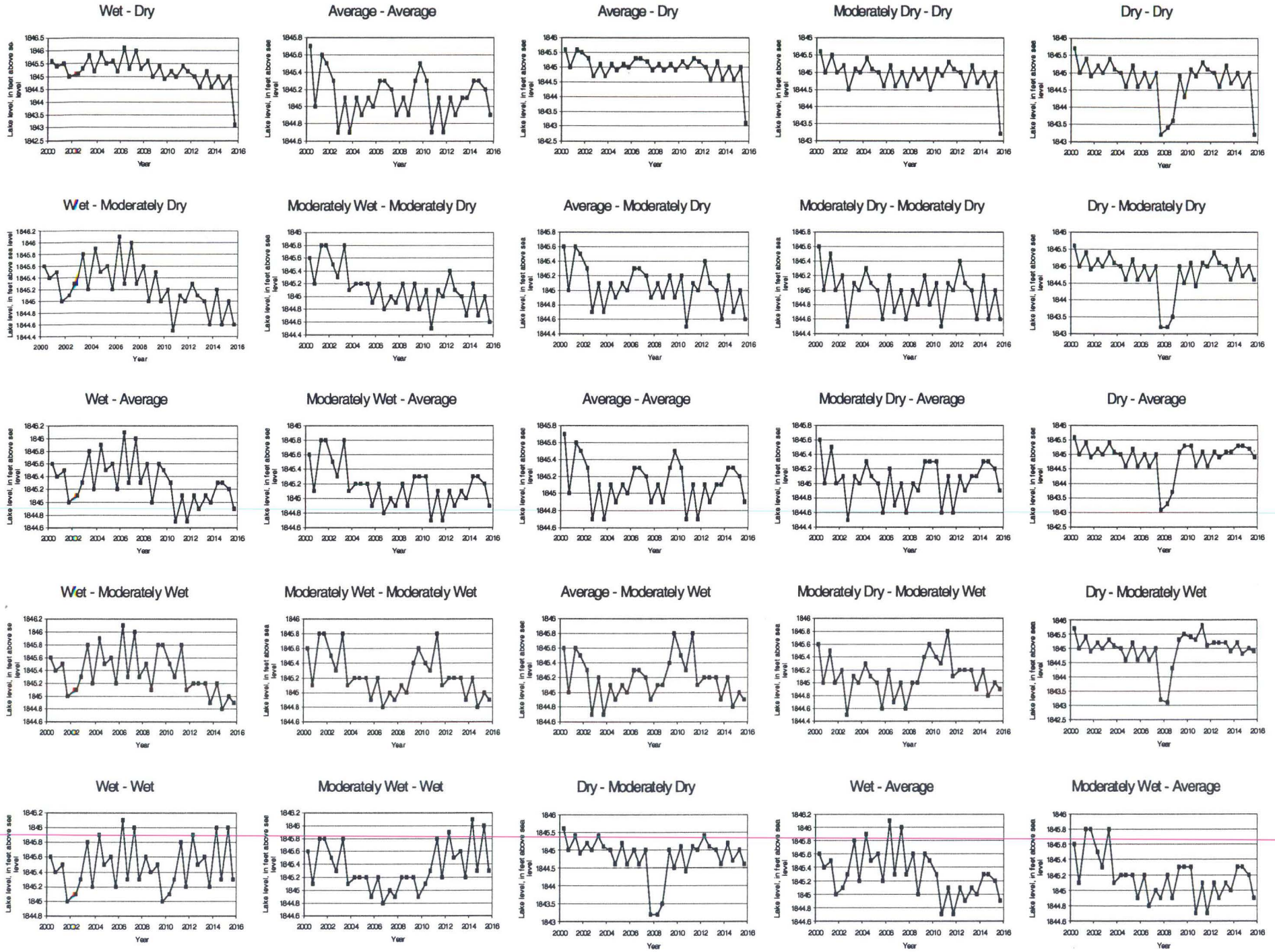

Figure A1. Simulated lake levels for Pickerel Lake.

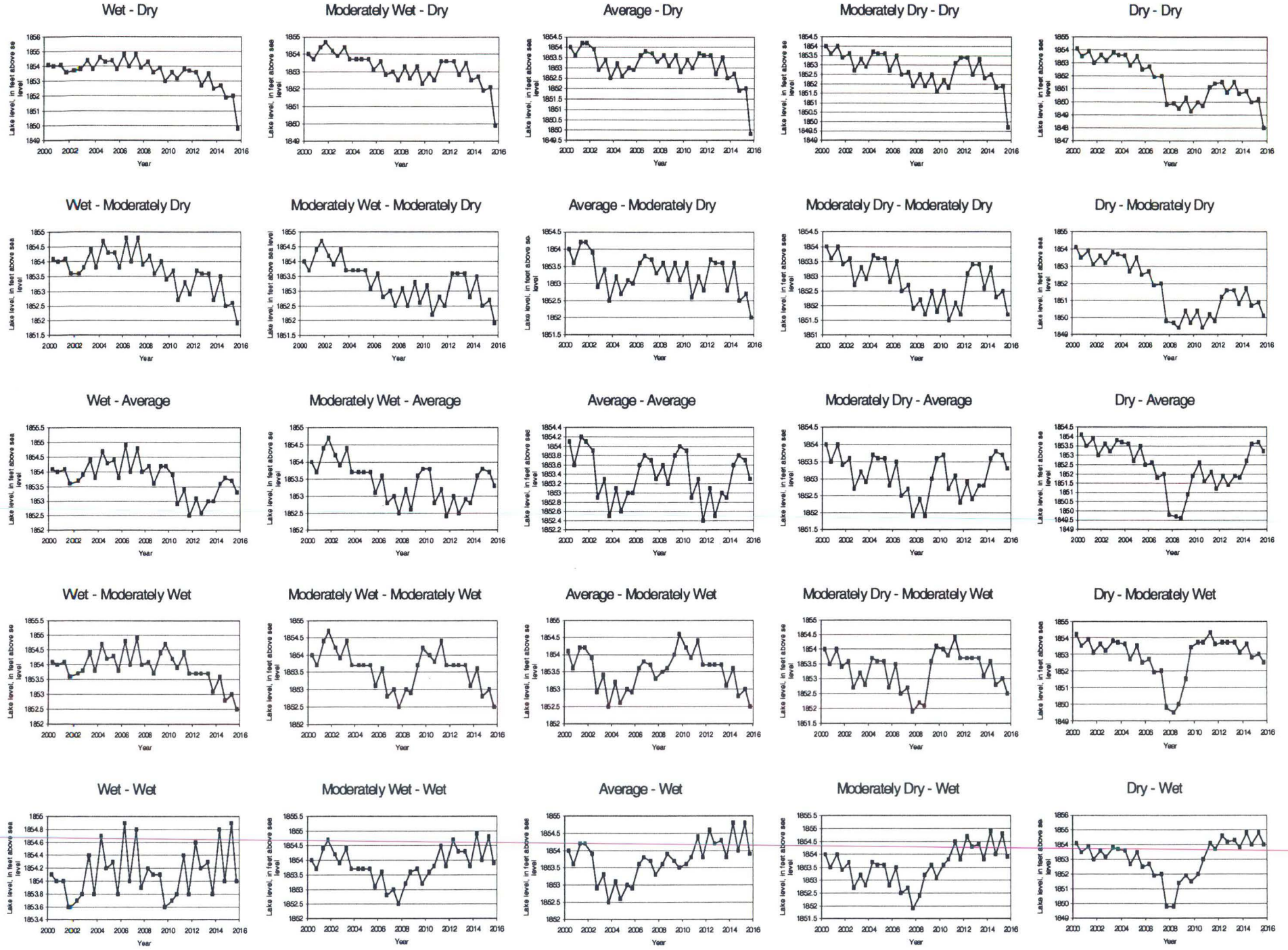

Figure A2. Simulated lake levels for Enemy Swim Lake.

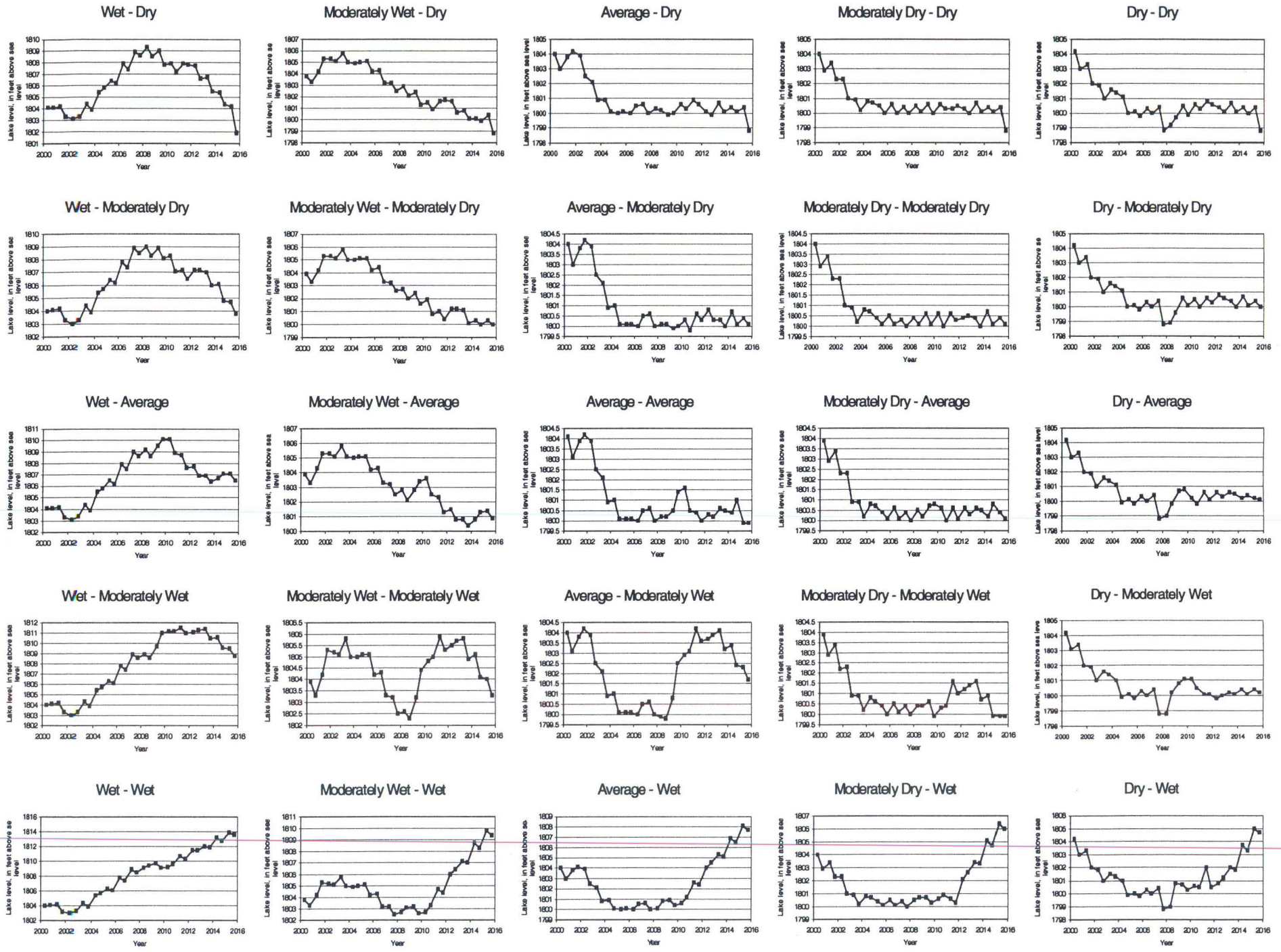

Figure A3. Simulated lake levels for Blue Dog Lake.

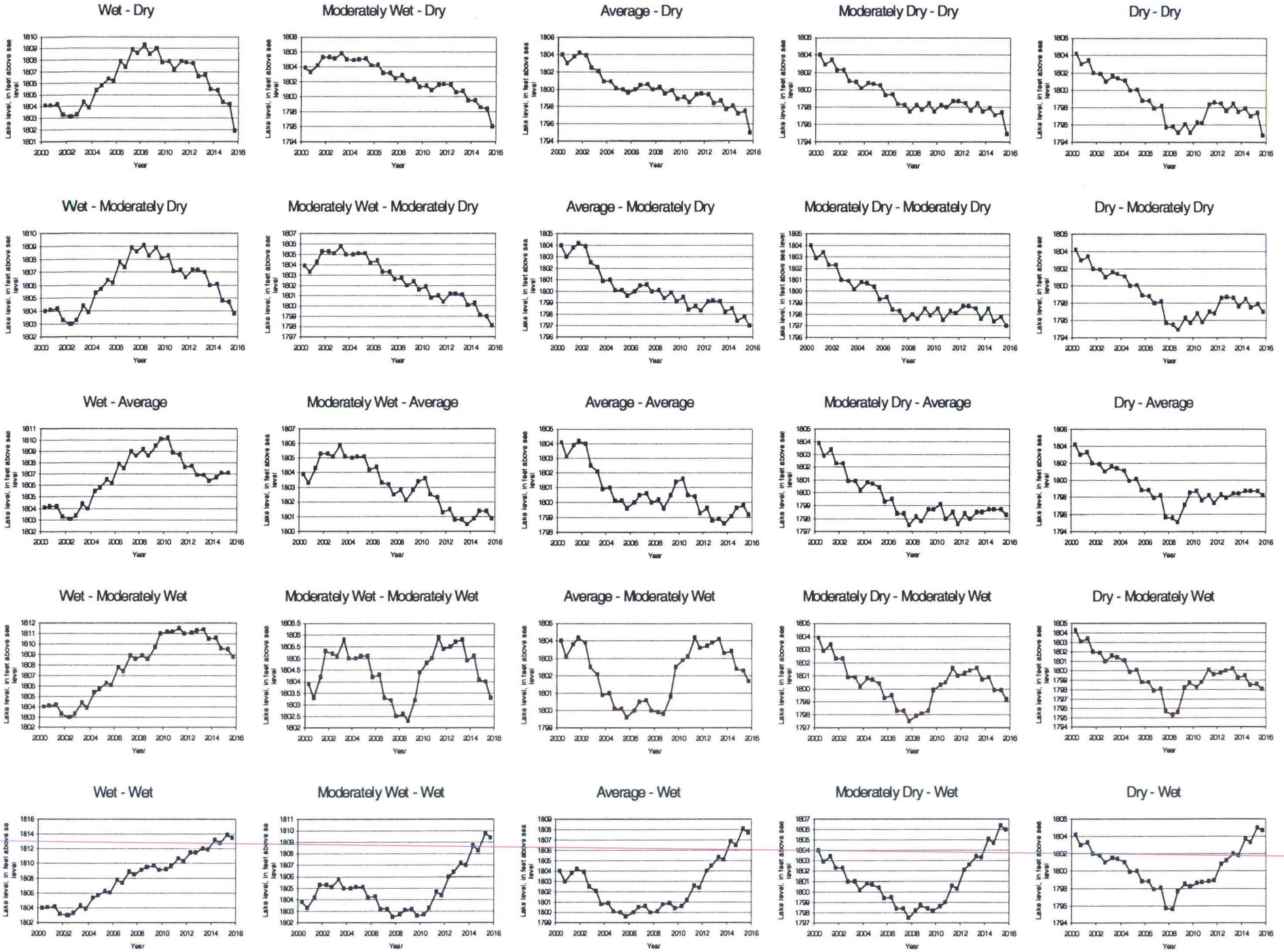

Figure A4. Simulated lake levels for Rush Lake

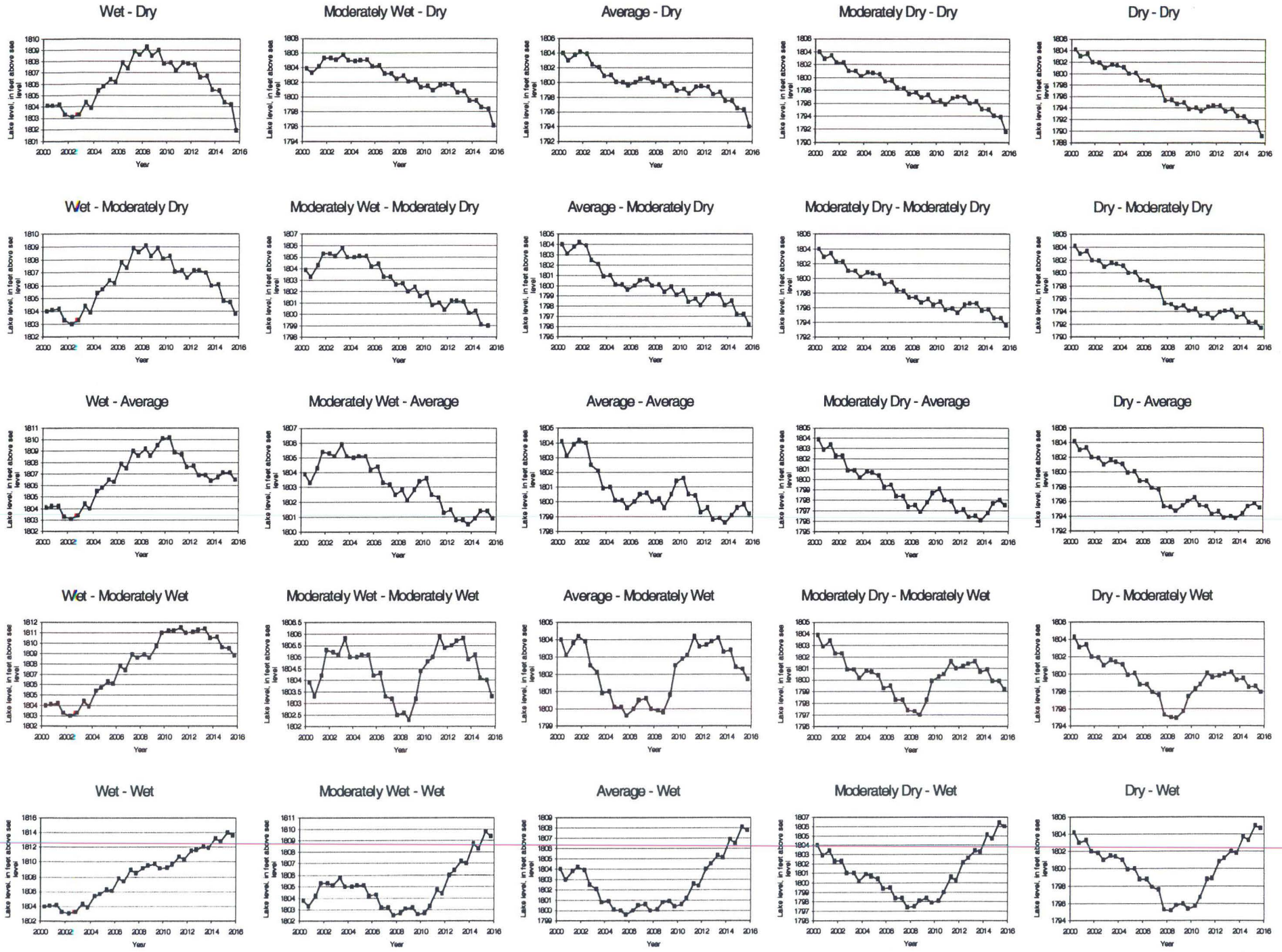

Figure A5. Simulated lake levels for Waubay Lake.

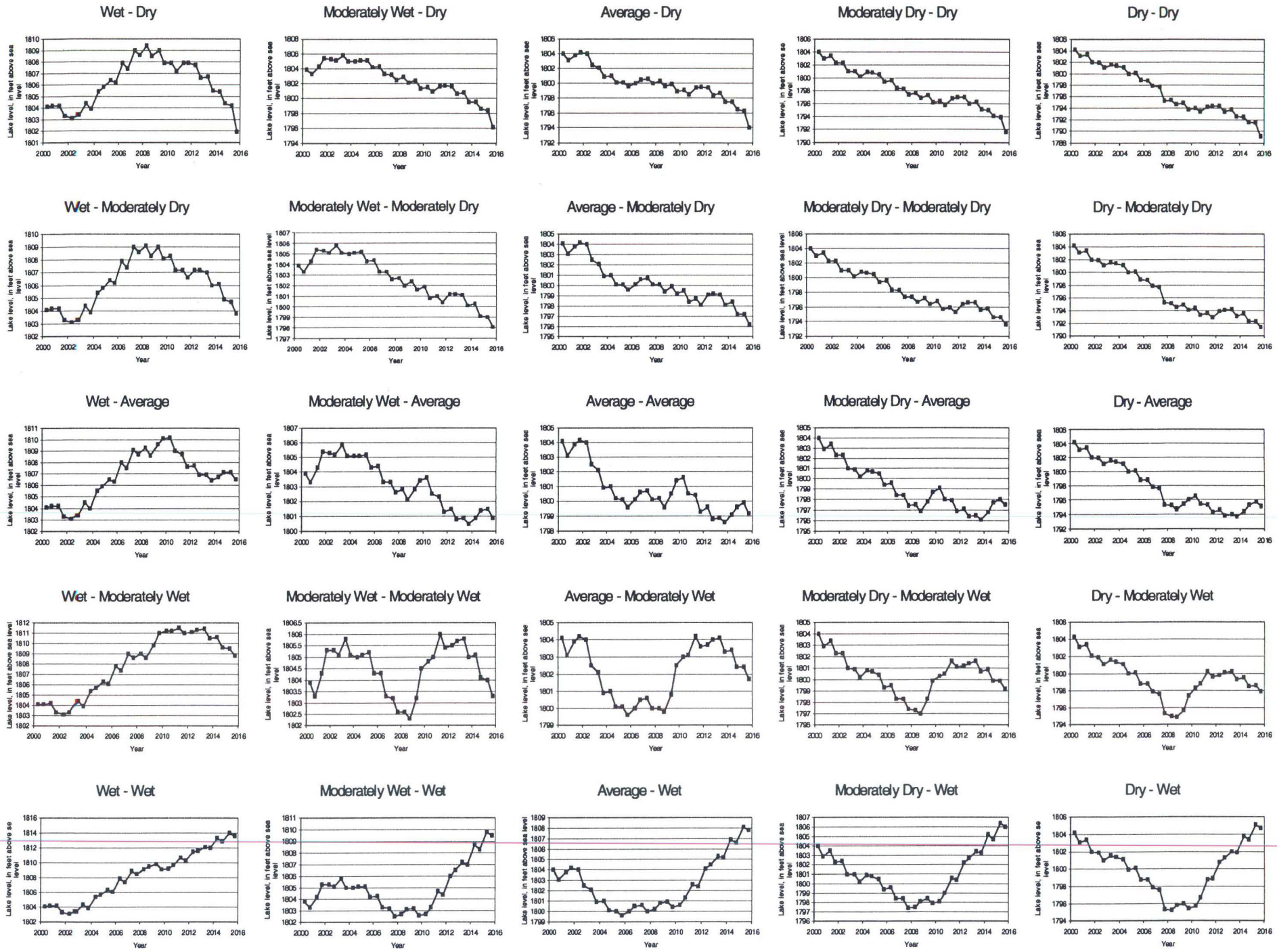

Figure A6. Simulated lake levels for Hillebrands Lake.

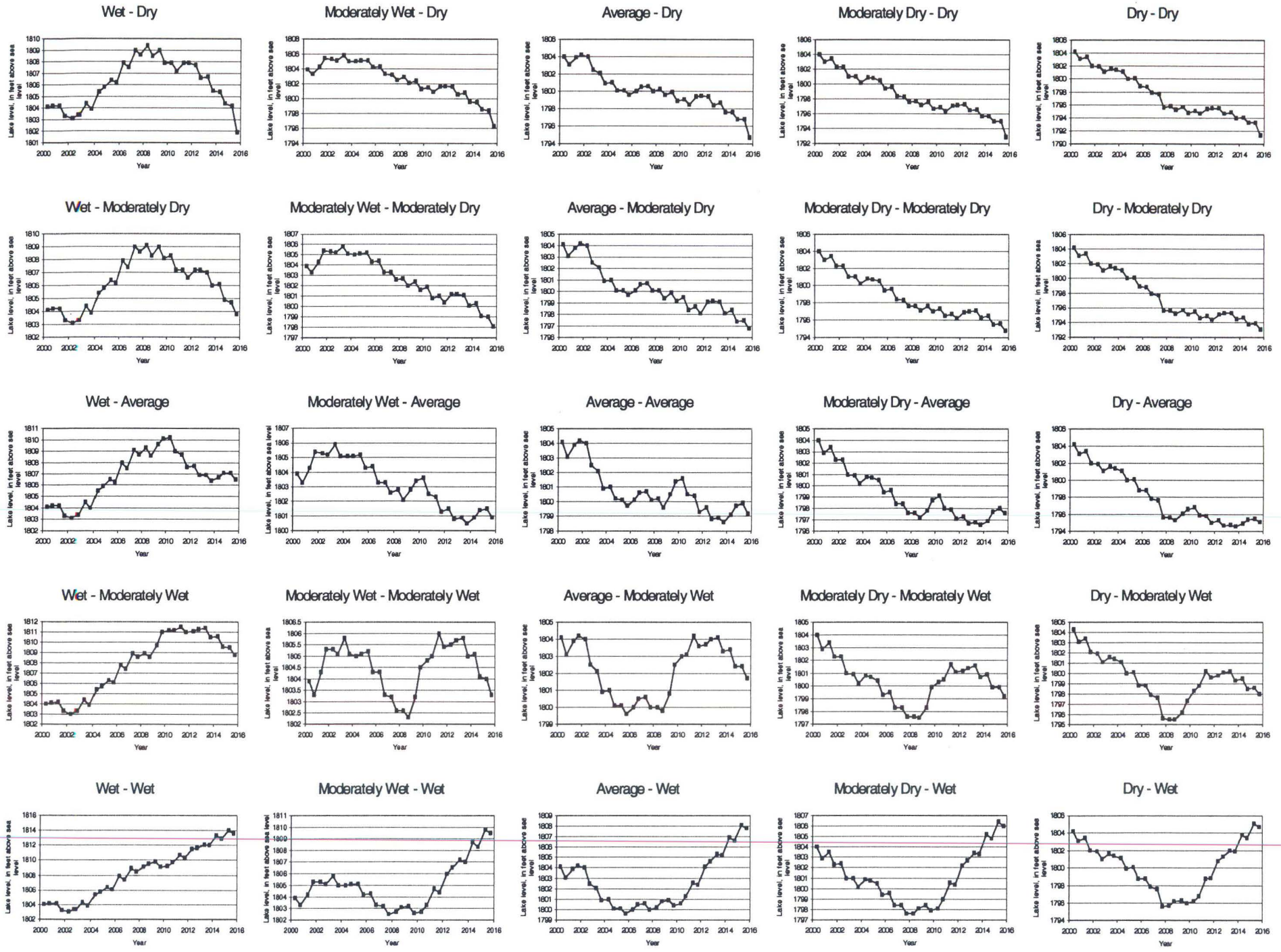

Figure A7. Simulated lake levels for Spring Lake.

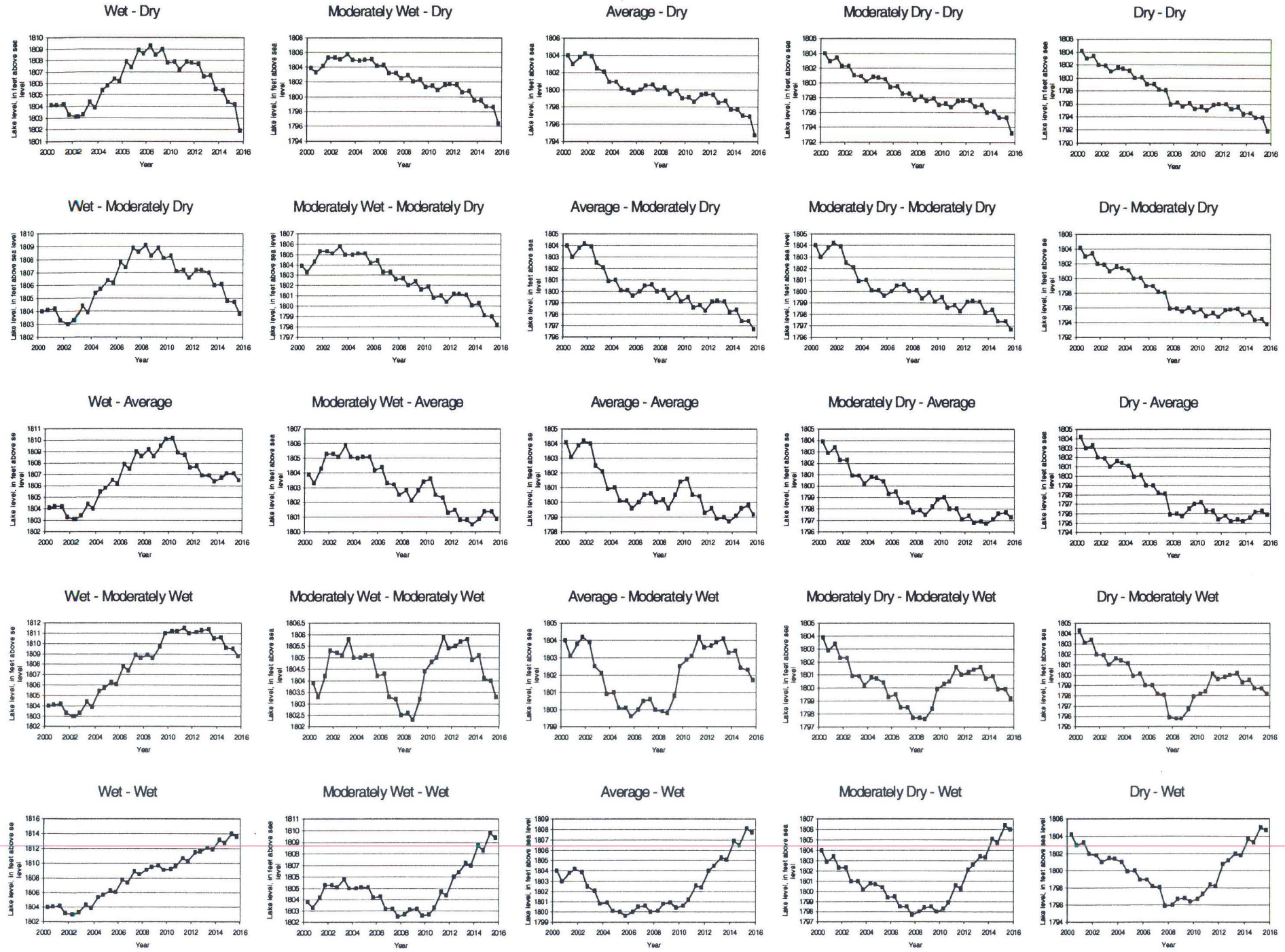

Figure A9. Simulated lake levels for Minnewasta Lake.

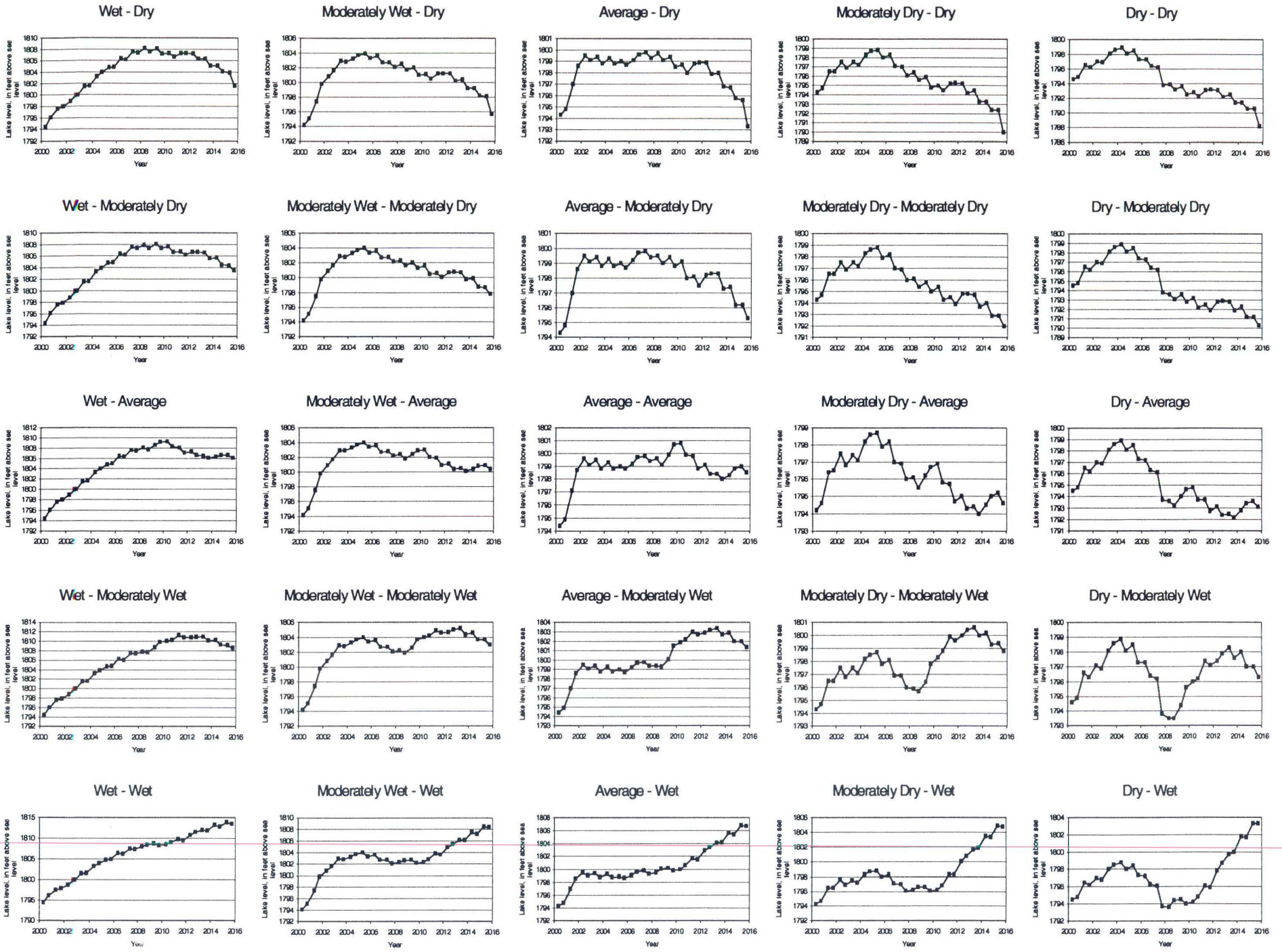

Figure A10. Simulated lake levels for Bitter Lake.

Appendix B

Simulated Lake Areas

Table B1. Simulated lake areas for the Wet-Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1778.1	4076.1	15866.5	931.6	1348.1	208.9	1313.4	11543.9
2	Fall 2000	980.0	2874.9	1778.1	4076.1	15866.5	934.0	1350.3	209.4	1313.4	12903.3
3	Spring 2001	983.4	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	14159.7
4	Fall 2001	966.1	2828.7	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	14503.0
5	Spring 2002	969.5	2840.3	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	15287.7
6	Fall 2002	976.5	2851.8	1741.2	3918.7	15537.1	914.4	1332.4	205.4	1272.7	16268.6
7	Spring 2003	993.9	2921.0	1792.6	4134.5	15989.8	939.0	1354.7	210.4	1328.6	17642.6
8	Fall 2003	973.0	2851.8	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	17735.6
9	Spring 2004	997.4	2944.0	1845.1	4326.8	16400.0	963.8	1376.8	215.3	1379.4	19247.9
10	Fall 2004	983.4	2909.4	1868.1	4402.7	16563.8	973.9	1385.5	217.3	1399.6	20020.4
11	Spring 2005	986.9	2921.0	1905.0	4515.5	16809.0	989.0	1398.5	220.2	1430.1	20803.5
12	Fall 2005	973.0	2851.8	1892.3	4478.0	16727.3	983.9	1394.2	219.2	1419.9	20902.2
13	Spring 2006	1004.4	2967.0	2012.1	4791.8	17420.2	1027.2	1430.7	227.4	1506.0	22401.8
14	Fall 2006	976.5	2874.9	1973.8	4700.5	17216.8	1014.4	1422.2	225.5	1480.7	22199.7
15	Spring 2007	1000.9	2967.0	2096.7	4971.8	17826.1	1055.6	1453.9	232.7	1556.5	23628.6
16	Fall 2007	976.5	2863.3	2070.1	4918.1	17704.5	1045.3	1445.5	230.8	1541.3	23422.4
17	Spring 2008	986.9	2909.4	2133.8	5042.8	17988.1	1066.0	1462.2	234.5	1576.7	24251.2
18	Fall 2008	966.1	2828.7	2061.5	4900.2	17663.9	1042.7	1443.4	230.3	1536.3	23628.6
19	Spring 2009	980.0	2863.3	2105.8	4989.6	17866.6	1055.6	1453.9	232.7	1561.5	24147.0
20	Fall 2009	962.6	2759.6	2004.2	4773.6	17379.6	1027.2	1430.7	227.4	1500.9	23217.0
21	Spring 2010	973.0	2828.7	2012.1	4791.8	17420.2	1027.2	1430.7	227.4	1506.0	23319.6
22	Fall 2010	966.1	2782.6	1959.3	4663.8	17135.3	1009.3	1415.8	224.1	1470.6	22706.2
23	Spring 2011	980.0	2851.8	2012.1	4791.8	17420.2	1027.2	1430.7	227.4	1506.0	23319.6
24	Fall 2011	973.0	2840.3	2004.2	4773.6	17379.6	1027.2	1430.7	227.4	1500.9	23319.6
25	Spring 2012	966.1	2828.7	1996.4	4755.4	17338.9	1022.1	1426.4	226.5	1495.9	23217.0
26	Fall 2012	952.2	2725.0	1918.0	4552.8	16890.7	994.1	1402.9	221.2	1440.2	22300.7
27	Spring 2013	973.0	2817.2	1924.6	4571.4	16931.5	996.6	1405.0	221.7	1445.3	22300.7
28	Fall 2013	952.2	2702.0	1850.8	4345.9	16441.0	966.3	1379.0	215.8	1384.4	21100.0
29	Spring 2014	966.1	2725.0	1845.1	4326.8	16400.0	963.8	1376.8	215.3	1379.4	21100.0
30	Fall 2014	952.2	2633.2	1792.6	4134.5	15989.8	939.0	1354.7	210.4	1328.6	20117.7
31	Spring 2015	966.1	2644.7	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	19923.2
32	Fall 2015	900.8	2395.0	1681.1	3637.7	14958.8	878.2	1298.5	197.8	1201.6	17735.6

Table B2. Simulated lake areas for the Moderately Wet-Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1763.9	4037.0	15784.2	926.6	1343.6	207.9	1303.2	11388.9
2	Fall 2000	969.5	2840.3	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	12094.9
3	Spring 2001	993.9	2921.0	1782.9	4095.6	15907.6	936.5	1352.5	209.9	1318.4	13989.3
4	Fall 2001	993.9	2955.5	1839.6	4307.8	16359.1	963.8	1376.8	215.3	1374.3	16088.5
5	Spring 2002	983.4	2897.9	1839.6	4307.8	16359.1	961.3	1374.6	214.8	1374.3	16996.3
6	Fall 2002	976.5	2863.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	17735.6
7	Spring 2003	993.9	2921.0	1868.1	4402.7	16563.8	973.9	1385.5	217.3	1399.6	18961.0
8	Fall 2003	969.5	2840.3	1823.3	4250.4	16236.1	953.8	1368.0	213.4	1359.1	18865.7
9	Spring 2004	973.0	2840.3	1818.1	4231.2	16195.1	953.8	1368.0	213.4	1354.0	19247.9
10	Fall 2004	973.0	2840.3	1823.3	4250.4	16236.1	956.3	1370.2	213.9	1359.1	19729.4
11	Spring 2005	973.0	2840.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	19923.2
12	Fall 2005	962.6	2771.1	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	19343.9
13	Spring 2006	973.0	2828.7	1787.7	4115.1	15948.7	936.5	1352.5	209.9	1323.5	19632.8
14	Fall 2006	959.1	2736.5	1736.8	3898.9	15495.9	912.0	1330.2	204.9	1267.6	18770.6
15	Spring 2007	966.1	2759.6	1736.8	3898.9	15495.9	909.5	1328.0	204.4	1267.6	18770.6
16	Fall 2007	962.6	2702.0	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	18203.5
17	Spring 2008	973.0	2794.2	1723.6	3839.1	15372.1	902.3	1321.2	202.9	1252.4	18580.9
18	Fall 2008	959.1	2713.5	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	17828.8
19	Spring 2009	969.5	2794.2	1702.2	3738.9	15165.6	890.2	1309.9	200.3	1227.0	18109.5
20	Fall 2009	948.8	2679.1	1655.8	3515.2	14710.2	864.0	1284.7	194.7	1171.0	17180.0
21	Spring 2010	969.5	2748.1	1664.2	3556.2	14793.1	868.7	1289.3	195.7	1181.2	17272.2
22	Fall 2010	966.1	2702.0	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	16722.0
23	Spring 2011	980.0	2828.7	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	17364.5
24	Fall 2011	973.0	2828.7	1672.7	3597.0	14876.0	873.4	1293.9	196.7	1191.4	17364.5
25	Spring 2012	966.1	2828.7	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	17364.5
26	Fall 2012	952.2	2736.5	1625.7	3371.0	14419.6	847.5	1268.5	191.0	1135.4	16449.4
27	Spring 2013	973.0	2817.2	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	16630.9
28	Fall 2013	952.2	2702.0	1603.4	3142.1	13961.8	822.0	1245.2	185.8	1079.5	15552.9
29	Spring 2014	966.1	2725.0	1603.4	3142.1	13961.8	822.0	1242.8	185.3	1079.5	15552.9
30	Fall 2014	952.2	2633.2	1594.1	2953.3	13586.1	801.5	1221.6	180.5	1038.7	14676.0
31	Spring 2015	966.1	2656.1	1616.9	2911.2	13502.4	797.0	1216.8	179.4	1033.6	14589.4
32	Fall 2015	904.2	2406.2	1539.4	2373.9	12537.2	746.4	1166.3	168.0	920.9	12577.0

Table B3. Simulated lake areas for the Average-Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1773.3	4056.6	15825.4	929.1	1345.9	208.4	1308.3	11466.3
2	Fall 2000	966.1	2828.7	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	11857.2
3	Spring 2001	986.9	2897.9	1763.9	4017.4	15743.1	924.2	1343.6	207.9	1298.1	13651.1
4	Fall 2001	983.4	2897.9	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	15024.3
5	Spring 2002	976.5	2863.3	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	15819.8
6	Fall 2002	955.7	2748.1	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	15464.3
7	Spring 2003	969.5	2805.7	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	15730.7
8	Fall 2003	955.7	2702.0	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	15199.7
9	Spring 2004	969.5	2782.6	1638.7	3433.0	14585.8	856.9	1277.8	193.1	1150.7	15641.7
10	Fall 2004	962.6	2713.5	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15199.7
11	Spring 2005	969.5	2759.6	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	15375.9
12	Fall 2005	966.1	2748.1	1603.4	3163.0	14003.5	824.3	1245.2	185.8	1084.6	15111.9
13	Spring 2006	976.5	2828.7	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	15464.3
14	Fall 2006	976.5	2851.8	1621.3	3350.3	14378.1	845.2	1266.2	190.5	1130.4	15909.2
15	Spring 2007	973.0	2840.3	1625.7	3371.0	14419.6	847.5	1268.5	191.0	1135.4	16088.5
16	Fall 2007	962.6	2794.2	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	15641.7
17	Spring 2008	969.5	2828.7	1612.4	3308.8	14294.9	840.5	1261.6	189.5	1120.2	15998.8
18	Fall 2008	962.6	2771.1	1607.9	3142.1	13961.8	824.3	1245.2	185.8	1079.5	15464.3
19	Spring 2009	969.5	2828.7	1594.1	3225.6	14128.4	831.2	1252.2	187.4	1099.8	15730.7
20	Fall 2009	962.6	2736.5	1598.8	3016.4	13711.4	808.3	1228.7	182.1	1054.0	14936.9
21	Spring 2010	973.0	2805.7	1625.7	3058.3	13794.9	812.9	1233.4	183.1	1059.1	15111.9
22	Fall 2010	966.1	2759.6	1612.4	2932.3	13544.2	799.3	1219.2	179.9	1033.6	14503.0
23	Spring 2011	976.5	2840.3	1638.7	3121.2	13920.1	819.7	1240.5	184.7	1074.4	15199.7
24	Fall 2011	973.0	2828.7	1625.7	3142.1	13961.8	822.0	1242.8	185.3	1079.5	15287.7
25	Spring 2012	966.1	2828.7	1603.4	3121.2	13920.1	819.7	1240.5	184.7	1074.4	15287.7
26	Fall 2012	952.2	2725.0	1594.1	2911.2	13502.4	797.0	1216.8	179.4	1028.5	14416.9
27	Spring 2013	973.0	2817.2	1630.1	2974.3	13627.8	803.8	1223.9	181.0	1038.7	14503.0
28	Fall 2013	952.2	2702.0	1603.4	2763.0	13125.5	776.9	1197.7	175.1	987.6	13483.3
29	Spring 2014	966.1	2725.0	1616.9	2847.9	13125.5	776.9	1197.7	175.1	987.6	13399.8
30	Fall 2014	952.2	2633.2	1603.4	2655.5	12705.5	755.1	1178.4	170.7	951.8	12658.2
31	Spring 2015	966.1	2644.7	1616.9	2720.3	12621.4	750.7	1178.4	170.7	946.6	12496.0
32	Fall 2015	900.8	2395.0	1539.4	2043.7	11650.3	702.4	1127.1	159.1	832.2	10704.7

Table B4. Simulated lake areas for the Moderately Dry-Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1773.3	4056.6	15825.4	929.1	1345.9	208.4	1308.3	11466.3
2	Fall 2000	966.1	2828.7	1723.6	3839.1	15372.1	904.7	1323.4	203.4	1252.4	11778.5
3	Spring 2001	983.4	2874.9	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	13233.3
4	Fall 2001	966.1	2805.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	13233.3
5	Spring 2002	973.0	2828.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	14074.4
6	Fall 2002	948.8	2725.0	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	13567.1
7	Spring 2003	969.5	2794.2	1638.7	3433.0	14585.8	856.9	1277.8	193.1	1150.7	14074.4
8	Fall 2003	966.1	2748.1	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1115.1	13819.7
9	Spring 2004	980.0	2840.3	1634.4	3412.4	14502.7	854.5	1275.5	192.6	1145.6	14762.8
10	Fall 2004	969.5	2828.7	1630.1	3391.7	14461.2	852.2	1273.2	192.1	1140.5	15111.9
11	Spring 2005	966.1	2828.7	1621.3	3350.3	14378.1	845.2	1266.2	190.5	1130.4	15199.7
12	Fall 2005	952.2	2725.0	1598.8	3121.2	13920.1	819.7	1240.5	184.7	1074.4	14503.0
13	Spring 2006	973.0	2817.2	1625.7	3142.1	13961.8	824.3	1245.2	185.8	1079.5	14762.8
14	Fall 2006	952.2	2702.0	1598.8	2911.2	13502.4	797.0	1216.8	179.4	1028.5	13735.3
15	Spring 2007	966.1	2713.5	1616.9	2890.1	13460.6	794.8	1214.4	178.9	1028.5	13651.1
16	Fall 2007	952.2	2633.2	1598.8	2720.3	13083.5	774.7	1197.7	175.1	987.6	12903.3
17	Spring 2008	969.5	2702.0	1621.3	2890.1	13209.3	781.4	1200.1	175.6	1008.1	13150.5
18	Fall 2008	959.1	2633.2	1603.4	2763.0	12873.6	763.8	1188.1	172.9	977.4	12496.0
19	Spring 2009	969.5	2702.0	1625.7	2932.3	13041.6	772.5	1197.7	175.1	997.9	12739.7
20	Fall 2009	948.8	2598.9	1598.8	2720.3	12579.3	748.6	1176.0	170.2	951.8	11857.2
21	Spring 2010	969.5	2667.6	1625.7	2890.1	12663.4	752.9	1180.8	171.3	962.0	12015.4
22	Fall 2010	962.6	2621.7	1612.4	2826.7	12410.8	740.0	1168.7	168.5	936.3	11621.8
23	Spring 2011	976.5	2771.1	1612.4	2974.3	12831.6	761.6	1185.7	172.4	977.4	12174.6
24	Fall 2011	969.5	2805.7	1621.3	2974.3	12915.6	765.9	1188.1	172.9	982.5	12254.6
25	Spring 2012	966.1	2805.7	1612.4	2932.3	12915.6	765.9	1190.5	173.5	982.5	12174.6
26	Fall 2012	952.2	2702.0	1598.8	2741.7	12495.1	744.3	1171.1	169.1	941.5	11388.9
27	Spring 2013	973.0	2794.2	1630.1	2932.3	12621.4	750.7	1173.6	169.6	951.8	11621.8
28	Fall 2013	955.7	2679.1	1603.4	2720.3	12115.5	725.2	1151.6	164.7	900.2	10704.7
29	Spring 2014	966.1	2702.0	1616.9	2805.5	12073.3	723.1	1151.6	164.7	905.4	10704.7
30	Fall 2014	952.2	2621.7	1603.4	2633.6	11692.7	704.4	1134.5	160.8	863.8	10043.8
31	Spring 2015	966.1	2633.2	1616.9	2698.8	11608.0	700.3	1134.5	160.8	863.8	10043.8
32	Fall 2015	904.2	2383.8	1539.4	1999.8	10630.6	654.7	1082.5	148.9	751.2	8407.8

Table B5. Simulated lake areas for the Dry-Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	990.4	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	11700.0
2	Fall 2000	966.1	2817.2	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	11936.2
3	Spring 2001	980.0	2863.3	1741.2	3938.5	15578.3	914.4	1332.4	205.4	1277.8	13233.3
4	Fall 2001	962.6	2759.6	1685.3	3658.0	15000.2	880.6	1300.8	198.3	1206.6	12985.4
5	Spring 2002	973.0	2828.7	1681.1	3637.7	14958.8	878.2	1298.5	197.8	1201.6	13651.1
6	Fall 2002	966.1	2782.6	1643.0	3453.6	14585.8	859.2	1280.1	193.6	1155.8	13567.1
7	Spring 2003	980.0	2851.8	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	14589.4
8	Fall 2003	969.5	2828.7	1660.0	3535.7	14751.7	866.3	1287.0	195.2	1176.1	15024.3
9	Spring 2004	966.1	2828.7	1647.3	3474.2	14627.3	859.2	1280.1	193.6	1160.9	15287.7
10	Fall 2004	952.2	2736.5	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	14589.4
11	Spring 2005	973.0	2817.2	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	14936.9
12	Fall 2005	952.2	2702.0	1589.5	2995.3	13669.6	808.3	1228.7	182.1	1054.0	13904.4
13	Spring 2006	966.1	2725.0	1612.4	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13904.4
14	Fall 2006	952.2	2633.2	1598.8	2805.5	13293.1	785.8	1204.9	176.7	1013.2	13150.5
15	Spring 2007	966.1	2644.7	1616.9	2869.0	13209.3	781.4	1200.1	175.6	1008.1	12985.4
16	Fall 2007	904.2	2395.0	1539.4	2290.2	12199.9	729.4	1149.2	164.1	895.0	11082.0
17	Spring 2008	911.0	2406.2	1560.2	2319.2	12242.1	731.5	1154.1	165.2	910.5	11158.3
18	Fall 2008	917.9	2361.4	1584.7	2085.0	11946.5	716.8	1141.9	162.4	879.4	10630.1
19	Spring 2009	962.6	2451.2	1621.3	2400.0	12031.0	721.0	1151.6	164.7	905.4	10930.2
20	Fall 2009	941.9	2339.1	1594.1	2085.0	11565.6	698.3	1129.6	159.7	858.5	10116.0
21	Spring 2010	969.5	2417.5	1625.7	2450.1	11650.3	702.4	1136.9	161.3	874.2	10334.6
22	Fall 2010	962.6	2383.8	1612.4	2425.4	11396.0	690.2	1127.1	159.1	848.0	9971.9
23	Spring 2011	976.5	2541.9	1634.4	2911.2	11735.0	706.5	1144.3	163.0	889.8	10555.8
24	Fall 2011	969.5	2576.0	1625.7	2953.3	11819.6	710.6	1146.8	163.6	900.2	10630.1
25	Spring 2012	966.1	2587.5	1616.9	2932.3	11819.6	710.6	1146.8	163.6	900.2	10555.8
26	Fall 2012	952.2	2496.5	1603.4	2741.7	11396.0	690.2	1127.1	159.1	858.5	9900.3
27	Spring 2013	973.0	2587.5	1630.1	2932.3	11565.6	698.3	1132.0	160.2	874.2	10116.0
28	Fall 2013	955.7	2485.1	1603.4	2720.3	11056.3	674.2	1109.8	155.2	821.6	9338.8
29	Spring 2014	966.1	2507.8	1616.9	2805.5	11013.7	672.2	1112.3	155.7	826.9	9338.8
30	Fall 2014	952.2	2417.5	1598.8	2611.6	10630.6	654.7	1092.5	151.2	789.5	8798.4
31	Spring 2015	966.1	2440.0	1616.9	2698.8	10588.0	652.8	1092.5	151.2	789.5	8798.4
32	Fall 2015	904.2	2195.3	1539.4	1953.0	9561.9	608.2	1042.7	139.7	670.8	7317.2

Table B6. Simulated lake areas for the Wet-Moderately Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1773.3	4056.6	15825.4	931.6	1348.1	208.9	1308.3	11543.9
2	Fall 2000	980.0	2874.9	1778.1	4076.1	15866.5	934.0	1350.3	209.4	1313.4	12903.3
3	Spring 2001	983.4	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	14159.7
4	Fall 2001	966.1	2828.7	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	14416.9
5	Spring 2002	969.5	2828.7	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	15199.7
6	Fall 2002	976.5	2851.8	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	16268.6
7	Spring 2003	993.9	2921.0	1792.6	4134.5	15989.8	939.0	1354.7	210.4	1328.6	17642.6
8	Fall 2003	973.0	2851.8	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	17735.6
9	Spring 2004	997.4	2955.5	1845.1	4326.8	16400.0	963.8	1376.8	215.3	1379.4	19343.9
10	Fall 2004	983.4	2909.4	1862.2	4383.8	16522.9	973.9	1385.5	217.3	1394.6	19923.2
11	Spring 2005	986.9	2909.4	1905.0	4515.5	16809.0	989.0	1398.5	220.2	1430.1	20803.5
12	Fall 2005	973.0	2851.8	1892.3	4478.0	16727.3	983.9	1394.2	219.2	1419.9	20902.2
13	Spring 2006	1004.4	2967.0	2004.2	4773.6	17379.6	1027.2	1430.7	227.4	1500.9	22401.8
14	Fall 2006	976.5	2874.9	1973.8	4700.5	17216.8	1014.4	1420.0	225.0	1480.7	22199.7
15	Spring 2007	1000.9	2967.0	2096.7	4971.8	17826.1	1055.6	1453.9	232.7	1556.5	23628.6
16	Fall 2007	976.5	2863.3	2061.5	4918.1	17704.5	1045.3	1445.5	230.8	1541.3	23422.4
17	Spring 2008	986.9	2897.9	2105.8	5007.4	17907.2	1058.2	1456.0	233.1	1566.6	23939.1
18	Fall 2008	966.1	2828.7	2044.6	4864.2	17582.7	1037.5	1439.1	229.3	1526.2	23422.4
19	Spring 2009	983.4	2874.9	2096.7	4971.8	17826.1	1055.6	1453.9	232.7	1556.5	24147.0
20	Fall 2009	966.1	2805.7	2028.1	4828.0	17501.5	1032.4	1434.9	228.4	1516.1	23422.4
21	Spring 2010	973.0	2840.3	2044.6	4864.2	17582.7	1037.5	1439.1	229.3	1526.2	23731.9
22	Fall 2010	948.8	2725.0	1952.2	4645.4	17094.6	1009.3	1415.8	224.1	1465.5	22706.2
23	Spring 2011	969.5	2794.2	1959.3	4663.8	17135.3	1009.3	1415.8	224.1	1470.6	22808.0
24	Fall 2011	966.1	2748.1	1911.4	4552.8	16890.7	994.1	1402.9	221.2	1440.2	22199.7
25	Spring 2012	976.5	2840.3	1959.3	4663.8	17135.3	1009.3	1415.8	224.1	1470.6	22706.2
26	Fall 2012	969.5	2828.7	1959.3	4663.8	17135.3	1009.3	1415.8	224.1	1470.6	22706.2
27	Spring 2013	966.1	2828.7	1945.1	4626.9	17053.8	1004.2	1411.5	223.1	1460.5	22604.6
28	Fall 2013	952.2	2725.0	1880.1	4440.5	16645.6	978.9	1389.9	218.3	1409.8	21597.4
29	Spring 2014	973.0	2817.2	1886.2	4459.3	16686.5	981.4	1392.0	218.8	1414.9	21697.3
30	Fall 2014	952.2	2702.0	1812.9	4211.9	16154.0	951.4	1365.8	212.9	1348.9	20508.6
31	Spring 2015	966.1	2713.5	1807.7	4192.6	16113.0	946.4	1361.4	211.9	1343.8	20410.6
32	Fall 2015	952.2	2633.2	1763.9	4017.4	15743.1	924.2	1341.4	207.4	1298.1	19536.3

Table B7. Simulated lake areas for the Moderately Wet-Moderately Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	11388.9
2	Fall 2000	973.0	2840.3	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	12094.9
3	Spring 2001	993.9	2921.0	1782.9	4115.1	15948.7	936.5	1352.5	209.9	1323.5	14074.4
4	Fall 2001	993.9	2955.5	1839.6	4307.8	16359.1	963.8	1376.8	215.3	1374.3	16088.5
5	Spring 2002	983.4	2897.9	1839.6	4307.8	16359.1	961.3	1374.6	214.8	1374.3	17088.1
6	Fall 2002	976.5	2863.3	1828.7	4269.5	16277.1	956.3	1372.4	214.3	1364.1	17828.8
7	Spring 2003	993.9	2921.0	1868.1	4402.7	16563.8	973.9	1385.5	217.3	1399.6	18961.0
8	Fall 2003	969.5	2840.3	1823.3	4250.4	16236.1	956.3	1370.2	213.9	1359.1	18865.7
9	Spring 2004	973.0	2840.3	1823.3	4250.4	16236.1	953.8	1368.0	213.4	1359.1	19343.9
10	Fall 2004	973.0	2840.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	19729.4
11	Spring 2005	973.0	2840.3	1828.7	4269.5	16277.1	958.8	1372.4	214.3	1364.1	20020.4
12	Fall 2005	962.6	2771.1	1782.9	4095.6	15907.6	936.5	1352.5	209.9	1318.4	19440.0
13	Spring 2006	973.0	2828.7	1792.6	4134.5	15989.8	939.0	1354.7	210.4	1328.6	19632.8
14	Fall 2006	959.1	2736.5	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18770.6
15	Spring 2007	966.1	2759.6	1736.8	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18865.7
16	Fall 2007	962.6	2702.0	1710.7	3779.1	15248.3	895.0	1314.4	201.3	1237.1	18297.5
17	Spring 2008	973.0	2771.1	1715.0	3799.1	15289.6	897.4	1316.7	201.8	1242.2	18391.8
18	Fall 2008	959.1	2702.0	1685.3	3658.0	15000.2	880.6	1300.8	198.3	1206.6	17828.8
19	Spring 2009	973.0	2794.2	1702.2	3738.9	15165.6	890.2	1309.9	200.3	1227.0	18109.5
20	Fall 2009	959.1	2713.5	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	17457.0
21	Spring 2010	969.5	2782.6	1681.1	3637.7	14958.8	878.2	1298.5	197.8	1201.6	17735.6
22	Fall 2010	948.8	2667.6	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	16722.0
23	Spring 2011	969.5	2736.5	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	16813.2
24	Fall 2011	966.1	2702.0	1616.9	3329.6	14336.5	842.8	1263.9	190.0	1125.3	16358.9
25	Spring 2012	980.0	2828.7	1651.5	3494.7	14668.7	861.6	1282.4	194.2	1166.0	16904.7
26	Fall 2012	969.5	2828.7	1651.5	3494.7	14668.7	861.6	1282.4	194.2	1166.0	16996.3
27	Spring 2013	966.1	2828.7	1647.3	3474.2	14627.3	859.2	1280.1	193.6	1160.9	16904.7
28	Fall 2013	955.7	2736.5	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	16088.5
29	Spring 2014	973.0	2817.2	1612.4	3308.8	14294.9	840.5	1261.6	189.5	1120.2	16178.4
30	Fall 2014	955.7	2702.0	1598.8	3058.3	13794.9	812.9	1233.4	183.1	1059.1	15199.7
31	Spring 2015	966.1	2725.0	1612.4	3037.3	13753.2	810.6	1231.1	182.6	1054.0	15111.9
32	Fall 2015	952.2	2633.2	1598.8	2847.9	15743.1	790.3	1209.7	177.8	1013.2	14330.9

Table B8. Simulated lake areas for the Average-Moderately Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1773.3	4056.6	15825.4	931.6	1348.1	208.9	1308.3	11466.3
2	Fall 2000	966.1	2828.7	1728.0	3859.1	15454.6	907.1	1325.7	203.9	1257.5	11857.2
3	Spring 2001	986.9	2897.9	1763.9	4017.4	15743.1	924.2	1341.4	207.4	1298.1	13651.1
4	Fall 2001	983.4	2897.9	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	15024.3
5	Spring 2002	976.5	2863.3	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	15819.8
6	Fall 2002	955.7	2748.1	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	15464.3
7	Spring 2003	969.5	2805.7	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	15730.7
8	Fall 2003	955.7	2702.0	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	15199.7
9	Spring 2004	969.5	2782.6	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	15641.7
10	Fall 2004	962.6	2725.0	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15199.7
11	Spring 2005	969.5	2771.1	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15375.9
12	Fall 2005	966.1	2759.6	1603.4	3163.0	14003.5	824.3	1247.5	186.3	1084.6	15111.9
13	Spring 2006	976.5	2828.7	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	15552.9
14	Fall 2006	976.5	2851.8	1621.3	3350.3	14378.1	847.5	1268.5	191.0	1130.4	15998.8
15	Spring 2007	973.0	2840.3	1625.7	3371.0	14419.6	849.8	1270.9	191.6	1135.4	16088.5
16	Fall 2007	962.6	2794.2	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	15730.7
17	Spring 2008	969.5	2828.7	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15819.8
18	Fall 2008	962.6	2771.1	1603.4	3121.2	13920.1	819.7	1240.5	184.7	1074.4	15375.9
19	Spring 2009	973.0	2828.7	1594.1	3225.6	14128.4	831.2	1252.2	187.4	1099.8	15730.7
20	Fall 2009	962.6	2771.1	1598.8	3058.3	13794.9	815.1	1235.8	183.7	1059.1	15199.7
21	Spring 2010	973.0	2828.7	1612.4	3142.1	13961.8	822.0	1242.8	185.3	1079.5	15464.3
22	Fall 2010	948.8	2713.5	1589.5	2911.2	13502.4	797.0	1216.8	179.4	1033.6	14503.0
23	Spring 2011	969.5	2782.6	1625.7	2974.3	13627.8	803.8	1223.9	181.0	1043.8	14589.4
24	Fall 2011	966.1	2736.5	1612.4	2890.1	13376.9	790.3	1209.7	177.8	1018.3	14074.4
25	Spring 2012	980.0	2840.3	1634.4	3058.3	13794.9	812.9	1233.4	183.1	1059.1	14676.0
26	Fall 2012	969.5	2828.7	1612.4	3079.3	13836.6	815.1	1235.8	183.7	1064.2	14762.8
27	Spring 2013	966.1	2828.7	1612.4	3058.3	13794.9	812.9	1233.4	183.1	1059.1	14762.8
28	Fall 2013	952.2	2736.5	1598.8	2869.0	13376.9	790.3	1209.7	177.8	1013.2	13904.4
29	Spring 2014	973.0	2828.7	1630.1	2932.3	13544.2	797.0	1216.8	179.4	1023.4	13989.3
30	Fall 2014	955.7	2702.0	1603.4	2698.8	12999.6	770.3	1192.9	174.0	972.3	12985.4
31	Spring 2015	966.1	2725.0	1616.9	2784.3	12999.6	770.3	1195.3	174.5	972.3	12985.4
32	Fall 2015	952.2	2644.7	1603.4	2611.6	12579.3	748.6	1178.4	170.7	936.3	12254.6

Table B9. Simulated lake areas for the Moderately Dry-Moderately Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1773.3	4056.6	15825.4	929.1	1345.9	208.4	1308.3	11466.3
2	Fall 2000	966.1	2828.7	1723.6	3839.1	15372.1	904.7	1323.4	203.4	1257.5	11778.5
3	Spring 2001	983.4	2874.9	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1298.1	13233.3
4	Fall 2001	966.1	2805.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1318.4	13233.3
5	Spring 2002	973.0	2828.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1303.2	14074.4
6	Fall 2002	948.8	2725.0	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1232.1	13567.1
7	Spring 2003	969.5	2794.2	1638.7	3433.0	14585.8	856.9	1277.8	193.1	1211.7	14074.4
8	Fall 2003	966.1	2748.1	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1150.7	13819.7
9	Spring 2004	976.5	2840.3	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1155.8	14762.8
10	Fall 2004	969.5	2828.7	1630.1	3391.7	14461.2	849.8	1270.9	191.6	1110.0	15024.3
11	Spring 2005	966.1	2828.7	1616.9	3329.6	14336.5	845.2	1266.2	190.5	1110.0	15199.7
12	Fall 2005	952.2	2736.5	1603.4	3100.2	13878.4	819.7	1240.5	184.7	1084.6	14416.9
13	Spring 2006	973.0	2817.2	1621.3	3142.1	13961.8	824.3	1245.2	185.8	1104.9	14676.0
14	Fall 2006	955.7	2702.0	1603.4	2911.2	13502.4	797.0	1216.8	179.4	1130.4	13651.1
15	Spring 2007	966.1	2725.0	1612.4	2890.1	13460.6	794.8	1214.4	178.9	1135.4	13567.1
16	Fall 2007	952.2	2633.2	1598.8	2720.3	13083.5	774.7	1197.7	175.1	1104.9	12821.4
17	Spring 2008	966.1	2667.6	1616.9	2826.7	13083.5	774.7	1197.7	175.1	1110.0	12903.3
18	Fall 2008	959.1	2610.3	1603.4	2741.7	12789.6	759.4	1185.7	172.4	1074.4	12334.8
19	Spring 2009	973.0	2702.0	1625.7	2932.3	12999.6	770.3	1197.7	175.1	1099.8	12658.2
20	Fall 2009	959.1	2621.7	1603.4	2805.5	12663.4	752.9	1183.2	171.8	1059.1	12015.4
21	Spring 2010	969.5	2702.0	1625.7	2932.3	12831.6	761.6	1190.5	173.5	1079.5	12334.8
22	Fall 2010	948.8	2587.5	1598.8	2720.3	12368.6	737.9	1171.1	169.1	1033.6	11466.3
23	Spring 2011	969.5	2656.1	1625.7	2890.1	12452.9	742.1	1176.0	170.2	1043.8	11621.8
24	Fall 2011	966.1	2610.3	1612.4	2847.9	12199.9	729.4	1163.8	167.4	1018.3	11158.3
25	Spring 2012	980.0	2771.1	1616.9	2974.3	12663.4	752.9	1180.8	171.3	1059.1	11857.2
26	Fall 2012	969.5	2805.7	1621.3	2974.3	12747.6	757.2	1183.2	171.8	1064.2	11857.2
27	Spring 2013	966.1	2805.7	1616.9	2932.3	12747.6	757.2	1185.7	172.4	1059.1	11778.5
28	Fall 2013	952.2	2713.5	1598.8	2741.7	12326.5	735.8	1166.3	168.0	1013.2	11006.0
29	Spring 2014	973.0	2794.2	1630.1	2932.3	12410.8	740.0	1171.1	169.1	1023.4	11234.9
30	Fall 2014	952.2	2679.1	1603.4	2698.8	11904.2	714.8	1146.8	163.6	972.3	10408.0
31	Spring 2015	966.1	2702.0	1616.9	2784.3	11904.2	714.8	1149.2	164.1	972.3	10408.0
32	Fall 2015	952.2	2610.3	1603.4	2611.6	12579.3	694.2	1129.6	159.7	936.3	9758.0

Table B10. Simulated lake areas for the Dry-Moderately Dry climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	11621.8
2	Fall 2000	966.1	2817.2	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	11857.2
3	Spring 2001	980.0	2863.3	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	13233.3
4	Fall 2001	962.6	2771.1	1685.3	3658.0	15000.2	880.6	1300.8	198.3	1206.6	12985.4
5	Spring 2002	973.0	2828.7	1681.1	3637.7	14958.8	878.2	1298.5	197.8	1201.6	13651.1
6	Fall 2002	966.1	2782.6	1643.0	3453.6	14585.8	859.2	1280.1	193.6	1155.8	13567.1
7	Spring 2003	980.0	2851.8	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	14589.4
8	Fall 2003	969.5	2840.3	1660.0	3535.7	14751.7	866.3	1287.0	195.2	1176.1	15024.3
9	Spring 2004	966.1	2828.7	1647.3	3474.2	14627.3	859.2	1280.1	193.6	1160.9	15287.7
10	Fall 2004	952.2	2725.0	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	14589.4
11	Spring 2005	973.0	2817.2	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	14936.9
12	Fall 2005	952.2	2702.0	1589.5	3016.4	13711.4	808.3	1228.7	182.1	1054.0	13989.3
13	Spring 2006	966.1	2725.0	1612.4	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13904.4
14	Fall 2006	952.2	2633.2	1598.8	2826.7	13293.1	785.8	1204.9	176.7	1013.2	13150.5
15	Spring 2007	966.1	2644.7	1616.9	2869.0	13209.3	781.4	1200.1	175.6	1008.1	12985.4
16	Fall 2007	904.2	2395.0	1539.4	2290.2	12199.9	729.4	1149.2	164.1	895.0	11082.0
17	Spring 2008	904.2	2383.8	1544.8	2228.6	12115.5	725.2	1149.2	164.1	895.0	10930.2
18	Fall 2008	914.5	2350.2	1580.0	1999.8	11861.9	712.7	1139.4	161.9	874.2	10555.8
19	Spring 2009	966.1	2462.5	1625.7	2450.1	12031.0	721.0	1151.6	164.7	900.2	10930.2
20	Fall 2009	948.8	2383.8	1603.4	2290.2	11692.7	704.4	1136.9	161.3	869.0	10334.6
21	Spring 2010	969.5	2462.5	1621.3	2567.0	11819.6	710.6	1146.8	163.6	889.8	10630.1
22	Fall 2010	945.3	2350.2	1598.8	2319.2	11353.6	688.2	1124.6	158.5	842.8	9900.3
23	Spring 2011	969.5	2440.0	1625.7	2611.6	11480.8	694.2	1132.0	160.2	863.8	10116.0
24	Fall 2011	966.1	2395.0	1612.4	2567.0	11183.7	680.2	1119.7	157.4	837.5	9687.3
25	Spring 2012	980.0	2553.3	1634.4	2953.3	11608.0	700.3	1136.9	161.3	884.6	10334.6
26	Fall 2012	969.5	2598.9	1625.7	2974.3	11692.7	704.4	1141.9	162.4	889.8	10408.0
27	Spring 2013	966.1	2598.9	1616.9	2953.3	11735.0	706.5	1141.9	162.4	895.0	10334.6
28	Fall 2013	952.2	2507.8	1598.8	2741.7	11268.7	684.2	1122.2	158.0	853.3	9687.3
29	Spring 2014	973.0	2610.3	1630.1	2932.3	11438.4	692.2	1127.1	159.1	869.0	9971.9
30	Fall 2014	955.7	2496.5	1603.4	2720.3	10928.7	668.3	1104.9	154.0	816.3	9201.6
31	Spring 2015	966.1	2519.2	1616.9	2805.5	10928.7	668.3	1107.3	154.6	821.6	9201.6
32	Fall 2015	952.2	2428.7	1598.8	2611.6	10545.3	650.9	1087.5	150.0	784.1	8601.5

Table B11. Simulated lake areas for the Wet-Average climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1778.1	4076.1	15866.5	931.6	1348.1	208.9	1313.4	11543.9
2	Fall 2000	980.0	2874.9	1778.1	4095.6	15907.6	934.0	1350.3	209.4	1318.4	12903.3
3	Spring 2001	983.4	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	14159.7
4	Fall 2001	966.1	2828.7	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	14503.0
5	Spring 2002	969.5	2840.3	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	15287.7
6	Fall 2002	976.5	2863.3	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	16268.6
7	Spring 2003	993.9	2921.0	1792.6	4134.5	15989.8	941.4	1357.0	210.9	1328.6	17642.6
8	Fall 2003	973.0	2851.8	1768.6	4056.6	15825.4	929.1	1345.9	208.4	1308.3	17828.8
9	Spring 2004	997.4	2955.5	1850.8	4345.9	16441.0	966.3	1379.0	215.8	1384.4	19343.9
10	Fall 2004	983.4	2909.4	1868.1	4402.7	16563.8	976.4	1387.7	217.8	1399.6	20020.4
11	Spring 2005	986.9	2921.0	1911.4	4534.1	16849.9	991.5	1400.7	220.7	1435.1	20803.5
12	Fall 2005	973.0	2851.8	1892.3	4478.0	16768.2	986.5	1396.4	219.7	1419.9	21001.0
13	Spring 2006	1004.4	2978.5	2012.1	4791.8	17420.2	1029.8	1432.8	227.9	1506.0	22503.1
14	Fall 2006	976.5	2874.9	1981.3	4718.9	17257.5	1017.0	1422.2	225.5	1485.8	22300.7
15	Spring 2007	1000.9	2967.0	2105.8	4989.6	17866.6	1058.2	1456.0	233.1	1561.5	23628.6
16	Fall 2007	976.5	2874.9	2070.1	4918.1	17704.5	1047.9	1447.6	231.2	1541.3	23525.4
17	Spring 2008	986.9	2897.9	2124.4	5025.1	17947.7	1063.4	1460.1	234.1	1571.6	24147.0
18	Fall 2008	966.1	2828.7	2070.1	4918.1	17704.5	1045.3	1445.5	230.8	1541.3	23731.9
19	Spring 2009	986.9	2897.9	2153.0	5078.2	18069.1	1071.2	1466.4	235.5	1586.7	24669.7
20	Fall 2009	983.4	2897.9	2213.5	5183.5	18311.6	1084.3	1476.8	237.8	1616.9	25302.8
21	Spring 2010	976.5	2863.3	2213.5	5200.9	18352.0	1086.9	1478.8	238.3	1622.0	25408.9
22	Fall 2010	955.7	2748.1	2096.7	4971.8	17826.1	1055.6	1453.9	232.7	1556.5	24355.6
23	Spring 2011	969.5	2805.7	2078.9	4936.0	17745.0	1047.9	1447.6	231.2	1546.4	24147.0
24	Fall 2011	955.7	2702.0	1988.8	4737.1	17298.2	1019.5	1424.3	226.0	1490.8	23114.5
25	Spring 2012	969.5	2771.1	1996.4	4755.4	17338.9	1022.1	1426.4	226.5	1495.9	23319.6
26	Fall 2012	962.6	2713.5	1938.2	4608.4	17013.1	1001.7	1409.3	222.6	1455.4	22604.6
27	Spring 2013	969.5	2759.6	1938.2	4608.4	17013.1	1001.7	1409.3	222.6	1455.4	22503.1
28	Fall 2013	966.1	2759.6	1905.0	4515.5	16809.0	989.0	1398.5	220.2	1430.1	22098.9
29	Spring 2014	976.5	2828.7	1924.6	4571.4	16931.5	996.6	1405.0	221.7	1445.3	22300.7
30	Fall 2014	976.5	2851.8	1952.2	4645.4	17094.6	1006.8	1413.6	223.6	1465.5	22604.6
31	Spring 2015	973.0	2840.3	1952.2	4645.4	17094.6	1006.8	1413.6	223.6	1465.5	22604.6
32	Fall 2015	962.6	2794.2	1911.4	2611.6	16849.9	991.5	1400.7	220.7	1435.1	22098.9

Table B12. Simulated lake areas for the Moderately Wet-Average climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	11388.9
2	Fall 2000	969.5	2840.3	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	12094.9
3	Spring 2001	993.9	2921.0	1787.7	4115.1	15948.7	936.5	1352.5	209.9	1323.5	14074.4
4	Fall 2001	993.9	2955.5	1839.6	4307.8	16400.0	963.8	1376.8	215.3	1374.3	16088.5
5	Spring 2002	983.4	2897.9	1839.6	4307.8	16359.1	961.3	1374.6	214.8	1374.3	17088.1
6	Fall 2002	976.5	2863.3	1828.7	4269.5	16277.1	958.8	1372.4	214.3	1364.1	17828.8
7	Spring 2003	993.9	2921.0	1868.1	4421.6	16604.7	976.4	1387.7	217.8	1404.7	18961.0
8	Fall 2003	969.5	2840.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	18961.0
9	Spring 2004	973.0	2840.3	1823.3	4250.4	16236.1	956.3	1370.2	213.9	1359.1	19343.9
10	Fall 2004	973.0	2840.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	19729.4
11	Spring 2005	973.0	2840.3	1828.7	4269.5	16277.1	958.8	1372.4	214.3	1364.1	20020.4
12	Fall 2005	962.6	2771.1	1782.9	4095.6	15907.6	936.5	1352.5	209.9	1318.4	19440.0
13	Spring 2006	973.0	2828.7	1787.7	4134.5	15989.8	939.0	1354.7	210.4	1328.6	19632.8
14	Fall 2006	959.1	2736.5	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18770.6
15	Spring 2007	966.1	2759.6	1736.8	3898.9	15495.9	912.0	1330.2	204.9	1267.6	18865.7
16	Fall 2007	962.6	2702.0	1706.4	3759.0	15206.9	895.0	1314.4	201.3	1232.1	18297.5
17	Spring 2008	973.0	2782.6	1719.3	3819.2	15330.9	899.8	1318.9	202.4	1247.3	18486.2
18	Fall 2008	962.6	2713.5	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	17922.2
19	Spring 2009	976.5	2828.7	1719.3	3819.2	15330.9	899.8	1318.9	202.4	1247.3	18486.2
20	Fall 2009	976.5	2851.8	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	18961.0
21	Spring 2010	976.5	2851.8	1754.7	3978.0	15660.7	919.3	1336.9	206.4	1288.0	19056.5
22	Fall 2010	955.7	2736.5	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	18109.5
23	Spring 2011	969.5	2782.6	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	18015.8
24	Fall 2011	955.7	2690.5	1655.8	3515.2	14710.2	864.0	1284.7	194.7	1171.0	17088.1
25	Spring 2012	969.5	2759.6	1664.2	3556.2	14793.1	868.7	1289.3	195.7	1181.2	17272.2
26	Fall 2012	962.6	2702.0	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	16630.9
27	Spring 2013	969.5	2748.1	1634.4	3412.4	14502.7	854.5	1275.5	192.6	1145.6	16722.0
28	Fall 2013	966.1	2736.5	1616.9	3350.3	14378.1	845.2	1266.2	190.5	1130.4	16358.9
29	Spring 2014	976.5	2828.7	1634.4	3433.0	14544.2	854.5	1275.5	192.6	1150.7	16630.9
30	Fall 2014	976.5	2851.8	1655.8	3535.7	14751.7	866.3	1287.0	195.2	1176.1	16996.3
31	Spring 2015	973.0	2840.3	1660.0	3535.7	14751.7	868.7	1289.3	195.7	1176.1	17088.1
32	Fall 2015	962.6	2794.2	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	16630.9

Table B13. Simulated lake areas for the Average-Average climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	990.4	2886.4	1778.1	4076.1	15866.5	931.6	1348.1	208.9	1313.4	11543.9
2	Fall 2000	966.1	2828.7	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	11936.2
3	Spring 2001	986.9	2897.9	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	13735.3
4	Fall 2001	983.4	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	15111.9
5	Spring 2002	976.5	2863.3	1768.6	4056.6	15825.4	929.1	1345.9	208.4	1308.3	15909.2
6	Fall 2002	955.7	2748.1	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	15464.3
7	Spring 2003	969.5	2794.2	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	15819.8
8	Fall 2003	955.7	2702.0	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	15199.7
9	Spring 2004	969.5	2771.1	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	15641.7
10	Fall 2004	962.6	2713.5	1603.4	3267.3	14211.7	838.2	1259.2	188.9	1110.0	15199.7
11	Spring 2005	969.5	2759.6	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15375.9
12	Fall 2005	966.1	2759.6	1603.4	3163.0	14003.5	824.3	1247.5	186.3	1084.6	15199.7
13	Spring 2006	976.5	2828.7	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	15552.9
14	Fall 2006	976.5	2851.8	1621.3	3350.3	14378.1	847.5	1268.5	191.0	1130.4	15998.8
15	Spring 2007	973.0	2840.3	1625.7	3371.0	14419.6	849.8	1270.9	191.6	1135.4	16088.5
16	Fall 2007	962.6	2794.2	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	15730.7
17	Spring 2008	969.5	2828.7	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1115.1	15909.2
18	Fall 2008	962.6	2782.6	1607.9	3163.0	14003.5	824.3	1245.2	185.8	1084.6	15464.3
19	Spring 2009	976.5	2851.8	1621.3	3350.3	14378.1	845.2	1266.2	190.5	1130.4	16178.4
20	Fall 2009	983.4	2874.9	1660.0	3535.7	14751.7	866.3	1287.0	195.2	1176.1	16904.7
21	Spring 2010	976.5	2863.3	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	16996.3
22	Fall 2010	955.7	2748.1	1621.3	3350.3	14378.1	845.2	1266.2	190.5	1130.4	16178.4
23	Spring 2011	969.5	2794.2	1616.9	3329.6	14336.5	842.8	1263.9	190.0	1125.3	16088.5
24	Fall 2011	955.7	2690.5	1598.8	3100.2	13878.4	817.4	1238.1	184.2	1069.3	15199.7
25	Spring 2012	969.5	2771.1	1612.4	3163.0	14003.5	824.3	1245.2	185.8	1084.6	15464.3
26	Fall 2012	962.6	2702.0	1607.9	2995.3	13669.6	806.0	1226.3	181.5	1048.9	14849.7
27	Spring 2013	969.5	2759.6	1625.7	3016.4	13711.4	808.3	1228.7	182.1	1054.0	14849.7
28	Fall 2013	969.5	2748.1	1621.3	2953.3	13586.1	801.5	1221.6	180.5	1038.7	14503.0
29	Spring 2014	976.5	2828.7	1616.9	3058.3	13794.9	812.9	1233.4	183.1	1059.1	14762.8
30	Fall 2014	976.5	2851.8	1643.0	3163.0	14003.5	824.3	1247.5	186.3	1084.6	15199.7
31	Spring 2015	973.0	2840.3	1594.1	3204.8	14086.8	831.2	1252.2	187.4	1094.7	15375.9
32	Fall 2015	962.6	2794.2	1594.1	3079.3	13836.6	815.1	1235.8	183.7	1064.2	14936.9

Table B14. Simulated lake areas for the Moderately Dry-Average climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	11388.9
2	Fall 2000	966.1	2817.2	1723.6	3839.1	15372.1	902.3	1321.2	202.9	1252.4	11700.0
3	Spring 2001	983.4	2874.9	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	13150.5
4	Fall 2001	966.1	2805.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	13233.3
5	Spring 2002	969.5	2828.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	14074.4
6	Fall 2002	948.8	2725.0	1638.7	3433.0	14544.2	856.9	1277.8	193.1	1150.7	13483.3
7	Spring 2003	969.5	2782.6	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	13989.3
8	Fall 2003	966.1	2748.1	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1115.1	13735.3
9	Spring 2004	976.5	2840.3	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	14676.0
10	Fall 2004	969.5	2828.7	1630.1	3391.7	14461.2	849.8	1270.9	191.6	1140.5	15024.3
11	Spring 2005	966.1	2828.7	1616.9	3329.6	14336.5	845.2	1266.2	190.5	1125.3	15111.9
12	Fall 2005	952.2	2736.5	1603.4	3100.2	13878.4	819.7	1240.5	184.7	1069.3	14416.9
13	Spring 2006	973.0	2817.2	1625.7	3142.1	13961.8	824.3	1245.2	185.8	1079.5	14676.0
14	Fall 2006	955.7	2702.0	1603.4	2911.2	13502.4	797.0	1216.8	179.4	1028.5	13651.1
15	Spring 2007	966.1	2725.0	1616.9	2911.2	13502.4	797.0	1216.8	179.4	1028.5	13567.1
16	Fall 2007	952.2	2633.2	1598.8	2720.3	13083.5	774.7	1197.7	175.1	987.6	12821.4
17	Spring 2008	966.1	2690.5	1621.3	2869.0	13125.5	776.9	1197.7	175.1	997.9	12903.3
18	Fall 2008	962.6	2633.2	1607.9	2784.3	12873.6	763.8	1188.1	172.9	977.4	12415.3
19	Spring 2009	976.5	2759.6	1630.1	2974.3	13251.2	783.6	1202.5	176.2	1013.2	12985.4
20	Fall 2009	976.5	2828.7	1634.4	2974.3	13627.8	803.8	1223.9	181.0	1043.8	13399.8
21	Spring 2010	976.5	2840.3	1625.7	3058.3	13794.9	812.9	1233.4	183.1	1054.0	13567.1
22	Fall 2010	952.2	2725.0	1598.8	2826.7	13335.0	788.0	1207.3	177.2	1003.0	12658.2
23	Spring 2011	969.5	2771.1	1625.7	2932.3	13293.1	785.8	1204.9	176.7	1003.0	12577.0
24	Fall 2011	952.2	2679.1	1603.4	2741.7	12873.6	763.8	1185.7	172.4	956.9	11778.5
25	Spring 2012	969.5	2748.1	1625.7	2911.2	12957.6	768.1	1190.5	173.5	972.3	12015.4
26	Fall 2012	962.6	2690.5	1612.4	2826.7	12663.4	752.9	1176.0	170.2	941.5	11466.3
27	Spring 2013	969.5	2736.5	1625.7	2932.3	12705.5	755.1	1178.4	170.7	946.6	11543.9
28	Fall 2013	969.5	2736.5	1621.3	2932.3	12537.2	746.4	1173.6	169.6	936.3	11234.9
29	Spring 2014	976.5	2828.7	1607.9	2974.3	12831.6	761.6	1180.8	171.3	956.9	11621.8
30	Fall 2014	976.5	2851.8	1634.4	2974.3	13209.3	781.4	1200.1	175.6	982.5	12015.4
31	Spring 2015	973.0	2840.3	1616.9	2974.3	13335.0	788.0	1207.3	177.2	987.6	12174.6
32	Fall 2015	962.6	2794.2	1603.4	2890.1	13125.5	776.9	1197.7	175.1	967.1	11700.0

Table B15. Simulated lake areas for the Dry-Average climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	11621.8
2	Fall 2000	966.1	2817.2	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	11857.2
3	Spring 2001	980.0	2863.3	1741.2	3918.7	15537.1	914.4	1332.4	205.4	1272.7	13233.3
4	Fall 2001	962.6	2759.6	1685.3	3658.0	15000.2	880.6	1300.8	198.3	1206.6	12985.4
5	Spring 2002	973.0	2828.7	1681.1	3637.7	14958.8	878.2	1298.5	197.8	1201.6	13651.1
6	Fall 2002	966.1	2782.6	1643.0	3453.6	14585.8	859.2	1280.1	193.6	1155.8	13567.1
7	Spring 2003	980.0	2851.8	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	14589.4
8	Fall 2003	969.5	2840.3	1660.0	3535.7	14751.7	866.3	1287.0	195.2	1176.1	15024.3
9	Spring 2004	966.1	2828.7	1647.3	3474.2	14627.3	859.2	1280.1	193.6	1160.9	15287.7
10	Fall 2004	952.2	2725.0	1594.1	3225.6	14128.4	833.5	1254.6	187.9	1099.8	14589.4
11	Spring 2005	973.0	2817.2	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	14936.9
12	Fall 2005	952.2	2702.0	1589.5	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13904.4
13	Spring 2006	966.1	2713.5	1612.4	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13819.7
14	Fall 2006	952.2	2621.7	1598.8	2805.5	13251.2	783.6	1202.5	176.2	1013.2	13067.8
15	Spring 2007	966.1	2644.7	1616.9	2869.0	13167.4	779.1	1197.7	175.1	1008.1	12903.3
16	Fall 2007	900.8	2395.0	1539.4	2290.2	12199.9	729.4	1149.2	164.1	895.0	11006.0
17	Spring 2008	907.6	2383.8	1550.0	2260.1	12157.7	727.3	1149.2	164.1	900.2	10930.2
18	Fall 2008	921.3	2372.6	1589.5	2085.0	11946.5	716.8	1141.9	162.4	884.6	10630.1
19	Spring 2009	969.5	2519.2	1630.1	2633.6	12242.1	731.5	1161.4	166.9	926.0	11234.9
20	Fall 2009	976.5	2633.2	1634.4	2932.3	12495.1	744.3	1173.6	169.6	951.8	11700.0
21	Spring 2010	976.5	2713.5	1607.9	2974.3	12705.5	755.1	1178.4	170.7	962.0	11857.2
22	Fall 2010	952.2	2598.9	1589.5	2741.7	12242.1	731.5	1156.5	165.8	915.7	11006.0
23	Spring 2011	969.5	2656.1	1625.7	2869.0	12199.9	729.4	1154.1	165.2	915.7	11006.0
24	Fall 2011	952.2	2553.3	1603.4	2677.2	11777.3	708.5	1134.5	160.8	869.0	10261.4
25	Spring 2012	969.5	2633.2	1625.7	2890.1	11904.2	714.8	1141.9	162.4	889.8	10555.8
26	Fall 2012	962.6	2576.0	1612.4	2805.5	11565.6	698.3	1127.1	159.1	858.5	10043.8
27	Spring 2013	969.5	2633.2	1625.7	2911.2	11650.3	702.4	1129.6	159.7	869.0	10116.0
28	Fall 2013	969.5	2621.7	1621.3	2911.2	11523.2	696.3	1124.6	158.5	858.5	9900.3
29	Spring 2014	976.5	2725.0	1607.9	2974.3	11819.6	710.6	1132.0	160.2	879.4	10334.6
30	Fall 2014	976.5	2828.7	1616.9	2974.3	12199.9	729.4	1144.3	163.0	910.5	10779.6
31	Spring 2015	973.0	2840.3	1607.9	2974.3	12368.6	737.9	1146.8	163.6	915.7	10930.2
32	Fall 2015	962.6	2782.6	1603.4	2869.0	12115.5	725.2	1136.9	161.3	895.0	10555.8

Table B16. Simulated lake areas for the Wet-Moderately Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1773.3	4056.6	15825.4	931.6	1345.9	208.9	1308.3	11543.9
2	Fall 2000	980.0	2874.9	1778.1	4076.1	15866.5	931.6	1348.1	208.9	1313.4	12821.4
3	Spring 2001	983.4	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	14159.7
4	Fall 2001	966.1	2828.7	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	14416.9
5	Spring 2002	969.5	2840.3	1728.0	3859.1	15413.4	907.1	1323.4	203.9	1257.5	15199.7
6	Fall 2002	976.5	2851.8	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	16268.6
7	Spring 2003	993.9	2921.0	1787.7	4134.5	15989.8	939.0	1354.7	210.4	1328.6	17642.6
8	Fall 2003	973.0	2851.8	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	17735.6
9	Spring 2004	997.4	2955.5	1845.1	4326.8	16400.0	963.8	1376.8	215.3	1379.4	19247.9
10	Fall 2004	983.4	2897.9	1862.2	4383.8	16522.9	971.3	1383.3	216.8	1394.6	19923.2
11	Spring 2005	986.9	2909.4	1898.6	4496.8	16768.2	986.5	1396.4	220.2	1425.0	20705.1
12	Fall 2005	973.0	2851.8	1886.2	4459.3	16686.5	981.4	1392.0	218.8	1414.9	20803.5
13	Spring 2006	1004.4	2967.0	2004.2	4773.6	17379.6	1024.7	1428.6	227.0	1500.9	22300.7
14	Fall 2006	976.5	2874.9	1973.8	4700.5	17216.8	1014.4	1420.0	225.0	1480.7	22098.9
15	Spring 2007	1000.9	2978.5	2096.7	4971.8	17826.1	1055.6	1451.8	232.7	1556.5	23525.4
16	Fall 2007	976.5	2874.9	2070.1	4918.1	17704.5	1045.3	1445.5	230.8	1541.3	23422.4
17	Spring 2008	983.4	2886.4	2096.7	4971.8	17826.1	1055.6	1451.8	232.7	1556.5	23835.5
18	Fall 2008	969.5	2840.3	2070.1	4918.1	17704.5	1045.3	1445.5	230.8	1541.3	23731.9
19	Spring 2009	993.9	2921.0	2172.7	5113.4	18150.0	1076.4	1468.5	236.4	1596.8	24774.8
20	Fall 2009	993.9	2955.5	2312.2	5339.3	18674.5	1107.9	1495.3	242.0	1662.1	26049.6
21	Spring 2010	983.4	2897.9	2335.4	5373.6	18755.0	1113.1	1499.3	242.9	1672.1	26264.6
22	Fall 2010	976.5	2863.3	2335.4	5373.6	18755.0	1113.1	1499.3	242.9	1672.1	26480.3
23	Spring 2011	993.9	2921.0	2370.9	5424.9	18875.7	1121.0	1505.4	244.3	1687.2	27570.5
24	Fall 2011	969.5	2840.3	2312.2	5339.3	18674.5	1107.9	1495.3	242.0	1662.1	27023.0
25	Spring 2012	973.0	2840.3	2323.7	5356.5	18714.8	1110.5	1497.3	242.4	1667.1	27023.0
26	Fall 2012	973.0	2840.3	2347.1	5390.7	18795.2	1115.8	1501.4	243.4	1677.2	27132.1
27	Spring 2013	973.0	2840.3	2359.0	5407.8	18835.5	1118.4	1503.4	243.8	1682.2	27241.4
28	Fall 2013	962.6	2771.1	2256.2	5253.0	18473.0	1094.7	1485.0	239.7	1637.0	26372.4
29	Spring 2014	973.0	2828.7	2267.2	5270.4	18513.3	1097.4	1487.1	240.1	1642.0	26480.3
30	Fall 2014	959.1	2736.5	2162.8	5095.8	18109.5	1071.2	1466.4	235.5	1591.8	25408.9
31	Spring 2015	966.1	2759.6	2153.0	5078.2	18069.1	1068.6	1464.3	235.0	1586.7	25302.8
32	Fall 2015	962.6	2702.0	2087.7	4953.9	17785.6	1050.4	1449.7	231.7	1551.4	24669.7

Table B17. Simulated lake areas for the Moderately Wet-Moderately Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	11388.9
2	Fall 2000	969.5	2840.3	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	12094.9
3	Spring 2001	993.9	2921.0	1782.9	4095.6	15907.6	936.5	1352.5	209.9	1318.4	13989.3
4	Fall 2001	993.9	2955.5	1839.6	4307.8	16359.1	961.3	1374.6	214.8	1374.3	16088.5
5	Spring 2002	983.4	2897.9	1834.1	4288.7	16318.1	961.3	1374.6	214.8	1369.2	16996.3
6	Fall 2002	976.5	2863.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	17735.6
7	Spring 2003	993.9	2921.0	1868.1	4402.7	16563.8	973.9	1385.5	217.3	1399.6	18961.0
8	Fall 2003	969.5	2840.3	1823.3	4250.4	16236.1	956.3	1370.2	213.9	1359.1	18865.7
9	Spring 2004	973.0	2840.3	1823.3	4250.4	16236.1	953.8	1368.0	213.4	1359.1	19343.9
10	Fall 2004	973.0	2840.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	19729.4
11	Spring 2005	973.0	2840.3	1828.7	4269.5	16277.1	958.8	1372.4	214.3	1364.1	20020.4
12	Fall 2005	962.6	2771.1	1782.9	4095.6	15907.6	936.5	1352.5	209.9	1318.4	19440.0
13	Spring 2006	973.0	2828.7	1787.7	4115.1	15948.7	936.5	1352.5	209.9	1323.5	19632.8
14	Fall 2006	959.1	2736.5	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18770.6
15	Spring 2007	966.1	2759.6	1736.8	3898.9	15495.9	909.5	1328.0	204.4	1267.6	18770.6
16	Fall 2007	962.6	2702.0	1706.4	3759.0	15206.9	895.0	1314.4	201.3	1232.1	18203.5
17	Spring 2008	969.5	2759.6	1710.7	3779.1	15248.3	895.0	1314.4	201.3	1237.1	18297.5
18	Fall 2008	966.1	2748.1	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	18015.8
19	Spring 2009	980.0	2840.3	1736.8	3898.9	15495.9	909.5	1328.0	204.4	1267.6	18675.6
20	Fall 2009	986.9	2897.9	1792.6	4134.5	15989.8	941.4	1357.0	210.9	1328.6	19729.4
21	Spring 2010	980.0	2874.9	1812.9	4211.9	16154.0	948.9	1363.6	212.4	1348.9	20020.4
22	Fall 2010	976.5	2851.8	1823.3	4250.4	16236.1	953.8	1368.0	213.4	1359.1	20215.2
23	Spring 2011	993.9	2921.0	1874.0	4421.6	16604.7	978.9	1389.9	218.3	1404.7	20902.2
24	Fall 2011	969.5	2840.3	1839.6	4326.8	16400.0	963.8	1376.8	215.3	1379.4	20606.8
25	Spring 2012	973.0	2840.3	1850.8	4345.9	16441.0	966.3	1379.0	215.8	1384.4	20705.1
26	Fall 2012	973.0	2840.3	1862.2	4383.8	16522.9	971.3	1383.3	216.8	1394.6	21001.0
27	Spring 2013	973.0	2840.3	1868.1	4402.7	16563.8	973.9	1385.5	217.3	1399.6	21199.1
28	Fall 2013	962.6	2771.1	1818.1	4231.2	16195.1	953.8	1368.0	213.4	1354.0	20410.6
29	Spring 2014	973.0	2828.7	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	20606.8
30	Fall 2014	959.1	2736.5	1778.1	4076.1	15866.5	931.6	1348.1	208.9	1313.4	19729.4
31	Spring 2015	966.1	2759.6	1773.3	4056.6	15825.4	929.1	1345.9	208.4	1308.3	19729.4
32	Fall 2015	962.6	2702.0	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	19056.5

Table B18. Simulated lake areas for the Average-Moderately Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1773.3	4056.6	15825.4	931.6	1348.1	208.9	1308.3	11543.9
2	Fall 2000	966.1	2828.7	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	11936.2
3	Spring 2001	986.9	2897.9	1763.9	4017.4	15743.1	926.6	1343.6	207.9	1298.1	13651.1
4	Fall 2001	983.4	2897.9	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	15024.3
5	Spring 2002	976.5	2863.3	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	15819.8
6	Fall 2002	955.7	2748.1	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	15464.3
7	Spring 2003	973.0	2805.7	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	15730.7
8	Fall 2003	955.7	2702.0	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	15199.7
9	Spring 2004	969.5	2782.6	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	15641.7
10	Fall 2004	962.6	2713.5	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15199.7
11	Spring 2005	969.5	2759.6	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15375.9
12	Fall 2005	966.1	2748.1	1603.4	3163.0	14003.5	824.3	1245.2	185.8	1084.6	15111.9
13	Spring 2006	976.5	2828.7	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	15552.9
14	Fall 2006	976.5	2851.8	1621.3	3350.3	14378.1	845.2	1266.2	190.5	1130.4	15998.8
15	Spring 2007	973.0	2840.3	1625.7	3371.0	14419.6	847.5	1268.5	191.0	1135.4	16088.5
16	Fall 2007	962.6	2794.2	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	15730.7
17	Spring 2008	969.5	2817.2	1594.1	3225.6	14128.4	833.5	1254.6	187.9	1099.8	15730.7
18	Fall 2008	969.5	2828.7	1589.5	3204.8	14086.8	828.9	1249.9	186.8	1094.7	15641.7
19	Spring 2009	980.0	2874.9	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	16358.9
20	Fall 2009	993.9	2944.0	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	17642.6
21	Spring 2010	983.4	2897.9	1723.6	3839.1	15372.1	904.7	1323.4	203.4	1252.4	18015.8
22	Fall 2010	976.5	2863.3	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	18297.5
23	Spring 2011	993.9	2921.0	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	19056.5
24	Fall 2011	969.5	2840.3	1754.7	3978.0	15660.7	919.3	1336.9	206.4	1288.0	18770.6
25	Spring 2012	973.0	2840.3	1759.3	3997.7	15701.9	921.7	1339.2	206.9	1293.0	18961.0
26	Fall 2012	973.0	2840.3	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	19247.9
27	Spring 2013	973.0	2840.3	1778.1	4076.1	15866.5	931.6	1348.1	208.9	1313.4	19440.0
28	Fall 2013	962.6	2771.1	1736.8	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18770.6
29	Spring 2014	973.0	2828.7	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	18961.0
30	Fall 2014	959.1	2736.5	1702.2	3738.9	15165.6	890.2	1309.9	200.3	1227.0	18109.5
31	Spring 2015	966.1	2759.6	1697.9	3718.7	15124.3	890.2	1309.9	200.3	1221.9	18109.5
32	Fall 2015	962.6	2702.0	1672.7	3597.0	14876.0	873.4	1293.9	196.7	1191.4	17549.7

Table B19. Simulated lake areas for the Moderately Dry-Moderately Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	11466.3
2	Fall 2000	966.1	2817.2	1723.6	3839.1	15372.1	902.3	1321.2	202.9	1252.4	11778.5
3	Spring 2001	983.4	2874.9	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	13233.3
4	Fall 2001	966.1	2805.7	1693.7	3718.7	15124.3	887.8	1307.6	199.8	1221.9	13233.3
5	Spring 2002	973.0	2828.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	14074.4
6	Fall 2002	948.8	2725.0	1638.7	3433.0	14544.2	856.9	1277.8	193.1	1150.7	13483.3
7	Spring 2003	969.5	2782.6	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	14074.4
8	Fall 2003	966.1	2736.5	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1115.1	13735.3
9	Spring 2004	976.5	2840.3	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	14676.0
10	Fall 2004	969.5	2828.7	1625.7	3391.7	14461.2	849.8	1270.9	191.6	1140.5	14936.9
11	Spring 2005	966.1	2828.7	1616.9	3329.6	14336.5	842.8	1263.9	190.0	1125.3	15111.9
12	Fall 2005	952.2	2725.0	1598.8	3100.2	13878.4	817.4	1238.1	184.2	1069.3	14330.9
13	Spring 2006	973.0	2817.2	1621.3	3142.1	13961.8	822.0	1242.8	185.3	1079.5	14589.4
14	Fall 2006	955.7	2702.0	1603.4	2890.1	13460.6	794.8	1214.4	178.9	1028.5	13567.1
15	Spring 2007	966.1	2725.0	1616.9	2890.1	13460.6	794.8	1214.4	178.9	1028.5	13567.1
16	Fall 2007	952.2	2633.2	1598.8	2720.3	13083.5	774.7	1197.7	175.1	987.6	12821.4
17	Spring 2008	966.1	2667.6	1616.9	2805.5	13041.6	772.5	1197.7	175.1	987.6	12739.7
18	Fall 2008	966.1	2656.1	1616.9	2847.9	12915.6	765.9	1195.3	174.5	982.5	12577.0
19	Spring 2009	980.0	2828.7	1625.7	2890.1	13460.6	794.8	1214.4	178.9	1023.4	13150.5
20	Fall 2009	986.9	2886.4	1594.1	3225.6	14128.4	831.2	1252.2	187.4	1099.8	14330.9
21	Spring 2010	980.0	2874.9	1612.4	3308.8	14294.9	840.5	1261.6	189.5	1120.2	14762.8
22	Fall 2010	976.5	2851.8	1616.9	3350.3	14378.1	845.2	1266.2	190.5	1130.4	15199.7
23	Spring 2011	993.9	2921.0	1668.4	3576.6	14834.6	871.1	1293.9	196.7	1186.3	16178.4
24	Fall 2011	969.5	2840.3	1643.0	3453.6	14585.8	859.2	1280.1	193.6	1155.8	15909.2
25	Spring 2012	973.0	2840.3	1651.5	3494.7	14668.7	861.6	1282.4	194.2	1166.0	16268.6
26	Fall 2012	973.0	2840.3	1660.0	3535.7	14751.7	866.3	1287.0	195.2	1176.1	16630.9
27	Spring 2013	973.0	2840.3	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	16813.2
28	Fall 2013	962.6	2771.1	1630.1	3391.7	14461.2	849.8	1270.9	191.6	1140.5	16268.6
29	Spring 2014	973.0	2828.7	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	16449.4
30	Fall 2014	959.1	2736.5	1594.1	3225.6	14128.4	831.2	1252.2	187.4	1099.8	15641.7
31	Spring 2015	966.1	2759.6	1594.1	3225.6	14128.4	831.2	1252.2	187.4	1099.8	15730.7
32	Fall 2015	962.6	2702.0	1594.1	3079.3	13836.6	815.1	1235.8	183.7	1064.2	15199.7

Table B20. Simulated lake areas for the Dry-Moderately Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	990.4	2897.9	1782.9	4115.1	15948.7	936.5	1352.5	209.9	1323.5	11700.0
2	Fall 2000	966.1	2817.2	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	11936.2
3	Spring 2001	980.0	2863.3	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	13316.4
4	Fall 2001	962.6	2771.1	1685.3	3658.0	15000.2	883.0	1303.0	198.8	1206.6	13067.8
5	Spring 2002	973.0	2828.7	1681.1	3637.7	14958.8	878.2	1298.5	197.8	1201.6	13735.3
6	Fall 2002	966.1	2782.6	1643.0	3453.6	14585.8	859.2	1280.1	193.6	1155.8	13567.1
7	Spring 2003	976.5	2851.8	1668.4	3576.6	14834.6	871.1	1291.6	196.2	1186.3	14589.4
8	Fall 2003	969.5	2840.3	1660.0	3535.7	14751.7	866.3	1287.0	195.2	1176.1	15024.3
9	Spring 2004	966.1	2828.7	1643.0	3474.2	14627.3	859.2	1280.1	193.6	1160.9	15287.7
10	Fall 2004	952.2	2725.0	1594.1	3225.6	14128.4	833.5	1254.6	187.9	1099.8	14589.4
11	Spring 2005	973.0	2817.2	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	14936.9
12	Fall 2005	952.2	2702.0	1589.5	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13904.4
13	Spring 2006	966.1	2725.0	1612.4	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13904.4
14	Fall 2006	952.2	2633.2	1598.8	2805.5	13293.1	785.8	1204.9	176.7	1013.2	13150.5
15	Spring 2007	966.1	2644.7	1616.9	2847.9	13167.4	779.1	1197.7	175.1	1008.1	12985.4
16	Fall 2007	904.2	2395.0	1539.4	2290.2	12199.9	729.4	1149.2	164.1	895.0	11082.0
17	Spring 2008	900.8	2361.4	1539.4	2160.7	12073.3	723.1	1146.8	163.6	889.8	10854.8
18	Fall 2008	941.9	2417.5	1607.9	2260.1	12031.0	721.0	1146.8	163.6	889.8	10854.8
19	Spring 2009	976.5	2587.5	1634.4	2869.0	12368.6	737.9	1163.8	167.4	936.3	11543.9
20	Fall 2009	983.4	2805.7	1647.3	2974.3	13083.5	774.7	1190.5	173.5	997.9	12496.0
21	Spring 2010	980.0	2840.3	1647.3	2890.1	13460.6	794.8	1214.4	178.9	1013.2	12821.4
22	Fall 2010	976.5	2840.3	1621.3	2995.3	13669.6	806.0	1226.3	181.5	1023.4	12985.4
23	Spring 2011	993.9	2909.4	1603.4	3267.3	14211.7	838.2	1259.2	188.9	1110.0	13989.3
24	Fall 2011	969.5	2828.7	1603.4	3163.0	14003.5	824.3	1245.2	185.8	1084.6	13735.3
25	Spring 2012	973.0	2840.3	1589.5	3204.8	14086.8	828.9	1249.9	186.8	1094.7	13989.3
26	Fall 2012	973.0	2840.3	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	14416.9
27	Spring 2013	973.0	2840.3	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1115.1	14762.8
28	Fall 2013	962.6	2771.1	1603.4	3100.2	13878.4	817.4	1238.1	184.2	1069.3	14159.7
29	Spring 2014	973.0	2828.7	1616.9	3142.1	13961.8	822.0	1242.8	185.3	1079.5	14503.0
30	Fall 2014	959.1	2736.5	1603.4	2932.3	13544.2	799.3	1219.2	179.9	1038.7	13651.1
31	Spring 2015	966.1	2759.6	1616.9	2953.3	13586.1	801.5	1221.6	180.5	1038.7	13651.1
32	Fall 2015	962.6	2702.0	1607.9	2847.9	13293.1	785.8	1207.3	177.2	1013.2	13067.8

Table B21. Simulated lake areas for the Wet-Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1773.3	4056.6	15825.4	931.6	1348.1	208.9	1308.3	11543.9
2	Fall 2000	980.0	2874.9	1778.1	4076.1	15866.5	934.0	1350.3	209.4	1313.4	12903.3
3	Spring 2001	983.4	2874.9	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	14074.4
4	Fall 2001	966.1	2828.7	1736.8	3898.9	15537.1	912.0	1330.2	204.9	1267.6	14416.9
5	Spring 2002	969.5	2840.3	1728.0	3859.1	15454.6	907.1	1325.7	203.9	1257.5	15199.7
6	Fall 2002	976.5	2851.8	1741.2	3918.7	15537.1	914.4	1332.4	205.4	1272.7	16268.6
7	Spring 2003	993.9	2921.0	1792.6	4134.5	15989.8	939.0	1354.7	210.4	1328.6	17642.6
8	Fall 2003	973.0	2851.8	1768.6	4037.0	15784.2	926.6	1343.6	207.9	1303.2	17735.6
9	Spring 2004	997.4	2955.5	1845.1	4326.8	16400.0	963.8	1376.8	215.3	1379.4	19247.9
10	Fall 2004	983.4	2897.9	1862.2	4383.8	16522.9	971.3	1385.5	217.3	1394.6	19923.2
11	Spring 2005	986.9	2909.4	1898.6	4496.8	16768.2	989.0	1398.5	220.2	1425.0	20705.1
12	Fall 2005	973.0	2851.8	1886.2	4459.3	16686.5	981.4	1392.0	218.8	1414.9	20902.2
13	Spring 2006	1004.4	2978.5	2004.2	4773.6	17379.6	1027.2	1430.7	227.4	1500.9	22401.8
14	Fall 2006	976.5	2874.9	1973.8	4700.5	17216.8	1014.4	1420.0	225.0	1480.7	22199.7
15	Spring 2007	1000.9	2967.0	2096.7	4971.8	17826.1	1053.0	1451.8	232.2	1556.5	23525.4
16	Fall 2007	976.5	2863.3	2061.5	4900.2	17663.9	1042.7	1443.4	230.3	1536.3	23422.4
17	Spring 2008	986.9	2897.9	2115.0	5007.4	17907.2	1058.2	1456.0	233.1	1566.6	24043.0
18	Fall 2008	980.0	2886.4	2143.3	5078.2	18069.1	1068.6	1464.3	235.0	1586.7	24460.1
19	Spring 2009	983.4	2886.4	2172.7	5113.4	18150.0	1076.4	1470.5	236.4	1596.8	24774.8
20	Fall 2009	966.1	2828.7	2115.0	5007.4	17907.2	1058.2	1456.0	233.1	1566.6	24355.6
21	Spring 2010	969.5	2840.3	2124.4	5025.1	17947.7	1060.8	1458.1	233.6	1571.6	24564.8
22	Fall 2010	976.5	2851.8	2162.8	5095.8	18109.5	1073.8	1468.5	235.9	1591.8	25091.1
23	Spring 2011	993.9	2921.0	2278.3	5287.6	18553.6	1100.0	1489.1	240.6	1647.1	25942.3
24	Fall 2011	973.0	2851.8	2234.7	5218.3	18392.3	1089.5	1480.9	238.7	1627.0	25621.8
25	Spring 2012	997.4	2944.0	2370.9	5424.9	18875.7	1121.0	1505.4	244.3	1687.2	27023.0
26	Fall 2012	983.4	2897.9	2370.9	5424.9	18915.9	1123.7	1507.5	244.7	1692.2	27790.8
27	Spring 2013	986.9	2909.4	2432.4	5509.7	19116.7	1136.9	1517.6	247.0	1717.2	28345.2
28	Fall 2013	973.0	2851.8	2419.9	5492.8	19036.4	1134.2	1515.6	246.6	1707.2	28233.9
29	Spring 2014	1000.9	2967.0	2590.0	5710.4	19557.3	1168.7	1541.6	252.4	1772.0	29696.8
30	Fall 2014	976.5	2874.9	2536.0	5643.9	19397.3	1158.1	1533.6	250.6	1752.1	29242.9
31	Spring 2015	1000.9	2978.5	2687.5	5825.6	19876.8	1187.3	1555.4	255.6	1811.6	30499.6
32	Fall 2015	976.5	2874.9	2645.3	5759.9	19717.2	1176.7	1547.5	253.8	1791.8	30039.5

Table B22. Simulated lake areas for the Moderately Wet-Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1763.9	4017.4	15743.1	924.2	1343.6	207.9	1298.1	11311.7
2	Fall 2000	969.5	2840.3	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	12094.9
3	Spring 2001	993.9	2921.0	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	13989.3
4	Fall 2001	993.9	2955.5	1839.6	4307.8	16359.1	961.3	1374.6	214.8	1374.3	16088.5
5	Spring 2002	983.4	2897.9	1834.1	4307.8	16359.1	961.3	1374.6	214.8	1374.3	16996.3
6	Fall 2002	976.5	2863.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	17735.6
7	Spring 2003	993.9	2921.0	1868.1	4402.7	16563.8	973.9	1385.5	217.3	1399.6	18961.0
8	Fall 2003	969.5	2840.3	1823.3	4250.4	16236.1	953.8	1368.0	213.4	1359.1	18865.7
9	Spring 2004	973.0	2840.3	1818.1	4250.4	16236.1	953.8	1368.0	213.4	1359.1	19247.9
10	Fall 2004	973.0	2840.3	1823.3	4269.5	16277.1	956.3	1370.2	213.9	1364.1	19729.4
11	Spring 2005	973.0	2840.3	1828.7	4269.5	16277.1	956.3	1370.2	213.9	1364.1	20020.4
12	Fall 2005	962.6	2771.1	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	19343.9
13	Spring 2006	973.0	2828.7	1787.7	4115.1	15948.7	936.5	1352.5	209.9	1323.5	19632.8
14	Fall 2006	959.1	2736.5	1736.8	3898.9	15495.9	912.0	1330.2	204.9	1267.6	18770.6
15	Spring 2007	966.1	2759.6	1736.8	3898.9	15495.9	909.5	1328.0	204.4	1267.6	18770.6
16	Fall 2007	962.6	2702.0	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	18203.5
17	Spring 2008	973.0	2782.6	1715.0	3799.1	15289.6	897.4	1316.7	201.8	1242.2	18391.8
18	Fall 2008	973.0	2828.7	1732.3	3879.0	15454.6	907.1	1325.7	203.9	1262.6	18675.6
19	Spring 2009	973.0	2840.3	1736.8	3898.9	15495.9	909.5	1328.0	204.4	1267.6	18770.6
20	Fall 2009	962.6	2782.6	1710.7	3779.1	15248.3	895.0	1314.4	201.3	1237.1	18297.5
21	Spring 2010	969.5	2828.7	1715.0	3799.1	15289.6	897.4	1316.7	201.8	1242.2	18391.8
22	Fall 2010	976.5	2851.8	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18865.7
23	Spring 2011	993.9	2932.5	1807.7	4192.6	16113.0	946.4	1361.4	211.9	1343.8	19826.2
24	Fall 2011	973.0	2851.8	1792.6	4134.5	15989.8	939.0	1354.7	210.4	1328.6	19632.8
25	Spring 2012	997.4	2955.5	1880.1	4440.5	16645.6	978.9	1389.9	218.3	1409.8	20902.2
26	Fall 2012	983.4	2909.4	1905.0	4515.5	16809.0	991.5	1400.7	220.7	1430.1	21397.9
27	Spring 2013	986.9	2909.4	1952.2	4663.8	17135.3	1009.3	1415.8	224.1	1470.6	22098.9
28	Fall 2013	973.0	2851.8	1945.1	4626.9	17053.8	1004.2	1411.5	223.1	1460.5	22098.9
29	Spring 2014	1004.4	2978.5	2078.9	4936.0	17745.0	1047.9	1447.6	231.2	1546.4	23525.4
30	Fall 2014	976.5	2874.9	2044.6	4864.2	17582.7	1037.5	1439.1	229.3	1526.2	23217.0
31	Spring 2015	1000.9	2967.0	2182.8	5131.0	18190.4	1076.4	1470.5	236.4	1601.8	24564.8
32	Fall 2015	976.5	2863.3	2143.3	5060.5	18028.6	1068.6	1464.3	235.0	1581.7	24460.1

Table B23. Simulated lake areas for the Average-Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1773.3	4056.6	15825.4	929.1	1348.1	208.9	1308.3	11466.3
2	Fall 2000	966.1	2828.7	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	11857.2
3	Spring 2001	986.9	2897.9	1763.9	4017.4	15743.1	924.2	1343.6	207.9	1298.1	13651.1
4	Fall 2001	983.4	2897.9	1778.1	4095.6	15907.6	934.0	1350.3	209.4	1318.4	15024.3
5	Spring 2002	976.5	2863.3	1768.6	4037.0	15784.2	929.1	1345.9	208.4	1303.2	15819.8
6	Fall 2002	955.7	2748.1	1706.4	3759.0	15206.9	892.6	1312.1	200.8	1232.1	15464.3
7	Spring 2003	969.5	2794.2	1689.5	3678.3	15041.6	883.0	1303.0	198.8	1211.7	15730.7
8	Fall 2003	955.7	2702.0	1634.4	3412.4	14502.7	854.5	1275.5	192.6	1145.6	15199.7
9	Spring 2004	969.5	2771.1	1638.7	3433.0	14544.2	856.9	1277.8	193.1	1150.7	15641.7
10	Fall 2004	962.6	2713.5	1603.4	3267.3	14211.7	835.8	1256.9	188.4	1110.0	15199.7
11	Spring 2005	969.5	2759.6	1598.8	3246.4	14170.1	833.5	1256.9	188.4	1104.9	15287.7
12	Fall 2005	969.5	2748.1	1603.4	3163.0	14003.5	824.3	1245.2	185.8	1084.6	15111.9
13	Spring 2006	976.5	2828.7	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	15464.3
14	Fall 2006	976.5	2851.8	1621.3	3350.3	14378.1	845.2	1266.2	190.5	1130.4	15909.2
15	Spring 2007	973.0	2840.3	1625.7	3371.0	14419.6	847.5	1268.5	191.0	1135.4	16088.5
16	Fall 2007	962.6	2794.2	1598.8	3246.4	14170.1	833.5	1254.6	187.9	1104.9	15641.7
17	Spring 2008	969.5	2828.7	1603.4	3267.3	14211.7	838.2	1259.2	188.9	1110.0	15819.8
18	Fall 2008	980.0	2863.3	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	16358.9
19	Spring 2009	973.0	2840.3	1638.7	3433.0	14544.2	854.5	1275.5	192.6	1150.7	16449.4
20	Fall 2009	966.1	2817.2	1616.9	3329.6	14336.5	842.8	1263.9	190.0	1125.3	16088.5
21	Spring 2010	969.5	2828.7	1625.7	3371.0	14419.6	847.5	1268.5	191.0	1135.4	16268.6
22	Fall 2010	976.5	2851.8	1651.5	3494.7	14668.7	864.0	1284.7	194.7	1166.0	16813.2
23	Spring 2011	993.9	2921.0	1710.7	3779.1	15248.3	895.0	1314.4	201.3	1237.1	17828.8
24	Fall 2011	973.0	2851.8	1702.2	3738.9	15165.6	890.2	1309.9	200.3	1227.0	17642.6
25	Spring 2012	997.4	2944.0	1773.3	4056.6	15825.4	931.6	1348.1	208.9	1308.3	18961.0
26	Fall 2012	983.4	2897.9	1797.6	4153.9	16030.9	941.4	1359.2	211.4	1333.7	19440.0
27	Spring 2013	986.9	2909.4	1839.6	4307.8	16359.1	961.3	1374.6	214.8	1374.3	20117.7
28	Fall 2013	973.0	2851.8	1828.7	4269.5	16277.1	958.8	1372.4	214.3	1364.1	20215.2
29	Spring 2014	1004.4	2967.0	1938.2	4608.4	17013.1	1001.7	1409.3	222.6	1455.4	21697.3
30	Fall 2014	976.5	2874.9	1911.4	4534.1	16849.9	994.1	1402.9	221.2	1435.1	21397.9
31	Spring 2015	1000.9	2967.0	2028.1	4828.0	17501.5	1032.4	1434.9	228.4	1516.1	22808.0
32	Fall 2015	976.5	2863.3	1996.4	4755.4	17379.6	1024.7	1428.6	227.0	1495.9	22706.2

Table B24. Simulated lake areas for the Moderately Dry-Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2874.9	1773.3	4056.6	15825.4	929.1	1345.9	208.4	1308.3	11466.3
2	Fall 2000	966.1	2817.2	1723.6	3839.1	15372.1	902.3	1321.2	202.9	1252.4	11778.5
3	Spring 2001	983.4	2874.9	1745.7	3938.5	15578.3	916.8	1334.7	205.9	1277.8	13233.3
4	Fall 2001	966.1	2805.7	1697.9	3718.7	15124.3	887.8	1307.6	199.8	1221.9	13233.3
5	Spring 2002	973.0	2840.3	1697.9	3718.7	15124.3	890.2	1309.9	200.3	1221.9	14159.7
6	Fall 2002	948.8	2725.0	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	13567.1
7	Spring 2003	969.5	2782.6	1638.7	3453.6	14585.8	856.9	1277.8	193.1	1155.8	14074.4
8	Fall 2003	966.1	2736.5	1607.9	3288.1	14253.3	838.2	1259.2	188.9	1115.1	13819.7
9	Spring 2004	980.0	2840.3	1634.4	3412.4	14544.2	854.5	1275.5	192.6	1145.6	14762.8
10	Fall 2004	969.5	2828.7	1630.1	3391.7	14461.2	852.2	1273.2	192.1	1140.5	15111.9
11	Spring 2005	966.1	2828.7	1616.9	3329.6	14336.5	845.2	1266.2	190.5	1125.3	15199.7
12	Fall 2005	955.7	2736.5	1603.4	3121.2	13920.1	819.7	1240.5	184.7	1074.4	14503.0
13	Spring 2006	973.0	2817.2	1621.3	3142.1	13961.8	824.3	1245.2	185.8	1079.5	14762.8
14	Fall 2006	955.7	2702.0	1603.4	2911.2	13502.4	797.0	1216.8	179.4	1028.5	13735.3
15	Spring 2007	966.1	2725.0	1616.9	2911.2	13502.4	797.0	1216.8	179.4	1028.5	13651.1
16	Fall 2007	952.2	2633.2	1598.8	2720.3	13083.5	774.7	1197.7	175.1	987.6	12903.3
17	Spring 2008	966.1	2690.5	1621.3	2869.0	13125.5	776.9	1197.7	175.1	1003.0	12985.4
18	Fall 2008	976.5	2782.6	1630.1	2974.3	13376.9	790.3	1209.7	177.8	1023.4	13316.4
19	Spring 2009	973.0	2828.7	1630.1	2911.2	13502.4	797.0	1216.8	179.4	1028.5	13316.4
20	Fall 2009	962.6	2771.1	1612.4	2869.0	13293.1	785.8	1204.9	176.7	1003.0	12903.3
21	Spring 2010	969.5	2828.7	1625.7	2953.3	13376.9	790.3	1209.7	177.8	1018.3	12985.4
22	Fall 2010	976.5	2851.8	1638.7	3037.3	13753.2	810.6	1231.1	182.6	1048.9	13483.3
23	Spring 2011	993.9	2932.5	1625.7	3371.0	14419.6	847.5	1268.5	191.0	1135.4	14762.8
24	Fall 2011	973.0	2851.8	1612.4	3308.8	14294.9	842.8	1263.9	190.0	1120.2	14762.8
25	Spring 2012	1000.9	2955.5	1689.5	3678.3	15041.6	885.4	1305.3	199.3	1211.7	16358.9
26	Fall 2012	983.4	2909.4	1710.7	3779.1	15248.3	897.4	1316.7	201.8	1237.1	16996.3
27	Spring 2013	986.9	2921.0	1745.7	3938.5	15578.3	914.4	1332.4	205.4	1277.8	17828.8
28	Fall 2013	973.0	2851.8	1741.2	3918.7	15537.1	912.0	1330.2	204.9	1272.7	18015.8
29	Spring 2014	1004.4	2978.5	1828.7	4269.5	16277.1	958.8	1372.4	214.3	1364.1	19536.3
30	Fall 2014	976.5	2874.9	1807.7	4192.6	16113.0	946.4	1363.6	212.4	1343.8	19440.0
31	Spring 2015	1000.9	2967.0	1905.0	4515.5	16809.0	989.0	1398.5	220.2	1430.1	20902.2
32	Fall 2015	976.5	2863.3	1880.1	4440.5	16645.6	978.9	1389.9	218.3	1409.8	20803.5

Table B25. Simulated lake areas for the Dry-Wet climate scenario (in acres).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	986.9	2886.4	1782.9	4095.6	15907.6	934.0	1350.3	209.4	1318.4	11621.8
2	Fall 2000	966.1	2817.2	1728.0	3859.1	15413.4	907.1	1325.7	203.9	1257.5	11857.2
3	Spring 2001	980.0	2863.3	1741.2	3918.7	15537.1	914.4	1332.4	205.4	1272.7	13233.3
4	Fall 2001	962.6	2759.6	1685.3	3658.0	15000.2	880.6	1300.8	198.3	1206.6	12985.4
5	Spring 2002	973.0	2828.7	1676.9	3617.4	14917.4	878.2	1298.5	197.8	1196.5	13651.1
6	Fall 2002	966.1	2782.6	1643.0	3453.6	14585.8	856.9	1277.8	193.1	1155.8	13483.3
7	Spring 2003	976.5	2851.8	1664.2	3556.2	14793.1	871.1	1291.6	196.2	1181.2	14503.0
8	Fall 2003	969.5	2840.3	1655.8	3535.7	14751.7	866.3	1287.0	195.2	1176.1	14936.9
9	Spring 2004	966.1	2828.7	1643.0	3453.6	14585.8	859.2	1280.1	193.6	1155.8	15199.7
10	Fall 2004	952.2	2725.0	1594.1	3225.6	14128.4	831.2	1252.2	187.4	1099.8	14503.0
11	Spring 2005	973.0	2817.2	1598.8	3246.4	14170.1	835.8	1256.9	188.4	1104.9	14849.7
12	Fall 2005	955.7	2702.0	1589.5	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13904.4
13	Spring 2006	966.1	2725.0	1612.4	2995.3	13669.6	806.0	1226.3	181.5	1054.0	13819.7
14	Fall 2006	952.2	2633.2	1598.8	2805.5	13293.1	785.8	1204.9	176.7	1013.2	13067.8
15	Spring 2007	966.1	2644.7	1616.9	2847.9	13167.4	779.1	1197.7	175.1	1008.1	12903.3
16	Fall 2007	904.2	2395.0	1539.4	2290.2	12199.9	729.4	1149.2	164.1	895.0	11006.0
17	Spring 2008	907.6	2395.0	1550.0	2260.1	12157.7	727.3	1151.6	164.7	900.2	10930.2
18	Fall 2008	973.0	2576.0	1634.4	2763.0	12410.8	740.0	1163.8	167.4	936.3	11543.9
19	Spring 2009	973.0	2633.2	1630.1	2932.3	12495.1	744.3	1166.3	168.0	941.5	11621.8
20	Fall 2009	962.6	2587.5	1612.4	2869.0	12242.1	731.5	1159.0	166.3	920.9	11234.9
21	Spring 2010	969.5	2644.7	1625.7	2953.3	12368.6	737.9	1163.8	167.4	936.3	11388.9
22	Fall 2010	976.5	2759.6	1621.3	2974.3	12789.6	759.4	1178.4	170.7	967.1	11857.2
23	Spring 2011	993.9	2886.4	1685.3	2995.3	13669.6	806.0	1226.3	181.5	1023.4	12903.3
24	Fall 2011	973.0	2840.3	1621.3	3016.4	13711.4	808.3	1228.7	182.1	1013.2	12739.7
25	Spring 2012	997.4	2944.0	1634.4	3412.4	14502.7	852.2	1273.2	192.1	1145.6	14330.9
26	Fall 2012	983.4	2897.9	1651.5	3494.7	14668.7	864.0	1284.7	194.7	1166.0	15111.9
27	Spring 2013	986.9	2909.4	1685.3	3658.0	15000.2	880.6	1300.8	198.3	1206.6	15998.8
28	Fall 2013	973.0	2851.8	1676.9	3617.4	14917.4	878.2	1298.5	197.8	1196.5	16268.6
29	Spring 2014	1004.4	2967.0	1759.3	3997.7	15701.9	924.2	1341.4	207.4	1293.0	17922.2
30	Fall 2014	976.5	2874.9	1741.2	3918.7	15537.1	914.4	1332.4	205.4	1272.7	17828.8
31	Spring 2015	1000.9	2967.0	1823.3	4250.4	16236.1	956.3	1370.2	213.9	1359.1	19343.9
32	Fall 2015	976.5	2874.9	1807.7	4192.6	16113.0	946.4	1361.4	211.9	1343.8	19343.9

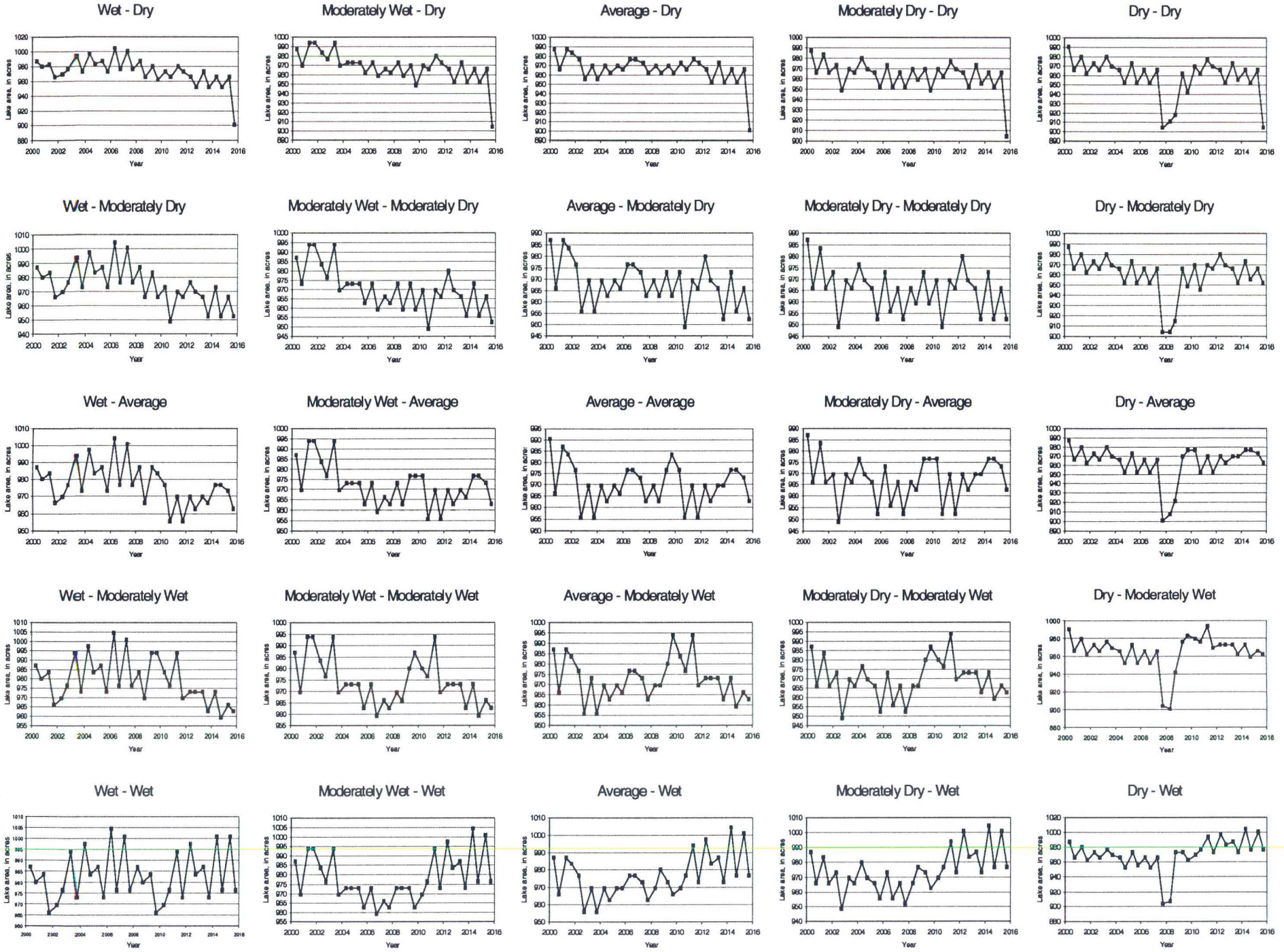

Figure B1. Simulated lake areas for Pickerel Lake.

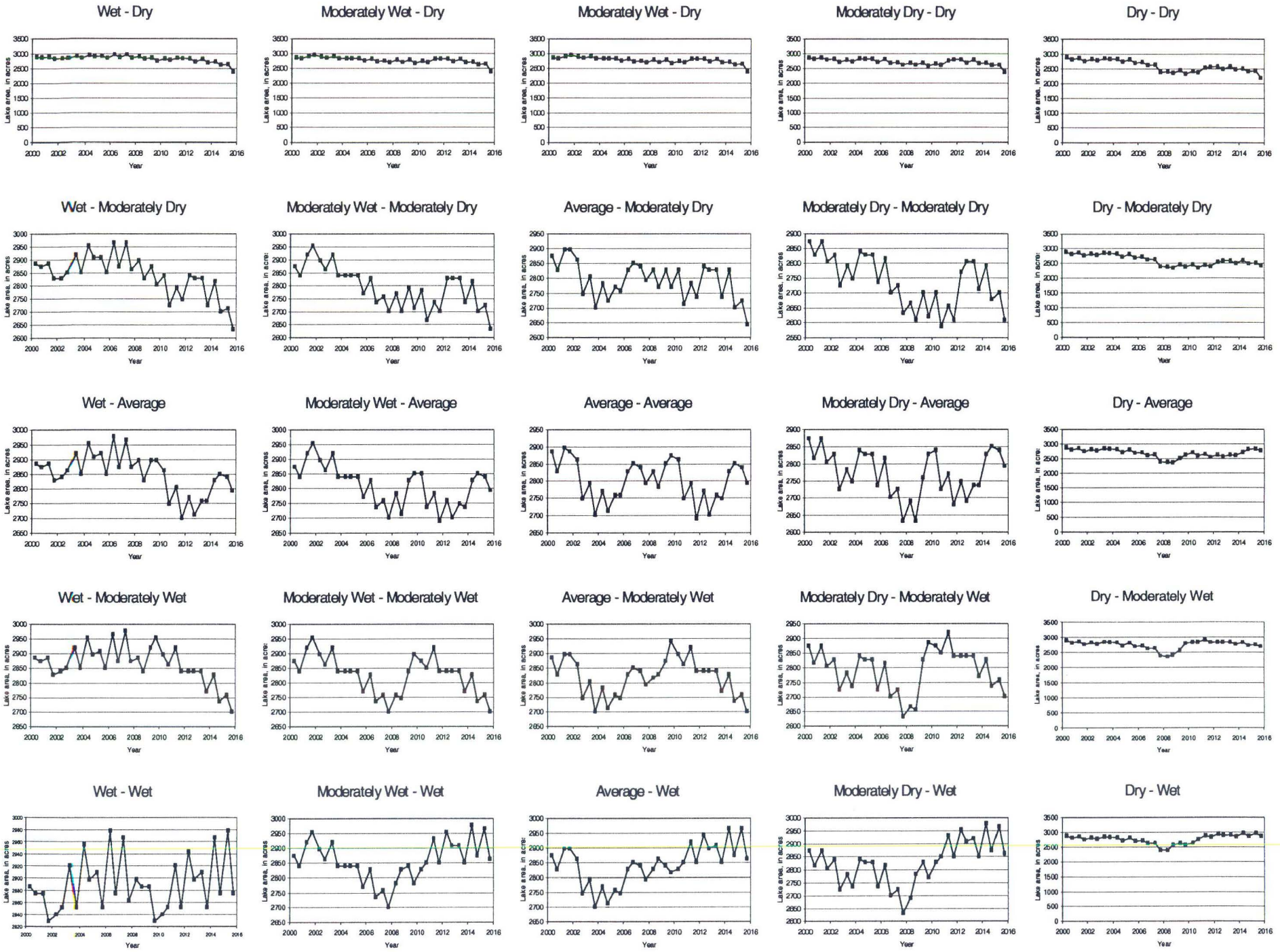

Figure B2. Simulated lake areas for Enemy Swim Lake

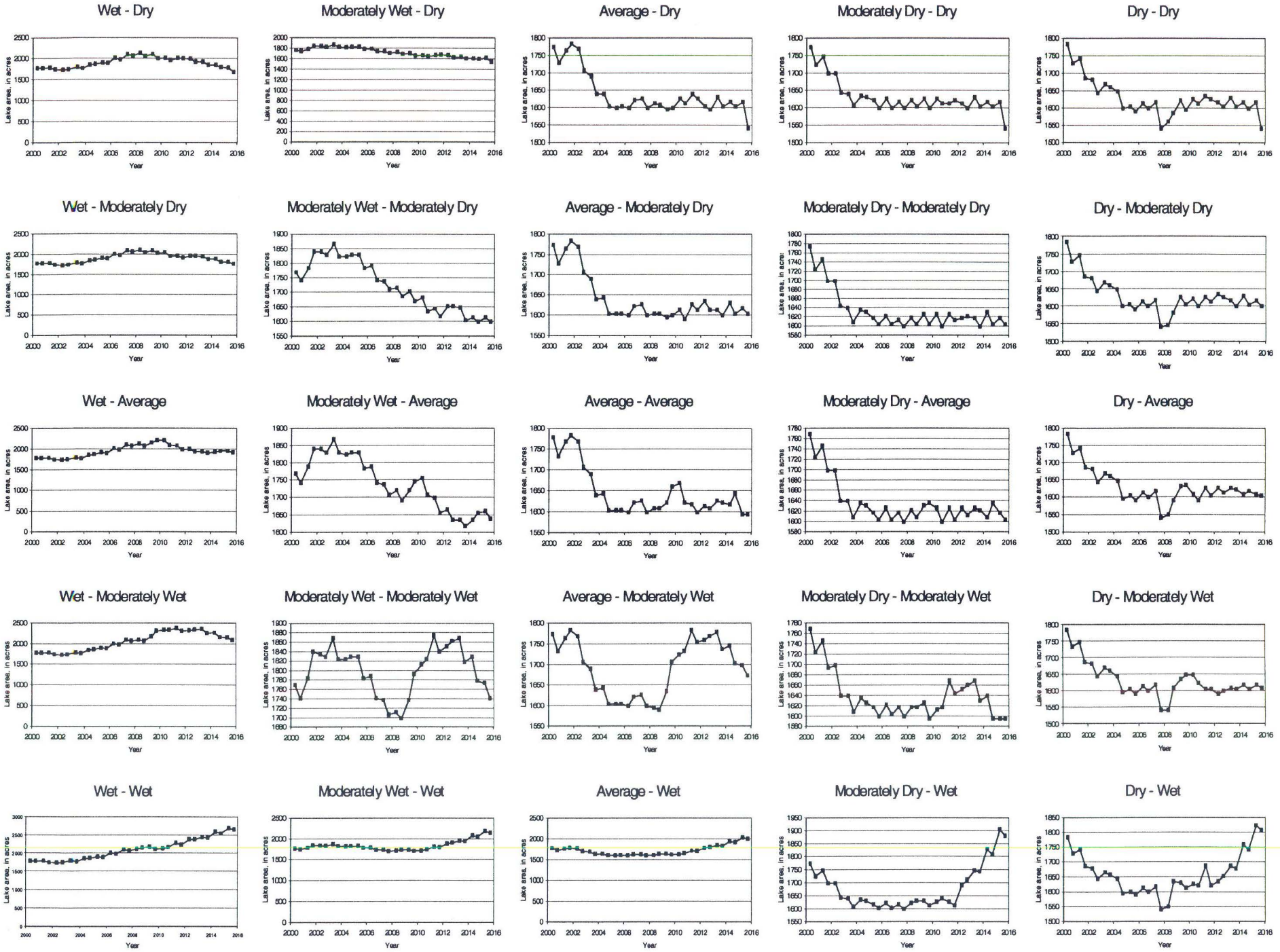

Figure B3. Simulated lake areas for Blue Dog Lake.

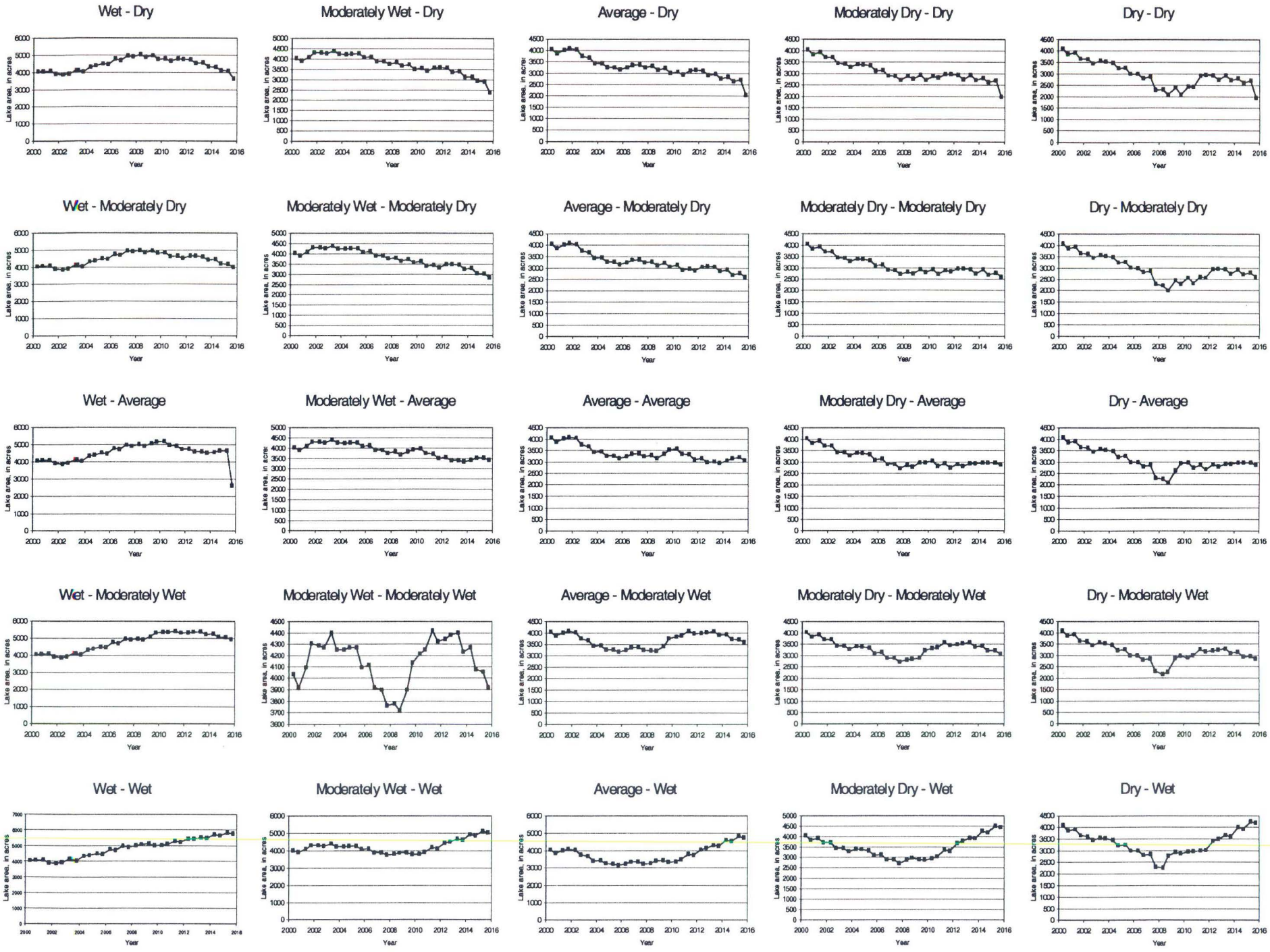

Figure B4. Simulate lake areas for Rush Lake.

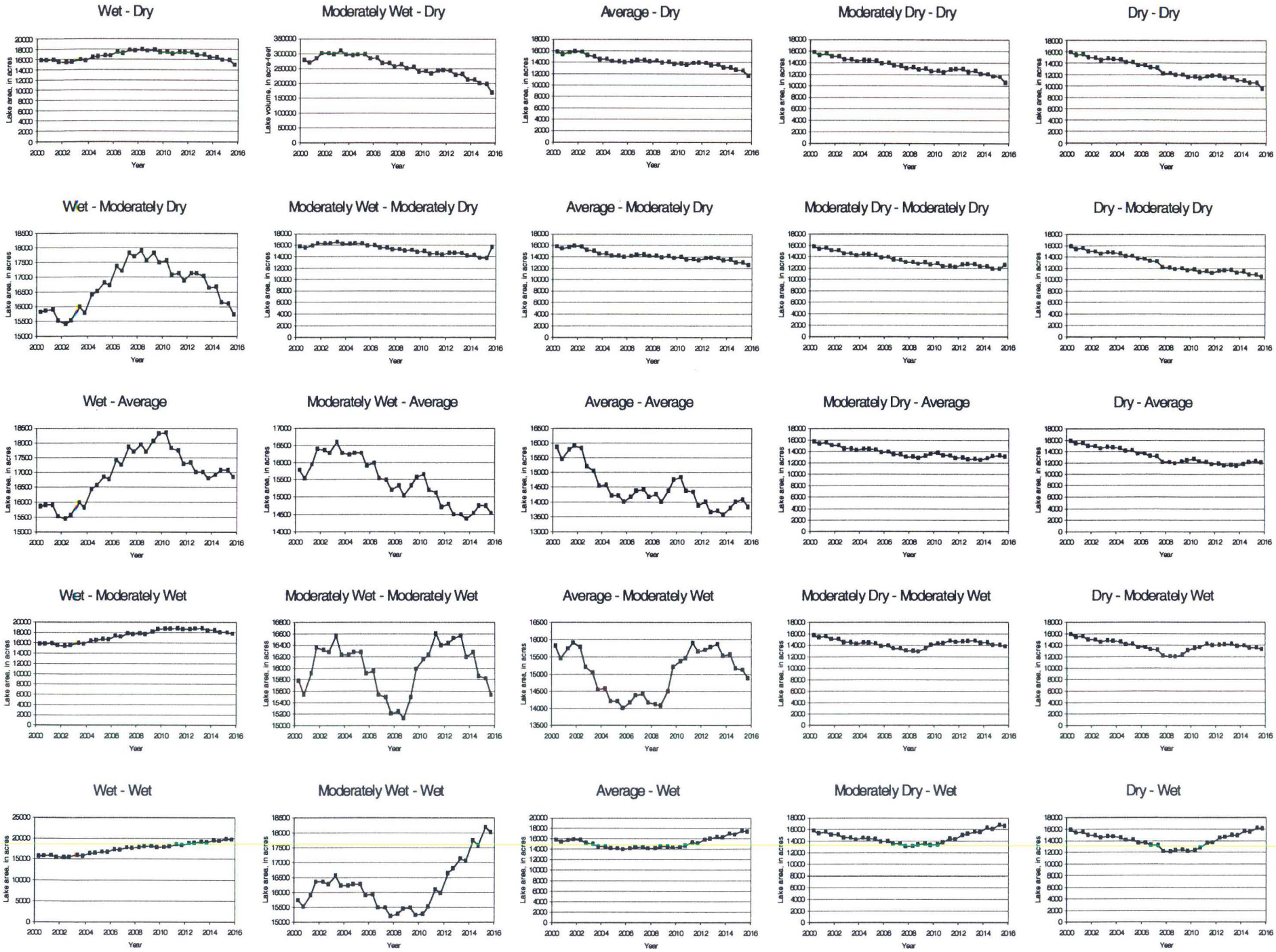

Figure B5. Simulated lake areas for Waubay Lake.

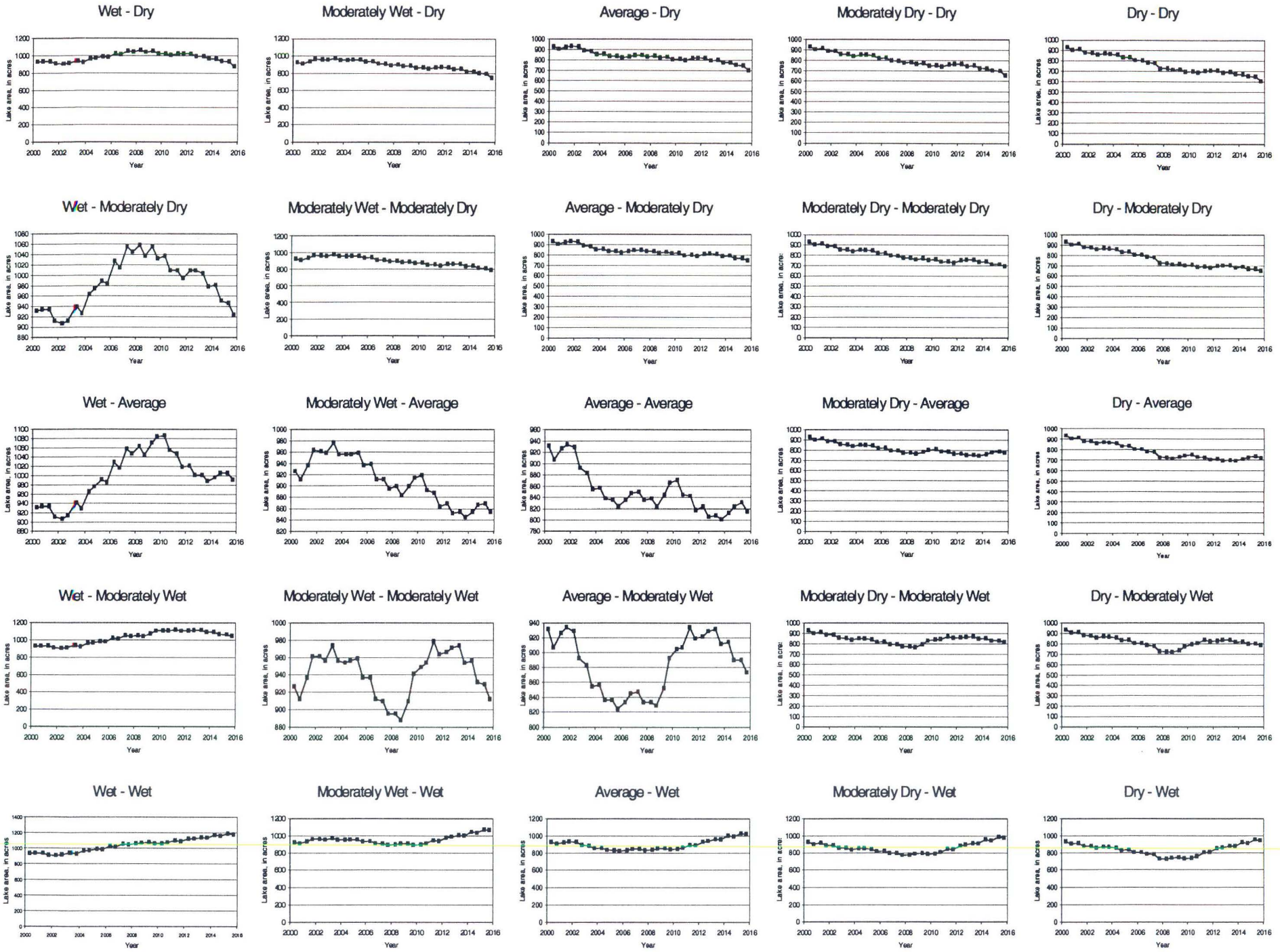

Figure B6. Simulated lake areas for Hillebrands Lake.

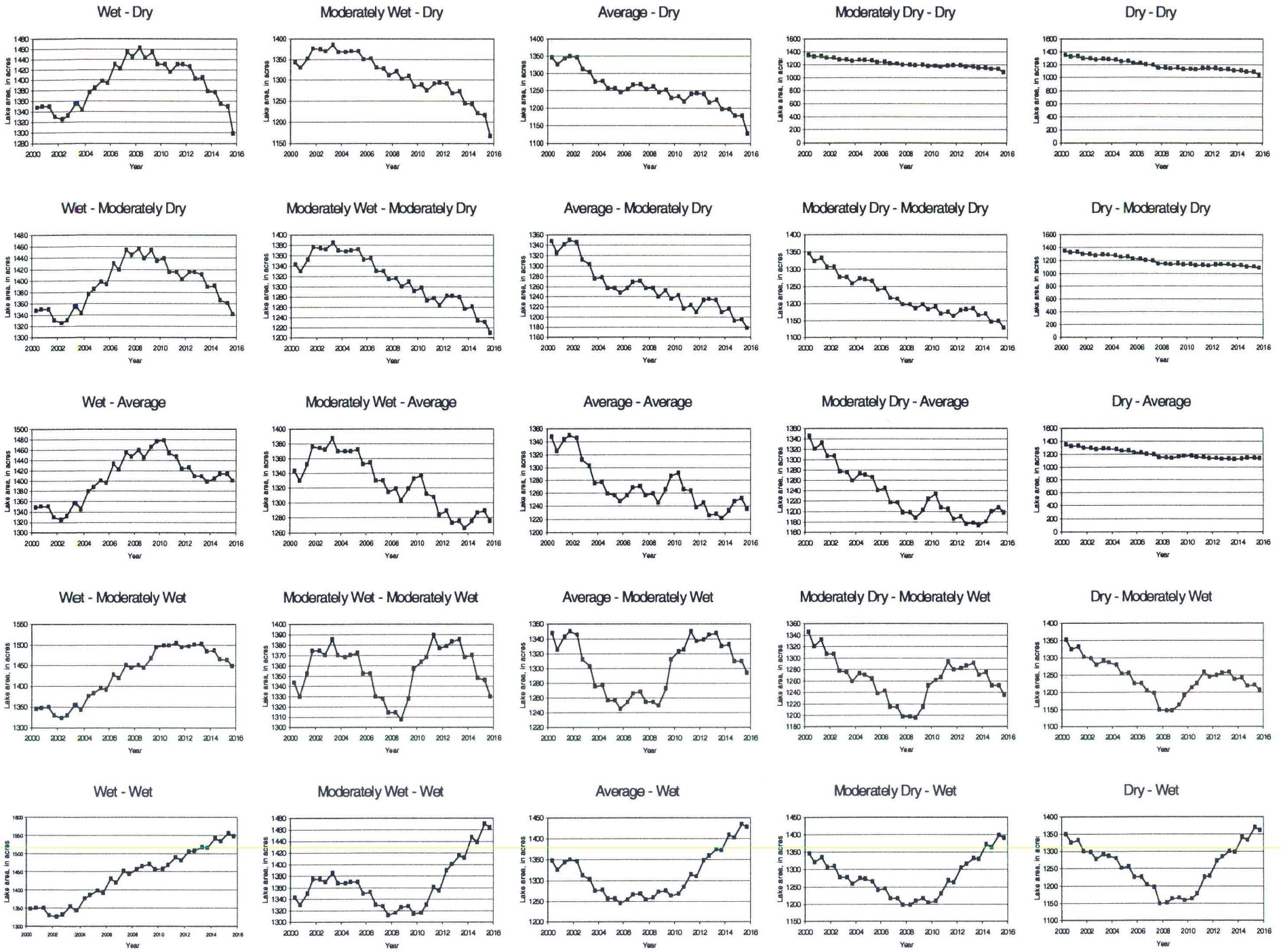

Figure B7. Simulated lake areas for Spring Lake.

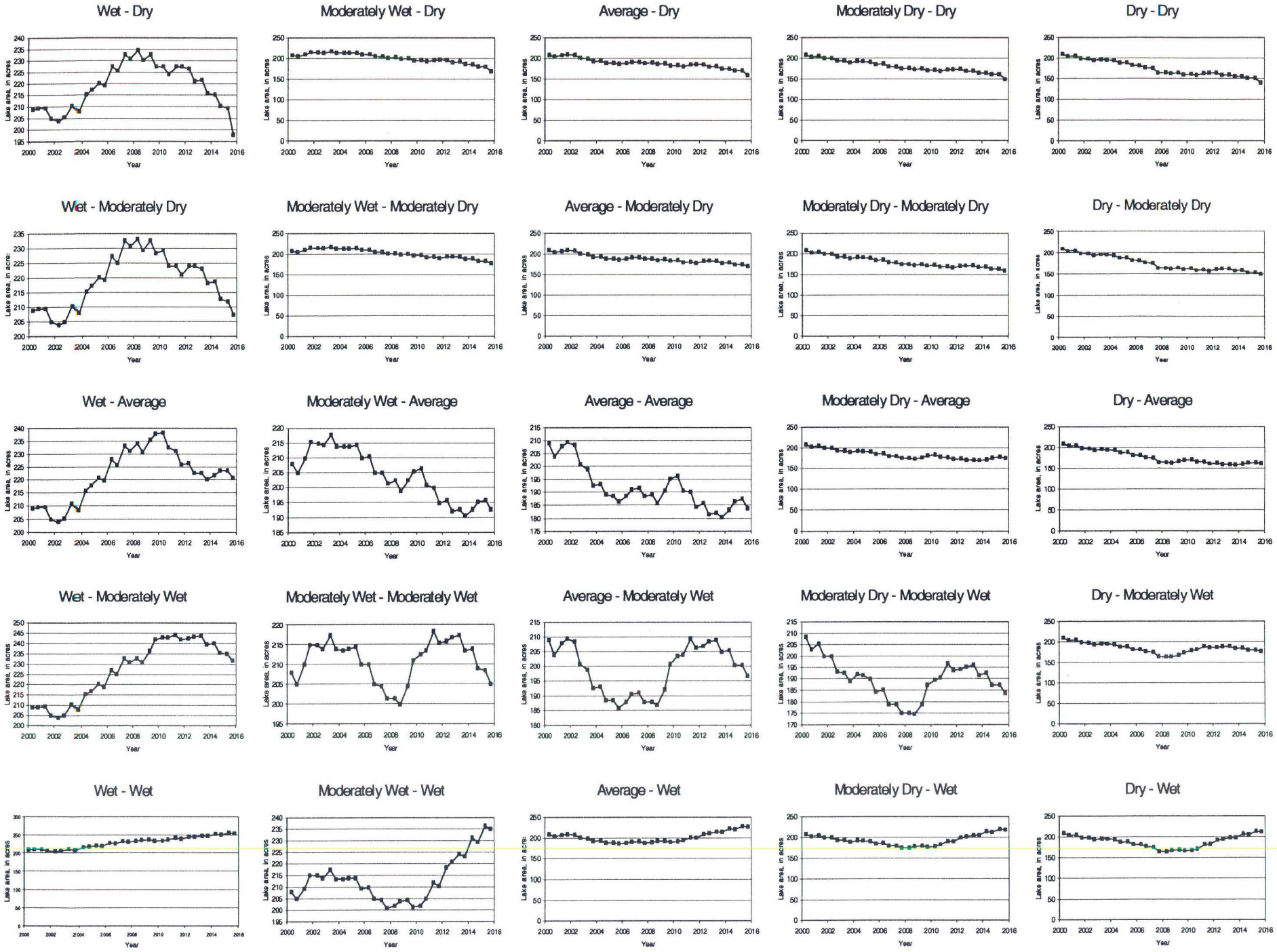

Figure B8. Simulated lake areas for Swan Pond.

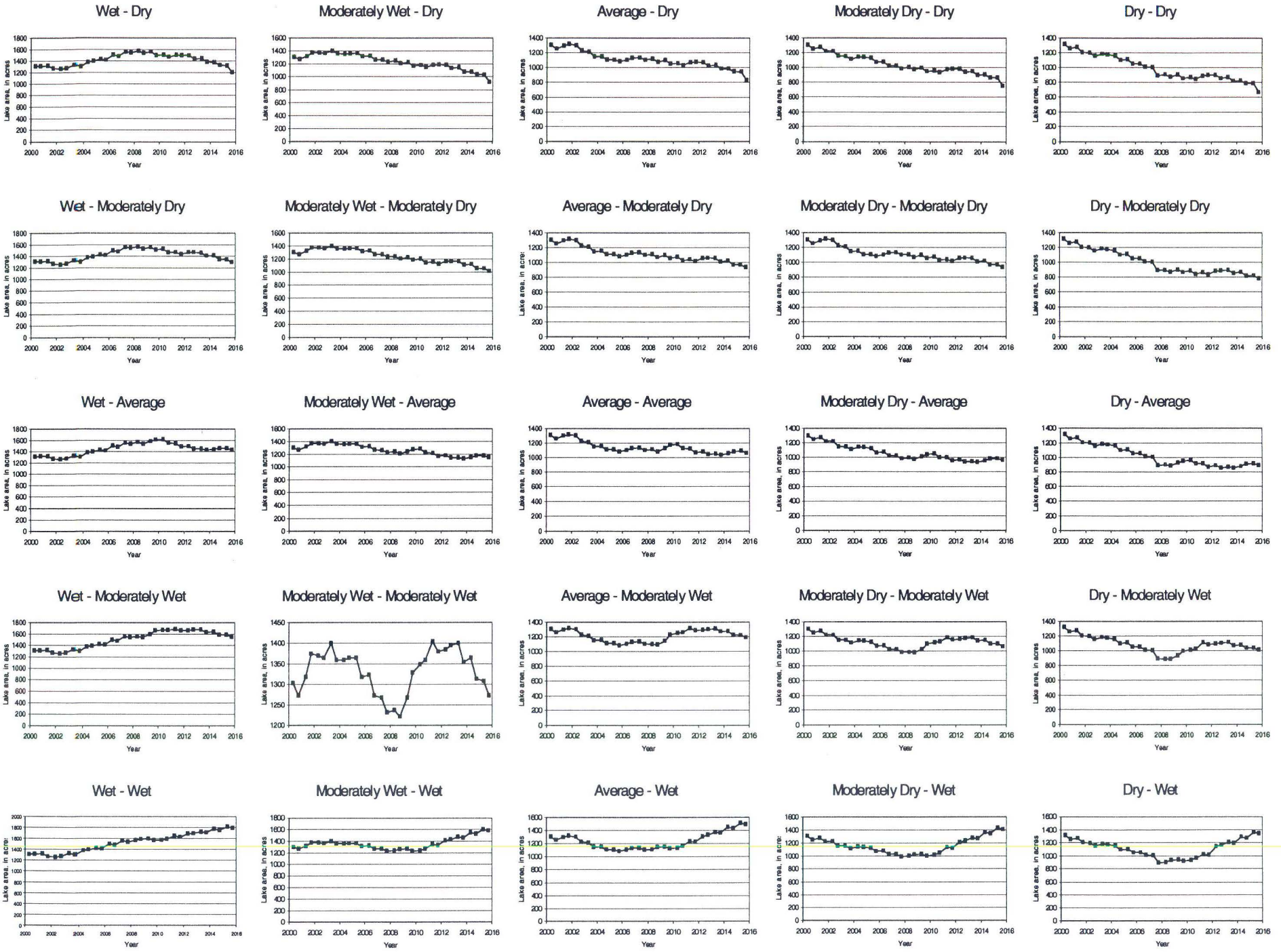

Figure B9. Simulated lake areas for Minnewasta Lake.

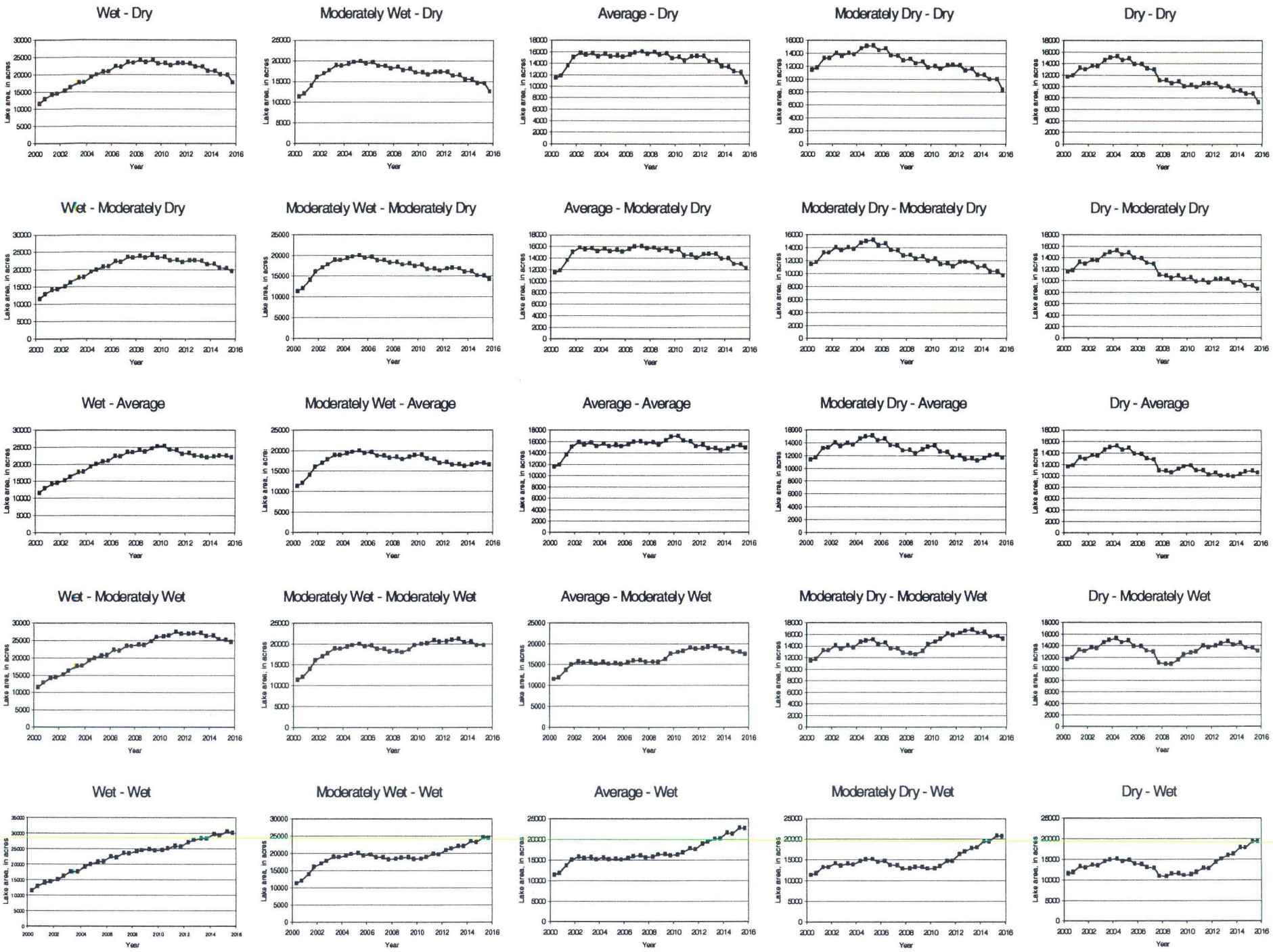

Figure B10 Simulated lake areas for Bitter Lake.

Appendix C

Simulated Lake Volumes

Table C1. Simulated lake water volumes for the Wet-Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	17157.7	31433.5	282808.9	18991.0	27173.9	3308.0	15194.3	137299.9
2	Fall 2000	15878.8	39602.8	17157.7	31433.5	282808.9	19084.3	27308.8	3328.9	15194.3	158069.8
3	Spring 2001	15977.0	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	178360.7
4	Fall 2001	15489.6	38462.1	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	184093.1
5	Spring 2002	15586.4	38745.6	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	197497.7
6	Fall 2002	15781.0	39030.2	15750.2	28235.4	270247.4	18344.9	26235.7	3163.0	14159.9	214851.6
7	Spring 2003	16273.6	40762.0	17693.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	240279.8
8	Fall 2003	15683.5	39030.2	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	242048.7
9	Spring 2004	16373.1	41348.5	19511.6	36896.1	303782.4	20223.0	28945.1	3583.8	16944.6	271629.6
10	Fall 2004	15977.0	40470.5	20254.2	38642.1	310375.2	20610.5	29497.6	3670.3	17500.4	287336.2
11	Spring 2005	16075.5	40762.0	21386.0	41317.6	320387.0	21199.3	30332.8	3801.5	18349.3	303665.1
12	Fall 2005	15683.5	39030.2	21006.3	40418.2	317033.4	21002.1	30053.5	3757.6	18064.3	305750.4
13	Spring 2006	16573.3	41939.6	24321.0	48299.0	346059.3	22711.4	32454.8	4137.3	20551.3	338223.7
14	Fall 2006	15781.0	39602.8	23324.6	45925.9	337400.0	22201.0	31884.2	4046.7	19804.7	333763.5
15	Spring 2007	16473.0	41939.6	26374.4	53181.1	363682.6	23857.0	34041.3	4390.4	22082.6	365839.5
16	Fall 2007	15781.0	39315.9	25749.4	51697.6	358353.0	23436.8	33461.4	4297.7	21617.9	361134.4
17	Spring 2008	16075.5	40470.5	27220.5	55184.0	370845.4	24281.3	34624.5	4483.8	22709.2	380203.1
18	Fall 2008	15489.6	38462.1	25542.8	51206.7	356584.6	23332.4	33317.0	4274.6	21464.0	365839.5
19	Spring 2009	15878.8	39315.9	26584.5	53679.1	365467.2	23857.0	34041.3	4390.4	22238.5	377783.2
20	Fall 2009	15393.1	36785.6	24120.2	47820.7	344319.3	22711.4	32454.8	4137.3	20401.0	356470.5
21	Spring 2010	15683.5	38462.1	24321.0	48299.0	346059.3	22711.4	32454.8	4137.3	20551.3	358797.3
22	Fall 2010	15489.6	37339.9	22931.3	44989.5	333964.8	21998.7	31458.5	3979.3	19509.5	344989.8
23	Spring 2011	15878.8	39030.2	24321.0	48299.0	346059.3	22711.4	32454.8	4137.3	20551.3	358797.3
24	Fall 2011	15683.5	38745.6	24120.2	47820.7	344319.3	22711.4	32454.8	4137.3	20401.0	358797.3
25	Spring 2012	15489.6	38462.1	23920.1	47344.3	342583.4	22506.5	32169.0	4091.9	20251.2	356470.5
26	Fall 2012	15105.9	35962.9	21768.3	42224.4	323757.0	21397.6	30612.9	3845.7	18636.3	335988.6
27	Spring 2013	15683.5	38179.8	21960.4	42680.6	325448.1	21497.2	30753.3	3867.8	18780.6	335988.6
28	Fall 2013	15105.9	35420.2	19696.4	37329.8	305424.4	20319.5	29082.9	3605.3	17082.8	309950.6
29	Spring 2014	15489.6	35962.9	19511.6	36896.1	303782.4	20223.0	28945.1	3583.8	16944.6	309950.6
30	Fall 2014	15105.9	33819.7	17693.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	289343.1
31	Spring 2015	15489.6	34083.6	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	285339.0
32	Fall 2015	13716.2	28540.9	13355.0	22945.1	248900.0	17000.6	24262.4	2860.6	12427.9	242048.7

Table C2. Simulated lake water volumes for the Moderately Wet-Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16626.4	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	135006.7
2	Fall 2000	15586.4	38745.6	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	145572.8
3	Spring 2001	16273.6	40762.0	17335.7	31842.1	284397.6	19177.8	27444.0	3349.9	15325.9	175545.8
4	Fall 2001	16273.6	41643.5	19327.4	36464.4	302144.4	20223.0	28945.1	3583.8	16806.9	211615.9
5	Spring 2002	15977.0	40180.1	19327.4	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	228156.7
6	Fall 2002	15781.0	39315.9	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	242048.7
7	Spring 2003	16273.6	40762.0	20254.2	38642.1	310375.2	20610.5	29497.6	3670.3	17500.4	265898.3
8	Fall 2003	15586.4	38745.6	18778.0	35180.7	297255.2	19839.4	28396.1	3498.0	16396.9	264007.0
9	Spring 2004	15683.5	38745.6	18595.9	34756.6	295633.6	19839.4	28396.1	3498.0	16261.2	271629.6
10	Fall 2004	15683.5	38745.6	18778.0	35180.7	297255.2	19934.9	28533.1	3519.4	16396.9	281373.8
11	Spring 2005	15683.5	38745.6	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	285339.0
12	Fall 2005	15393.1	37062.2	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	273559.2
13	Spring 2006	15683.5	38462.1	17514.3	32252.7	285990.5	19177.8	27444.0	3349.9	15458.0	279405.7
14	Fall 2006	15297.1	36236.0	15576.3	27844.5	268695.8	18253.6	26102.6	3142.5	14032.9	262125.2
15	Spring 2007	15489.6	36785.6	15576.3	27844.5	268695.8	18162.5	25969.7	3122.0	14032.9	262125.2
16	Fall 2007	15393.1	35420.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	251033.3
17	Spring 2008	15683.5	37618.7	15057.2	26683.8	264065.6	17890.8	25572.3	3060.9	13654.9	258390.1
18	Fall 2008	15297.1	35691.0	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	243826.9
19	Spring 2009	15586.4	37618.7	14200.8	24789.3	256431.1	17442.7	24914.5	2960.2	13035.0	249217.6
20	Fall 2009	15010.9	34882.1	12353.9	20799.2	239999.3	16477.9	23487.5	2742.9	11716.1	231574.3
21	Spring 2010	15586.4	36510.2	12685.9	21506.3	242949.6	16651.2	23744.9	2781.9	11951.3	233296.9
22	Fall 2010	15489.6	35420.2	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	223099.0
23	Spring 2011	15878.8	38462.1	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	235028.8
24	Fall 2011	15683.5	38462.1	13019.6	22221.7	245916.5	16825.4	24003.2	2821.2	12188.6	235028.8
25	Spring 2012	15489.6	38462.1	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	235028.8
26	Fall 2012	15105.9	36236.0	11205.4	18388.9	229803.8	15878.9	22593.8	2607.9	10908.8	218123.3
27	Spring 2013	15683.5	38179.8	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	221431.4
28	Fall 2013	15105.9	35420.2	10398.1	14806.5	214193.9	14960.8	21336.9	2419.5	9690.6	202123.8
29	Spring 2014	15489.6	35962.9	10398.1	14806.5	214193.9	14960.8	21212.5	2400.9	9690.6	202123.8
30	Fall 2014	15105.9	33819.7	10078.3	12063.5	201797.3	14230.2	20103.5	2236.4	8843.4	187011.0
31	Spring 2015	15489.6	34348.6	10881.1	11477.0	199088.4	14070.3	19859.7	2200.4	8739.8	185547.7
32	Fall 2015	13806.5	28781.0	8354.1	5113.2	169141.7	12295.8	17357.3	1835.6	6589.6	152973.9

Table C3. Simulated lake water volumes for the Average-Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16980.1	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	136149.4
2	Fall 2000	15489.6	38462.1	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	141980.0
3	Spring 2001	16075.5	40180.1	16626.4	30219.5	278067.5	18712.6	26904.7	3266.3	14802.6	170017.9
4	Fall 2001	15977.0	40180.1	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	192951.0
5	Spring 2002	15781.0	39315.9	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	206829.6
6	Fall 2002	15201.3	36510.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	200572.9
7	Spring 2003	15586.4	37898.7	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	205252.1
8	Fall 2003	15201.3	35420.2	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	195973.4
9	Spring 2004	15586.4	37339.9	11695.0	19409.5	235604.9	16219.8	23103.1	2684.7	11251.8	203683.5
10	Fall 2004	15393.1	35691.0	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	195973.4
11	Spring 2005	15586.4	36785.6	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	199030.9
12	Fall 2005	15489.6	36510.2	10398.1	15121.8	215592.2	15043.1	21336.9	2419.5	9798.8	194457.8
13	Spring 2006	15781.0	38462.1	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	200572.9
14	Fall 2006	15781.0	39030.2	11043.0	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	208416.1
15	Spring 2007	15683.5	38745.6	11205.4	18388.9	229803.8	15878.9	22593.8	2607.9	10908.8	211615.9
16	Fall 2007	15393.1	37618.7	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	203683.5
17	Spring 2008	15586.4	38462.1	10719.6	17386.9	225496.6	15625.7	22214.3	2550.8	10570.5	210011.5
18	Fall 2008	15393.1	37062.2	10558.6	14806.5	214193.9	15043.1	21336.9	2419.5	9690.6	200572.9
19	Spring 2009	15586.4	38462.1	10078.3	16080.0	219811.9	15291.4	21711.6	2475.5	10126.5	205252.1
20	Fall 2009	15393.1	36236.0	10237.9	12958.9	205891.9	14471.7	20471.1	2290.7	9157.3	191452.9
21	Spring 2010	15683.5	37898.7	11205.4	13566.4	208642.5	14633.8	20717.3	2327.3	9262.9	194457.8
22	Fall 2010	15489.6	36785.6	10719.6	11769.2	200440.8	14150.2	19981.5	2218.3	8739.8	184093.1
23	Spring 2011	15781.0	38745.6	11695.0	14493.3	212799.8	14878.7	21088.4	2382.4	9582.9	195973.4
24	Fall 2011	15683.5	38462.1	11205.4	14806.5	214193.9	14960.8	21212.5	2400.9	9690.6	197497.7
25	Spring 2012	15489.6	38462.1	10398.1	14493.3	212799.8	14878.7	21088.4	2382.4	9582.9	197497.7
26	Fall 2012	15105.9	35962.9	10078.3	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	182647.1
27	Spring 2013	15683.5	38179.8	11368.1	12359.9	203158.0	14310.5	20225.8	2254.4	8843.4	184093.1
28	Fall 2013	15105.9	35420.2	10398.1	9491.0	187105.8	13362.1	18893.9	2058.6	7830.2	167304.4
29	Spring 2014	15489.6	35962.9	10881.1	10613.2	187105.8	13362.1	18893.9	2058.6	7830.2	165960.3
30	Fall 2014	15105.9	33819.7	10398.1	8136.3	174190.2	12596.1	17943.4	1920.2	7151.4	154235.6
31	Spring 2015	15489.6	34083.6	10881.1	8942.6	171657.5	12445.6	17943.4	1920.2	7056.5	151720.2
32	Fall 2015	13716.2	28540.9	8354.1	2891.2	143743.9	10775.0	15522.5	1573.9	5099.2	125066.3

Table C4. Simulated lake water volumes for the Moderately Dry-Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16980.1	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	136149.4
2	Fall 2000	15489.6	38462.1	15057.2	26683.8	264065.6	17981.1	25704.5	3081.3	13654.9	140798.2
3	Spring 2001	15977.0	39602.8	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	163297.0
4	Fall 2001	15489.6	37898.7	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	163297.0
5	Spring 2002	15683.5	38462.1	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	176949.0
6	Fall 2002	15010.9	35962.9	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	168657.0
7	Spring 2003	15586.4	37618.7	11695.0	19409.5	235604.9	16219.8	23103.1	2684.7	11251.8	176949.0
8	Fall 2003	15489.6	36510.2	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	10458.7	172764.9
9	Spring 2004	15878.8	38745.6	11531.4	19067.3	232696.0	16134.2	22975.4	2665.4	11136.9	188483.0
10	Fall 2004	15586.4	38462.1	11368.1	18727.1	231247.8	16048.9	22848.0	2646.2	11022.6	194457.8
11	Spring 2005	15489.6	38462.1	11043.0	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	195973.4
12	Fall 2005	15105.9	35962.9	10237.9	14493.3	212799.8	14878.7	21088.4	2382.4	9582.9	184093.1
13	Spring 2006	15683.5	38179.8	11205.4	14806.5	214193.9	15043.1	21336.9	2419.5	9690.6	188483.0
14	Fall 2006	15105.9	35420.2	10237.9	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	171387.2
15	Spring 2007	15489.6	35691.0	10881.1	11187.0	197740.3	13990.8	19738.1	2182.5	8636.6	170017.9
16	Fall 2007	15105.9	33819.7	10237.9	8942.6	185795.4	13284.5	18893.9	2058.6	7830.2	158069.8
17	Spring 2008	15586.4	35420.2	11043.0	11187.0	189739.3	13517.9	19013.8	2076.1	8229.3	161977.8
18	Fall 2008	15297.1	33819.7	10398.1	9491.0	179306.1	12899.9	18416.7	1989.0	7633.7	151720.2
19	Spring 2009	15586.4	35420.2	11205.4	11769.2	184489.1	13207.2	18893.9	2058.6	8028.7	155505.5
20	Fall 2009	15010.9	33034.9	10237.9	8942.6	170397.5	12370.6	17825.7	1903.2	7151.4	141980.0
21	Spring 2010	15586.4	34614.8	11205.4	11187.0	172921.8	12520.7	18061.4	1937.3	7342.8	144367.2
22	Fall 2010	15393.1	33556.9	10719.6	10329.4	165399.5	12072.9	17474.0	1852.4	6868.2	138458.2
23	Spring 2011	15781.0	37062.2	10719.6	12359.9	178020.8	12823.6	18298.0	1971.7	7633.7	146786.2
24	Fall 2011	15586.4	37898.7	11043.0	12359.9	180595.5	12976.4	18416.7	1989.0	7731.7	148007.7
25	Spring 2012	15489.6	37898.7	10719.6	11769.2	180595.5	12976.4	18535.7	2006.3	7731.7	146786.2
26	Fall 2012	15105.9	35420.2	10237.9	9215.7	167890.1	12221.3	17591.0	1869.3	6962.1	135006.7
27	Spring 2013	15683.5	37618.7	11368.1	11769.2	171657.5	12445.6	17708.2	1886.2	7151.4	138458.2
28	Fall 2013	15201.3	34882.1	10398.1	8942.6	156815.2	11560.1	16661.9	1735.8	6225.4	125066.3
29	Spring 2014	15489.6	35420.2	10881.1	10047.8	155605.8	11487.7	16661.9	1735.8	6315.7	125066.3
30	Fall 2014	15105.9	33556.9	10398.1	7871.8	144911.1	10845.3	15861.7	1621.9	5608.0	115731.2
31	Spring 2015	15489.6	33819.7	10881.1	8671.7	142581.0	10704.8	15861.7	1621.9	5608.0	115731.2
32	Fall 2015	13806.5	28302.0	8354.1	2689.0	117005.5	9147.0	13533.8	1296.6	3911.1	93628.0

Table C5. Simulated lake water volumes for the Dry-Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16174.3	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	139624.3
2	Fall 2000	15489.6	38179.8	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	143169.7
3	Spring 2001	15878.8	39315.9	15750.2	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	163297.0
4	Fall 2001	15393.1	36785.6	13523.3	23309.9	250398.0	17088.5	24392.4	2880.4	12548.3	159364.2
5	Spring 2002	15683.5	38462.1	13355.0	22945.1	248900.0	17000.6	24262.4	2860.6	12427.9	170017.9
6	Fall 2002	15489.6	37339.9	11859.1	19753.9	235604.9	16305.6	23231.0	2704.1	11367.1	168657.0
7	Spring 2003	15878.8	39030.2	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	185547.7
8	Fall 2003	15586.4	38462.1	12519.7	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	192951.0
9	Spring 2004	15489.6	38462.1	12023.6	20100.3	237065.5	16305.6	23231.0	2704.1	11482.9	197497.7
10	Fall 2004	15105.9	36236.0	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	185547.7
11	Spring 2005	15683.5	38179.8	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	191452.9
12	Fall 2005	15105.9	35420.2	9919.1	12658.4	204522.9	14471.7	20471.1	2290.7	9157.3	174151.1
13	Spring 2006	15489.6	35962.9	10719.6	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	174151.1
14	Fall 2006	15105.9	33819.7	10237.9	10047.8	192389.5	13674.6	19254.3	2111.3	8330.4	161977.8
15	Spring 2007	15489.6	34083.6	10881.1	10899.0	189739.3	13517.9	19013.8	2076.1	8229.3	159364.2
16	Fall 2007	13806.5	28540.9	8354.1	4413.4	159246.8	11705.5	16546.8	1719.3	6135.6	130512.6
17	Spring 2008	13988.0	28781.0	8974.1	4643.8	160468.9	11778.6	16777.2	1752.3	6406.5	131624.6
18	Fall 2008	14170.9	27827.5	9760.4	3097.6	152002.8	11271.7	16203.2	1670.3	5869.5	123999.5
19	Spring 2009	15393.1	29752.5	11043.0	5351.9	154400.6	11415.5	16661.9	1735.8	6315.7	128311.4
20	Fall 2009	14821.8	27357.4	10078.3	3097.6	141422.3	10634.9	15635.3	1589.8	5521.9	116739.2
21	Spring 2010	15586.4	29022.2	11205.4	5837.0	143743.9	10775.0	15975.3	1638.0	5781.8	119806.7
22	Fall 2010	15393.1	28302.0	10719.6	5593.2	136830.0	10357.2	15522.5	1573.9	5351.2	114730.5
23	Spring 2011	15781.0	31749.7	11531.4	11477.0	146082.4	10915.9	16317.5	1686.6	6046.4	122940.2
24	Fall 2011	15586.4	32517.4	11205.4	12063.5	148437.9	11057.6	16432.0	1702.9	6225.4	123999.5
25	Spring 2012	15489.6	32775.5	10881.1	11769.2	148437.9	11057.6	16432.0	1702.9	6225.4	122940.2
26	Fall 2012	15105.9	30742.0	10398.1	9215.7	136830.0	10357.2	15522.5	1573.9	5521.9	113736.8
27	Spring 2013	15683.5	32775.5	11368.1	11769.2	141422.3	10634.9	15748.4	1605.8	5781.8	116739.2
28	Fall 2013	15201.3	30492.9	10398.1	8942.6	127849.1	9811.5	14739.6	1463.9	4933.8	106042.6
29	Spring 2014	15489.6	30992.2	10881.1	10047.8	126745.6	9744.1	14850.7	1479.4	5016.2	106042.6
30	Fall 2014	15105.9	29022.2	10237.9	7609.5	117005.5	9147.0	13968.8	1356.7	4450.4	98789.2
31	Spring 2015	15489.6	29507.9	10881.1	8671.7	115944.6	9081.7	13968.8	1356.7	4450.4	98789.2
32	Fall 2015	13806.5	24410.3	8354.1	2491.3	91763.5	7569.1	11833.6	1065.7	2915.0	79494.4

Table C6. Simulated lake water volumes for the Wet-Moderately Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	16980.1	31026.9	281224.3	18991.0	27173.9	3308.0	15063.2	137299.9
2	Fall 2000	15878.8	39602.8	17157.7	31433.5	282808.9	19084.3	27308.8	3328.9	15194.3	158069.8
3	Spring 2001	15977.0	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	178360.7
4	Fall 2001	15489.6	38462.1	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	182647.1
5	Spring 2002	15586.4	38462.1	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	195973.4
6	Fall 2002	15781.0	39030.2	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	214851.6
7	Spring 2003	16273.6	40762.0	17693.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	240279.8
8	Fall 2003	15683.5	39030.2	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	242048.7
9	Spring 2004	16373.1	41643.5	19511.6	36896.1	303782.4	20223.0	28945.1	3583.8	16944.6	273559.2
10	Fall 2004	15977.0	40470.5	20067.7	38202.7	308720.8	20610.5	29497.6	3670.3	17360.7	285339.0
11	Spring 2005	16075.5	40470.5	21386.0	41317.6	320387.0	21199.3	30332.8	3801.5	18349.3	303665.1
12	Fall 2005	15683.5	39030.2	21006.3	40418.2	317033.4	21002.1	30053.5	3757.6	18064.3	305750.4
13	Spring 2006	16573.3	41939.6	24120.2	47820.7	344319.3	22711.4	32454.8	4137.3	20401.0	338223.7
14	Fall 2006	15781.0	39602.8	23324.6	45925.9	337400.0	22201.0	31742.1	4024.2	19804.7	333763.5
15	Spring 2007	16473.0	41939.6	26374.4	53181.1	363682.6	23857.0	34041.3	4390.4	22082.6	365839.5
16	Fall 2007	15781.0	39315.9	25542.8	51697.6	358353.0	23436.8	33461.4	4297.7	21617.9	361134.4
17	Spring 2008	16075.5	40180.1	26584.5	54179.0	367255.9	23962.7	34186.8	4413.7	22394.9	372974.6
18	Fall 2008	15489.6	38462.1	25132.2	50230.2	353059.9	23124.4	33028.7	4228.7	21157.8	361134.4
19	Spring 2009	15977.0	39602.8	26374.4	53181.1	363682.6	23857.0	34041.3	4390.4	22082.6	377783.2
20	Fall 2009	15489.6	37898.7	24725.0	49261.0	349551.5	22917.4	32741.3	4182.9	20853.5	361134.4
21	Spring 2010	15683.5	38745.6	25132.2	50230.2	353059.9	23124.4	33028.7	4228.7	21157.8	368207.5
22	Fall 2010	15010.9	35962.9	22735.7	44524.0	332253.3	21998.7	31458.5	3979.3	19362.7	344989.8
23	Spring 2011	15586.4	37618.7	22931.3	44989.5	333964.8	21998.7	31458.5	3979.3	19509.5	347265.6
24	Fall 2011	15489.6	36510.2	21576.8	42224.4	323757.0	21397.6	30612.9	3845.7	18636.3	333763.5
25	Spring 2012	15781.0	38745.6	22931.3	44989.5	333964.8	21998.7	31458.5	3979.3	19509.5	344989.8
26	Fall 2012	15586.4	38462.1	22931.3	44989.5	333964.8	21998.7	31458.5	3979.3	19509.5	344989.8
27	Spring 2013	15489.6	38462.1	22540.9	44060.4	330545.9	21797.3	31175.8	3934.6	19216.4	342724.3
28	Fall 2013	15105.9	35962.9	20629.0	39526.4	313696.1	20805.8	29775.1	3713.8	17781.3	320624.7
29	Spring 2014	15683.5	38179.8	20817.3	39971.4	315362.7	20903.8	29914.2	3735.7	17922.5	322789.5
30	Fall 2014	15105.9	35420.2	18414.3	34334.4	294016.1	19744.2	28259.5	3476.7	16126.1	297468.3
31	Spring 2015	15489.6	35691.0	18233.3	33914.2	292402.8	19554.4	27986.7	3434.2	15991.5	295422.3
32	Fall 2015	15105.9	33819.7	16626.4	30219.5	278067.5	18712.6	26770.5	3245.6	14802.6	277447.2

Table C7. Simulated lake water volumes for the Moderately Wet-Moderately Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	135006.7
2	Fall 2000	15683.5	38745.6	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	145572.8
3	Spring 2001	16273.6	40762.0	17335.7	32252.7	285990.5	19177.8	27444.0	3349.9	15458.0	176949.0
4	Fall 2001	16273.6	41643.5	19327.4	36464.4	302144.4	20223.0	28945.1	3583.8	16806.9	211615.9
5	Spring 2002	15977.0	40180.1	19327.4	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	229860.9
6	Fall 2002	15781.0	39315.9	18960.6	35606.7	298880.8	19934.9	28670.2	3540.8	16533.1	243826.9
7	Spring 2003	16273.6	40762.0	20254.2	38642.1	310375.2	20610.5	29497.6	3670.3	17500.4	265898.3
8	Fall 2003	15586.4	38745.6	18778.0	35180.7	297255.2	19934.9	28533.1	3519.4	16396.9	264007.0
9	Spring 2004	15683.5	38745.6	18778.0	35180.7	297255.2	19839.4	28396.1	3498.0	16396.9	273559.2
10	Fall 2004	15683.5	38745.6	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	281373.8
11	Spring 2005	15683.5	38745.6	18960.6	35606.7	298880.8	20030.7	28670.2	3540.8	16533.1	287336.2
12	Fall 2005	15393.1	37062.2	17335.7	31842.1	284397.6	19177.8	27444.0	3349.9	15325.9	275498.4
13	Spring 2006	15683.5	38462.1	17693.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	279405.7
14	Fall 2006	15297.1	36236.0	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	262125.2
15	Spring 2007	15489.6	36785.6	15576.3	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	264007.0
16	Fall 2007	15393.1	35420.2	14542.1	25541.1	259472.5	17621.2	25176.9	3000.3	13281.4	252858.3
17	Spring 2008	15683.5	37062.2	14713.4	25920.0	260999.4	17710.8	25308.5	3020.5	13405.4	254692.8
18	Fall 2008	15297.1	35420.2	13523.3	23309.9	250398.0	17088.5	24392.4	2880.4	12548.3	243826.9
19	Spring 2009	15683.5	37618.7	14200.8	24789.3	256431.1	17442.7	24914.5	2960.2	13035.0	249217.6
20	Fall 2009	15297.1	35691.0	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	236769.8
21	Spring 2010	15586.4	37339.9	13355.0	22945.1	248900.0	17000.6	24262.4	2860.6	12427.9	242048.7
22	Fall 2010	15010.9	34614.8	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	223099.0
23	Spring 2011	15586.4	36236.0	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	224775.8
24	Fall 2011	15489.6	35420.2	10881.1	17718.9	226928.2	15709.9	22340.6	2569.8	10682.8	216482.9
25	Spring 2012	15878.8	38462.1	12188.6	20448.7	238530.3	16391.6	23359.1	2723.5	11599.3	226461.7
26	Fall 2012	15586.4	38462.1	12188.6	20448.7	238530.3	16391.6	23359.1	2723.5	11599.3	228156.7
27	Spring 2013	15489.6	38462.1	12023.6	20100.3	237065.5	16305.6	23231.0	2704.1	11482.9	226461.7
28	Fall 2013	15201.3	36236.0	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	211615.9
29	Spring 2014	15683.5	38179.8	10719.6	17386.9	225496.6	15625.7	22214.3	2550.8	10570.5	213229.2
30	Fall 2014	15201.3	35420.2	10237.9	13566.4	208642.5	14633.8	20717.3	2327.3	9262.9	195973.4
31	Spring 2015	15489.6	35962.9	10719.6	13261.6	207265.1	14552.6	20594.1	2309.0	9157.3	194457.8
32	Fall 2015	15105.9	33819.7	10237.9	10613.2	278067.5	13832.3	19495.7	2146.8	8330.4	181209.7

Table C8. Simulated lake water volumes for the Average-Moderately Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16980.1	31026.9	281224.3	18991.0	27173.9	3308.0	15063.2	136149.4
2	Fall 2000	15489.6	38462.1	15229.8	27068.7	267148.3	18071.7	25837.0	3101.6	13780.4	141980.0
3	Spring 2001	16075.5	40180.1	16626.4	30219.5	278067.5	18712.6	26770.5	3245.6	14802.6	170017.9
4	Fall 2001	15977.0	40180.1	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	192951.0
5	Spring 2002	15781.0	39315.9	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	206829.6
6	Fall 2002	15201.3	36510.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	200572.9
7	Spring 2003	15586.4	37898.7	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	205252.1
8	Fall 2003	15201.3	35420.2	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	195973.4
9	Spring 2004	15586.4	37339.9	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	203683.5
10	Fall 2004	15393.1	35962.9	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	195973.4
11	Spring 2005	15586.4	37062.2	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	199030.9
12	Fall 2005	15489.6	36785.6	10398.1	15121.8	215592.2	15043.1	21461.6	2438.1	9798.8	194457.8
13	Spring 2006	15781.0	38462.1	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	202123.8
14	Fall 2006	15781.0	39030.2	11043.0	18052.9	228363.9	15878.9	22593.8	2607.9	10795.5	210011.5
15	Spring 2007	15683.5	38745.6	11205.4	18388.9	229803.8	15963.8	22720.8	2627.0	10908.8	211615.9
16	Fall 2007	15393.1	37618.7	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	205252.1
17	Spring 2008	15586.4	38462.1	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	206829.6
18	Fall 2008	15393.1	37062.2	10398.1	14493.3	212799.8	14878.7	21088.4	2382.4	9582.9	199030.9
19	Spring 2009	15683.5	38462.1	10078.3	16080.0	219811.9	15291.4	21711.6	2475.5	10126.5	205252.1
20	Fall 2009	15393.1	37062.2	10237.9	13566.4	208642.5	14715.2	20840.7	2345.6	9262.9	195973.4
21	Spring 2010	15683.5	38462.1	10719.6	14806.5	214193.9	14960.8	21212.5	2400.9	9690.6	200572.9
22	Fall 2010	15010.9	35691.0	9919.1	11477.0	199088.4	14070.3	19859.7	2200.4	8739.8	184093.1
23	Spring 2011	15586.4	37339.9	11205.4	12359.9	203158.0	14310.5	20225.8	2254.4	8947.5	185547.7
24	Fall 2011	15489.6	36236.0	10719.6	11187.0	195056.5	13832.3	19495.7	2146.8	8432.0	176949.0
25	Spring 2012	15878.8	38745.6	11531.4	13566.4	208642.5	14633.8	20717.3	2327.3	9262.9	187011.0
26	Fall 2012	15586.4	38462.1	10719.6	13873.3	210024.1	14715.2	20840.7	2345.6	9369.1	188483.0
27	Spring 2013	15489.6	38462.1	10719.6	13566.4	208642.5	14633.8	20717.3	2327.3	9262.9	188483.0
28	Fall 2013	15105.9	36236.0	10237.9	10899.0	195056.5	13832.3	19495.7	2146.8	8330.4	174151.1
29	Spring 2014	15683.5	38462.1	11368.1	11769.2	200440.8	14070.3	19859.7	2200.4	8534.1	175545.8
30	Fall 2014	15201.3	35420.2	10398.1	8671.7	183187.0	13130.0	18654.8	2023.7	7536.2	159364.2
31	Spring 2015	15489.6	35962.9	10881.1	9768.3	183187.0	13130.0	18774.2	2041.1	7536.2	159364.2
32	Fall 2015	15105.9	34083.6	10398.1	7609.5	170397.5	12370.6	17943.4	1920.2	6868.2	148007.7

Table C9. Simulated lake water volumes for the Moderately Dry-Moderately Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16980.1	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	136149.4
2	Fall 2000	15489.6	38462.1	15057.2	26683.8	264065.6	17981.1	25704.5	3081.3	13780.4	140798.2
3	Spring 2001	15977.0	39602.8	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14802.6	163297.0
4	Fall 2001	15489.6	37898.7	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	15325.9	163297.0
5	Spring 2002	15683.5	38462.1	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	14932.7	176949.0
6	Fall 2002	15010.9	35962.9	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	13158.0	168657.0
7	Spring 2003	15586.4	37618.7	11695.0	19409.5	235604.9	16219.8	23103.1	2684.7	12669.2	176949.0
8	Fall 2003	15489.6	36510.2	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	11251.8	172764.9
9	Spring 2004	15781.0	38745.6	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11367.1	188483.0
10	Fall 2004	15586.4	38462.1	11368.1	18727.1	231247.8	15963.8	22720.8	2627.0	10347.5	192951.0
11	Spring 2005	15489.6	38462.1	10881.1	17718.9	226928.2	15794.3	22467.1	2588.8	10347.5	195973.4
12	Fall 2005	15105.9	36236.0	10398.1	14182.3	211409.9	14878.7	21088.4	2382.4	9798.8	182647.1
13	Spring 2006	15683.5	38179.8	11043.0	14806.5	214193.9	15043.1	21336.9	2419.5	10236.7	187011.0
14	Fall 2006	15201.3	35420.2	10398.1	11477.0	199088.4	14070.3	19859.7	2200.4	10795.5	170017.9
15	Spring 2007	15489.6	35962.9	10719.6	11187.0	197740.3	13990.8	19738.1	2182.5	10908.8	168657.0
16	Fall 2007	15105.9	33819.7	10237.9	8942.6	185795.4	13284.5	18893.9	2058.6	10236.7	156783.6
17	Spring 2008	15489.6	34614.8	10881.1	10329.4	185795.4	13284.5	18893.9	2058.6	10347.5	158069.8
18	Fall 2008	15297.1	33295.3	10398.1	9215.7	176739.7	12747.6	18298.0	1971.7	9582.9	149237.2
19	Spring 2009	15683.5	35420.2	11205.4	11769.2	183187.0	13130.0	18893.9	2058.6	10126.5	154235.6
20	Fall 2009	15297.1	33556.9	10398.1	10047.8	172921.8	12520.7	18179.6	1954.5	9262.9	144367.2
21	Spring 2010	15586.4	35420.2	11205.4	11769.2	178020.8	12823.6	18535.7	2006.3	9690.6	149237.2
22	Fall 2010	15010.9	32775.5	10237.9	8942.6	164160.5	11999.0	17591.0	1869.3	8739.8	136149.4
23	Spring 2011	15586.4	34348.6	11205.4	11187.0	166642.7	12147.0	17825.7	1903.2	8947.5	138458.2
24	Fall 2011	15489.6	33295.3	10719.6	10613.2	159246.8	11705.5	17240.8	1818.8	8432.0	131624.6
25	Spring 2012	15878.8	37062.2	10881.1	12359.9	172921.8	12520.7	18061.4	1937.3	9262.9	141980.0
26	Fall 2012	15586.4	37898.7	11043.0	12359.9	175462.9	12671.8	18179.6	1954.5	9369.1	141980.0
27	Spring 2013	15489.6	37898.7	10881.1	11769.2	175462.9	12671.8	18298.0	1971.7	9262.9	140798.2
28	Fall 2013	15105.9	35691.0	10237.9	9215.7	162925.8	11925.3	17357.3	1835.6	8330.4	129408.2
29	Spring 2014	15683.5	37618.7	11368.1	11769.2	165399.5	12072.9	17591.0	1869.3	8534.1	132744.3
30	Fall 2014	15105.9	34882.1	10398.1	8671.7	150810.3	11200.1	16432.0	1702.9	7536.2	120843.9
31	Spring 2015	15489.6	35420.2	10881.1	9768.3	150810.3	11200.1	16546.8	1719.3	7536.2	120843.9
32	Fall 2015	15105.9	33295.3	10398.1	7609.5	170397.5	10495.6	15635.3	1589.8	6868.2	111771.0

Table C10. Simulated lake water volumes for the Dry-Moderately Dry climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	138458.2
2	Fall 2000	15489.6	38179.8	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	141980.0
3	Spring 2001	15878.8	39315.9	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	163297.0
4	Fall 2001	15393.1	37062.2	13523.3	23309.9	250398.0	17088.5	24392.4	2880.4	12548.3	159364.2
5	Spring 2002	15683.5	38462.1	13355.0	22945.1	248900.0	17000.6	24262.4	2860.6	12427.9	170017.9
6	Fall 2002	15489.6	37339.9	11859.1	19753.9	235604.9	16305.6	23231.0	2704.1	11367.1	168657.0
7	Spring 2003	15878.8	39030.2	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	185547.7
8	Fall 2003	15586.4	38745.6	12519.7	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	192951.0
9	Spring 2004	15489.6	38462.1	12023.6	20100.3	237065.5	16305.6	23231.0	2704.1	11482.9	197497.7
10	Fall 2004	15105.9	35962.9	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	185547.7
11	Spring 2005	15683.5	38179.8	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	191452.9
12	Fall 2005	15105.9	35420.2	9919.1	12958.9	205891.9	14471.7	20471.1	2290.7	9157.3	175545.8
13	Spring 2006	15489.6	35962.9	10719.6	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	174151.1
14	Fall 2006	15105.9	33819.7	10237.9	10329.4	192389.5	13674.6	19254.3	2111.3	8330.4	161977.8
15	Spring 2007	15489.6	34083.6	10881.1	10899.0	189739.3	13517.9	19013.8	2076.1	8229.3	159364.2
16	Fall 2007	13806.5	28540.9	8354.1	4413.4	159246.8	11705.5	16546.8	1719.3	6135.6	130512.6
17	Spring 2008	13806.5	28302.0	8508.3	3961.4	156815.2	11560.1	16546.8	1719.3	6135.6	128311.4
18	Fall 2008	14079.3	27591.9	9602.2	2689.0	149622.0	11128.7	16089.1	1654.1	5781.8	122940.2
19	Spring 2009	15489.6	29998.2	11205.4	5837.0	154400.6	11415.5	16661.9	1735.8	6225.4	128311.4
20	Fall 2009	15010.9	28302.0	10398.1	4413.4	144911.1	10845.3	15975.3	1638.0	5694.6	119806.7
21	Spring 2010	15586.4	29998.2	11043.0	7091.7	148437.9	11057.6	16432.0	1702.9	6046.4	123999.5
22	Fall 2010	14916.2	27591.9	10237.9	4643.8	135692.5	10288.3	15409.9	1558.0	5266.7	113736.8
23	Spring 2011	15586.4	29507.9	11205.4	7609.5	139117.7	10495.6	15748.4	1605.8	5608.0	116739.2
24	Fall 2011	15489.6	28540.9	10719.6	7091.7	131185.1	10014.6	15185.5	1526.4	5182.7	110798.8
25	Spring 2012	15878.8	32004.4	11531.4	12063.5	142581.0	10704.8	15975.3	1638.0	5957.7	119806.7
26	Fall 2012	15586.4	33034.9	11205.4	12359.9	144911.1	10845.3	16203.2	1670.3	6046.4	120843.9
27	Spring 2013	15489.6	33034.9	10881.1	12063.5	146082.4	10915.9	16203.2	1670.3	6135.6	119806.7
28	Fall 2013	15105.9	30992.2	10237.9	9215.7	133430.3	10151.0	15297.6	1542.2	5436.3	110798.8
29	Spring 2014	15683.5	33295.3	11368.1	11769.2	137971.7	10426.3	15522.5	1573.9	5694.6	114730.5
30	Fall 2014	15201.3	30742.0	10398.1	8942.6	124551.3	9610.1	14518.1	1433.0	4851.9	104188.6
31	Spring 2015	15489.6	31243.6	10881.1	10047.8	124551.3	9610.1	14628.7	1448.4	4933.8	104188.6
32	Fall 2015	15105.9	29264.5	10237.9	7609.5	114887.9	9016.5	13750.8	1326.5	4371.8	96179.3

Table C11. Simulated lake water volumes for the Wet-Average climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	17157.7	31433.5	282808.9	18991.0	27173.9	3308.0	15194.3	137299.9
2	Fall 2000	15878.8	39602.8	17157.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	158069.8
3	Spring 2001	15977.0	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	178360.7
4	Fall 2001	15489.6	38462.1	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	184093.1
5	Spring 2002	15586.4	38745.6	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	197497.7
6	Fall 2002	15781.0	39315.9	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	214851.6
7	Spring 2003	16273.6	40762.0	17693.3	32665.1	287587.4	19365.6	27714.9	3392.0	15590.6	240279.8
8	Fall 2003	15683.5	39030.2	16803.0	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	243826.9
9	Spring 2004	16373.1	41643.5	19696.4	37329.8	305424.4	20319.5	29082.9	3605.3	17082.8	273559.2
10	Fall 2004	15977.0	40470.5	20254.2	38642.1	310375.2	20708.0	29636.2	3692.0	17500.4	287336.2
11	Spring 2005	16075.5	40762.0	21576.8	41770.1	322070.0	21298.4	30472.7	3823.6	18492.5	303665.1
12	Fall 2005	15683.5	39030.2	21006.3	40418.2	318708.2	21100.6	30193.0	3779.5	18064.3	307845.5
13	Spring 2006	16573.3	42236.9	24321.0	48299.0	346059.3	22814.3	32597.9	4160.1	20551.3	340468.9
14	Fall 2006	15781.0	39602.8	23522.4	46396.9	339123.7	22302.6	31884.2	4046.7	19953.0	335988.6
15	Spring 2007	16473.0	41939.6	26584.5	53679.1	365467.2	23962.7	34186.8	4413.7	22238.5	365839.5
16	Fall 2007	15781.0	39602.8	25749.4	51697.6	358353.0	23541.5	33606.1	4320.8	21617.9	363481.8
17	Spring 2008	16075.5	40180.1	27007.6	54680.6	369048.6	24174.8	34478.4	4460.4	22551.8	377783.2
18	Fall 2008	15489.6	38462.1	25749.4	51697.6	358353.0	23436.8	33461.4	4297.7	21617.9	368207.5
19	Spring 2009	16075.5	40180.1	27649.1	56196.1	374451.1	24495.0	34917.4	4530.8	23025.5	389987.2
20	Fall 2009	15977.0	40180.1	28958.9	59274.6	385365.4	25033.9	35653.2	4649.1	23986.6	404978.7
21	Spring 2010	15781.0	39315.9	28958.9	59793.9	387198.5	25142.5	35800.9	4672.9	24148.6	407514.2
22	Fall 2010	15201.3	36510.2	26374.4	53181.1	363682.6	23857.0	34041.3	4390.4	22082.6	382633.5
23	Spring 2011	15586.4	37898.7	25956.9	52190.3	360125.4	23541.5	33606.1	4320.8	21772.3	377783.2
24	Fall 2011	15201.3	35420.2	23720.9	46869.7	340851.5	22404.4	32026.5	4069.3	20101.8	354153.9
25	Spring 2012	15586.4	37062.2	23920.1	47344.3	342583.4	22506.5	32169.0	4091.9	20251.2	358797.3
26	Fall 2012	15393.1	35691.0	22346.7	43598.6	328842.6	21697.0	31034.7	3912.3	19070.6	342724.3
27	Spring 2013	15586.4	36785.6	22346.7	43598.6	328842.6	21697.0	31034.7	3912.3	19070.6	340468.9
28	Fall 2013	15489.6	36785.6	21386.0	41317.6	320387.0	21199.3	30332.8	3801.5	18349.3	331548.6
29	Spring 2014	15781.0	38462.1	21960.4	42680.6	325448.1	21497.2	30753.3	3867.8	18780.6	335988.6
30	Fall 2014	15781.0	39030.2	22735.7	44524.0	332253.3	21897.8	31317.0	3956.9	19362.7	342724.3
31	Spring 2015	15683.5	38745.6	22735.7	44524.0	332253.3	21897.8	31317.0	3956.9	19362.7	342724.3
32	Fall 2015	15393.1	37618.7	21576.8	7609.5	322070.0	21298.4	30472.7	3823.6	18492.5	331548.6

Table C12. Simulated lake water volumes for the Moderately Wet-Average climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	135006.7
2	Fall 2000	15586.4	38745.6	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	145572.8
3	Spring 2001	16273.6	40762.0	17514.3	32252.7	285990.5	19177.8	27444.0	3349.9	15458.0	176949.0
4	Fall 2001	16273.6	41643.5	19327.4	36464.4	303782.4	20223.0	28945.1	3583.8	16806.9	211615.9
5	Spring 2002	15977.0	40180.1	19327.4	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	229860.9
6	Fall 2002	15781.0	39315.9	18960.6	35606.7	298880.8	20030.7	28670.2	3540.8	16533.1	243826.9
7	Spring 2003	16273.6	40762.0	20254.2	39083.3	312033.6	20708.0	29636.2	3692.0	17640.6	265898.3
8	Fall 2003	15586.4	38745.6	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	265898.3
9	Spring 2004	15683.5	38745.6	18778.0	35180.7	297255.2	19934.9	28533.1	3519.4	16396.9	273559.2
10	Fall 2004	15683.5	38745.6	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	281373.8
11	Spring 2005	15683.5	38745.6	18960.6	35606.7	298880.8	20030.7	28670.2	3540.8	16533.1	287336.2
12	Fall 2005	15393.1	37062.2	17335.7	31842.1	284397.6	19177.8	27444.0	3349.9	15325.9	275498.4
13	Spring 2006	15683.5	38462.1	17514.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	279405.7
14	Fall 2006	15297.1	36236.0	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	262125.2
15	Spring 2007	15489.6	36785.6	15576.3	27844.5	268695.8	18253.6	26102.6	3142.5	14032.9	264007.0
16	Fall 2007	15393.1	35420.2	14371.2	25164.2	257949.8	17621.2	25176.9	3000.3	13158.0	252858.3
17	Spring 2008	15683.5	37339.9	14885.1	26300.9	262530.4	17800.7	25440.3	3040.7	13529.9	256536.7
18	Fall 2008	15393.1	35691.0	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	245614.5
19	Spring 2009	15781.0	38462.1	14885.1	26300.9	262530.4	17800.7	25440.3	3040.7	13529.9	256536.7
20	Fall 2009	15781.0	39030.2	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	265898.3
21	Spring 2010	15781.0	39030.2	16274.5	29419.9	274927.1	18528.3	26502.6	3204.2	14544.0	267799.2
22	Fall 2010	15201.3	36236.0	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	249217.6
23	Spring 2011	15586.4	37339.9	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	247411.4
24	Fall 2011	15201.3	35150.6	12353.9	20799.2	239999.3	16477.9	23487.5	2742.9	11716.1	229860.9
25	Spring 2012	15586.4	36785.6	12685.9	21506.3	242949.6	16651.2	23744.9	2781.9	11951.3	233296.9
26	Fall 2012	15393.1	35420.2	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	221431.4
27	Spring 2013	15586.4	36510.2	11531.4	19067.3	232696.0	16134.2	22975.4	2665.4	11136.9	223099.0
28	Fall 2013	15489.6	36236.0	10881.1	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	216482.9
29	Spring 2014	15781.0	38462.1	11531.4	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	221431.4
30	Fall 2014	15781.0	39030.2	12353.9	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	228156.7
31	Spring 2015	15683.5	38745.6	12519.7	21151.7	241472.4	16651.2	23744.9	2781.9	11833.5	229860.9
32	Fall 2015	15393.1	37618.7	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	221431.4

Table C13. Simulated lake water volumes for the Average-Average climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16174.3	39890.9	17157.7	31433.5	282808.9	18991.0	27173.9	3308.0	15194.3	137299.9
2	Fall 2000	15489.6	38462.1	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	143169.7
3	Spring 2001	16075.5	40180.1	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	171387.2
4	Fall 2001	15977.0	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	194457.8
5	Spring 2002	15781.0	39315.9	16803.0	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	208416.1
6	Fall 2002	15201.3	36510.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	200572.9
7	Spring 2003	15586.4	37618.7	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	206829.6
8	Fall 2003	15201.3	35420.2	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	195973.4
9	Spring 2004	15586.4	37062.2	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	203683.5
10	Fall 2004	15393.1	35691.0	10398.1	16729.3	222646.0	15541.8	22088.3	2531.9	10347.5	195973.4
11	Spring 2005	15586.4	36785.6	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	199030.9
12	Fall 2005	15489.6	36785.6	10398.1	15121.8	215592.2	15043.1	21461.6	2438.1	9798.8	195973.4
13	Spring 2006	15781.0	38462.1	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	202123.8
14	Fall 2006	15781.0	39030.2	11043.0	18052.9	228363.9	15878.9	22593.8	2607.9	10795.5	210011.5
15	Spring 2007	15683.5	38745.6	11205.4	18388.9	229803.8	15963.8	22720.8	2627.0	10908.8	211615.9
16	Fall 2007	15393.1	37618.7	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	205252.1
17	Spring 2008	15586.4	38462.1	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	10458.7	208416.1
18	Fall 2008	15393.1	37339.9	10558.6	15121.8	215592.2	15043.1	21336.9	2419.5	9798.8	200572.9
19	Spring 2009	15781.0	39030.2	11043.0	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	213229.2
20	Fall 2009	15977.0	39602.8	12519.7	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	226461.7
21	Spring 2010	15781.0	39315.9	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	228156.7
22	Fall 2010	15201.3	36510.2	11043.0	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	213229.2
23	Spring 2011	15586.4	37618.7	10881.1	17718.9	226928.2	15709.9	22340.6	2569.8	10682.8	211615.9
24	Fall 2011	15201.3	35150.6	10237.9	14182.3	211409.9	14796.8	20964.4	2364.0	9475.8	195973.4
25	Spring 2012	15586.4	37062.2	10719.6	15121.8	215592.2	15043.1	21336.9	2419.5	9798.8	200572.9
26	Fall 2012	15393.1	35420.2	10558.6	12658.4	204522.9	14391.0	20348.3	2272.6	9052.1	189963.6
27	Spring 2013	15586.4	36785.6	11205.4	12958.9	205891.9	14471.7	20471.1	2290.7	9157.3	189963.6
28	Fall 2013	15586.4	36510.2	11043.0	12063.5	201797.3	14230.2	20103.5	2236.4	8843.4	184093.1
29	Spring 2014	15781.0	38462.1	10881.1	13566.4	208642.5	14633.8	20717.3	2327.3	9262.9	188483.0
30	Fall 2014	15781.0	39030.2	11859.1	15121.8	215592.2	15043.1	21461.6	2438.1	9798.8	195973.4
31	Spring 2015	15683.5	38745.6	10078.3	15758.5	218401.2	15291.4	21711.6	2475.5	10016.8	199030.9
32	Fall 2015	15393.1	37618.7	10078.3	13873.3	210024.1	14715.2	20840.7	2345.6	9369.1	191452.9

Table C14. Simulated lake water volumes for the Moderately Dry-Average climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	135006.7
2	Fall 2000	15489.6	38179.8	15057.2	26683.8	264065.6	17890.8	25572.3	3060.9	13654.9	139624.3
3	Spring 2001	15977.0	39602.8	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	161977.8
4	Fall 2001	15489.6	37898.7	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	163297.0
5	Spring 2002	15586.4	38462.1	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	176949.0
6	Fall 2002	15010.9	35962.9	11695.0	19409.5	234148.4	16219.8	23103.1	2684.7	11251.8	167304.4
7	Spring 2003	15586.4	37339.9	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	175545.8
8	Fall 2003	15489.6	36510.2	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	10458.7	171387.2
9	Spring 2004	15781.0	38745.6	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	187011.0
10	Fall 2004	15586.4	38462.1	11368.1	18727.1	231247.8	15963.8	22720.8	2627.0	11022.6	192951.0
11	Spring 2005	15489.6	38462.1	10881.1	17718.9	226928.2	15794.3	22467.1	2588.8	10682.8	194457.8
12	Fall 2005	15105.9	36236.0	10398.1	14182.3	211409.9	14878.7	21088.4	2382.4	9475.8	182647.1
13	Spring 2006	15683.5	38179.8	11205.4	14806.5	214193.9	15043.1	21336.9	2419.5	9690.6	187011.0
14	Fall 2006	15201.3	35420.2	10398.1	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	170017.9
15	Spring 2007	15489.6	35962.9	10881.1	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	168657.0
16	Fall 2007	15105.9	33819.7	10237.9	8942.6	185795.4	13284.5	18893.9	2058.6	7830.2	156783.6
17	Spring 2008	15489.6	35150.6	11043.0	10899.0	187105.8	13362.1	18893.9	2058.6	8028.7	158069.8
18	Fall 2008	15393.1	33819.7	10558.6	9768.3	179306.1	12899.9	18416.7	1989.0	7633.7	150474.7
19	Spring 2009	15781.0	36785.6	11368.1	12359.9	191062.3	13596.2	19133.9	2093.7	8330.4	159364.2
20	Fall 2009	15781.0	38462.1	11531.4	12359.9	203158.0	14310.5	20225.8	2254.4	8947.5	165960.3
21	Spring 2010	15781.0	38745.6	11205.4	13566.4	208642.5	14633.8	20717.3	2327.3	9157.3	168657.0
22	Fall 2010	15105.9	35962.9	10237.9	10329.4	193720.9	13753.3	19374.9	2129.0	8128.8	154235.6
23	Spring 2011	15586.4	37062.2	11205.4	11769.2	192389.5	13674.6	19254.3	2111.3	8128.8	152973.9
24	Fall 2011	15105.9	34882.1	10398.1	9215.7	179306.1	12899.9	18298.0	1971.7	7246.8	140798.2
25	Spring 2012	15586.4	36510.2	11205.4	11477.0	181889.2	13053.1	18535.7	2006.3	7536.2	144367.2
26	Fall 2012	15393.1	35150.6	10719.6	10329.4	172921.8	12520.7	17825.7	1903.2	6962.1	136149.4
27	Spring 2013	15586.4	36236.0	11205.4	11769.2	174190.2	12596.1	17943.4	1920.2	7056.5	137299.9
28	Fall 2013	15586.4	36236.0	11043.0	11769.2	169141.7	12295.8	17708.2	1886.2	6868.2	132744.3
29	Spring 2014	15781.0	38462.1	10558.6	12359.9	178020.8	12823.6	18061.4	1937.3	7246.8	138458.2
30	Fall 2014	15781.0	39030.2	11531.4	12359.9	189739.3	13517.9	19013.8	2076.1	7731.7	144367.2
31	Spring 2015	15683.5	38745.6	10881.1	12359.9	193720.9	13753.3	19374.9	2129.0	7830.2	146786.2
32	Fall 2015	15393.1	37618.7	10398.1	11187.0	187105.8	13362.1	18893.9	2058.6	7439.2	139624.3

Table C15. Simulated lake water volumes for the Dry-Average climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	138458.2
2	Fall 2000	15489.6	38179.8	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	141980.0
3	Spring 2001	15878.8	39315.9	15750.2	28235.4	270247.4	18344.9	26235.7	3163.0	14159.9	163297.0
4	Fall 2001	15393.1	36785.6	13523.3	23309.9	250398.0	17088.5	24392.4	2880.4	12548.3	159364.2
5	Spring 2002	15683.5	38462.1	13355.0	22945.1	248900.0	17000.6	24262.4	2860.6	12427.9	170017.9
6	Fall 2002	15489.6	37339.9	11859.1	19753.9	235604.9	16305.6	23231.0	2704.1	11367.1	168657.0
7	Spring 2003	15878.8	39030.2	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	185547.7
8	Fall 2003	15586.4	38745.6	12519.7	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	192951.0
9	Spring 2004	15489.6	38462.1	12023.6	20100.3	237065.5	16305.6	23231.0	2704.1	11482.9	197497.7
10	Fall 2004	15105.9	35962.9	10078.3	16080.0	219811.9	15374.6	21836.9	2494.2	10126.5	185547.7
11	Spring 2005	15683.5	38179.8	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	191452.9
12	Fall 2005	15105.9	35420.2	9919.1	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	174151.1
13	Spring 2006	15489.6	35691.0	10719.6	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	172764.9
14	Fall 2006	15105.9	33556.9	10237.9	10047.8	191062.3	13596.2	19133.9	2093.7	8330.4	160666.9
15	Spring 2007	15489.6	34083.6	10881.1	10899.0	188420.5	13439.9	18893.9	2058.6	8229.3	158069.8
16	Fall 2007	13716.2	28540.9	8354.1	4413.4	159246.8	11705.5	16546.8	1719.3	6135.6	129408.2
17	Spring 2008	13897.1	28302.0	8663.1	4185.8	158028.9	11632.7	16546.8	1719.3	6225.4	128311.4
18	Fall 2008	14262.8	28064.2	9919.1	3097.6	152002.8	11271.7	16203.2	1670.3	5957.7	123999.5
19	Spring 2009	15586.4	31243.6	11368.1	7871.8	160468.9	11778.6	17124.5	1802.1	6682.0	132744.3
20	Fall 2009	15781.0	33819.7	11531.4	11769.2	167890.1	12221.3	17708.2	1886.2	7151.4	139624.3
21	Spring 2010	15781.0	35691.0	10558.6	12359.9	174190.2	12596.1	17943.4	1920.2	7342.8	141980.0
22	Fall 2010	15105.9	33034.9	9919.1	9215.7	160468.9	11778.6	16892.7	1768.8	6497.8	129408.2
23	Spring 2011	15586.4	34348.6	11205.4	10899.0	159246.8	11705.5	16777.2	1752.3	6497.8	129408.2
24	Fall 2011	15105.9	32004.4	10398.1	8402.9	147258.1	10986.6	15861.7	1621.9	5694.6	118777.0
25	Spring 2012	15586.4	33819.7	11205.4	11187.0	150810.3	11200.1	16203.2	1670.3	6046.4	122940.2
26	Fall 2012	15393.1	32517.4	10719.6	10047.8	141422.3	10634.9	15522.5	1573.9	5521.9	115731.2
27	Spring 2013	15586.4	33819.7	11205.4	11477.0	143743.9	10775.0	15635.3	1589.8	5694.6	116739.2
28	Fall 2013	15586.4	33556.9	11043.0	11477.0	140267.9	10565.2	15409.9	1558.0	5521.9	113736.8
29	Spring 2014	15781.0	35962.9	10558.6	12359.9	148437.9	11057.6	15748.4	1605.8	5869.5	119806.7
30	Fall 2014	15781.0	38462.1	10881.1	12359.9	159246.8	11705.5	16317.5	1686.6	6406.5	126140.5
31	Spring 2015	15683.5	38745.6	10558.6	12359.9	164160.5	11999.0	16432.0	1702.9	6497.8	128311.4
32	Fall 2015	15393.1	37339.9	10398.1	10899.0	156815.2	11560.1	15975.3	1638.0	6135.6	122940.2

Table C16. Simulated lake water volumes for the Wet-Moderately Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	16980.1	31026.9	281224.3	18991.0	27039.2	3308.0	15063.2	137299.9
2	Fall 2000	15878.8	39602.8	17157.7	31433.5	282808.9	18991.0	27173.9	3308.0	15194.3	156783.6
3	Spring 2001	15977.0	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	178360.7
4	Fall 2001	15489.6	38462.1	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	182647.1
5	Spring 2002	15586.4	38745.6	15229.8	27068.7	265604.9	18071.7	25704.5	3101.6	13780.4	195973.4
6	Fall 2002	15781.0	39030.2	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	214851.6
7	Spring 2003	16273.6	40762.0	17514.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	240279.8
8	Fall 2003	15683.5	39030.2	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	242048.7
9	Spring 2004	16373.1	41643.5	19511.6	36896.1	303782.4	20223.0	28945.1	3583.8	16944.6	271629.6
10	Fall 2004	15977.0	40180.1	20067.7	38202.7	308720.8	20513.2	29359.1	3648.6	17360.7	285339.0
11	Spring 2005	16075.5	40470.5	21195.8	40867.0	318708.2	21100.6	30193.0	3801.5	18206.5	301589.6
12	Fall 2005	15683.5	39030.2	20817.3	39971.4	315362.7	20903.8	29914.2	3735.7	17922.5	303665.1
13	Spring 2006	16573.3	41939.6	24120.2	47820.7	344319.3	22608.8	32311.8	4114.6	20401.0	335988.6
14	Fall 2006	15781.0	39602.8	23324.6	45925.9	337400.0	22201.0	31742.1	4024.2	19804.7	331548.6
15	Spring 2007	16473.0	42236.9	26374.4	53181.1	363682.6	23857.0	33896.0	4390.4	22082.6	363481.8
16	Fall 2007	15781.0	39602.8	25749.4	51697.6	358353.0	23436.8	33461.4	4297.7	21617.9	361134.4
17	Spring 2008	15977.0	39890.9	26374.4	53181.1	363682.6	23857.0	33896.0	4390.4	22082.6	370585.9
18	Fall 2008	15586.4	38745.6	25749.4	51697.6	358353.0	23436.8	33461.4	4297.7	21617.9	368207.5
19	Spring 2009	16273.6	40762.0	28081.7	57215.2	378073.1	24709.8	35064.1	4578.0	23343.9	392459.4
20	Fall 2009	16273.6	41643.5	30994.8	64010.1	402009.2	26020.4	36990.6	4865.0	25462.2	422951.5
21	Spring 2010	15977.0	40180.1	31459.5	65081.4	405752.1	26242.5	37290.0	4913.5	25795.6	428182.9
22	Fall 2010	15781.0	39315.9	31459.5	65081.4	405752.1	26242.5	37290.0	4913.5	25795.6	433457.4
23	Spring 2011	16273.6	40762.0	32165.4	66701.2	411396.7	26577.6	37740.8	4986.6	26299.5	460481.2
24	Fall 2011	15586.4	38745.6	30994.8	64010.1	402009.2	26020.4	36990.6	4865.0	25462.2	446833.0
25	Spring 2012	15683.5	38745.6	31226.6	64544.9	403878.6	26131.3	37140.2	4889.2	25628.7	446833.0
26	Fall 2012	15683.5	38745.6	31693.6	65619.6	407629.6	26353.9	37440.1	4937.8	25963.1	449540.7
27	Spring 2013	15683.5	38745.6	31928.9	66159.5	409511.2	26465.6	37590.3	4962.2	26131.1	452259.4
28	Fall 2013	15393.1	37062.2	29852.8	61362.0	392722.3	25469.7	36245.5	4744.6	24637.4	430814.7
29	Spring 2014	15683.5	38462.1	30079.0	61888.1	394571.6	25579.3	36394.1	4768.6	24801.4	433457.4
30	Fall 2014	15297.1	36236.0	27864.9	56704.8	376260.1	24495.0	34917.4	4530.8	23184.5	407514.2
31	Spring 2015	15489.6	36785.6	27649.1	56196.1	374451.1	24388.0	34770.8	4507.3	23025.5	404978.7
32	Fall 2015	15393.1	35420.2	26165.2	52684.8	361902.0	23646.4	33750.9	4343.9	21927.2	389987.2

Table C17. Simulated lake water volumes for the Moderately Wet-Moderately Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	135006.7
2	Fall 2000	15586.4	38745.6	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	145572.8
3	Spring 2001	16273.6	40762.0	17335.7	31842.1	284397.6	19177.8	27444.0	3349.9	15325.9	175545.8
4	Fall 2001	16273.6	41643.5	19327.4	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	211615.9
5	Spring 2002	15977.0	40180.1	19143.7	36034.6	300510.6	20126.7	28807.5	3562.3	16669.7	228156.7
6	Fall 2002	15781.0	39315.9	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	242048.7
7	Spring 2003	16273.6	40762.0	20254.2	38642.1	310375.2	20610.5	29497.6	3670.3	17500.4	265898.3
8	Fall 2003	15586.4	38745.6	18778.0	35180.7	297255.2	19934.9	28533.1	3519.4	16396.9	264007.0
9	Spring 2004	15683.5	38745.6	18778.0	35180.7	297255.2	19839.4	28396.1	3498.0	16396.9	273559.2
10	Fall 2004	15683.5	38745.6	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	281373.8
11	Spring 2005	15683.5	38745.6	18960.6	35606.7	298880.8	20030.7	28670.2	3540.8	16533.1	287336.2
12	Fall 2005	15393.1	37062.2	17335.7	31842.1	284397.6	19177.8	27444.0	3349.9	15325.9	275498.4
13	Spring 2006	15683.5	38462.1	17514.3	32252.7	285990.5	19177.8	27444.0	3349.9	15458.0	279405.7
14	Fall 2006	15297.1	36236.0	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	262125.2
15	Spring 2007	15489.6	36785.6	15576.3	27844.5	268695.8	18162.5	25969.7	3122.0	14032.9	262125.2
16	Fall 2007	15393.1	35420.2	14371.2	25164.2	257949.8	17621.2	25176.9	3000.3	13158.0	251033.3
17	Spring 2008	15586.4	36785.6	14542.1	25541.1	259472.5	17621.2	25176.9	3000.3	13281.4	252858.3
18	Fall 2008	15489.6	36510.2	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	247411.4
19	Spring 2009	15878.8	38745.6	15576.3	27844.5	268695.8	18162.5	25969.7	3122.0	14032.9	260252.9
20	Fall 2009	16075.5	40180.1	17693.3	32665.1	287587.4	19365.6	27714.9	3392.0	15590.6	281373.8
21	Spring 2010	15878.8	39602.8	18414.3	34334.4	294016.1	19649.2	28123.0	3455.5	16126.1	287336.2
22	Fall 2010	15781.0	39030.2	18778.0	35180.7	297255.2	19839.4	28396.1	3498.0	16396.9	291359.8
23	Spring 2011	16273.6	40762.0	20441.3	39083.3	312033.6	20805.8	29775.1	3713.8	17640.6	305750.4
24	Fall 2011	15586.4	38745.6	19327.4	36896.1	303782.4	20223.0	28945.1	3583.8	16944.6	299524.1
25	Spring 2012	15683.5	38745.6	19696.4	37329.8	305424.4	20319.5	29082.9	3605.3	17082.8	301589.6
26	Fall 2012	15683.5	38745.6	20067.7	38202.7	308720.8	20513.2	29359.1	3648.6	17360.7	307845.5
27	Spring 2013	15683.5	38745.6	20254.2	38642.1	310375.2	20610.5	29497.6	3670.3	17500.4	312065.5
28	Fall 2013	15393.1	37062.2	18595.9	34756.6	295633.6	19839.4	28396.1	3498.0	16261.2	295422.3
29	Spring 2014	15683.5	38462.1	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	299524.1
30	Fall 2014	15297.1	36236.0	17157.7	31433.5	282808.9	18991.0	27173.9	3308.0	15194.3	281373.8
31	Spring 2015	15489.6	36785.6	16980.1	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	281373.8
32	Fall 2015	15393.1	35420.2	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	267799.2

Table C18. Simulated lake water volumes for the Average-Moderately Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	16980.1	31026.9	281224.3	18991.0	27173.9	3308.0	15063.2	137299.9
2	Fall 2000	15489.6	38462.1	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	143169.7
3	Spring 2001	16075.5	40180.1	16626.4	30219.5	278067.5	18805.2	26904.7	3266.3	14802.6	170017.9
4	Fall 2001	15977.0	40180.1	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	192951.0
5	Spring 2002	15781.0	39315.9	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	206829.6
6	Fall 2002	15201.3	36510.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	200572.9
7	Spring 2003	15683.5	37898.7	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	205252.1
8	Fall 2003	15201.3	35420.2	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	195973.4
9	Spring 2004	15586.4	37339.9	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	203683.5
10	Fall 2004	15393.1	35691.0	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	195973.4
11	Spring 2005	15586.4	36785.6	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	199030.9
12	Fall 2005	15489.6	36510.2	10398.1	15121.8	215592.2	15043.1	21336.9	2419.5	9798.8	194457.8
13	Spring 2006	15781.0	38462.1	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	202123.8
14	Fall 2006	15781.0	39030.2	11043.0	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	210011.5
15	Spring 2007	15683.5	38745.6	11205.4	18388.9	229803.8	15878.9	22593.8	2607.9	10908.8	211615.9
16	Fall 2007	15393.1	37618.7	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	205252.1
17	Spring 2008	15586.4	38179.8	10078.3	16080.0	219811.9	15374.6	21836.9	2494.2	10126.5	205252.1
18	Fall 2008	15586.4	38462.1	9919.1	15758.5	218401.2	15208.4	21586.4	2456.7	10016.8	203683.5
19	Spring 2009	15878.8	39602.8	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	216482.9
20	Fall 2009	16273.6	41348.5	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	240279.8
21	Spring 2010	15977.0	40180.1	15057.2	26683.8	264065.6	17981.1	25704.5	3081.3	13654.9	247411.4
22	Fall 2010	15781.0	39315.9	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	252858.3
23	Spring 2011	16273.6	40762.0	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	267799.2
24	Fall 2011	15586.4	38745.6	16274.5	29419.9	274927.1	18528.3	26502.6	3204.2	14544.0	262125.2
25	Spring 2012	15683.5	38745.6	16450.2	29818.7	276495.2	18620.4	26636.4	3224.9	14673.0	265898.3
26	Fall 2012	15683.5	38745.6	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	271629.6
27	Spring 2013	15683.5	38745.6	17157.7	31433.5	282808.9	18991.0	27173.9	3308.0	15194.3	275498.4
28	Fall 2013	15393.1	37062.2	15576.3	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	262125.2
29	Spring 2014	15683.5	38462.1	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	265898.3
30	Fall 2014	15297.1	36236.0	14200.8	24789.3	256431.1	17442.7	24914.5	2960.2	13035.0	249217.6
31	Spring 2015	15489.6	36785.6	14030.8	24416.4	254916.6	17442.7	24914.5	2960.2	12912.6	249217.6
32	Fall 2015	15393.1	35420.2	13019.6	22221.7	245916.5	16825.4	24003.2	2821.2	12188.6	238520.2

Table C19. Simulated lake water volumes for the Moderately Dry-Moderately Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	136149.4
2	Fall 2000	15489.6	38179.8	15057.2	26683.8	264065.6	17890.8	25572.3	3060.9	13654.9	140798.2
3	Spring 2001	15977.0	39602.8	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	163297.0
4	Fall 2001	15489.6	37898.7	13861.2	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	163297.0
5	Spring 2002	15683.5	38462.1	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	176949.0
6	Fall 2002	15010.9	35962.9	11695.0	19409.5	234148.4	16219.8	23103.1	2684.7	11251.8	167304.4
7	Spring 2003	15586.4	37339.9	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	176949.0
8	Fall 2003	15489.6	36236.0	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	10458.7	171387.2
9	Spring 2004	15781.0	38745.6	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	187011.0
10	Fall 2004	15586.4	38462.1	11205.4	18727.1	231247.8	15963.8	22720.8	2627.0	11022.6	191452.9
11	Spring 2005	15489.6	38462.1	10881.1	17718.9	226928.2	15709.9	22340.6	2569.8	10682.8	194457.8
12	Fall 2005	15105.9	35962.9	10237.9	14182.3	211409.9	14796.8	20964.4	2364.0	9475.8	181209.7
13	Spring 2006	15683.5	38179.8	11043.0	14806.5	214193.9	14960.8	21212.5	2400.9	9690.6	185547.7
14	Fall 2006	15201.3	35420.2	10398.1	11187.0	197740.3	13990.8	19738.1	2182.5	8636.6	168657.0
15	Spring 2007	15489.6	35962.9	10881.1	11187.0	197740.3	13990.8	19738.1	2182.5	8636.6	168657.0
16	Fall 2007	15105.9	33819.7	10237.9	8942.6	185795.4	13284.5	18893.9	2058.6	7830.2	156783.6
17	Spring 2008	15489.6	34614.8	10881.1	10047.8	184489.1	13207.2	18893.9	2058.6	7830.2	155505.5
18	Fall 2008	15489.6	34348.6	10881.1	10613.2	180595.5	12976.4	18774.2	2041.1	7731.7	152973.9
19	Spring 2009	15878.8	38462.1	11205.4	11187.0	197740.3	13990.8	19738.1	2182.5	8534.1	161977.8
20	Fall 2009	16075.5	39890.9	10078.3	16080.0	219811.9	15291.4	21711.6	2475.5	10126.5	181209.7
21	Spring 2010	15878.8	39602.8	10719.6	17386.9	225496.6	15625.7	22214.3	2550.8	10570.5	188483.0
22	Fall 2010	15781.0	39030.2	10881.1	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	195973.4
23	Spring 2011	16273.6	40762.0	12852.6	21863.0	244431.0	16738.2	24003.2	2821.2	12069.7	213229.2
24	Fall 2011	15586.4	38745.6	11859.1	19753.9	235604.9	16305.6	23231.0	2704.1	11367.1	208416.1
25	Spring 2012	15683.5	38745.6	12188.6	20448.7	238530.3	16391.6	23359.1	2723.5	11599.3	214851.6
26	Fall 2012	15683.5	38745.6	12519.7	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	221431.4
27	Spring 2013	15683.5	38745.6	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	224775.8
28	Fall 2013	15393.1	37062.2	11368.1	18727.1	231247.8	15963.8	22720.8	2627.0	11022.6	214851.6
29	Spring 2014	15683.5	38462.1	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	218123.3
30	Fall 2014	15297.1	36236.0	10078.3	16080.0	219811.9	15291.4	21711.6	2475.5	10126.5	203683.5
31	Spring 2015	15489.6	36785.6	10078.3	16080.0	219811.9	15291.4	21711.6	2475.5	10126.5	205252.1
32	Fall 2015	15393.1	35420.2	10078.3	13873.3	210024.1	14715.2	20840.7	2345.6	9369.1	195973.4

Table C20. Simulated lake water volumes for the Dry-Moderately Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16174.3	40180.1	17335.7	32252.7	285990.5	19177.8	27444.0	3349.9	15458.0	139624.3
2	Fall 2000	15489.6	38179.8	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	143169.7
3	Spring 2001	15878.8	39315.9	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	164624.5
4	Fall 2001	15393.1	37062.2	13523.3	23309.9	250398.0	17176.7	24522.6	2900.3	12548.3	160666.9
5	Spring 2002	15683.5	38462.1	13355.0	22945.1	248900.0	17000.6	24262.4	2860.6	12427.9	171387.2
6	Fall 2002	15489.6	37339.9	11859.1	19753.9	235604.9	16305.6	23231.0	2704.1	11367.1	168657.0
7	Spring 2003	15781.0	39030.2	12852.6	21863.0	244431.0	16738.2	23873.9	2801.5	12069.7	185547.7
8	Fall 2003	15586.4	38745.6	12519.7	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	192951.0
9	Spring 2004	15489.6	38462.1	11859.1	20100.3	237065.5	16305.6	23231.0	2704.1	11482.9	197497.7
10	Fall 2004	15105.9	35962.9	10078.3	16080.0	219811.9	15374.6	21836.9	2494.2	10126.5	185547.7
11	Spring 2005	15683.5	38179.8	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	191452.9
12	Fall 2005	15105.9	35420.2	9919.1	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	174151.1
13	Spring 2006	15489.6	35962.9	10719.6	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	174151.1
14	Fall 2006	15105.9	33819.7	10237.9	10047.8	192389.5	13674.6	19254.3	2111.3	8330.4	161977.8
15	Spring 2007	15489.6	34083.6	10881.1	10613.2	188420.5	13439.9	18893.9	2058.6	8229.3	159364.2
16	Fall 2007	13806.5	28540.9	8354.1	4413.4	159246.8	11705.5	16546.8	1719.3	6135.6	130512.6
17	Spring 2008	13716.2	27827.5	8354.1	3522.4	155605.8	11487.7	16432.0	1702.9	6046.4	127222.2
18	Fall 2008	14821.8	29022.2	10558.6	4185.8	154400.6	11415.5	16432.0	1702.9	6046.4	127222.2
19	Spring 2009	15781.0	32775.5	11531.4	10899.0	164160.5	11999.0	17240.8	1818.8	6868.2	137299.9
20	Fall 2009	15977.0	37898.7	12023.6	12359.9	185795.4	13284.5	18535.7	2006.3	8028.7	151720.2
21	Spring 2010	15878.8	38745.6	12023.6	11187.0	197740.3	13990.8	19738.1	2182.5	8330.4	156783.6
22	Fall 2010	15781.0	38745.6	11043.0	12658.4	204522.9	14391.0	20348.3	2272.6	8534.1	159364.2
23	Spring 2011	16273.6	40470.5	10398.1	16729.3	222646.0	15541.8	22088.3	2531.9	10347.5	175545.8
24	Fall 2011	15586.4	38462.1	10398.1	15121.8	215592.2	15043.1	21336.9	2419.5	9798.8	171387.2
25	Spring 2012	15683.5	38745.6	9919.1	15758.5	218401.2	15208.4	21586.4	2456.7	10016.8	175545.8
26	Fall 2012	15683.5	38745.6	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	182647.1
27	Spring 2013	15683.5	38745.6	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	10458.7	188483.0
28	Fall 2013	15393.1	37062.2	10398.1	14182.3	211409.9	14796.8	20964.4	2364.0	9475.8	178360.7
29	Spring 2014	15683.5	38462.1	10881.1	14806.5	214193.9	14960.8	21212.5	2400.9	9690.6	184093.1
30	Fall 2014	15297.1	36236.0	10398.1	11769.2	200440.8	14150.2	19981.5	2218.3	8843.4	170017.9
31	Spring 2015	15489.6	36785.6	10881.1	12063.5	201797.3	14230.2	20103.5	2236.4	8843.4	170017.9
32	Fall 2015	15393.1	35420.2	10558.6	10613.2	192389.5	13674.6	19374.9	2129.0	8330.4	160666.9

Table C21. Simulated lake water volumes for the Wet-Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	16980.1	31026.9	281224.3	18991.0	27173.9	3308.0	15063.2	137299.9
2	Fall 2000	15878.8	39602.8	17157.7	31433.5	282808.9	19084.3	27308.8	3328.9	15194.3	158069.8
3	Spring 2001	15977.0	39602.8	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	176949.0
4	Fall 2001	15489.6	38462.1	15576.3	27844.5	270247.4	18253.6	26102.6	3142.5	14032.9	182647.1
5	Spring 2002	15586.4	38745.6	15229.8	27068.7	267148.3	18071.7	25837.0	3101.6	13780.4	195973.4
6	Fall 2002	15781.0	39030.2	15750.2	28235.4	270247.4	18344.9	26235.7	3163.0	14159.9	214851.6
7	Spring 2003	16273.6	40762.0	17693.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	240279.8
8	Fall 2003	15683.5	39030.2	16803.0	30622.2	279643.9	18805.2	26904.7	3266.3	14932.7	242048.7
9	Spring 2004	16373.1	41643.5	19511.6	36896.1	303782.4	20223.0	28945.1	3583.8	16944.6	271629.6
10	Fall 2004	15977.0	40180.1	20067.7	38202.7	308720.8	20513.2	29497.6	3670.3	17360.7	285339.0
11	Spring 2005	16075.5	40470.5	21195.8	40867.0	318708.2	21199.3	30332.8	3801.5	18206.5	301589.6
12	Fall 2005	15683.5	39030.2	20817.3	39971.4	315362.7	20903.8	29914.2	3735.7	17922.5	305750.4
13	Spring 2006	16573.3	42236.9	24120.2	47820.7	344319.3	22711.4	32454.8	4137.3	20401.0	338223.7
14	Fall 2006	15781.0	39602.8	23324.6	45925.9	337400.0	22201.0	31742.1	4024.2	19804.7	333763.5
15	Spring 2007	16473.0	41939.6	26374.4	53181.1	363682.6	23751.5	33896.0	4367.1	22082.6	363481.8
16	Fall 2007	15781.0	39315.9	25542.8	51206.7	356584.6	23332.4	33317.0	4274.6	21464.0	361134.4
17	Spring 2008	16075.5	40180.1	26795.6	54179.0	367255.9	23962.7	34186.8	4413.7	22394.9	375373.7
18	Fall 2008	15878.8	39890.9	27434.3	56196.1	374451.1	24388.0	34770.8	4507.3	23025.5	385074.2
19	Spring 2009	15977.0	39890.9	28081.7	57215.2	378073.1	24709.8	35211.1	4578.0	23343.9	392459.4
20	Fall 2009	15489.6	38462.1	26795.6	54179.0	367255.9	23962.7	34186.8	4413.7	22394.9	382633.5
21	Spring 2010	15586.4	38745.6	27007.6	54680.6	369048.6	24068.6	34332.5	4437.0	22551.8	387525.5
22	Fall 2010	15781.0	39030.2	27864.9	56704.8	376260.1	24602.3	35064.1	4554.4	23184.5	399939.3
23	Spring 2011	16273.6	40762.0	30306.2	62416.0	396425.0	25689.2	36542.9	4792.6	24965.8	420351.9
24	Fall 2011	15683.5	39030.2	29403.7	60314.8	389035.8	25251.3	35948.9	4696.8	24311.0	412617.3
25	Spring 2012	16373.1	41348.5	32165.4	66701.2	411396.7	26577.6	37740.8	4986.6	26299.5	446833.0
26	Fall 2012	15977.0	40180.1	32165.4	66701.2	413286.3	26689.8	37891.4	5011.0	26468.5	466017.3
27	Spring 2013	16075.5	40470.5	33366.2	69434.8	422794.5	27255.0	38647.7	5134.0	27320.9	480051.1
28	Fall 2013	15683.5	39030.2	33123.5	68884.7	418979.2	27141.4	38496.0	5109.3	26978.4	477222.1
29	Spring 2014	16473.0	41939.6	36378.3	76167.3	444065.3	28638.3	40483.2	5433.6	29239.9	514873.3
30	Fall 2014	15781.0	39602.8	35353.1	73896.4	436274.4	28173.0	39868.2	5333.0	28535.1	503085.4
31	Spring 2015	16473.0	42236.9	38225.2	80205.0	459839.0	29462.9	41567.2	5611.4	30673.4	535941.4
32	Fall 2015	15781.0	39602.8	37425.3	77887.8	451920.2	28990.1	40946.6	5509.6	29952.7	523833.7

Table C22. Simulated lake water volumes for the Moderately Wet-Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16626.4	30219.5	278067.5	18712.6	26904.7	3266.3	14802.6	133871.6
2	Fall 2000	15586.4	38745.6	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	145572.8
3	Spring 2001	16273.6	40762.0	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	175545.8
4	Fall 2001	16273.6	41643.5	19327.4	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	211615.9
5	Spring 2002	15977.0	40180.1	19143.7	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	228156.7
6	Fall 2002	15781.0	39315.9	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	242048.7
7	Spring 2003	16273.6	40762.0	20254.2	38642.1	310375.2	20610.5	29497.6	3670.3	17500.4	265898.3
8	Fall 2003	15586.4	38745.6	18778.0	35180.7	297255.2	19839.4	28396.1	3498.0	16396.9	264007.0
9	Spring 2004	15683.5	38745.6	18595.9	35180.7	297255.2	19839.4	28396.1	3498.0	16396.9	271629.6
10	Fall 2004	15683.5	38745.6	18778.0	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	281373.8
11	Spring 2005	15683.5	38745.6	18960.6	35606.7	298880.8	19934.9	28533.1	3519.4	16533.1	287336.2
12	Fall 2005	15393.1	37062.2	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	273559.2
13	Spring 2006	15683.5	38462.1	17514.3	32252.7	285990.5	19177.8	27444.0	3349.9	15458.0	279405.7
14	Fall 2006	15297.1	36236.0	15576.3	27844.5	268695.8	18253.6	26102.6	3142.5	14032.9	262125.2
15	Spring 2007	15489.6	36785.6	15576.3	27844.5	268695.8	18162.5	25969.7	3122.0	14032.9	262125.2
16	Fall 2007	15393.1	35420.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	251033.3
17	Spring 2008	15683.5	37339.9	14713.4	25920.0	260999.4	17710.8	25308.5	3020.5	13405.4	254692.8
18	Fall 2008	15683.5	38462.1	15402.8	27455.7	267148.3	18071.7	25837.0	3101.6	13906.4	260252.9
19	Spring 2009	15683.5	38745.6	15576.3	27844.5	268695.8	18162.5	25969.7	3122.0	14032.9	262125.2
20	Fall 2009	15393.1	37339.9	14542.1	25541.1	259472.5	17621.2	25176.9	3000.3	13281.4	252858.3
21	Spring 2010	15586.4	38462.1	14713.4	25920.0	260999.4	17710.8	25308.5	3020.5	13405.4	254692.8
22	Fall 2010	15781.0	39030.2	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	264007.0
23	Spring 2011	16273.6	41054.7	18233.3	33914.2	292402.8	19554.4	27986.7	3434.2	15991.5	283351.6
24	Fall 2011	15683.5	39030.2	17693.3	32665.1	287587.4	19271.6	27579.3	3370.9	15590.6	279405.7
25	Spring 2012	16373.1	41643.5	20629.0	39526.4	313696.1	20805.8	29775.1	3713.8	17781.3	305750.4
26	Fall 2012	15977.0	40470.5	21386.0	41317.6	320387.0	21298.4	30472.7	3823.6	18349.3	316325.2
27	Spring 2013	16075.5	40470.5	22735.7	44989.5	333964.8	21998.7	31458.5	3979.3	19509.5	331548.6
28	Fall 2013	15683.5	39030.2	22540.9	44060.4	330545.9	21797.3	31175.8	3934.6	19216.4	331548.6
29	Spring 2014	16573.3	42236.9	25956.9	52190.3	360125.4	23541.5	33606.1	4320.8	21772.3	363481.8
30	Fall 2014	15781.0	39602.8	25132.2	50230.2	353059.9	23124.4	33028.7	4228.7	21157.8	356470.5
31	Spring 2015	16473.0	41939.6	28299.5	57727.5	379890.1	24709.8	35211.1	4578.0	23503.8	387525.5
32	Fall 2015	15781.0	39315.9	27434.3	55689.2	372646.3	24388.0	34770.8	4507.3	22867.1	385074.2

Table C23. Simulated lake water volumes for the Average-Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16980.1	31026.9	281224.3	18898.0	27173.9	3308.0	15063.2	136149.4
2	Fall 2000	15489.6	38462.1	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	141980.0
3	Spring 2001	16075.5	40180.1	16626.4	30219.5	278067.5	18712.6	26904.7	3266.3	14802.6	170017.9
4	Fall 2001	15977.0	40180.1	17157.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	192951.0
5	Spring 2002	15781.0	39315.9	16803.0	30622.2	279643.9	18898.0	27039.2	3287.1	14932.7	206829.6
6	Fall 2002	15201.3	36510.2	14371.2	25164.2	257949.8	17531.8	25045.6	2980.2	13158.0	200572.9
7	Spring 2003	15586.4	37618.7	13692.0	23676.7	251900.1	17176.7	24522.6	2900.3	12669.2	205252.1
8	Fall 2003	15201.3	35420.2	11531.4	19067.3	232696.0	16134.2	22975.4	2665.4	11136.9	195973.4
9	Spring 2004	15586.4	37062.2	11695.0	19409.5	234148.4	16219.8	23103.1	2684.7	11251.8	203683.5
10	Fall 2004	15393.1	35691.0	10398.1	16729.3	222646.0	15458.1	21962.5	2513.0	10347.5	195973.4
11	Spring 2005	15586.4	36785.6	10237.9	16403.7	221226.9	15374.6	21962.5	2513.0	10236.7	197497.7
12	Fall 2005	15586.4	36510.2	10398.1	15121.8	215592.2	15043.1	21336.9	2419.5	9798.8	194457.8
13	Spring 2006	15781.0	38462.1	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	200572.9
14	Fall 2006	15781.0	39030.2	11043.0	18052.9	228363.9	15794.3	22467.1	2588.8	10795.5	208416.1
15	Spring 2007	15683.5	38745.6	11205.4	18388.9	229803.8	15878.9	22593.8	2607.9	10908.8	211615.9
16	Fall 2007	15393.1	37618.7	10237.9	16403.7	221226.9	15374.6	21836.9	2494.2	10236.7	203683.5
17	Spring 2008	15586.4	38462.1	10398.1	16729.3	222646.0	15541.8	22088.3	2531.9	10347.5	206829.6
18	Fall 2008	15878.8	39315.9	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	216482.9
19	Spring 2009	15683.5	38745.6	11695.0	19409.5	234148.4	16134.2	22975.4	2665.4	11251.8	218123.3
20	Fall 2009	15489.6	38179.8	10881.1	17718.9	226928.2	15709.9	22340.6	2569.8	10682.8	211615.9
21	Spring 2010	15586.4	38462.1	11205.4	18388.9	229803.8	15878.9	22593.8	2607.9	10908.8	214851.6
22	Fall 2010	15781.0	39030.2	12188.6	20448.7	238530.3	16477.9	23487.5	2742.9	11599.3	224775.8
23	Spring 2011	16273.6	40762.0	14542.1	25541.1	259472.5	17621.2	25176.9	3000.3	13281.4	243826.9
24	Fall 2011	15683.5	39030.2	14200.8	24789.3	256431.1	17442.7	24914.5	2960.2	13035.0	240279.8
25	Spring 2012	16373.1	41348.5	16980.1	31026.9	281224.3	18991.0	27173.9	3308.0	15063.2	265898.3
26	Fall 2012	15977.0	40180.1	17872.8	33079.6	289188.4	19365.6	27850.7	3413.1	15723.7	275498.4
27	Spring 2013	16075.5	40470.5	19327.4	36464.4	302144.4	20126.7	28807.5	3562.3	16806.9	289343.1
28	Fall 2013	15683.5	39030.2	18960.6	35606.7	298880.8	20030.7	28670.2	3540.8	16533.1	291359.8
29	Spring 2014	16573.3	41939.6	22346.7	43598.6	328842.6	21697.0	31034.7	3912.3	19070.6	322789.5
30	Fall 2014	15781.0	39602.8	21576.8	41770.1	322070.0	21397.6	30612.9	3845.7	18492.5	316325.2
31	Spring 2015	16473.0	41939.6	24725.0	49261.0	349551.5	22917.4	32741.3	4182.9	20853.5	347265.6
32	Fall 2015	15781.0	39315.9	23920.1	47344.3	344319.3	22608.8	32311.8	4114.6	20251.2	344989.8

Table C24. Simulated lake water volumes for the Moderately Dry-Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39602.8	16980.1	31026.9	281224.3	18898.0	27039.2	3287.1	15063.2	136149.4
2	Fall 2000	15489.6	38179.8	15057.2	26683.8	264065.6	17890.8	25572.3	3060.9	13654.9	140798.2
3	Spring 2001	15977.0	39602.8	15924.5	28628.3	271803.2	18436.5	26369.1	3183.6	14287.4	163297.0
4	Fall 2001	15489.6	37898.7	14030.8	24416.4	254916.6	17353.8	24783.6	2940.1	12912.6	163297.0
5	Spring 2002	15683.5	38745.6	14030.8	24416.4	254916.6	17442.7	24914.5	2960.2	12912.6	178360.7
6	Fall 2002	15010.9	35962.9	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	168657.0
7	Spring 2003	15586.4	37339.9	11695.0	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	176949.0
8	Fall 2003	15489.6	36236.0	10558.6	17057.1	224069.2	15541.8	22088.3	2531.9	10458.7	172764.9
9	Spring 2004	15878.8	38745.6	11531.4	19067.3	234148.4	16134.2	22975.4	2665.4	11136.9	188483.0
10	Fall 2004	15586.4	38462.1	11368.1	18727.1	231247.8	16048.9	22848.0	2646.2	11022.6	194457.8
11	Spring 2005	15489.6	38462.1	10881.1	17718.9	226928.2	15794.3	22467.1	2588.8	10682.8	195973.4
12	Fall 2005	15201.3	36236.0	10398.1	14493.3	212799.8	14878.7	21088.4	2382.4	9582.9	184093.1
13	Spring 2006	15683.5	38179.8	11043.0	14806.5	214193.9	15043.1	21336.9	2419.5	9690.6	188483.0
14	Fall 2006	15201.3	35420.2	10398.1	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	171387.2
15	Spring 2007	15489.6	35962.9	10881.1	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	170017.9
16	Fall 2007	15105.9	33819.7	10237.9	8942.6	185795.4	13284.5	18893.9	2058.6	7830.2	158069.8
17	Spring 2008	15489.6	35150.6	11043.0	10899.0	187105.8	13362.1	18893.9	2058.6	8128.8	159364.2
18	Fall 2008	15781.0	37339.9	11368.1	12359.9	195056.5	13832.3	19495.7	2146.8	8534.1	164624.5
19	Spring 2009	15683.5	38462.1	11368.1	11477.0	199088.4	14070.3	19859.7	2200.4	8636.6	164624.5
20	Fall 2009	15393.1	37062.2	10719.6	10899.0	192389.5	13674.6	19254.3	2111.3	8128.8	158069.8
21	Spring 2010	15586.4	38462.1	11205.4	12063.5	195056.5	13832.3	19495.7	2146.8	8432.0	159364.2
22	Fall 2010	15781.0	39030.2	11695.0	13261.6	207265.1	14552.6	20594.1	2309.0	9052.1	167304.4
23	Spring 2011	16273.6	41054.7	11205.4	18388.9	229803.8	15878.9	22593.8	2607.9	10908.8	188483.0
24	Fall 2011	15683.5	39030.2	10719.6	17386.9	225496.6	15709.9	22340.6	2569.8	10570.5	188483.0
25	Spring 2012	16473.0	41643.5	13692.0	23676.7	251900.1	17265.1	24653.0	2920.2	12669.2	216482.9
26	Fall 2012	15977.0	40470.5	14542.1	25541.1	259472.5	17710.8	25308.5	3020.5	13281.4	228156.7
27	Spring 2013	16075.5	40762.0	15924.5	28628.3	271803.2	18344.9	26235.7	3163.0	14287.4	243826.9
28	Fall 2013	15683.5	39030.2	15750.2	28235.4	270247.4	18253.6	26102.6	3142.5	14159.9	247411.4
29	Spring 2014	16573.3	42236.9	18960.6	35606.7	298880.8	20030.7	28670.2	3540.8	16533.1	277447.2
30	Fall 2014	15781.0	39602.8	18233.3	33914.2	292402.8	19554.4	28123.0	3455.5	15991.5	275498.4
31	Spring 2015	16473.0	41939.6	21386.0	41317.6	320387.0	21199.3	30332.8	3801.5	18349.3	305750.4
32	Fall 2015	15781.0	39315.9	20629.0	39526.4	313696.1	20805.8	29775.1	3713.8	17781.3	303665.1

Table C25. Simulated lake water volumes for the Dry-Wet climate scenario (in acre-feet).

Model Time Step	Date	Pickerel	Enemy Swim	Blue Dog	Rush	Waubay	Hillebrands	Spring	Swan Pond	Minnewasta	Bitter
1	Spring 2000	16075.5	39890.9	17335.7	31842.1	284397.6	19084.3	27308.8	3328.9	15325.9	138458.2
2	Fall 2000	15489.6	38179.8	15229.8	27068.7	265604.9	18071.7	25837.0	3101.6	13780.4	141980.0
3	Spring 2001	15878.8	39315.9	15750.2	28235.4	270247.4	18344.9	26235.7	3163.0	14159.9	163297.0
4	Fall 2001	15393.1	36785.6	13523.3	23309.9	250398.0	17088.5	24392.4	2880.4	12548.3	159364.2
5	Spring 2002	15683.5	38462.1	13187.1	22582.4	247406.2	17000.6	24262.4	2860.6	12308.0	170017.9
6	Fall 2002	15489.6	37339.9	11859.1	19753.9	235604.9	16219.8	23103.1	2684.7	11367.1	167304.4
7	Spring 2003	15781.0	39030.2	12685.9	21506.3	242949.6	16738.2	23873.9	2801.5	11951.3	184093.1
8	Fall 2003	15586.4	38745.6	12353.9	21151.7	241472.4	16564.4	23616.1	2762.4	11833.5	191452.9
9	Spring 2004	15489.6	38462.1	11859.1	19753.9	235604.9	16305.6	23231.0	2704.1	11367.1	195973.4
10	Fall 2004	15105.9	35962.9	10078.3	16080.0	219811.9	15291.4	21711.6	2475.5	10126.5	184093.1
11	Spring 2005	15683.5	38179.8	10237.9	16403.7	221226.9	15458.1	21962.5	2513.0	10236.7	189963.6
12	Fall 2005	15201.3	35420.2	9919.1	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	174151.1
13	Spring 2006	15489.6	35962.9	10719.6	12658.4	204522.9	14391.0	20348.3	2272.6	9157.3	172764.9
14	Fall 2006	15105.9	33819.7	10237.9	10047.8	192389.5	13674.6	19254.3	2111.3	8330.4	160666.9
15	Spring 2007	15489.6	34083.6	10881.1	10613.2	188420.5	13439.9	18893.9	2058.6	8229.3	158069.8
16	Fall 2007	13806.5	28540.9	8354.1	4413.4	159246.8	11705.5	16546.8	1719.3	6135.6	129408.2
17	Spring 2008	13897.1	28540.9	8663.1	4185.8	158028.9	11632.7	16661.9	1735.8	6225.4	128311.4
18	Fall 2008	15683.5	32517.4	11531.4	9491.0	165399.5	12072.9	17240.8	1818.8	6868.2	137299.9
19	Spring 2009	15683.5	33819.7	11368.1	11769.2	167890.1	12221.3	17357.3	1835.6	6962.1	138458.2
20	Fall 2009	15393.1	32775.5	10719.6	10899.0	160468.9	11778.6	17008.5	1785.4	6589.6	132744.3
21	Spring 2010	15586.4	34083.6	11205.4	12063.5	164160.5	11999.0	17240.8	1818.8	6868.2	135006.7
22	Fall 2010	15781.0	36785.6	11043.0	12359.9	176739.7	12747.6	17943.4	1920.2	7439.2	141980.0
23	Spring 2011	16273.6	39890.9	13523.3	12658.4	204522.9	14391.0	20348.3	2272.6	8534.1	158069.8
24	Fall 2011	15683.5	38745.6	11043.0	12958.9	205891.9	14471.7	20471.1	2290.7	8330.4	155505.5
25	Spring 2012	16373.1	41348.5	11531.4	19067.3	232696.0	16048.9	22848.0	2646.2	11136.9	181209.7
26	Fall 2012	15977.0	40180.1	12188.6	20448.7	238530.3	16477.9	23487.5	2742.9	11599.3	194457.8
27	Spring 2013	16075.5	40470.5	13523.3	23309.9	250398.0	17088.5	24392.4	2880.4	12548.3	210011.5
28	Fall 2013	15683.5	39030.2	13187.1	22582.4	247406.2	17000.6	24262.4	2860.6	12308.0	214851.6
29	Spring 2014	16573.3	41939.6	16450.2	29818.7	276495.2	18712.6	26770.5	3245.6	14673.0	245614.5
30	Fall 2014	15781.0	39602.8	15750.2	28235.4	270247.4	18344.9	26235.7	3163.0	14159.9	243826.9
31	Spring 2015	16473.0	41939.6	18778.0	35180.7	297255.2	19934.9	28533.1	3519.4	16396.9	273559.2
32	Fall 2015	15781.0	39602.8	18233.3	33914.2	292402.8	19554.4	27986.7	3434.2	15991.5	273559.2

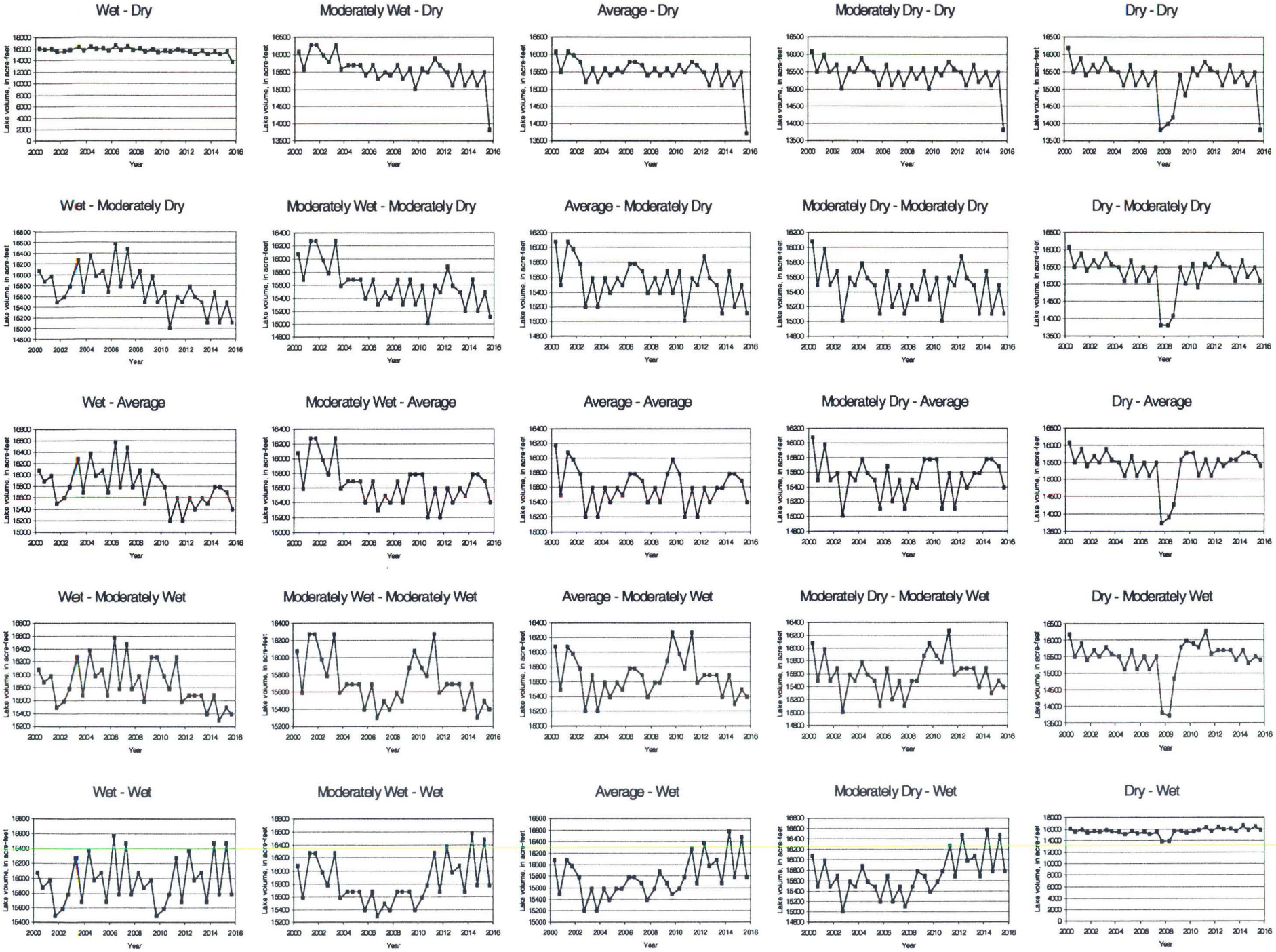

Figure C1. Simulated water volumes for Pickerel Lake.

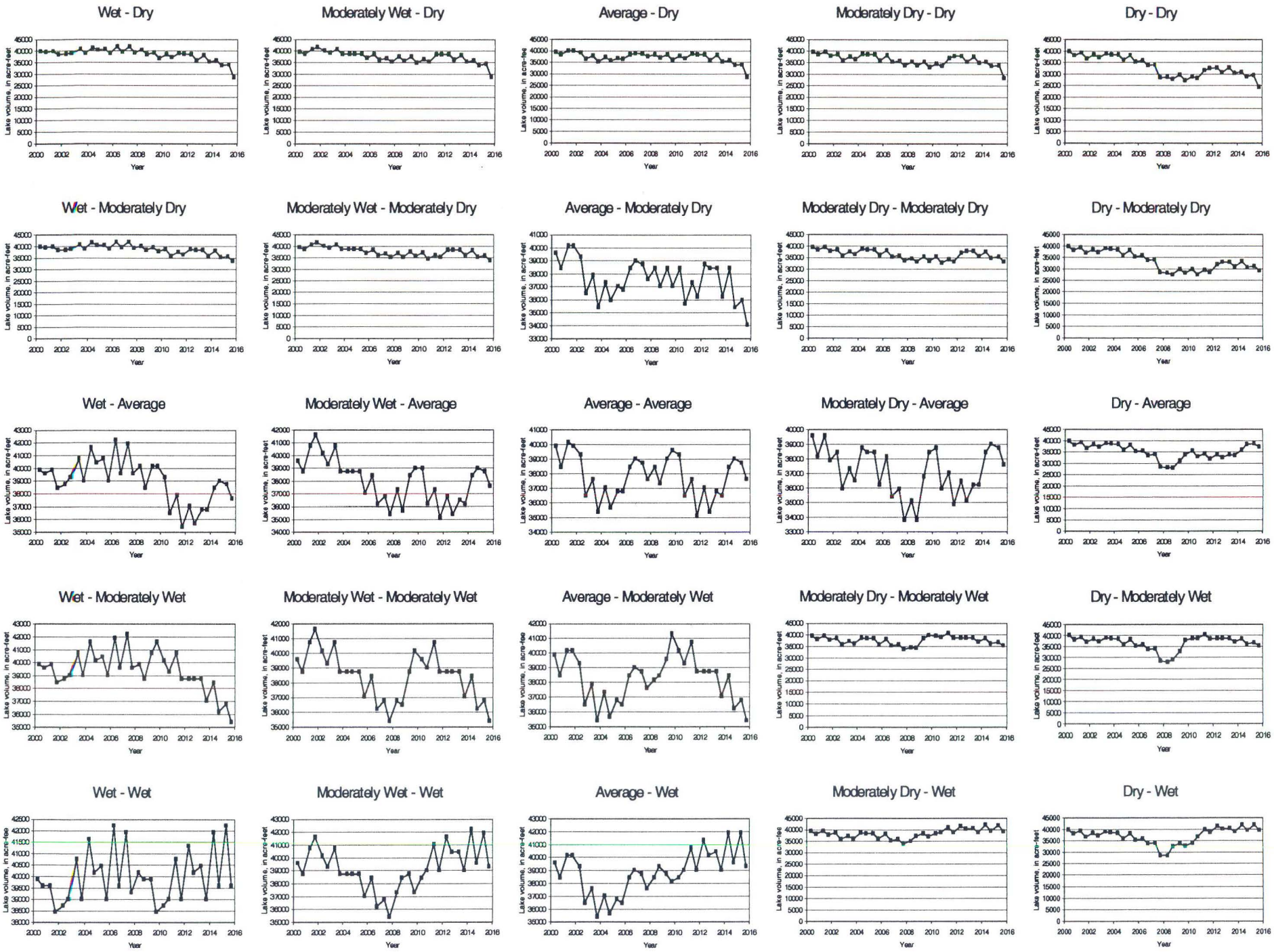

Figure C2. Simulated water volumes for Enemy Swim Lake.

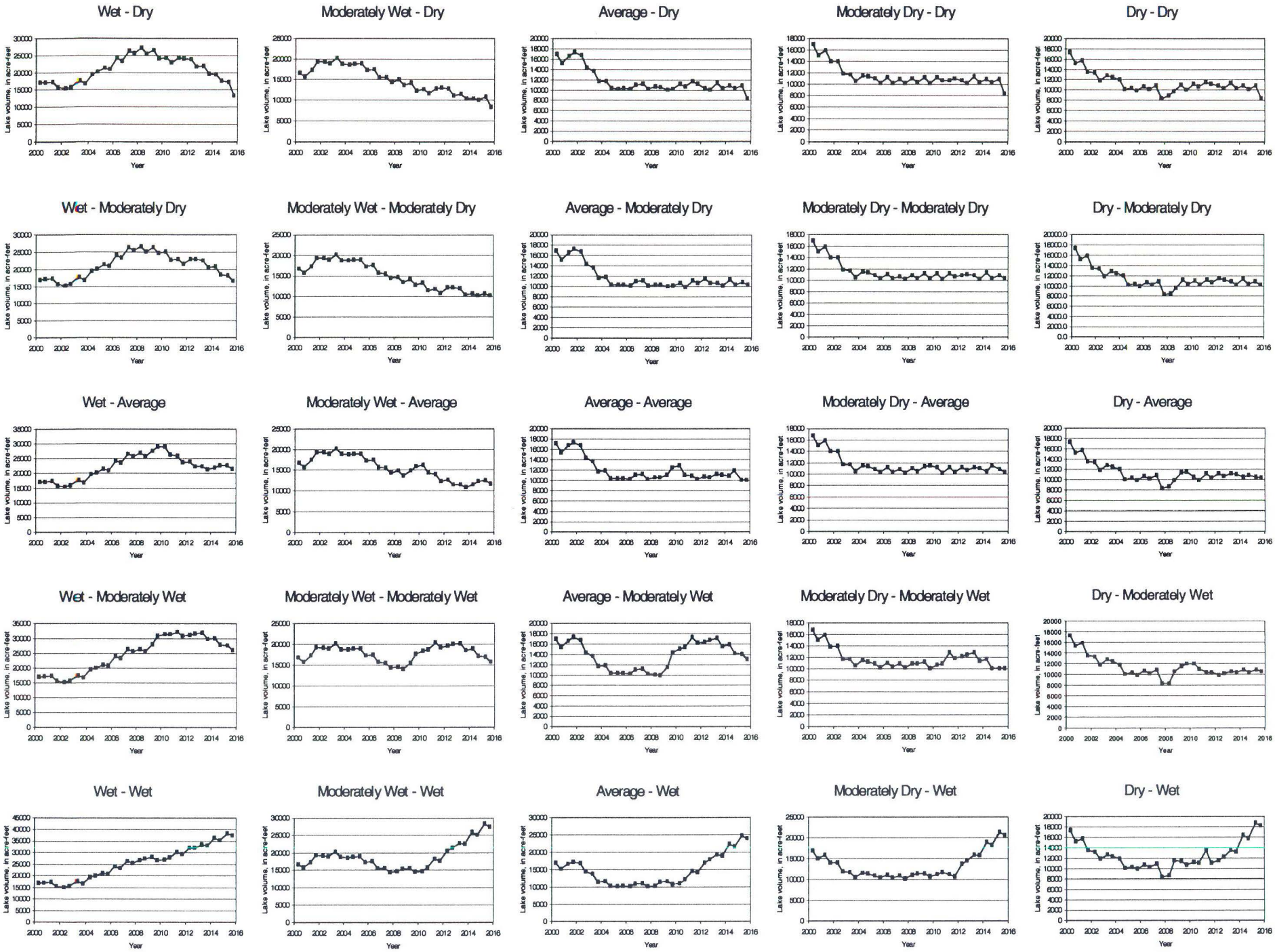

Figure C3. Simulated water volumes for Blue Dog Lake.

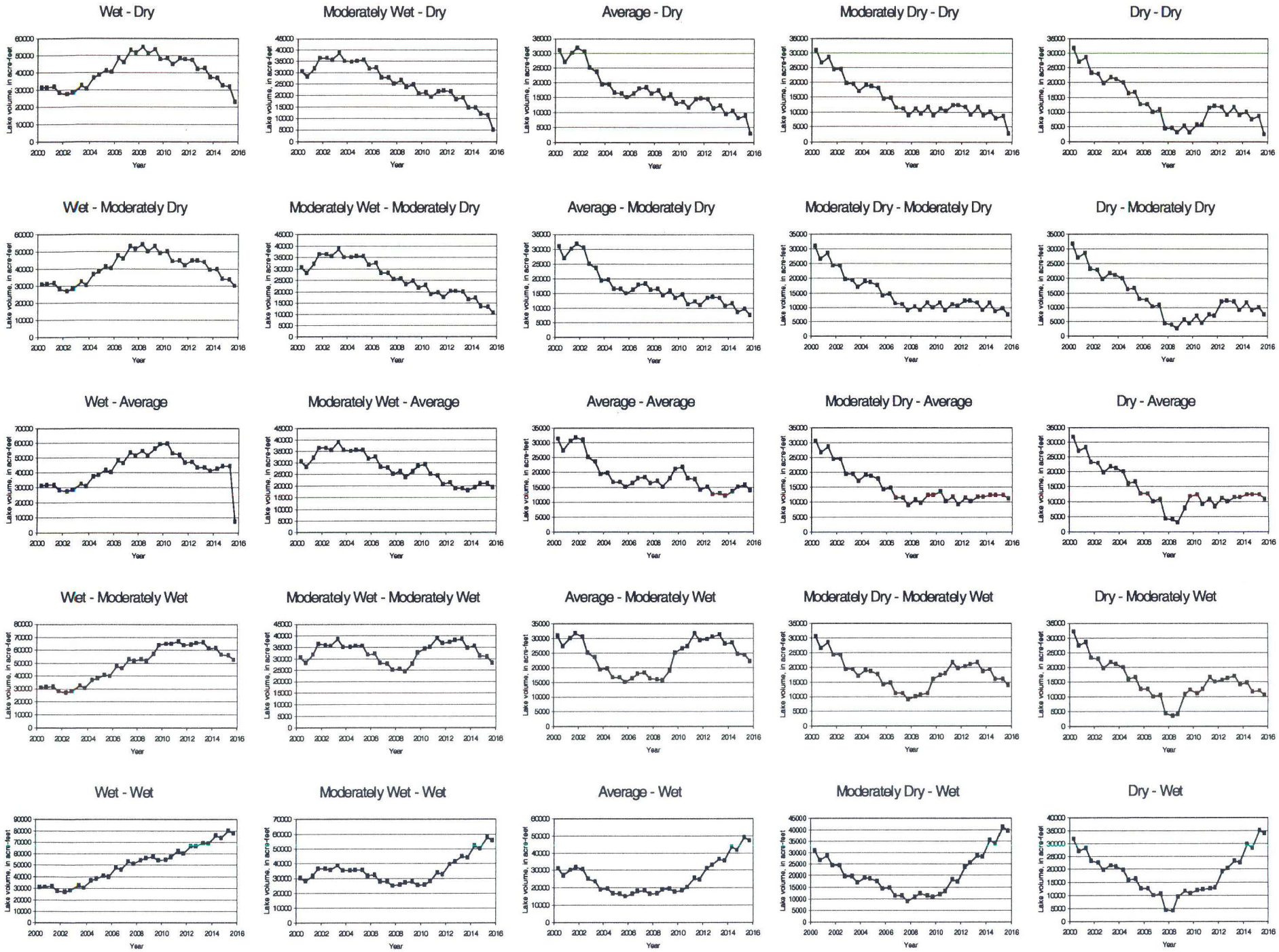

Figure C4. Simulated water volumes for Rush Lake.

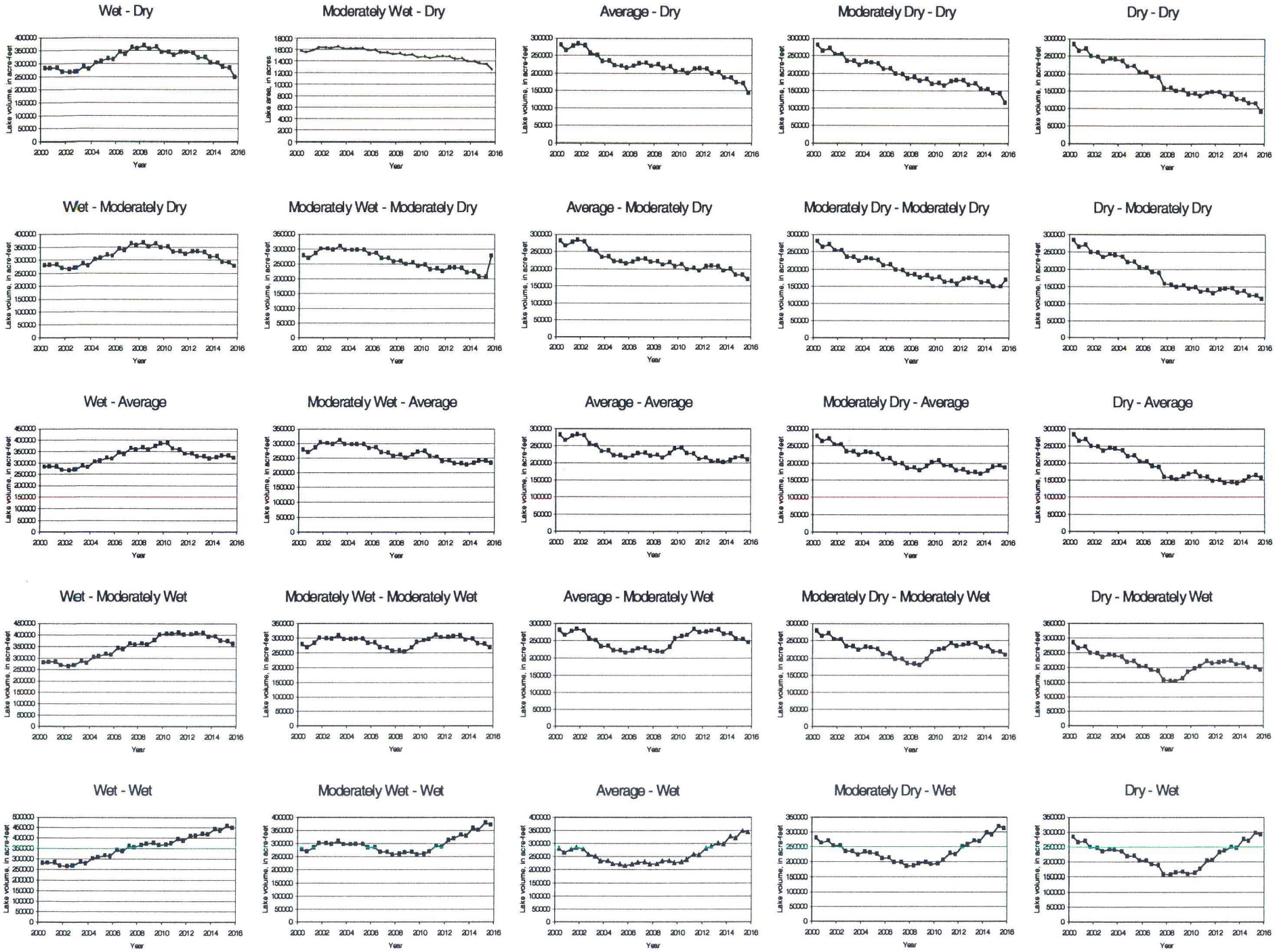

Figure C5. Simulated water volumes for Waubay Lake.

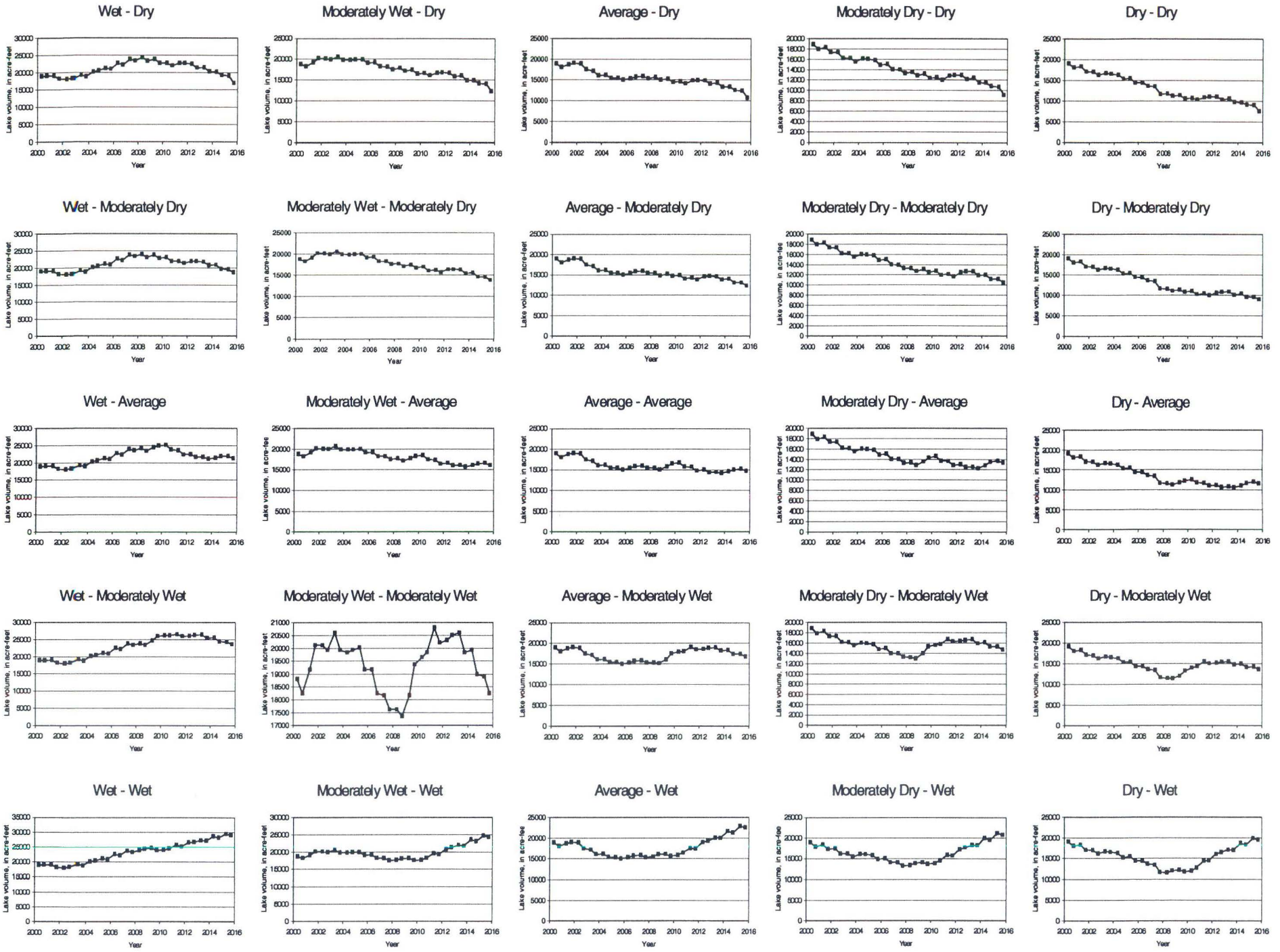

Figure C6. Simulated water volumes for Hillebrands Lake.

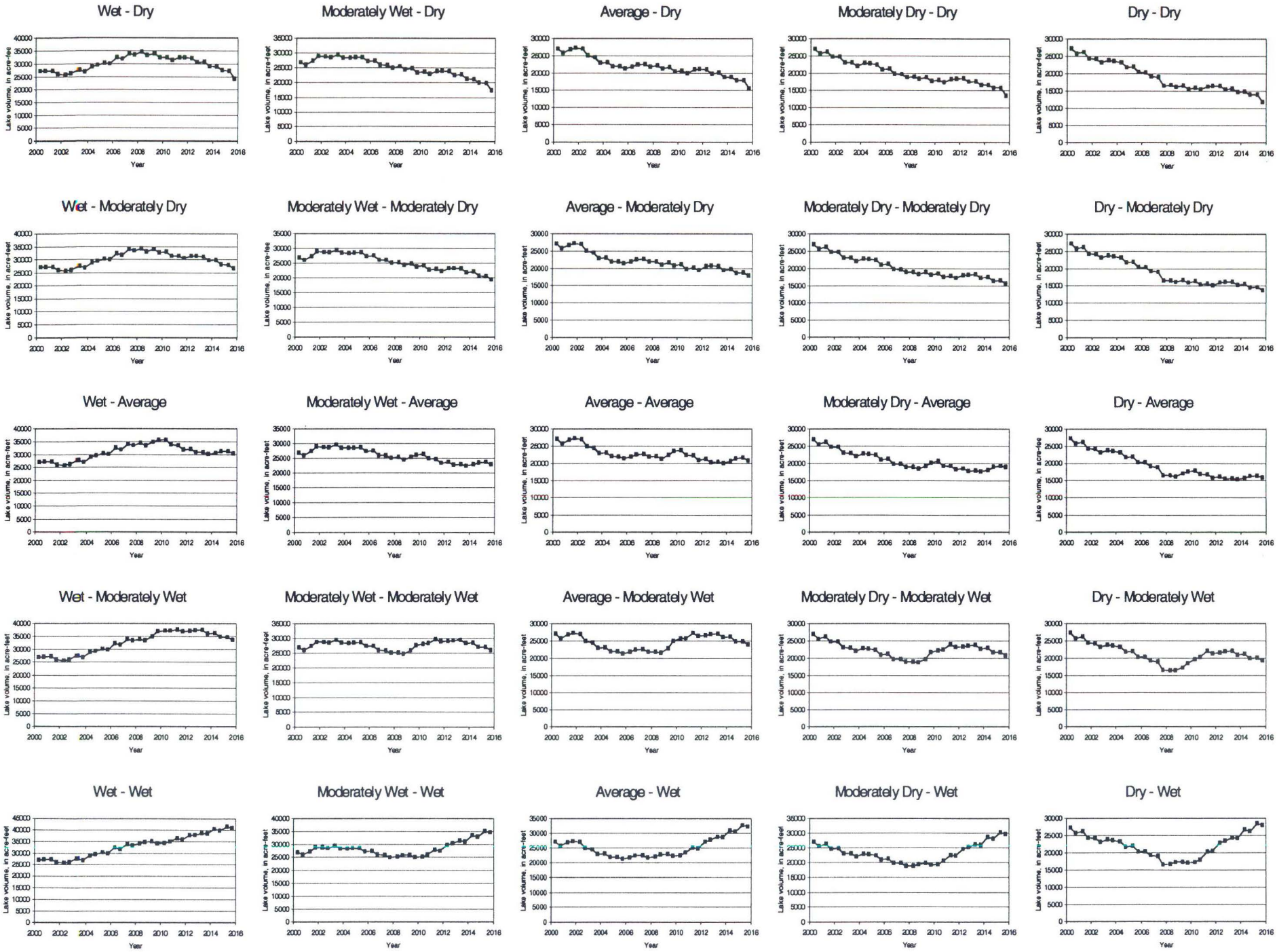

Figure C7. Simulated water volumes for Spring Lake.

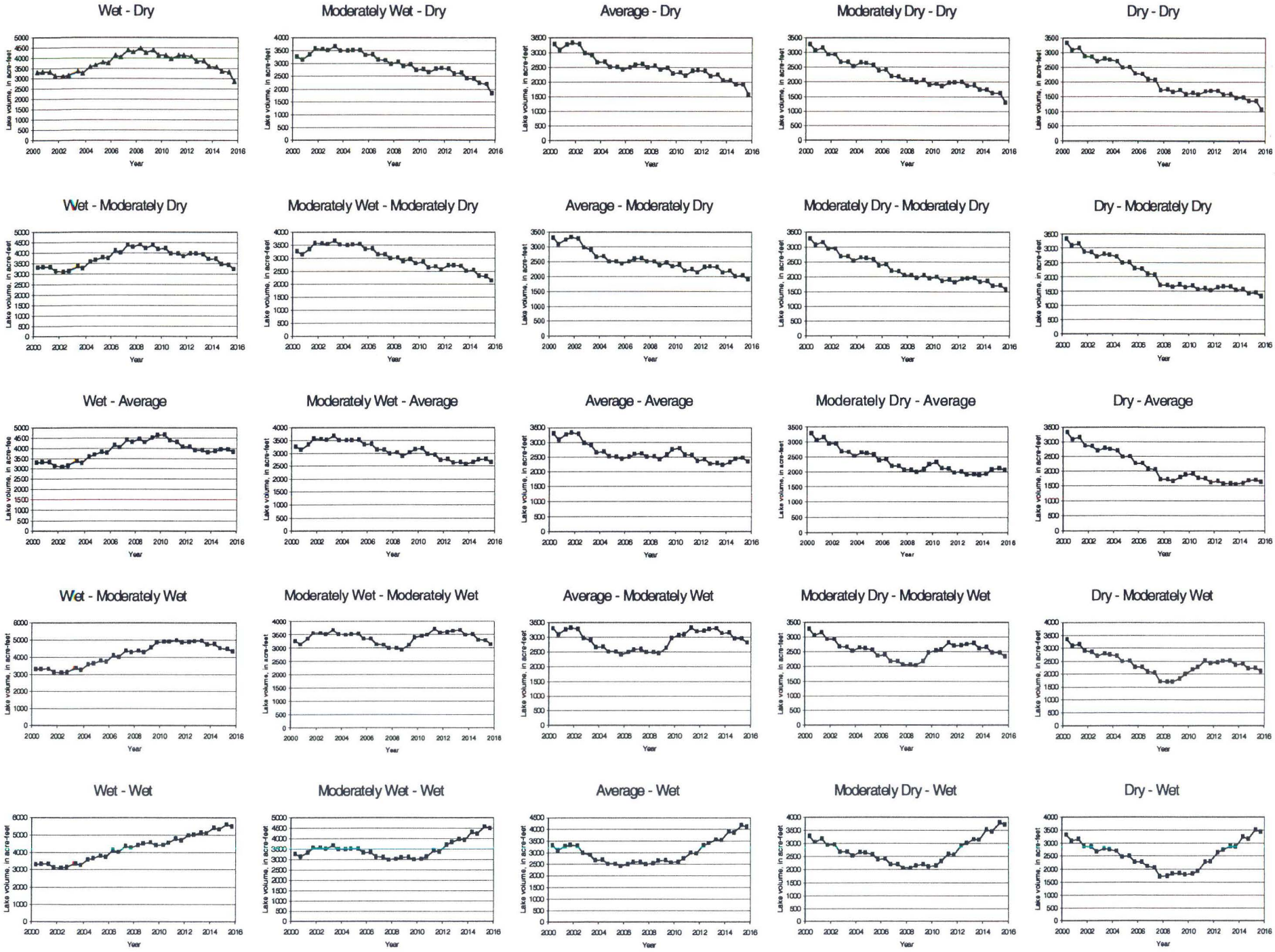

Figure C8. Simulated water volumes for Swan Pond.

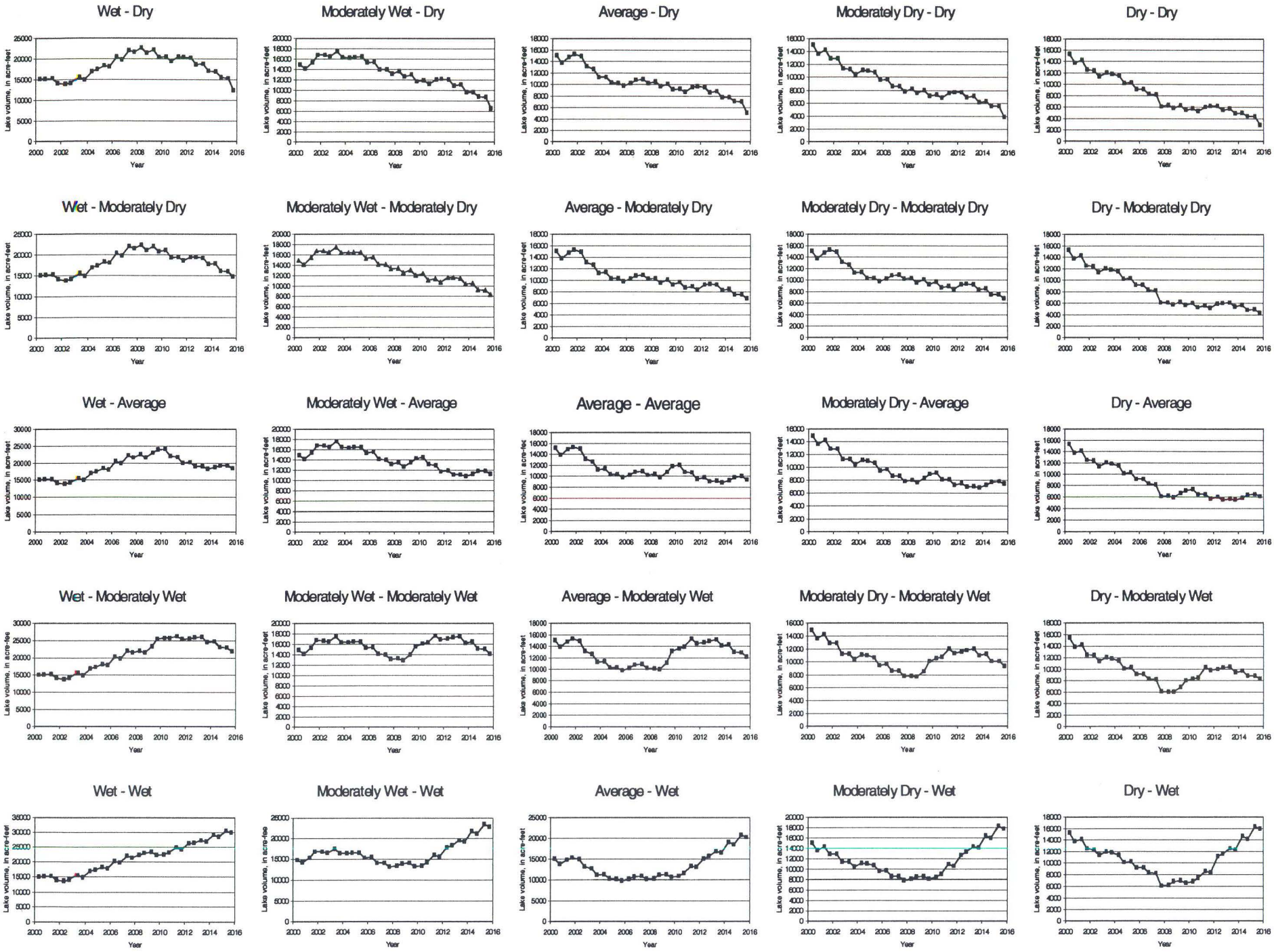

Figure C9. Simulated water volumes for Minnewasta Lake.

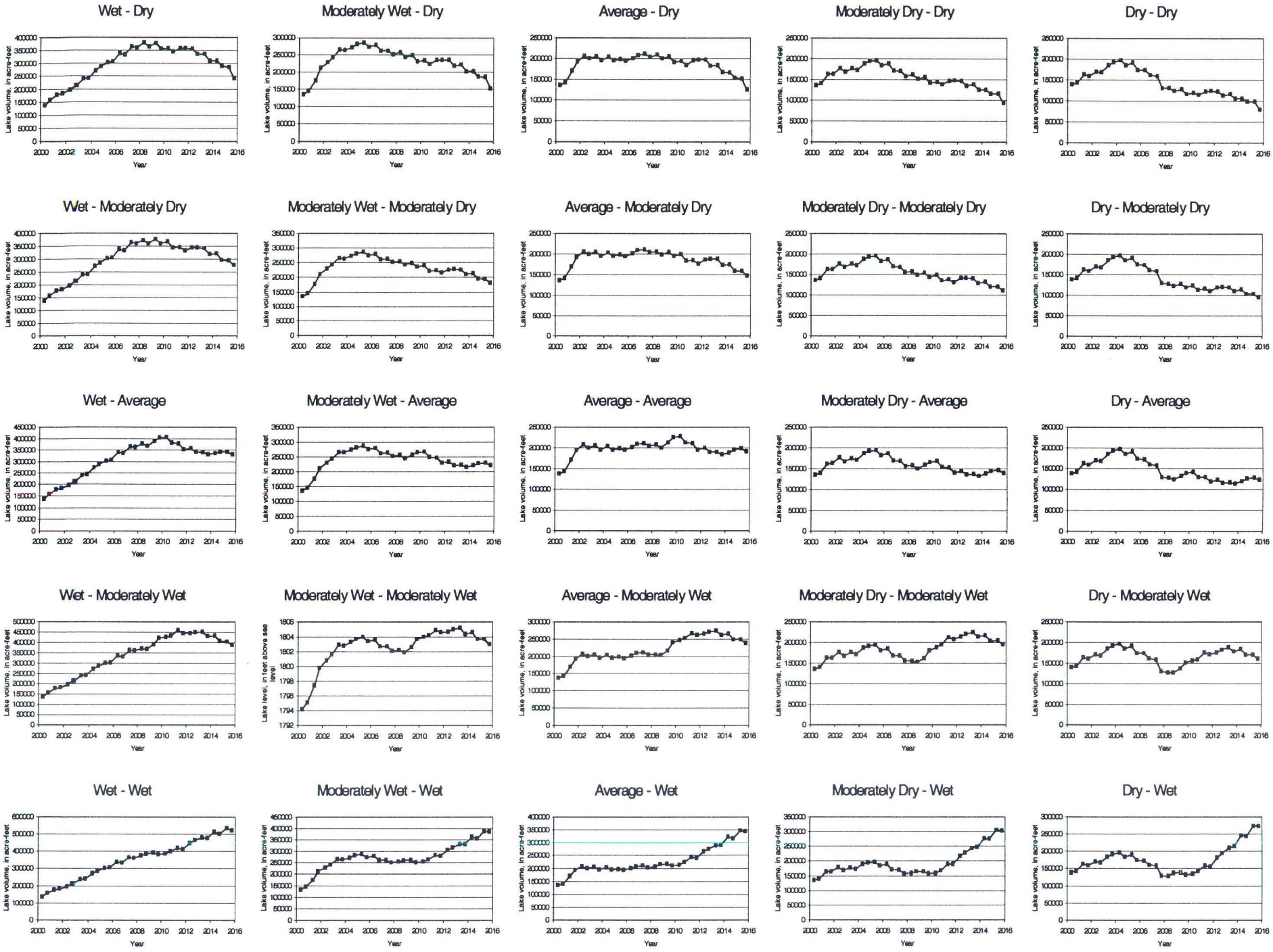

Figure C10. Simulated water volumes for Bitter Lake.