NEW YORK STATE OF OPPORTUNITY. | NY Power Authority

VIA Electronic Filing

September 2, 2020

Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Gregory B. Jarvis Power Project, FERC No. 3211-009, Reservoir Fluctuation Field Study Supplemental Analysis

Dear Secretary Bose:

In accordance with 18 C.F.R. § 5.15(f), the Power Authority of the State of New York (Power Authority) encloses for filing the attached Supplemental Analysis of the *Reservoir Fluctuation Field Study.*

The operating license for the Gregory B. Jarvis Power Project, FERC No. 3211-009 (the Project) was issued by the Federal Energy Regulatory Commission (FERC or the Commission) on August 12, 1982 and will expire on July 31, 2022. The Power Authority is following the Integrated Licensing Process (ILP) as outlined by 18 C.F.R. Part 5 for the Project relicensing.

The Commission issued a Study Plan Determination (SPD) on May 11, 2018. Following the completion of the first year of field studies, the Power Authority filed an Initial Study Report (ISR) on May 8, 2019 and held an ISR Meeting on May 22, 2019. On September 6, 2019, the Commission issued its *Determination on Requests for Study Modifications for the Hinckley (Gregory B. Jarvis) Hydroelectric Project*. In its determination, the Commission recommended supplemental analysis pertaining to the *Reservoir Fluctuation Field Study* as well as a new study – the *Dissolved Oxygen Enhancement Study*. The Commission found that no other study modifications or new studies were necessary. The Power Authority held a public meeting on May 19, 2020 to discuss its Updated Study Report (USR), which was filed with the Commission on May 4, 2020, and subsequently filed a USR Meeting Summary on June 3, 2020.

The enclosed Reservoir Fluctuation Field Study Supplemental Analysis presents data, requested by FERC and the Citizens for Hinckley Lake in their comments on the USR and Meeting Summary, to separately calculate and present tabular data on the percentage of time that wetlands and isolated pools are inundated for the two different Operating Diagrams (i.e., for the period 2001 to 2012 under the 1920 Operating Diagram, and 2013 to 2019 under the 2012 Operating Diagram). The *Dissolved Oxygen Enhancement Study* is ongoing and results will be filed with FERC at a later date.

The Power Authority is filing this Reservoir Fluctuation Field Study Supplemental Analysis with the Commission electronically and Participants may access it on the Commission's eLibrary website (http://elibrary.ferc.gov) by entering the docket number (P-3211). The Power Authority is also making the Reservoir Fluctuation Field Study Supplemental Analysis available on the Project relicensing website (https://jarvis.nypa.gov/). If there are any questions regarding the USR or the relicensing process, please direct them to the undersigned at cindy.brady@nypa.gov.

Sincerely,

Cindy Brady

Cindy Brady
Manager, Licensing

HINCKLEY RESERVOIR FLUCTUATION FIELD STUDY – SUPPLEMENTAL ANALYSIS

Prepared by: GOMEZ AND SULLIVAN ENGINEERS

September 2020

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GREGORY B. JARVIS PROJECT RELICENSING FERC NO. 3211

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List of Abbreviations

C.F.R.	Code of Federal Regulations
cfs	Cubic feet per second
DLA	Draft License Application
DO	Dissolved oxygen
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
ft^3	Cubic feet
ISR	Initial Study Report
Jarvis Project	Gregory B. Jarvis Power Project (FERC No. 3211-NY)
kV	Kilovolt
MW	Megawatt
NOI	Notice of Intent
NY	New York
NYPA	The Power Authority of the State of New York
NYS	New York State
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
Operating Diagram	2012 Hinckley Reservoir Operating Diagram
PAD	Pre-Application Document
PLP	Preliminary Licensing Proposal
PME	Protection, mitigation, and enhancement
PSP	Proposed Study Plan
RSP	Revised Study Plan
SD1	Scoping Document 1
SD2	Scoping Document 2
SPD	Study Plan Determination
SUNY	State University of New York
the Commission	Federal Energy Regulatory Commission
the Power Authority	The Power Authority of the State of New York
the Project	Gregory B. Jarvis Power Project (FERC No. 3211-NY)
USR	Updated Study Report

1 Overview

1.1 Project Description

The Power Authority of the State of New York (d/b/a "New York Power Authority" and referred to as "the Power Authority") is licensed by the Federal Energy Regulatory Commission ("FERC" or "the Commission") to operate the Gregory B. Jarvis Power Project ("Jarvis Project" or "Project") (FERC No. 3211-NY). The Project is located on West Canada Creek, a tributary of the Mohawk River, at the Hinckley Reservoir Dam. The Project is approximately 0.5 miles upstream of the Town of Hinckley in the counties of Oneida and Herkimer, NY. The original license was issued on August 12, 1982 and expires on July 31, 2022.

The 9-megawatt (MW) Project consists of: (a) the 3,635-foot-long Hinckley Dam; (b) the 65-foot-long intake structure; (c) 15-foot diameter penstock, which bifurcates into two 90-foot-long, 10.5-foot diameter penstocks; (d) two 4.5-MW horizontal Kaplan turbine/generator units; (e) a 120-foot-long, 55-foot wide powerhouse; (f) Hinckley Reservoir; and (g) a 200-foot-long 46 kV underground interconnection, which runs from the powerhouse to a switchyard located north of New York State (NYS) Route 365.

Hinckley Reservoir is operated by the New York State Canal Corporation ("NYSCC") in accordance with the 2012 Hinckley Reservoir Operating Diagram ("Operating Diagram"). The Operating Diagram is the product of legally binding operating agreements between NYSCC, State of New York, Mohawk Valley Water Authority, New York State Thruway Authority, and Erie Boulevard Hydropower, L.P. The Power Authority does not have the authority or the rights to deviate from these releases and if the Jarvis Project were not to exist, the same reservoir water levels and discharges would still occur in accordance with the Operating Diagram.

In addition, the current FERC license for the Project requires a continuous minimum flow in West Canada Creek of 160 cubic feet per second (cfs), as measured at the NYSCC diversion structure at the Nine Mile Creek Feeder Dam, which is located approximately 5.1 miles downstream of the Project.

1.2 Relicensing Background and Current Status

As previously noted, the original license for the Project was issued on August 12, 1982 and expires on July 31, 2022. As required by law, the Power Authority applied for a new license for the Project on July 31, 2020. In accordance with 18 C.F.R. §§ 5.5 and 5.6, the Power Authority filed its Notice of Intent (NOI) and Pre-Application Document (PAD) on June 30, 2017. The PAD included the Power Authority's preliminary study plans for the Project. FERC issued its Scoping Document 1 (SD1) on August 29, 2017, and held scoping meetings on September 26 and 27, 2017 at the State University of New York (SUNY) Polytechnic Institute in Utica, NY. During these meetings the agencies, stakeholders, and public identified potential issues for study. Following the scoping meetings, FERC issued its Scoping Document 2 (SD2) on December 12, 2017.

Subsequently, the Power Authority received comments on the PAD and requests for additional studies. The Power Authority reviewed these comments and study requests and developed a Proposed Study Plan (PSP), which was filed with the Commission on December 12, 2017. The Power Authority then held a Study Plan Meeting on January 11, 2018 at the SUNY Polytechnic Institute in Utica, NY to discuss the PSP with interested stakeholders. Following the Study Plan Meeting, the Power Authority received comments pertaining to its PSP from agencies and stakeholders on March 12, 2018. The Power Authority then developed its Revised Study Plan (RSP), which was filed with FERC on April 11, 2018. On May 11, 2018, FERC issued its Study Plan Determination (SPD) for the Project.

The Power Authority conducted its first season of field studies between May and October 2018. Following the first season, the Power Authority prepared and filed its Initial Study Report (ISR) on May 8, 2019, in accordance with the Integrated Licensing Process (18 C.F.R. § 5.15(c)(1)). One of the studies in the ISR was the *Reservoir Fluctuation Field Study.* At the time of the ISR, the Power Authority had completed all of the studies except the *Assessment of Fish Entrainment and Turbine Survival (Entrainment Study*). In accordance with 18 C.F.R § 5.15 (c)(2), the Power Authority held its ISR Meeting on May 22, 2019 at the SUNY Polytechnic Institute in Utica, NY. Following the ISR Meeting, the Power Authority filed its ISR Meeting Summary with the Commission on June 10, 2019.

The Power Authority filed the Updated Study Report (USR) for the final study, the *Entrainment Study*, as well as supplemental analyses requested for the *Reservoir Fluctuation Field Study* on May 4, 2020. The USR Meeting was then held on May 19, 2020. In accordance with the Commission’s process plan and schedule issued for the relicensing of the Project, the Power Authority filed a meeting summary of the USR meeting on June 3, 2020. The Power Authority received two letters in response, one from FERC on July 8, 2020 and one from Citizens for Hinckley Lake on July 10, 2020. This document provides a response to supplemental analyses requested in these two letters.

2 Response to Requested Supplemental Analysis

As previously noted, the Power Authority received two letters in response to the USR meeting summary, including letters filed by:

- FERC
- Citizens for Hinckley Lake

In general, the Commission and Citizens for Hinckley Lake requested a supplemental analysis of the *Reservoir Fluctuation Field Study* to separately calculate and present tabular data on the percentage of time that wetlands and isolated pools are inundated for the two different Operating Diagrams (i.e., for the period 2001 to 2012 under the 1920 Operating Diagram, and 2013 to 2019 under the 2012 Operating Diagram).

2.1 Supplemental Analysis of the Reservoir Fluctuation Field Study

2.1.1 Water Level Duration Analysis for 2001-2012 and 2013-2019

Figures 4.4.1.1.1-1 through Figures 4.4.1.1.1-13 of the Final License Application (FLA) showed annual and monthly water surface elevation duration curves for Hinckley Reservoir for the period of record from January 1938 to December 2019 (except for the years 1979 to 1986, for which there is no available water surface elevation data) and the period from January 2001 to December 2019 that coincided with the flow duration curves. For the supplemental analysis, the latter period was divided into the period from January 2001 to December 2012 (which used the 1920 Operating Diagram) and the period from January 2013 to December 2019 (which used the 2012 Operating Diagram). Figure A-1 through Figure A-13 in Appendix A show the annual and monthly water level duration curves for the following four periods of record:

- Full Period of Record (1938-2019)
- Recent Years (2001-2019)
- Years 2001-2012 (1920 Operating Diagram)
- Years 2013-2019 (2012 Operating Diagram)

This supplemental analysis provides limited value for two reasons. The first is that water levels in the reservoir are affected by factors other than the Operating Diagram such as rainfall, watershed soil moisture, amount of snowpack, and outflow. Outflows from the reservoir, and consequently water level, are affected by deviations from flow releases stipulated by the Operating Diagram. These deviations are often planned and are executed at the direction of the NYSCC. The NYSCC authorizes deviations from the Operating Diagram on a case-by-case basis, taking into consideration a number of different factors, including, but not limited to, the following:

- ensuring public safety;
- in cases of emergency or infrastructure problems (transmission outages, turbine issues, water main breaks, etc.);

- serving canal uses and/or purposes;
- mitigating unusual hydrologic or weather conditions;
- correcting any discrepancies between actual releases and the releases dictated by the 2012 Operating Diagram; and
- providing compensating flow to Erie Boulevard under the terms of a January 13, 2015 Settlement Agreement and Mutual Release.

For example, the NYSCC frequently deviates from the Operating Diagram during the summer months to maintain higher reservoir water levels when inflow is low as happened during the summer of 2018. Although the Operating Diagram prescribed a release of 400 cfs, the NYSCC deviated from this prescription and passed flows on the order of 250 cfs from June 27th to August 21st because of low inflows. When this happens, the NYSCC needs to then deviate from the Operating Diagram at other times during the year to compensate Erie Boulevard for the smaller releases this summer.

The NYSCC also deviates from the Operating Diagram for high flow conditions. Prior to the Halloween 2019 storm of record when a large rainfall was forecasted, the NYSCC increased releases on October 30, 2019 from the 1,530 cfs prescribed by the Operating Diagram to approximately 2,500 cfs to alleviate flooding.

NYSCC bases the deviation rate(s) and durations on the desired outcome and existing conditions, such as reservoir elevation levels, rate of elevation change, current and forecasted reservoir inflow rates, and the time of year.

The second reason that the comparison of environmental statistics for years 2001-2012 (1920 Operating Diagram) and years 2013-2019 (2012 Operating Diagram) is flawed is that the time period for the water level duration analyses is substantially shorter than the common practice in hydrologic statistical analyses of at least 20 years to assess trends. It is difficult to infer that the changes observed in the water level duration curves are caused by implementation of different operating diagrams because both periods of record, 2001 to 2012 and 2013 to 2019, are significantly shorter than the industry standard of 20 years.

2.1.2 Analysis of Inundation of Observed Isolated Pools for 2001-2012 and 2013-2019

A summary of each of the mapped pools previously described in the USR and *Reservoir Fluctuation Field Study* and their corresponding monthly and annual percentages of inundation is provided in Table 2.1.2-1 for the 2001-2012 time period and in Table 2.1.2-2 for the 2013-2019 time period. The depth of the pool as observed in the field and the maximum bed elevation associated with each pool are also provided. The maximum bed elevation of each pool corresponds with the elevation at which the pool is still connected to the main body of the reservoir. When the water surface elevation is below the maximum pool bed elevation, that pool then becomes isolated from the main body of the reservoir.

The percentage of time each pool's maximum bed elevation is equaled or exceeded was calculated based on historical water surface elevation data. For example, in Table 2.1.2-1, Pool A's maximum bed elevation was measured to be El. 1220.9. For the time period 2001-2012, this corresponds to Pool A being inundated 37% of the time in January, 11% of the time in February, 6% of the time in March, etc. To calculate the percentage of time when the reservoir's elevation is less than the Pool A maximum elevation, the provided percentages should be subtracted from 100%. Therefore 63% of the time in January the reservoir elevation is less than Pool A's maximum bed elevation, 89% of the time in February, 94% of the time in March, etc. On an annual basis, Pool A is inundated 45% of the time (or, in other words, Pool A is isolated from the main body of the reservoir 55% of the time annually). In general, the pools have a higher likelihood of being inundated by the main reservoir in the months of April, May and June due to the reservoir's operating diagram.

Table 2.1.2-1: Summary of Monthly and Annual Inundation Percentages of Observed Isolated Pools (2001-2012)

Location ID	Pool Depth (ft.)	Maximum Pool Bed El. (ft.)[1]	Percentage of Time the Maximum Pool El. is Equaled or Exceeded by the Water Surface Elevation of Hinckley Reservoir (2001-2012)												
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Pool A	2.5	1220.9	37%	11%	6%	69%	89%	75%	44%	39%	14%	37%	54%	59%	45%
Pool B	8.0	1223.2	23%	4%	4%	54%	60%	46%	24%	24%	5%	23%	29%	35%	28%
Pool C	2.0	1219.6	44%	15%	10%	75%	91%	84%	57%	43%	19%	39%	61%	67%	51%
Pool D	3.0	1218.0	50%	19%	13%	82%	92%	92%	71%	45%	26%	41%	68%	71%	56%
Pool E	2.5	1217.1	52%	21%	16%	86%	95%	95%	77%	46%	31%	42%	70%	73%	59%
Pool F	2.5	1218.0	50%	19%	13%	82%	92%	92%	71%	45%	26%	41%	68%	71%	56%
Pool G	1.5	1218.0	50%	19%	13%	82%	92%	92%	71%	45%	26%	41%	68%	71%	56%
Pool H	2.5	1218.3	49%	18%	12%	81%	92%	91%	68%	45%	24%	41%	67%	71%	55%
Pool I	1.5	1225.2	7%	1%	2%	34%	18%	11%	3%	2%	1%	12%	9%	9%	9%
Pool J	5.5	1217.5	51%	21%	14%	84%	93%	95%	74%	46%	29%	41%	69%	72%	58%
Pool K	3.0	1215.3	56%	25%	22%	90%	98%	98%	89%	55%	41%	44%	72%	77%	64%

Note: The percentages indicate the frequency that each pool is connected to the main body of the reservoir

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[1] Maximum pool bed elevations were derived from the Hinckley Reservoir bathymetric dataset. Depending on the location of the pool relative to the bathymetric survey transect, elevations shown may be reflective of measured survey data or interpolated data derived from GIS. Interpolated data should be considered approximate (e.g., Pool I).

Table 2.1.2-2: Summary of Monthly and Annual Inundation Percentages of Observed Isolated Pools (2013-2019)

Location ID	**Pool Depth (ft.)**	**Maximum Pool Bed El. (ft.)[2]**	**Percentage of Time the Maximum Pool El. is Equaled or Exceeded by the Water Surface Elevation of Hinckley Reservoir (2013-2019)**												
			Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Pool A	2.5	1220.9	21%	11%	16%	55%	65%	60%	37%	7%	0%	7%	31%	20%	28%
Pool B	8.0	1223.2	8%	4%	12%	50%	42%	41%	19%	0%	0%	6%	22%	5%	18%
Pool C	2.0	1219.6	34%	14%	19%	57%	73%	73%	49%	14%	0%	7%	35%	28%	34%
Pool D	3.0	1218.0	45%	21%	23%	60%	80%	79%	68%	30%	0%	10%	41%	34%	41%
Pool E	2.5	1217.1	50%	25%	25%	61%	84%	81%	74%	44%	5%	15%	47%	39%	46%
Pool F	2.5	1218.0	45%	21%	23%	60%	80%	79%	68%	30%	0%	10%	41%	34%	41%
Pool G	1.5	1218.0	45%	21%	23%	60%	80%	79%	68%	30%	0%	10%	41%	34%	41%
Pool H	2.5	1218.3	43%	19%	23%	59%	79%	77%	65%	28%	0%	9%	41%	33%	40%
Pool I	1.5	1225.2	0%	0%	5%	31%	14%	12%	8%	0%	0%	4%	9%	1%	7%
Pool J	5.5	1217.5	48%	24%	24%	61%	81%	80%	73%	39%	3%	13%	44%	36%	44%
Pool K	3.0	1215.3	59%	29%	29%	66%	86%	85%	79%	59%	17%	29%	59%	53%	54%

Note: The percentages indicate the frequency that each pool is connected to the main body of the reservoir

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[2] Maximum pool bed elevations were derived from the Hinckley Reservoir bathymetric dataset. Depending on the location of the pool relative to the bathymetric survey transect, elevations shown may be reflective of measured survey data or interpolated data derived from GIS. Interpolated data should be considered approximate (e.g., Pool I).

2.1.3 Analysis of Wetland Inundation or Exposure for 2001-2012 and 2013-2019

The 2018 survey identified and mapped a total of 485 acres of wetlands within the study area. There were two wetland types identified, freshwater emergent and forested/shrub. Emergent wetlands were found to be primarily comprised of bulrushes (*Scirpus*), rushes (*Juncus*), sedges (*Carex*), and sneezeweed (*Helenium*). The Reservoir Fluctuation Field Study Report noted that these emergent wetlands were observed at several locations throughout the reservoir that would be inundated at the spillway crest elevation (El. 1225). Forested/shrub wetlands exist primarily on the fringes of the reservoir and consisted primarily of willows (*Salix*), maple (*Acer*), alder (*Alnus*), and herbaceous plants.

This supplemental analysis further investigated the extent of wetland inundation at various reservoir water surface elevations. Table 2.1.3-1 presents a summary of each wetland type and the acreage and percentage of total area that is exposed (above water) at one-foot reservoir water surface elevation ranges for the time period 2001-2012. Table 2.1.3-2 shows the same information for the time period 2013-2019. The tables also provide the annual percentages of time that the minimum elevation of the range depicted is equaled or exceeded (based on historical water surface elevation data). For example, in Table 2.1.3-1, if the reservoir water surface elevation range shown is El. 1223 – 1224, then this column would depict the percentage of time that El. 1223 is equaled or exceeded (i.e., 30% of the time annually).

When the reservoir is at or above the spillway crest elevation, which annually occurs 11% of the time for the time period 2001-2012 (Table 2.1.3-1), 26% of emergent wetlands and 90% of forested/shrub wetlands are exposed. This illustrates that the forested/shrub wetlands are not strongly affected by reservoir operations. As discussed in the Reservoir Fluctuation Field Study Report, emergent wetlands consist of large areas that are seasonally inundated when the reservoir is at its spillway crest elevation. This data can be utilized to quantify the extent of exposure or inundation at various reservoir water surface elevations. For example, 74% of emergent wetlands are inundated at the spillway crest elevation of 1225; however, when the reservoir water surface elevation is 1218, which occurs approximately 56% of the time annually for the time period 2001-2012 (Table 2.1.3-1), 76% of emergent wetlands are exposed (therefore 24% are inundated). This analysis further demonstrates the dynamic extent of emergent wetlands and reservoir water surface elevations.

Table 2.1.3-1: Summary of Wetland Inundation or Exposure (2001-2012)

Wetland Type	Reservoir Water Surface Elevation Range (ft.)	Acreage	Total Percentage of Wetland Exposed (above water)	Annual % of Time Reservoir Water Surface Elevation is Equaled or Exceeded - 2001-2012 (Low Elev. Range)
Freshwater Emergent Wetland	Above 1225	57	26%	11%
	1224-1225	10	31%	21%
	1223-1224	11	36%	30%
	1222-1223	12	41%	38%
	1221-1222	14	48%	44%
	1220-1221	17	55%	49%
	1219-1220	20	65%	53%
	1218-1219	25	76%	56%
	1217-1218	13	82%	59%
	1216-1217	10	86%	62%
	1215-1216	8	90%	64%
	1214-1215	7	93%	67%
	1213-1214	6	96%	69%
	1212-1213	3	97%	72%
	1211-1212	1	98%	74%
	1210-1211	1	98%	76%
	<1210	4	>99%	77%
Forested/Shrub	Above 1225	238	90%	11%
	1224-1225	7	93%	21%
	1223-1224	6	95%	30%
	1222-1223	4	97%	38%
	1221-1222	3	98%	44%
	1220-1221	2	99%	49%
	<1220	4	>99%	53%

Table 2.1.3-2: Summary of Wetland Inundation or Exposure (2013-2019)

Wetland Type	Reservoir Water Surface Elevation Range (ft.)	Acreage	Total Percentage of Wetland Exposed (above water)	Annual % of Time Reservoir Water Surface Elevation is Equaled or Exceeded - 2013-2019 (Low Elev. Range)
Freshwater Emergent Wetland	Above 1225	57	26%	9%
	1224-1225	10	31%	14%
	1223-1224	11	36%	18%
	1222-1223	12	41%	23%
	1221-1222	14	48%	27%
	1220-1221	17	55%	32%
	1219-1220	20	65%	36%
	1218-1219	25	76%	41%
	1217-1218	13	82%	46%
	1216-1217	10	86%	51%
	1215-1216	8	90%	56%
	1214-1215	7	93%	60%
	1213-1214	6	96%	64%
	1212-1213	3	97%	69%
	1211-1212	1	98%	73%
	1210-1211	1	98%	77%
	<1210	4	>99%	78%
Forested/Shrub	Above 1225	238	90%	9-8%
	1224-1225	7	93%	14%
	1223-1224	6	95%	18%
	1222-1223	4	97%	23%
	1221-1222	3	98%	27%
	1220-1221	2	99%	32%
	<1220	4	>99%	36%

3 Conclusions

It is difficult to draw any conclusions from the additional supplemental inundation analysis for observed isolated pools and wetlands because it is based on water level duration analyses that are flawed. The water level duration analyses for the two periods, 2001-2012 (1920 Operating Diagram) and 2013-2019 (2013 Operating Diagram) are not for a sufficiently long period of record (i.e., at least 20 years) to observe any trends due to the change in releases stipulated by different operating diagrams. Additionally, comparison of the inundation tables for environmental resources for the two time periods assumes that reservoir water levels are a function solely of releases prescribed by the Operating Diagram (which they are not) and that the NYSCC strictly adheres to the Operating Diagram (which it does not). Reservoir water levels are also affected by hydrological conditions such as precipitation, soil moisture conditions, amount of snowpack, etc. Furthermore, the NYSCC can deviate from the releases prescribed by the Operating Diagram for several reasons as outlined in Section 2.1.1.

Appendix A – Annual and Monthly Water Level Duration Curves

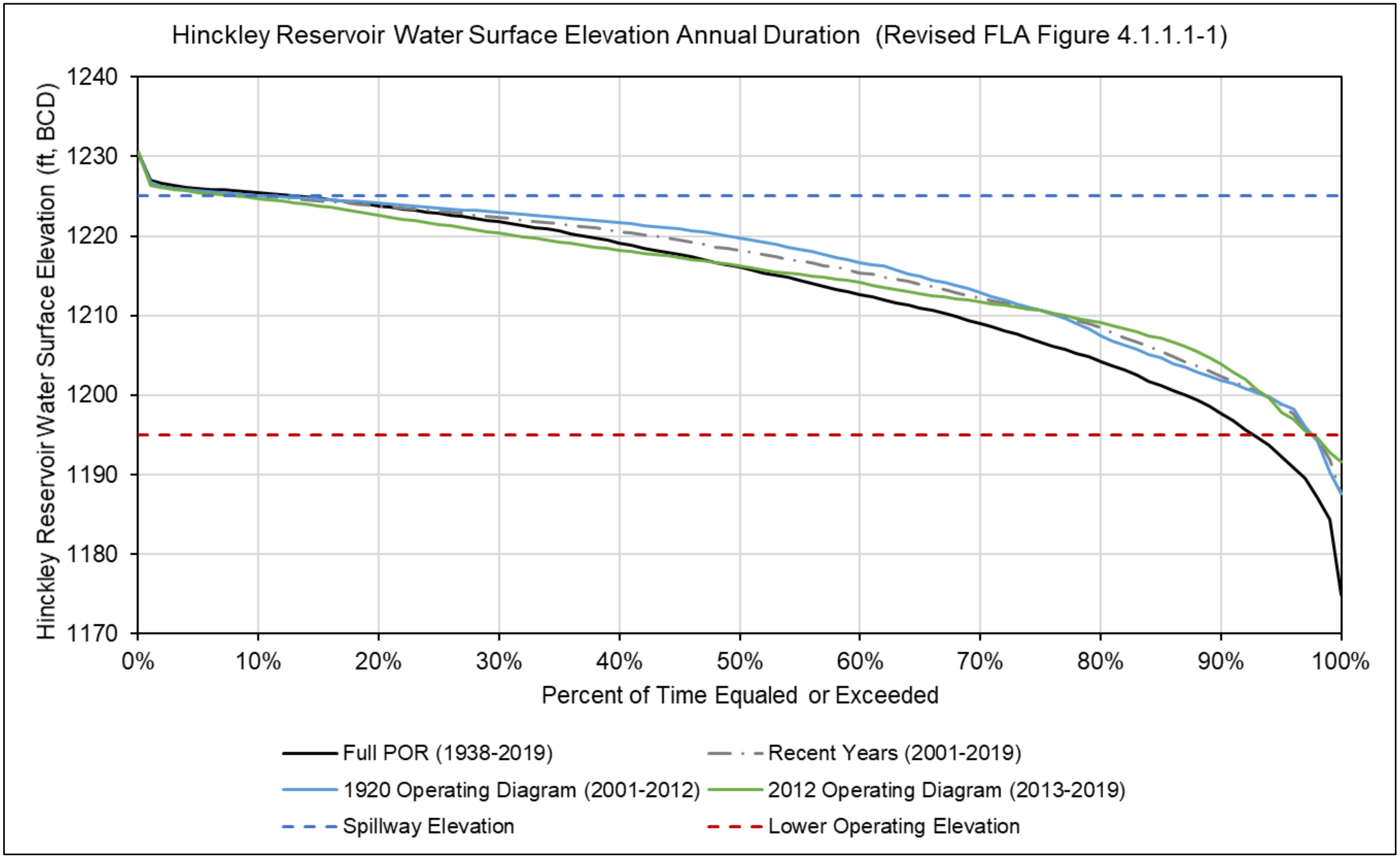

Figure A-1: Annual Hinckley Reservoir Water Surface Elevation Duration

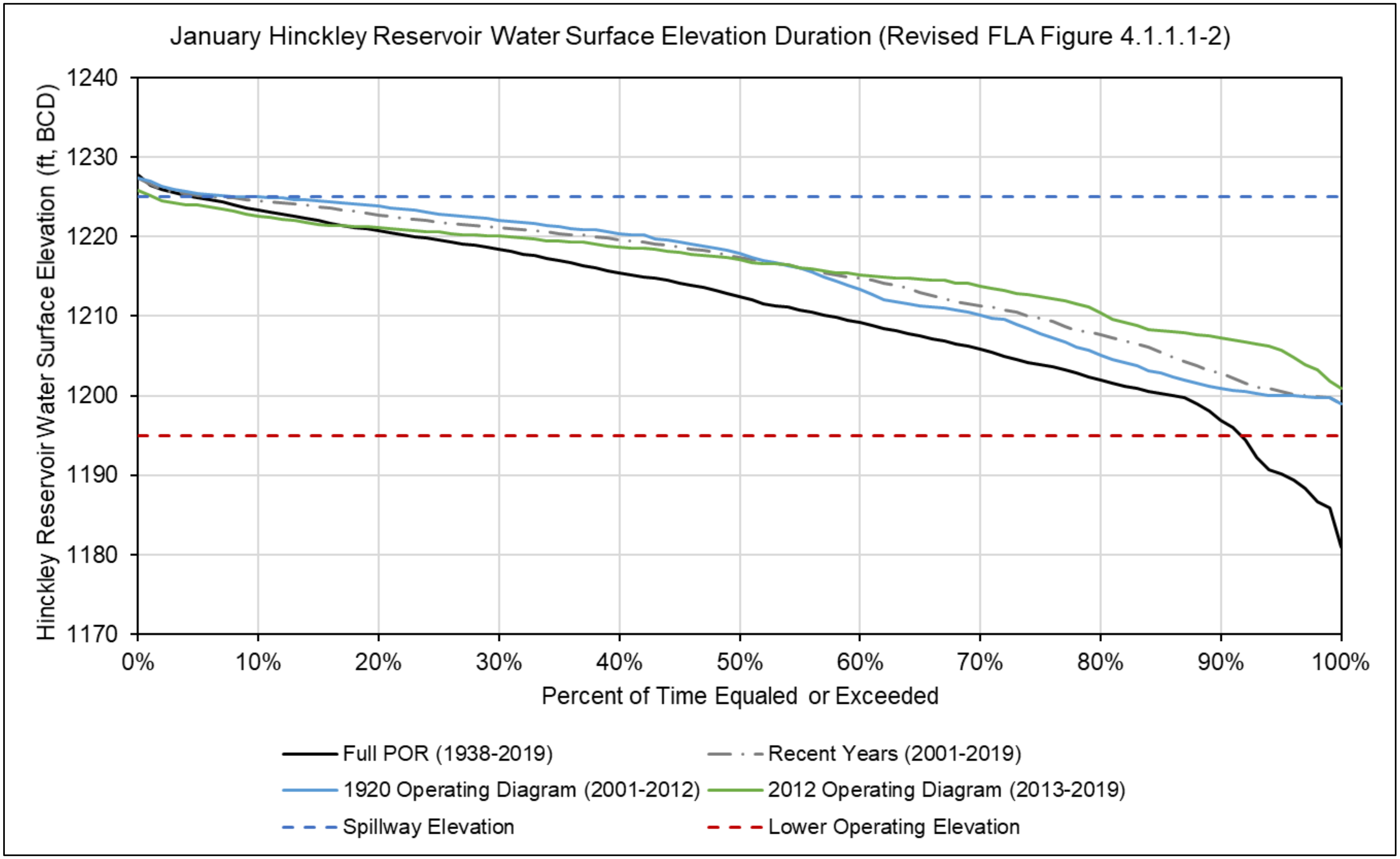

Figure A-2: January Hinckley Reservoir Water Surface Elevation Duration

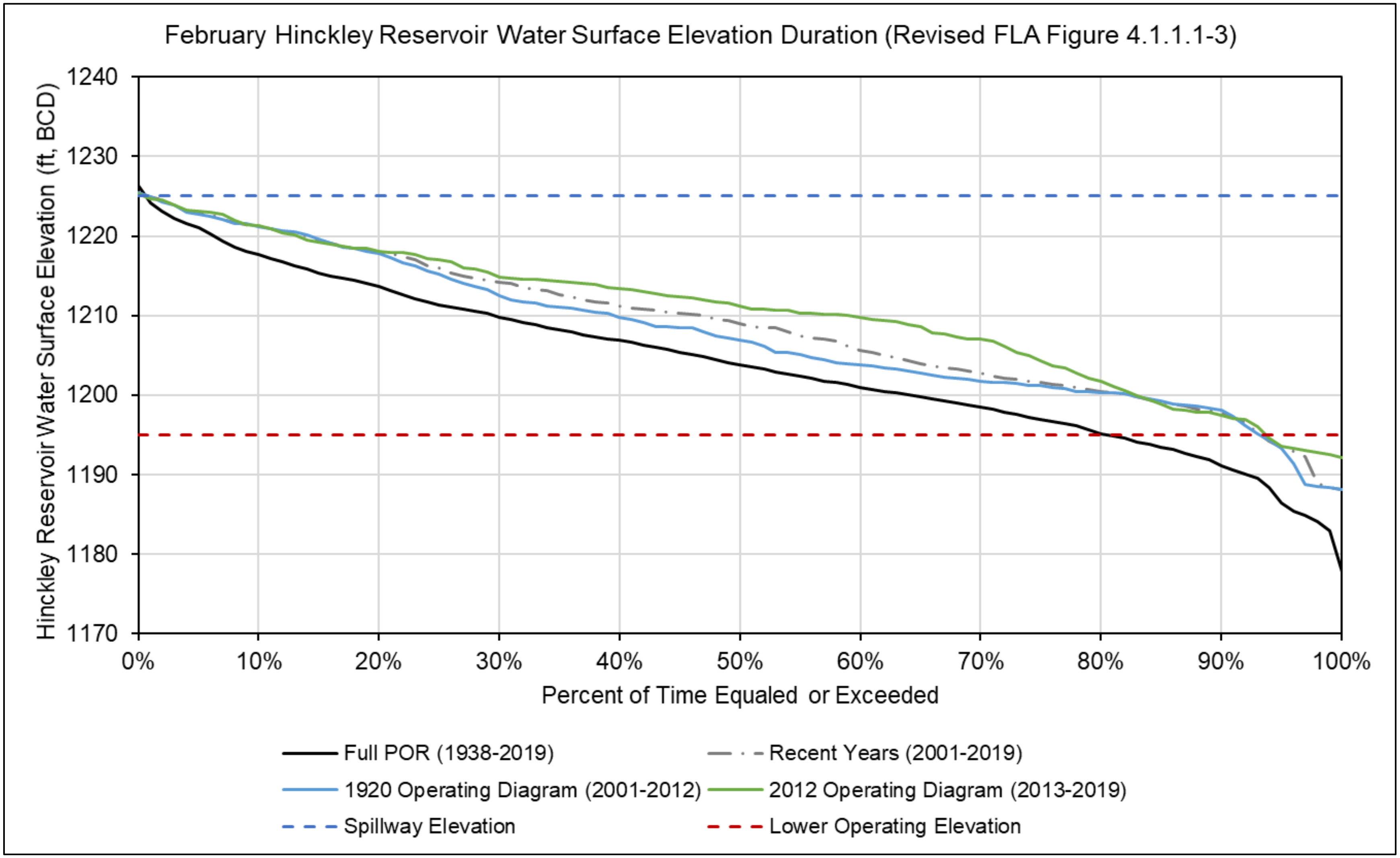

Figure A-3: February Hinckley Reservoir Water Surface Elevation Duration

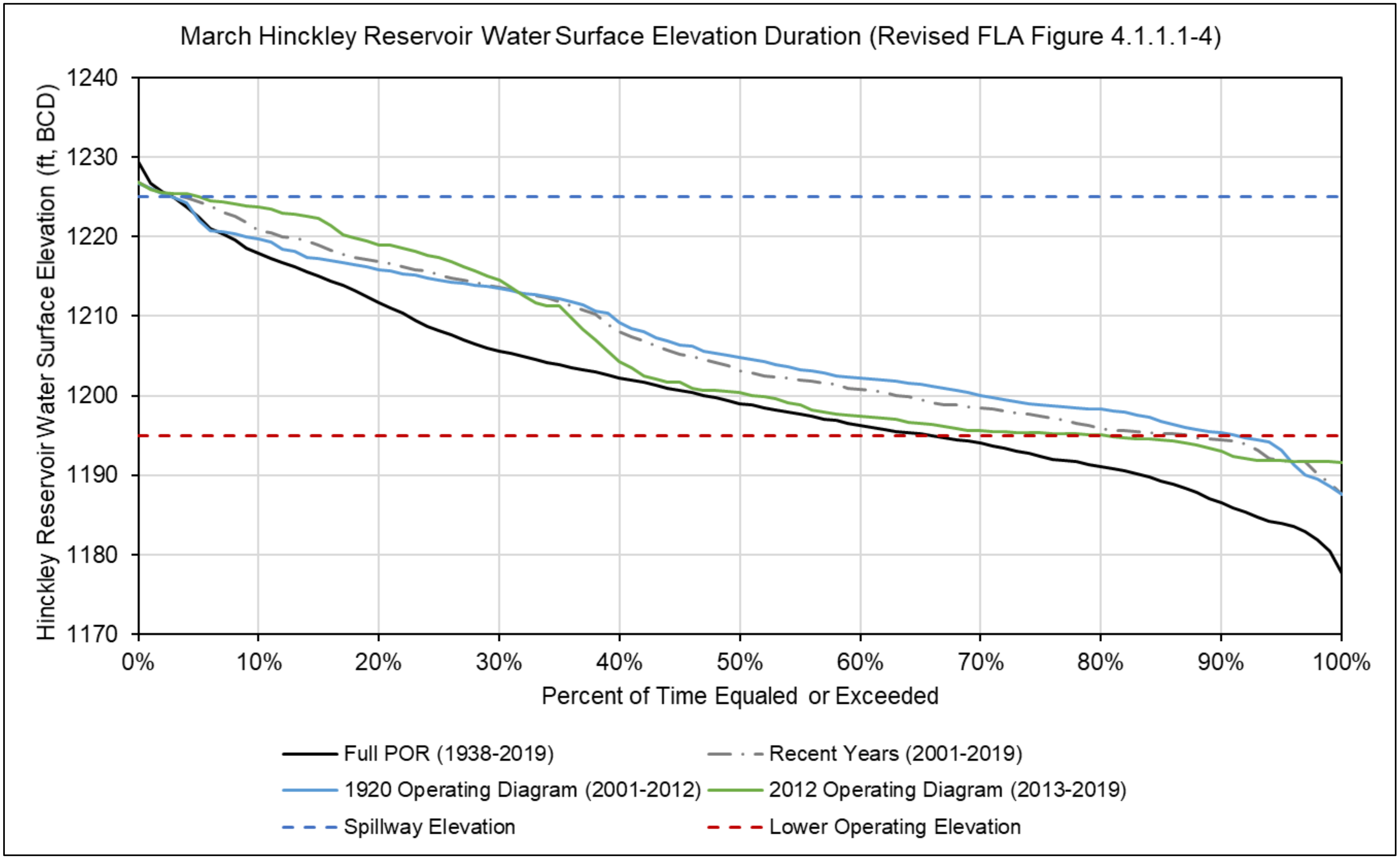

Figure A-4: March Hinckley Reservoir Water Surface Elevation Duration

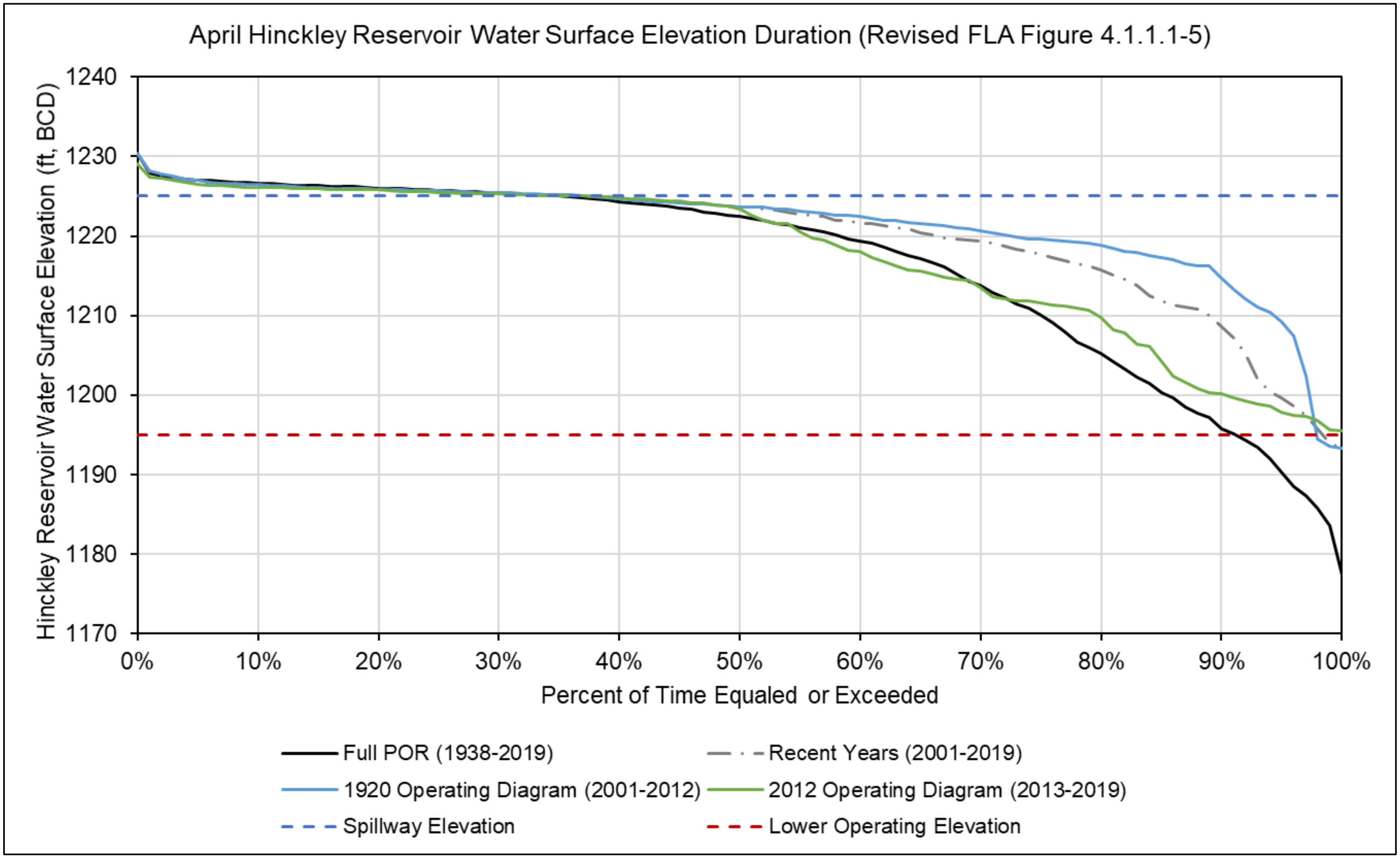

Figure A-5: April Hinckley Reservoir Water Surface Elevation Duration

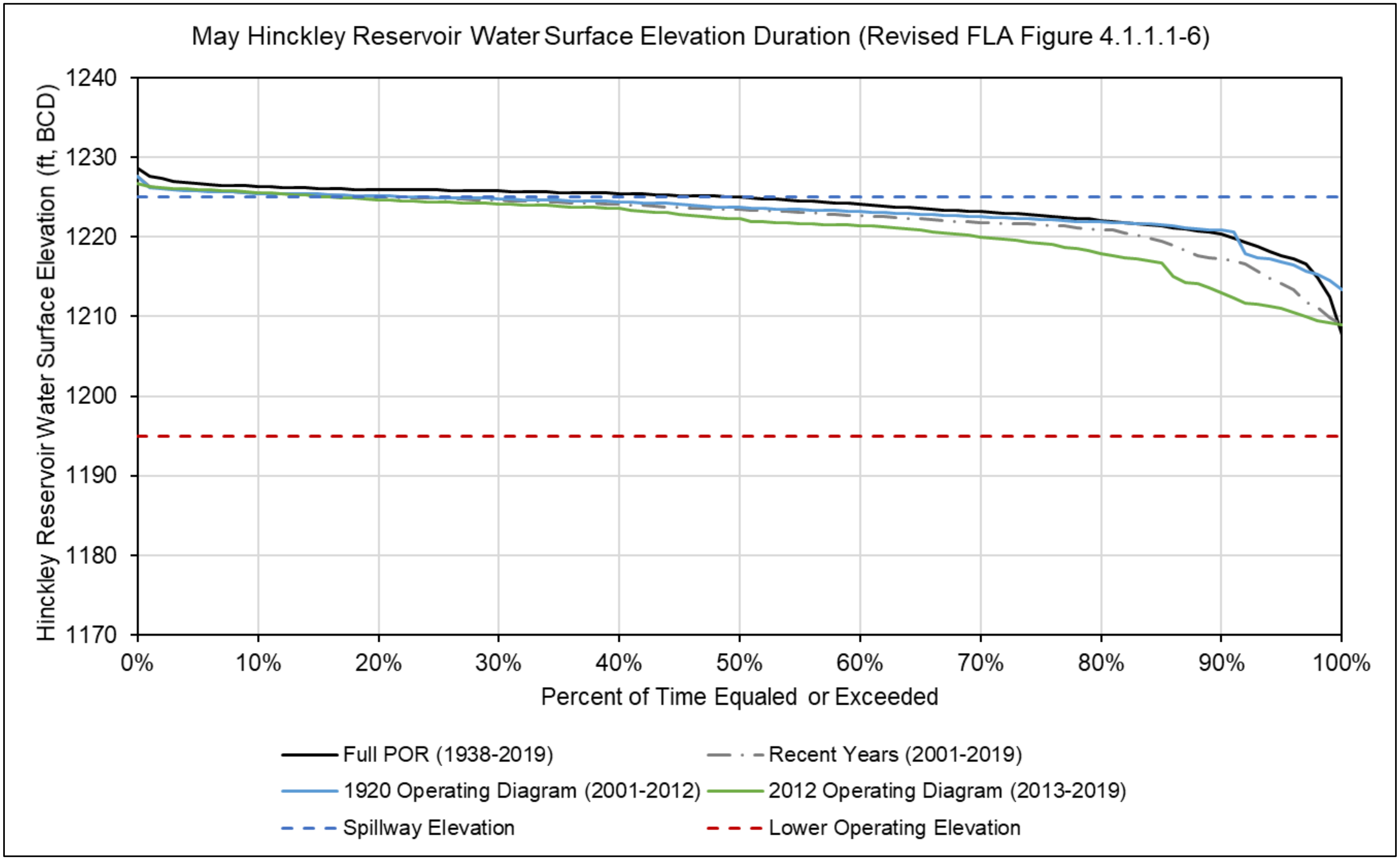

Figure A-6: May Hinckley Reservoir Water Surface Elevation Duration

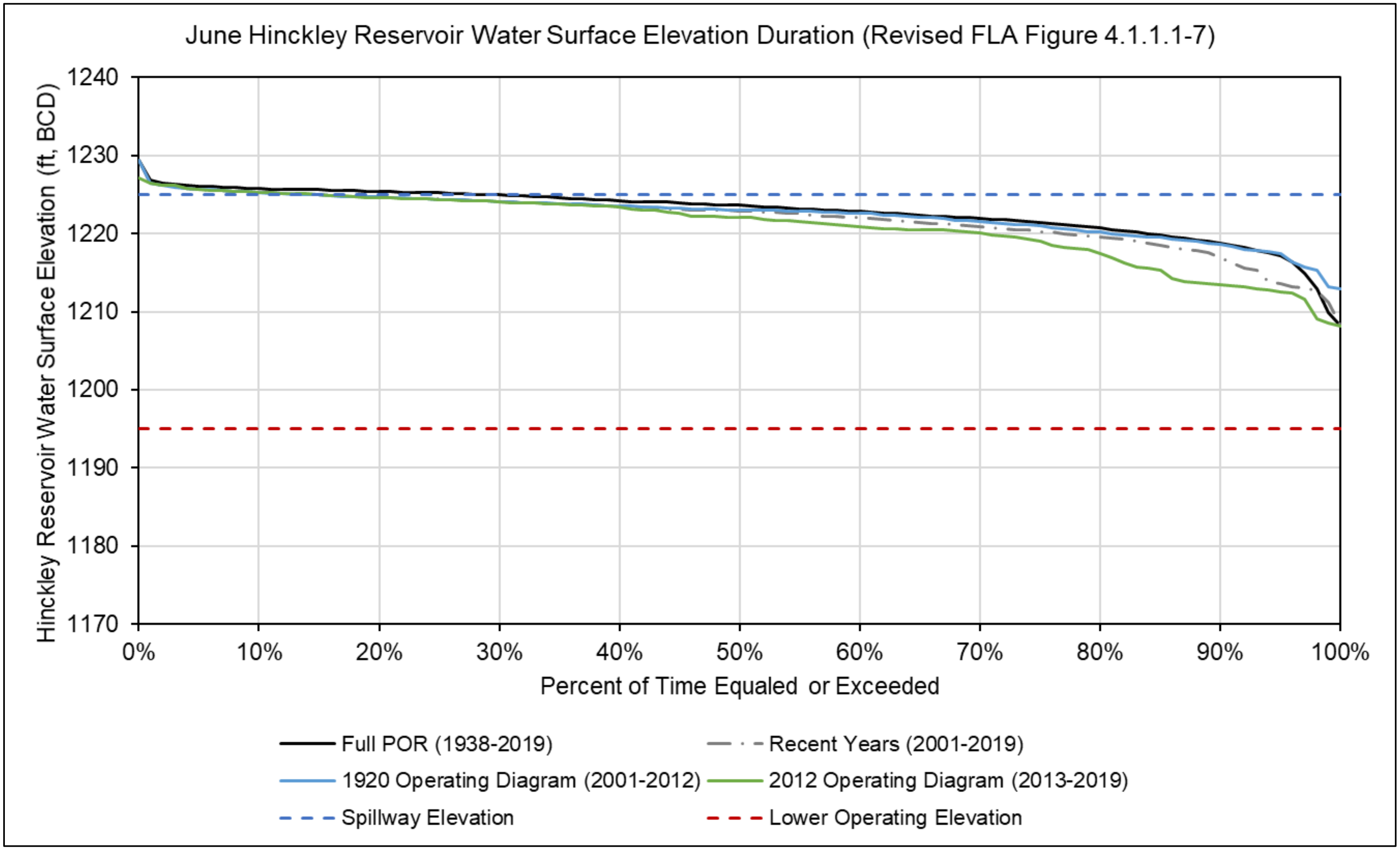

Figure A-7: June Hinckley Reservoir Water Surface Elevation Duration

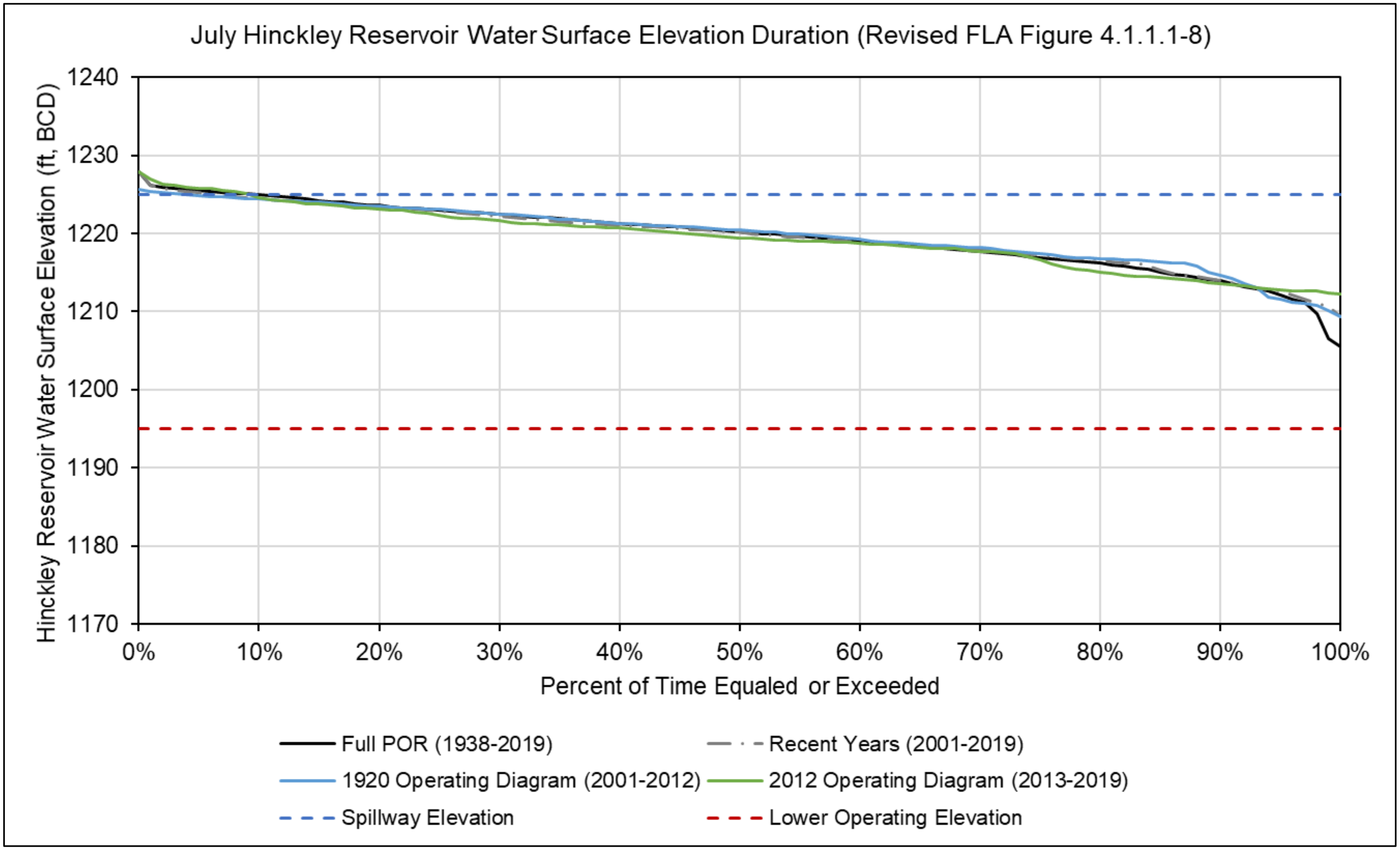

Figure A-8: July Hinckley Reservoir Water Surface Elevation Duration

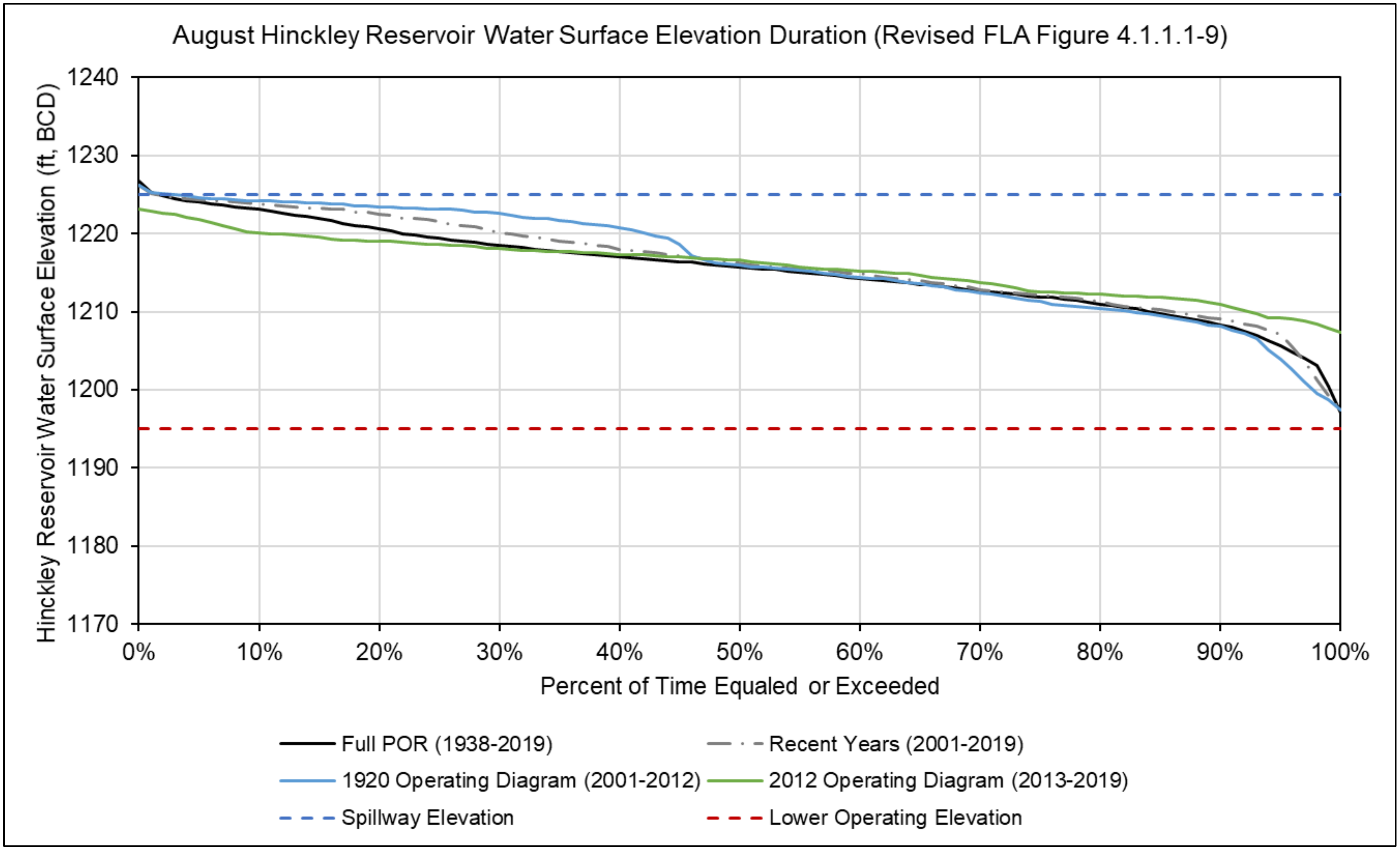

Figure A-9: August Hinckley Reservoir Water Surface Elevation Duration

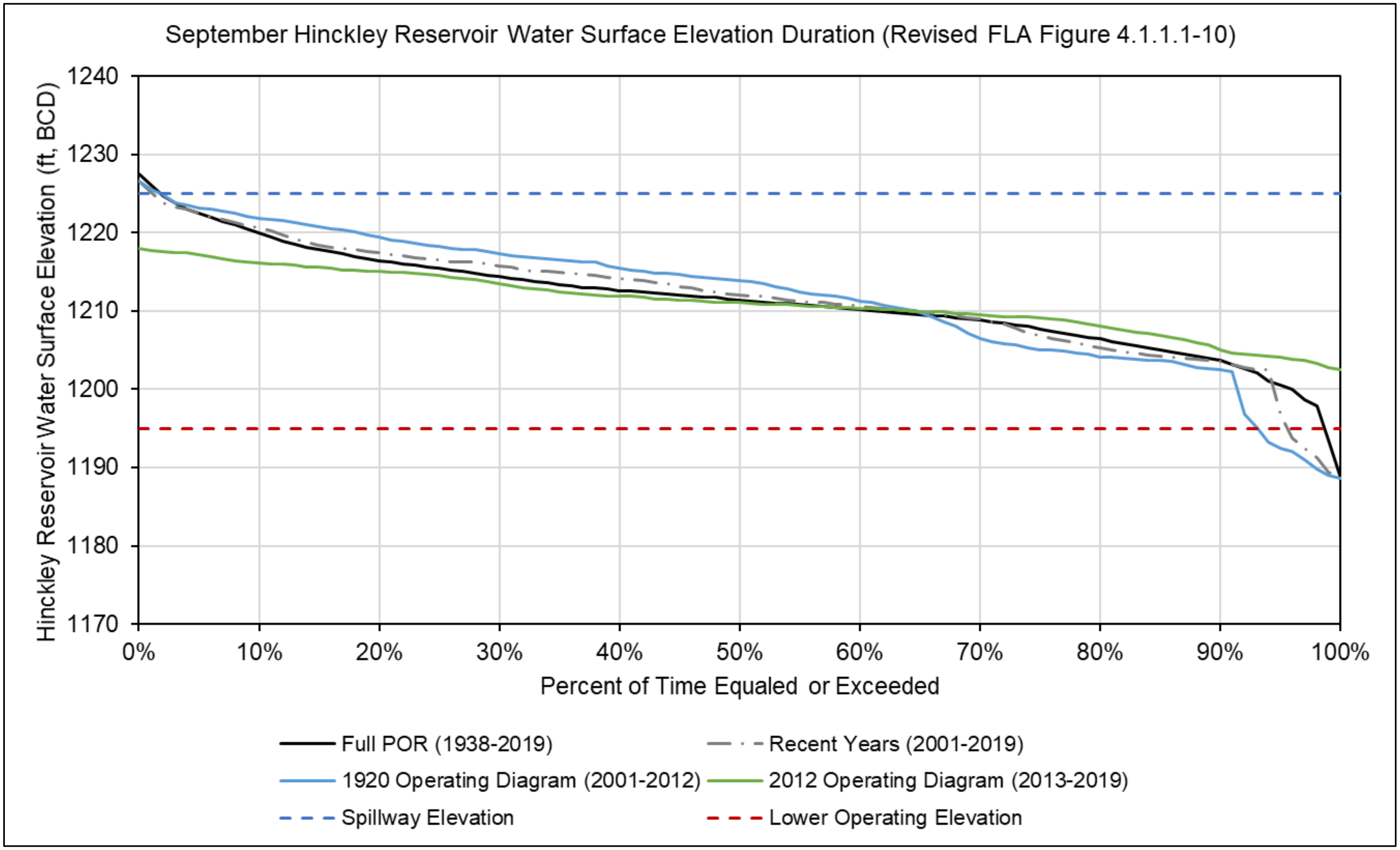

Figure A-10: September Hinckley Reservoir Water Surface Elevation Duration

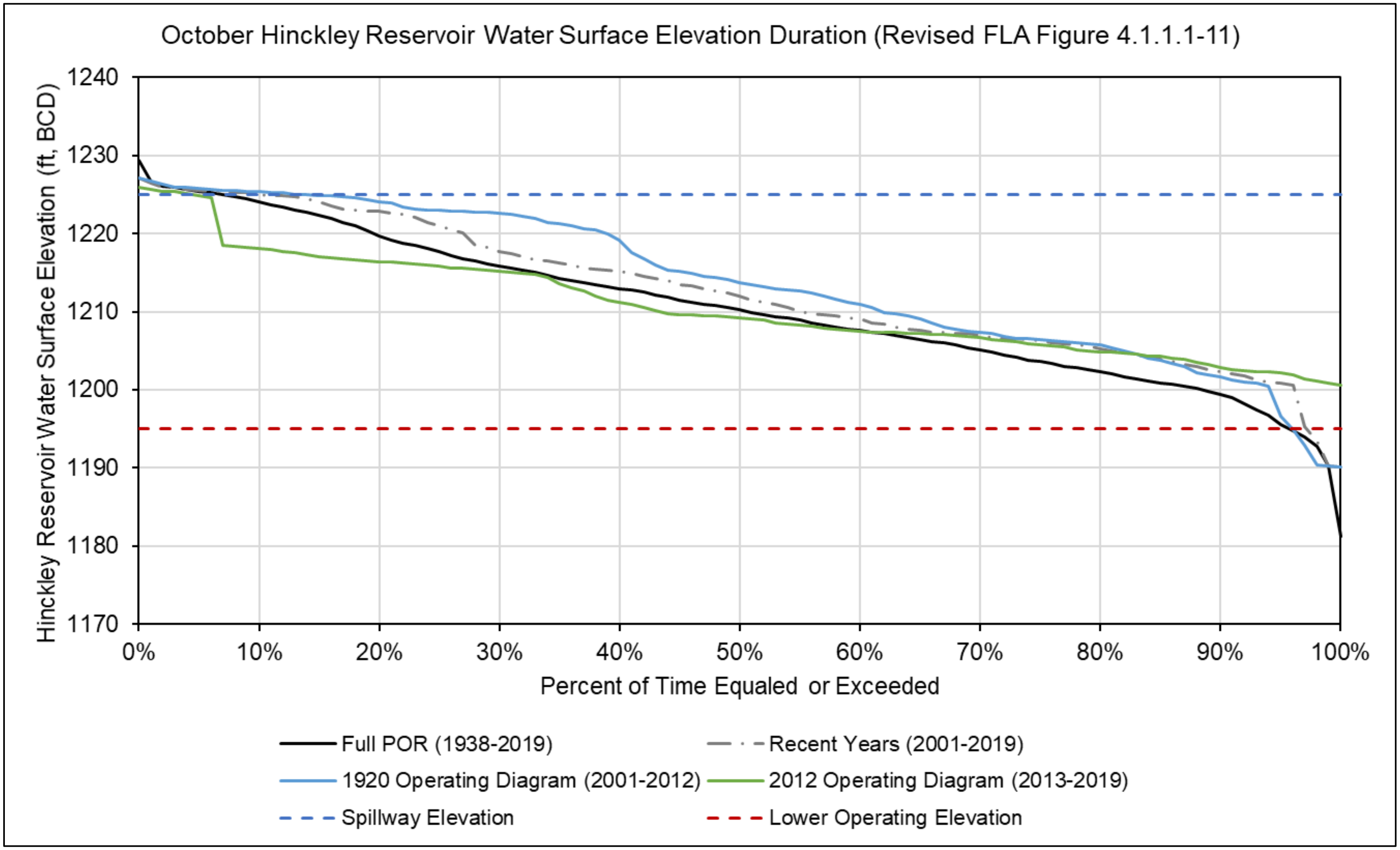

Figure A-11: October Hinckley Reservoir Water Surface Elevation Duration

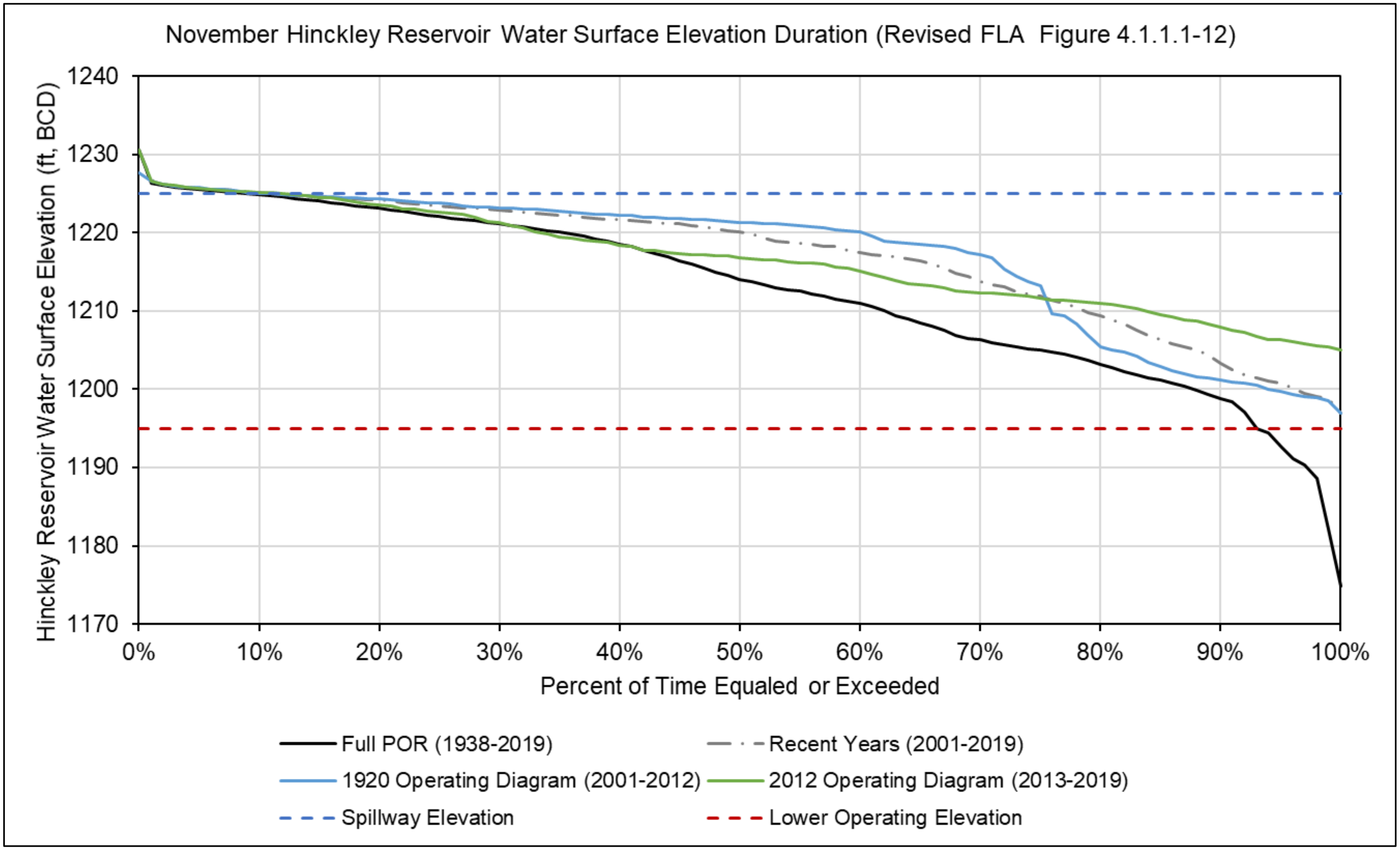

Figure A-12: November Hinckley Reservoir Water Surface Elevation Duration

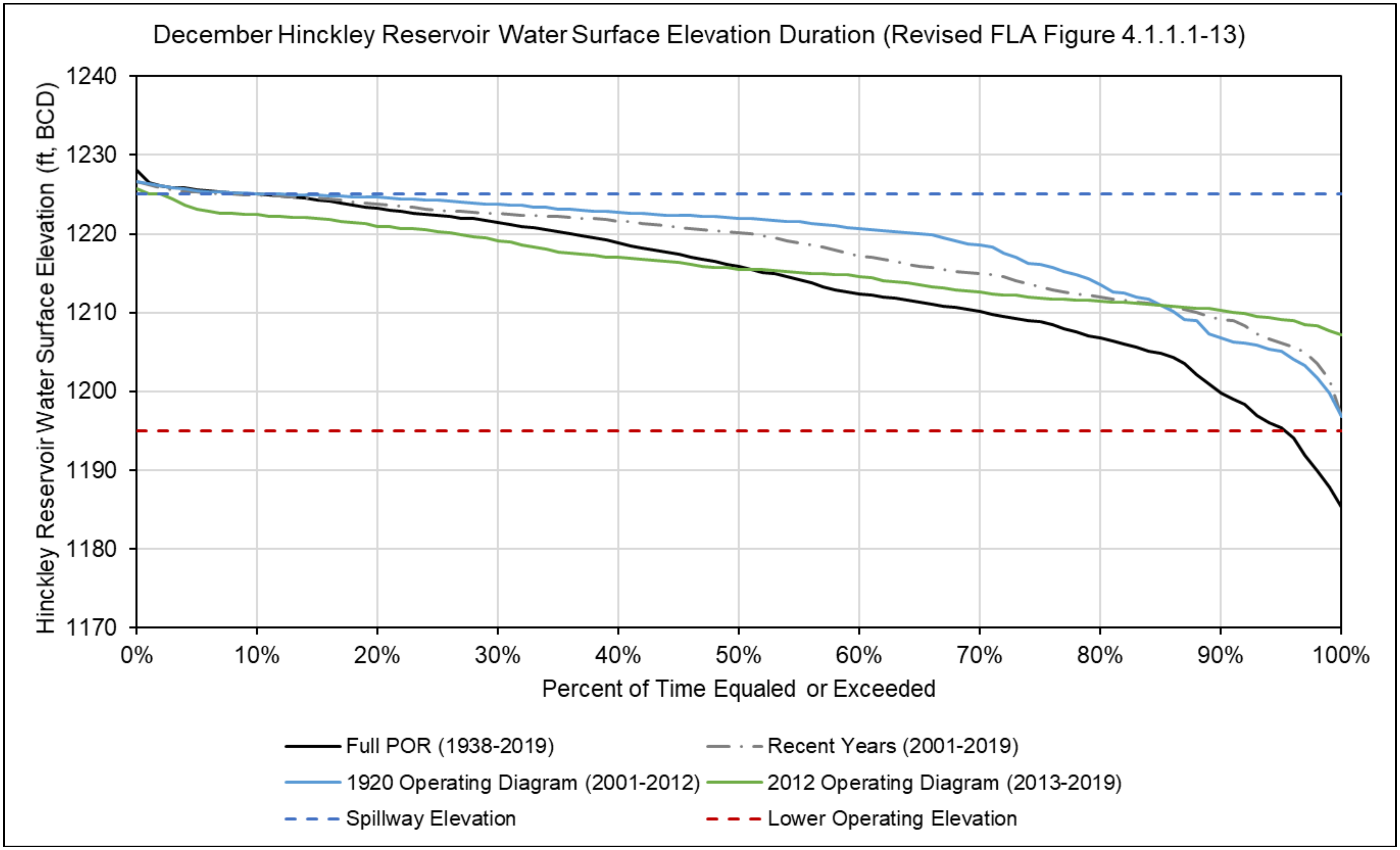

Figure A-13: December Hinckley Reservoir Water Surface Elevation Duration