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RECLAMATION

Maintenance and Rehabilitation of Spillway and Dam Structures at American Falls Dam

Supplemental Information Report

**Minidoka Project, Power County, Idaho
Columbia Pacific Northwest Region**



Mission Statements

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The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Cover Photo: American Falls Dam, Power County, Idaho. Photo courtesy of James Beitz.

Supplemental Information Report

Proposed Project/Action Title:	Maintenance and Rehabilitation of Spillway and Dam Structures at American Falls Dam, Minidoka Project, Power County, Idaho
Existing Environmental Document:	Maintenance and Rehabilitation of Spillway and Dam Structures at American Falls Dam, Minidoka Project, Power County, Idaho – Environmental Assessment and Finding of No Significant Impact. FONSI # PN-19-4 signed May 20, 2019.
NEPA Contact:	Amy Goodrich Natural Resource Specialist United States Bureau of Reclamation Columbia Pacific Northwest Region Snake River Area Office Boise, ID 83702 (208) 383-2250
Project Manager:	Nicole Carson Project Manager United States Bureau of Reclamation Columbia Pacific Northwest Region Upper Snake Field Office Heyburn, ID 83336 (208) 678-0461 – Ext. 16

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
ACOE	U.S. Army Corps of Engineers
BMP	Best Management Practice
cfs	cubic feet per second
DO	Dissolved Oxygen
EA	Environmental Assessment
FONSI	Finding of No Significant Impact
FSNL	Full Speed No Load
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IPC	Idaho Power Company
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OHWM	Ordinary High Water Mark
SH	State Highway

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Purpose of Supplemental Report

In accordance with National Environmental Policy Act (NEPA) requirements, an Environmental Assessment (EA) was completed and a Finding of No Significant Impact (FONSI) was signed for this proposed project in May 2019 (Reclamation 2019). Since that time and as more specific details of the project have been developed, changes have been made to the proposed action which have the potential to change the effects to certain environmental resources and the overall impact findings of the project. Therefore, prior to the initiation of the project, Reclamation staff have identified resource areas potentially affected by these changes and performed a reanalysis of effects for these resources to ensure continued adequacy of NEPA compliance prior to initiation of the project.

This document is intended to supplement the analysis already completed in the original EA-FONSI. It provides a description of changes to the proposed action and supplemental environmental analysis focusing on the effects of those changes. It is not a Findings document; rather, it is meant to aid the decision to supplement, revise, or reissue a separate Findings document for this project, or, in the event a decision is made to proceed without changing the adopted EA-FONSI, to create a record of the supporting information.

Proposed Project/Action Location

American Falls Dam is located on river mile 714.7 of the Snake River near American Falls, Idaho. The dam is located in Power County, Idaho, but American Falls Reservoir stretches northeast into both Bingham County and Bannock County. The maintenance and construction activities of the project are planned to occur on the downstream dam face and gate operating decks and within the spillway and stilling basin structures at American Falls Dam.

The proposed project and the affected area were described in detail in the original associated EA-FONSI (Reclamation 2019). Changes to the proposed project are described in the following sections.

Description of Changes to the Original Proposed Project/Action

The following sections describe the changes proposed to the original project description that was analyzed for effects in the completed EA-FONSI (Reclamation 2019).

Water Quality Mitigation Measures – Elimination of Mechanical Aeration

What was originally identified: The original EA-FONSI indicated that up to three portable aerators (also referred to as “blowers”), as identified in the Draft Water Quality Restoration Plan, would be placed immediately below the dam, to be used in conjunction with Idaho Power Company’s (IPC) three permanent aerators to raise dissolved oxygen (DO) to acceptable state standards during in-waterway construction, as needed.

What has changed: No portable aerators will be placed or used.

Additional/background information: To perform construction in the stilling basin, it will be necessary to keep the spillway and stilling basin in a dewatered state (also referred to as “locked out,” meaning no water is passed through the regulating gates into the spillway and stilling basin area). Passage of water through the stilling basin, known as “spill,” is typically one of several mitigation measures available for use during normal summer operations at times when DO levels fall near or below minimum standards set forth by the Idaho Department of Water Quality (IDEQ). Locking out the spillway, necessary for construction included in the proposed project, has the potential to cause effects to downstream water quality (specifically low DO), which, in turn, could potentially affect fish in the Snake River below the dam. These issues are discussed in detail in the 2019 EA-FONSI in Section 2.3.1, “American Falls Dam Water Release Configurations;” Section 2.4, “Alternative B – Maintenance and Rehabilitation of Spillway and Dam Structures (Proposed Action);” Section 3.3, “Water Quality;” and Section 3.4, “Aquatic Resources (Fisheries)” (Reclamation 2019).

In recognition of this potential for effects, Reclamation drafted a Water Quality Restoration Plan as part of the development of the 2019 EA-FONSI. That document, which accompanied the 2019 EA-FONSI in draft stage and was referenced as an appendix, indicated at the time that Reclamation planned for “the placement and use of additional aerators below the dam as advised by an interdisciplinary interagency water quality advisory team” to provide for an additional means of mechanical aeration of water discharged through the powerplant. This aeration measure was one of a suite of mitigation measures included in the draft Water Quality Restoration Plan. Collectively, those measures were expected to minimize, to an insignificant level, the possibility of occurrences of low DO concentrations in the Snake River below American Falls Dam due to the proposed project.

Additional analysis completed after the completion of the EA-FONSI showed that this aeration measure would be unlikely to produce any significant uplift in DO, given site-specific conditions below the dam. In particular, analysis pointed to the likelihood that aerators below the dam would not be effective due to the low retention time of water in the area. In performing extensive market research in search of alternative solutions, Reclamation also investigated the feasibility of installing a temporary aeration system above the dam, in the forebay of American Falls

Reservoir, to perform a similar mitigation function. However, no commercial vendor was found capable of performing such an installation within reasonable budget constraints.

In the 2019/2020 fall and winter season, IPC performed a replacement of two of three permanent powerplant blowers. An additional blower has been ordered to replace the third existing blower; however, delivery has been delayed until late summer 2020 due to the COVID-19 pandemic. Installation of the third new blower is scheduled for October 2020. Although data on the new equipment's increased DO uplift capability have not yet been collected, the newer blowers are reported to provide noticeable gains in efficiency by IPC plant operators (Merrick 2020) and are expected to have improved performance, including increased efficiency of DO uplift. Data to quantify these anticipated gains in performance will be collected in 2020, as possible.

For these reasons, the mitigative measure of placing portable blowers below the dam was found to be both infeasible and nonessential by the water quality advisory team. This measure was eliminated from the Water Quality Restoration Plan when that document was finalized in February 2020 (Reclamation 2020).

The complete mitigative measures to be used are detailed in the Final Water Quality Restoration Plan, included as Appendix A to this document.

In-Waterway Construction Work Window

What was originally identified: The original EA-FONSI identified an in-waterway construction work window between August 1 and November 23 for both 2020 and 2021.

What has changed: Reclamation proposes a modified in-waterway construction window allowing for greater adaptive flexibility in starting and ending dates.

In 2020, in-waterway construction would still begin on August 1 and continue until November 23, as identified in the original EA-FONSI. Reclamation could choose to allow in-waterway construction to continue beyond November 23 and into December, as may be feasible depending on water year conditions.

In 2021, Reclamation could choose to allow in-waterway construction to begin on or after July 15, if favorable conditions (water year, water quality, and weather) allow. If conditions are not favorable for an earlier start date, in-waterway construction would begin on August 1 and continue until November 23, as identified in the original EA-FONSI. Reclamation could again choose to allow in-waterway construction to continue into December, depending on water year conditions.

Additional/background information: Historic data show that there is a known issue of occurrences of periodically low DO below American Falls Dam during hot weather conditions, particularly during the months of July and August. The majority of low DO events have

historically occurred in the second half of July, with the frequency of such events tapering off through the first two weeks of August. Low DO has historically been effectively mitigated by spillway use, but this will not be possible during lockout for in-waterway construction. These factors and historic data are discussed in detail in the original EA-FONSI (Reclamation 2019).

There are multiple operational and environmental constraints at play in identifying a window when the spillway can be locked out. The construction window start date of August 1 that was analyzed for environmental impacts in the original EA-FONSI was identified as a reasonable target that most prudently balanced the need to maximize the in-waterway construction window with the need to minimize the likelihood of project impacts to downstream water quality, specifically exceedances of the state DO standards. Once weather and water conditions begin to cool at the end of summer, low DO is not an issue through the winter.

The construction contract for this proposed project was awarded to Winspear Construction, LLC (Winspear) in August 2019. Following award of the contract, Reclamation contracting officials and Winspear identified a likely need for additional time to complete the in-waterway construction as specified by the contract. After internal discussion with water quality and other environmental experts, Reclamation determined that operational flexibility to extend the in-waterway construction work window without contributing to significant environmental impacts may arise, if water year, water quality, and weather conditions allow.

Water Operations (Hydrology)

What was originally identified: To facilitate the in-waterway construction window, approximately 38,000 additional acre-feet of water would be discharged from American Falls Reservoir over a 6-week period in October and November of both 2020 and 2021, resulting in an approximately 1-foot drawdown of American Falls Reservoir. The water would be recaptured in previously-vacated storage space in Lake Walcott. Lake Walcott, which typically is maintained at a constant full pool elevation, would experience a brief drawdown of approximately 5 feet in the late summers of 2020 and 2021, and would then refill to normal full pool levels by the end of November in both years.

What has changed: To facilitate the potentially extended in-waterway construction window (discussed above), up to approximately 70,000 additional acre-feet of water would briefly be stored from September to October in American Falls and would then be discharged from American Falls Reservoir from October through December in both 2020 and 2021, resulting in an approximately 3-foot higher pool level in American Falls in October than would have been experienced if the 70,000 acre-feet additional storage hadn't been stored. Beginning in October and ending in the late November or December time frame, the 3 feet of additional stored water would then be released downstream. The water would be recaptured in previously-vacated storage space in Lake Walcott. Lake Walcott, which typically is maintained at a constant full pool elevation (4,245 feet), would experience a brief drawdown of up to approximately 7 feet.

This decrease in pool level would begin in early September and reach 5 feet down from full (water elevation 4,240 feet) approximately October 1, with the maximum 7-foot drawdown (water elevation 4,238 feet) reached by approximately October 15 in 2020 and 2021. Lake Walcott would then begin to refill, reaching normal full pool levels by the end of December in both years.

Additional/background information: Water is passed through American Falls Dam in one of two ways: through the powerplant, or through the spillway and stilling basin. During lockout, all water would be passed through the powerplant, which requires a minimum discharge of 1,000 cubic feet per second (cfs) to maintain single-turbine generation.¹ Discharge from American Falls Dam, which typically drops to between 350 and 400 cfs at the end of irrigation season, would remain at 1,000 cfs into the December timeframe in both construction years. This represents a flow increase of approximately 650 cfs, sustained from the end of irrigation season (approximately October 15) into the December time frame in each of the two construction years. This additional water released from American Falls Reservoir each year would total approximately 70,000 acre-feet annually, which corresponds to an approximate 3-foot water level change in American Falls Reservoir.

Beginning in September and ending by approximately October 15 in both 2020 and 2021, a temporary storage deficit of approximately 70,000 acre-feet would be created in Lake Walcott by reducing releases from American Falls Dam to levels below the irrigation demand downstream of American Falls Dam. This would allow Lake Walcott to draft approximately 70,000 acre-feet lower than it normally would during the September and October time frame. The 70,000 acre-foot temporary storage deficit in Lake Walcott corresponds to a decrease in pool level that is approximately 7 feet lower than the normal pool level of 4,245 feet and corresponds to the minimum powerplant generating pool level at Minidoka Dam. This decrease in pool level would begin in early September and reach a maximum drawdown point in mid-October, after which Lake Walcott would begin to refill.

Construction Methods – Temporary Access Road

What was originally identified: The original EA-FONSI identified that the contract awardee would access the dam face and spillway construction site using two cranes, as needed, staged on westbound State Highway (SH) 39 where it crosses the dam. This was anticipated to result in the need for traffic control and restrictions, including temporary closure of SH 39 westbound lanes from July through November of both 2020 and 2021. During these times, all traffic would be

¹ Lower volumes of water can be passed through the powerplant under “speed no load” operation, also referred to as “full speed no load” or FSNL operation. Speed no load is a power generation configuration where one or more turbines are in operation (spinning) but no power generation load is applied. In hydrogeneration, speed no load operation generally occurs at startup, or at times when power demand is low, but continued water passage is desired. However, due to the potential for equipment damage, it is generally undesirable to maintain a speed no load configuration for an extended timeframe; therefore, it will be necessary to provide the minimum discharge for single turbine generation throughout in-waterway construction.

rerouted to the eastbound lanes of SH 39, with both westbound and eastbound travel restricted to one lane each for approximately 2 miles. The original EA-FONSI estimated that these lane closures and traffic restrictions would be in place for a cumulative period of 113 to 130 days over the 2-year construction period.

What has changed: Winspear has instead proposed to install a temporary rockfill roadway into the stilling basin to provide for equipment access into the work site. Traffic restriction and control measures on SH 39 would no longer be needed.

Additional/background information: Winspear's proposal to construct a temporary access road into the stilling basin would replace the need for any work to occur from the SH 39 bridge. Full design and description of the temporary access road is included in Winspear Construction, LLC's Narrative Explanation of Site Plan, which was submitted to Reclamation on March 31, 2020 and which is included as Appendix B to this document. Winspear would ensure that all materials and equipment related to the construction of this access road could be fully removed and evacuated from below the Ordinary High Water Mark (OHWM) in the stilling basin within 48 hours of notice, such that Reclamation would retain the ability to spill water through the outlet gates following a 48-hour vacate notification, if so advised by the Water Quality Advisory Team. Materials above the OHWM would be permitted to remain in place in the event of a vacate notice, and between construction seasons.

A best estimate based on Winspear's April 2020 proposal indicates that approximately 60 cubic yards of suitable roadbed material would be placed into the stilling basin area (Winspear 2020). Winspear would use rock fill material with particle size ranging between ¾ inches and 4 inches in diameter, which falls into the size range of suitable spawning substrate utilized by downstream rainbow trout populations as identified in the literature (Sigler and Zaroban 2018). Winspear would also maintain equipment on standby throughout the in-waterway construction windows for the purposes of roadbed removal, including excavators, forklifts, hauling and delivery equipment, and cleaning and protection equipment. Since even with industry standard removal and cleanup practices, some amount of material would be expected to remain in the stilling basin and then be flushed into the river channel downstream when the area is rewatered, the identified particle size would ameliorate any potential effects to downstream fish spawning habitat from incidental flushing of some trace amounts of roadbed fill material. Absolutely no finer grained material (e.g., sand) would be placed anywhere below the OHWM. The temporary access road into the stilling basin requires a Section 404 Permit from the Army Corps of Engineers (ACOE). A permit application was submitted to ACOE on April 13, 2020.

Construction Methods – On-Site Water Management

What was originally described: On-site hydrodemolition of portions of concrete was described in general industry terms in the original EA-FONSI. A description of how wastewater created by hydrodemolition activities would be managed, treated, and discharged by the contract awardee

was not provided because at the time of the finalization of that document, the contract for this work had not yet been awarded.

What has changed: Winspear has submitted a Contractor Use of Site Plan (Appendix B) and Water Management Plan (Appendix C) which identify in more detail how they would manage the wastewater created by the hydrodemolition process to prevent contamination.

Additional/background information: Winspear's submittals include site maps showing the proposed layout of water containment operations within the construction site, including the use of a waterline, pumps, gator guard sediment barriers, and use of water containment and treatment apparatus such as Baker tanks and Tigerfloc® water treatment and dewatering bags. Winspear's submittal indicates that the wastewater management processes intended for use in this project would:

- Follow industry standard Best Management Practices (BMPs);
- Adhere to Environmental Protection Agency standards for the issuance of a National Pollutant Discharge Elimination System (NPDES) permit, which permit Winspear would obtain; and
- Not include the use of any polymers, flocculants, or other treatment chemicals.

Environmental Evaluation

The 2019 EA-FONSI concluded that there would be less-than-significant project effects to all resources analyzed, or that effects to specific resources could be mitigated to less-than-significant levels.

The changes to the proposed action described in this document would not be expected to result in any changes in the 2019 EA-FONSI findings for the following resources; full analysis of effects to these resources as included in the 2019 EA-FONSI remains adequate for NEPA compliance and decision-making purposes:

- Threatened and Endangered Species;
- Noise;
- Recreation;
- Indian Trust Assets;
- Indian Sacred Sites;
- Cultural Resources;
- Socioeconomics; and

- Environmental Justice.

The changes to the proposed action described in this document have the potential to affect the following resources:

- Hydrology;
- Water quality;
- Fisheries; and
- Transportation.

The affected environment for each resource was described in detail in the original EA-FONSI for the proposed project (Reclamation 2019) and these analyses are hereby incorporated by reference. Analyses of effects of the described changes to the project description to each of these potentially-affected resource areas are included below.

Hydrology

Environmental Consequences

Under the updated water operations management scenario, by the mid-October time frame, total storage content in Lake Walcott would be reduced to approximately 20,000 acre-feet (an approximately 7-foot water level drawdown, to 21 percent full). The typical non-irrigation season outflow for American Falls Dam is 350 cfs and for Minidoka Dam is 550 cfs. During the refilling of Lake Walcott from mid-October to the December time frame, outflow from American Falls Dam would be 1000 cfs. Recapture of the additional discharge from American Falls during the October to November/December construction period would then refill Lake Walcott, which would be approximately full by the end of the work window.

Fall drawdowns of 6 to 7 feet at Lake Walcott have occurred periodically since 1981. Historically, a 7-foot water level drawdown in the October time frame at Lake Walcott, as would occur under the proposed action, has occurred 11 times from 1980 to 2020. Most recently, a 7-foot drawdown in Lake Walcott occurred in the late fall or early winter timeframe in water years 2013, 2014, and 2015 to facilitate the Minidoka Dam Spillway Reconstruction Project. Figure 1 illustrates the yearly minimum pool level in Lake Walcott from 1980 to 2020. Figure 2 illustrates the duration in days that the water level in Lake Walcott was drawn down to at least 4,239 feet (6-foot drawdown) and 4,238.5 feet (6.5-foot drawdown).

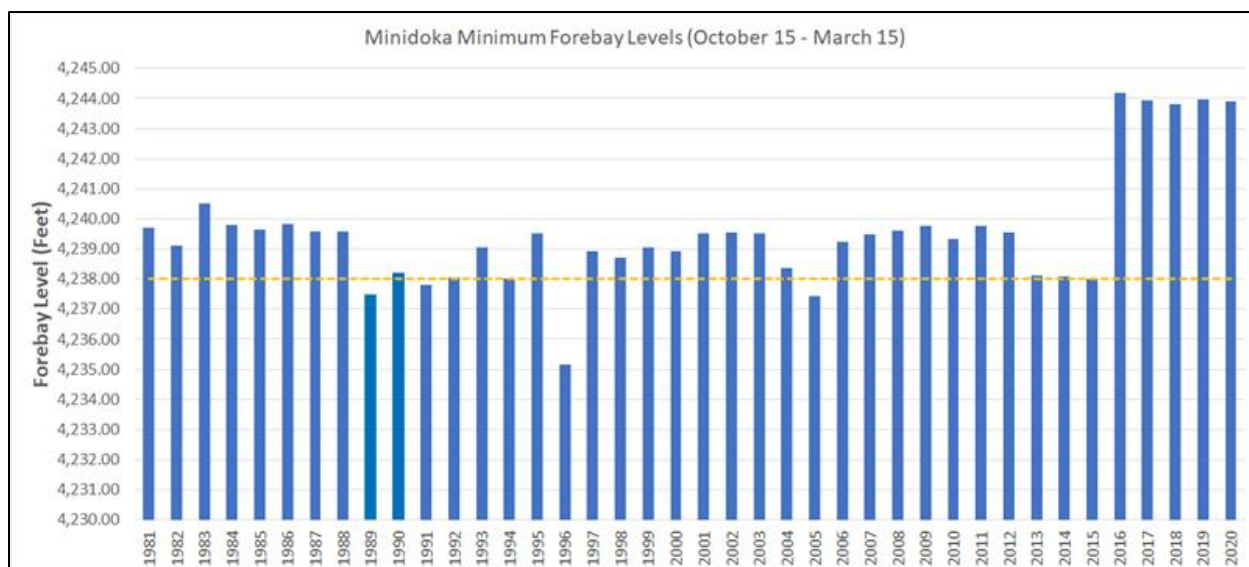


Figure 1. Minimum historic water surface elevation (lowest drawdown elevation) for Lake Walcott, water years 1981-2020. Water level elevation is measured in Lake Walcott forebay at Minidoka Dam. Lake Walcott is considered "full" at surface elevation 4,245.

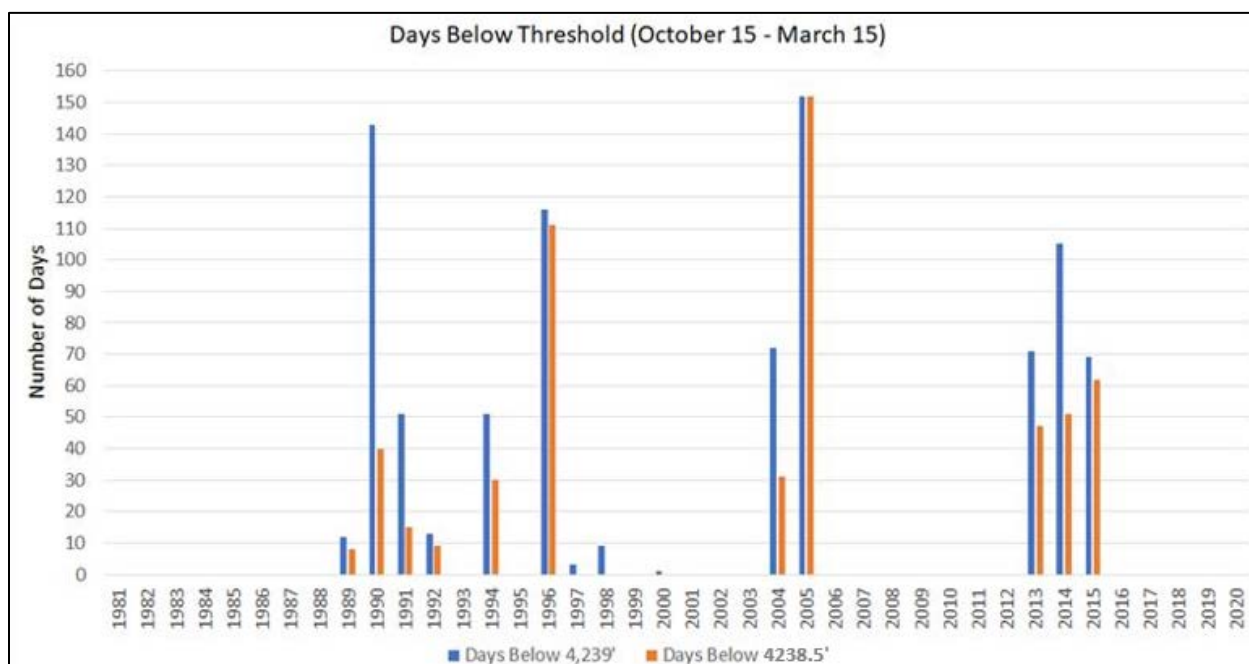


Figure 2. Number of days Lake Walcott's water surface elevation was below 4,239 feet and 4,238.5 feet for water years 1981-2020 (Lake Walcott forebay elevation measured at Minidoka Dam).

Typically, an outflow of approximately 350 cfs is maintained from American Falls Dam during the winter months. Following high runoff and high fall carryover years, outflows from American Falls Dam have historically been greater than 1,000 cfs after the irrigation season has ended. If high system carryover is observed late in water years 2020 or 2021, outflow from American Falls Dam could be 1,000 cfs or greater to manage American Falls Reservoir levels through the

wintertime leading into the subsequent irrigation year. If storage content in American Falls Reservoir and the other Upper Snake system reservoirs align to have high carryover storage, then the reservoir system would be setup to maintain a winter minimum flow from American Falls Dam that would not necessitate the using of the spillway at American Falls after irrigation season has ended. Should these conditions set up in the August or September time frame in 2020 or 2021, then the Lake Walcott drawdown and refill operation could still occur to facilitate other unrelated work proposed in Lake Walcott by other federal agencies.

Under this updated water operations scenario, there would be no significant effects to reservoir system storage, river flows, or water delivery. Water storage in American Falls Reservoir would occur as it has under a normal historical fall regime. The brief storage deficit at Lake Walcott would not affect water supply or water deliveries, as the water that would have been stored in the 70,000 acre-foot deficit would be stored in American Falls Reservoir and would then be restored to Lake Walcott beginning in October and ending in the late November or December time frame. The brief storage of the additional 70,000 acre-feet of water in American Falls and eventual delivery to Lake Walcott would be done gradually over an approximately 6-week period at steady rates, so there would be no abrupt changes in river flows or reservoir levels.

This alteration of location and timing of water storage and releases would not significantly affect the overall system reservoir management and would still fall within the historic range of operations. Therefore, no additional effects are anticipated as a result of the proposed action.

Cumulative effects

No changes from the original EA.

Mitigation

No changes from the original EA.

Water Quality

Environmental Consequences

Previously-identified effects, including potential wind deposition of construction debris in American Falls Reservoir and contaminant mobilization and transport into the Snake River below American Falls Dam due to construction activity in the waterway, would still occur. These would be minimal due to implementation of construction industry BMPs.

Additionally, the construction and use of the temporary stilling basin road could be a potential sediment and turbidity source. In the unlikely event that the spillway would have to be used during the in-waterway construction period, given the limited time (48 hours) the contractor would have to demobilize from the spillway and stilling basin, it is reasonable to assume trace amounts of the fill material from the temporary road would not be completely removed. Fill

material used to construct the temporary access road would consist of a particle size ranging between $\frac{3}{4}$ inches and 4 inches in diameter, since that size class falls into the size range of suitable spawning substrate utilized by downstream rainbow trout populations. This requirement would mitigate and reduce effects associated with remnants of the temporary roadbed material washing downstream in the event of an evacuation event, or during normal spillway use between construction years. The particle size would not increase turbidity and the resultant material could be utilized as spawning substrate by downstream fish communities. Once construction is complete for the season, the contractor would remove the portions of the temporary road below the OHWM. Any small amount of leftover roadbed material that is washed downstream would be in the appropriate size class for fish spawning substrate.

Hydrodemolition during construction could introduce small particles of concrete and construction materials into the spillway and reservoir, potentially contaminating the water. This would be minimized through BMPs and the contractor's compliance with its NPDES permit. This permit would be authorized and monitored by IDEQ and would require the effluent from hydrodemolition processes to meet water/effluent quality standards. Water quality effects from hydrodemolition are expected to be minor due to anticipated contractor compliance with NPDES permit requirements. These effects remain unchanged from those previously identified in the completed EA-FONSI (Reclamation 2019).

Extending the construction period into December for both 2020 and 2021 would have no additional water quality effects that have not previously been analyzed. However, the option of beginning construction as early as July 15 in 2021 could create a greater risk of significant effects to water quality. As discussed in greater detail in the completed EA-FONSI, as ambient air and water temperatures increase, the capacity of water to retain dissolved gases, such as oxygen, is reduced (Reclamation 2019). In hotter weather, the aerators' efficiency is decreased and aerator use without the use of spill may not increase DO concentrations below the dam sufficiently to maintain compliance with IDEQ standards.

Data show that air temperatures at American Falls tend to be highest in July and August, and that average high temperatures are significantly cooler in September, October, November and December. Therefore, construction in the spillway during July and August entails a higher risk of incidences of low DO. Accordingly, DO data from the July-August time period in 2020 would be analyzed by the Water Quality Action Team in a 2020 After-Action Review to evaluate and possibly modify the mitigative measures to ensure future compliance with IDEQ water quality standards. At that time, the team would review the advisability of starting construction in the spillway on July 15 2021. If, following analysis of the previous year's water quality data combined with as-yet unavailable data on the efficacy of IPC's newly-upgraded blowers, the Water Quality Advisory Team determines that an earlier in-waterway construction start date in 2021 would be unlikely to result in significant effects to water quality, the team could identify and recommend a start date as early as July 15 for the 2021 in-waterway construction period. Otherwise, the in-waterway construction start date for 2021 would remain August 1. In either

scenario, under this adaptive management approach, anticipated effects to water quality would remain unchanged from those previously identified.

Preventative measures have changed since the completion of the original FONSI. Preventative measures to mitigate for low DO now include the following:

- Operating American Falls Reservoir to target specific seasonal levels; and
- Ongoing water quality monitoring and real-time reporting by IDEQ to predict trends of decreasing DO.

Now that the use of additional aerators is no longer planned, more emphasis would be placed on the remaining two preventative measures (operations and ongoing water quality monitoring) to ensure compliance with IDEQ water quality standards, and to predict and avert potential low DO events during in-waterway construction. With IPC's replacement of two of three permanent powerplant aerators, increased efficiency of DO uplift expected from the newer blowers is anticipated. As data have not yet been collected during summer conditions, the exact amount of improved performance is unknown; however, any improvement in DO uplift is beneficial to water quality below the dam during low DO events.

Effects to water quality would be temporary and limited to the in-waterway construction periods (August/July to December of both 2020 and 2021). There would be no long-term effects to water quality resulting from implementation of the proposed action, Alternative B. Effects to water quality from this proposed action are not expected to contribute to cumulative effects.

Cumulative effects

No changes from the original EA.

Mitigation

No changes from the original EA, except the removal of use of portable aerators as originally included in mitigation.

Aquatic Resources (Fisheries)

Environmental Consequences

American Falls Reservoir

Previously-identified effects to the fish community in American Falls Reservoir include the potential for increased entrainment of fishes, particularly prey base species, due to an increased potential for low reservoir carryover. Carryover targets of 15 to 30 percent of full pool provide a balanced level of entrainment that benefits both the reservoir and downstream river fish communities. The changed reservoir operations identified in this document will still balance inflow and carryover for both American Falls and Lake Walcott and minimize the potential for

increased fish entrainment. In the unlikely event that carryover targets are not maintained due to climactic conditions, the prey base in American Falls would be reduced and the proposed project could exacerbate this effect. Such a reduction would take multiple spawning seasons to recover, in turn increasing competition by game fishes for limited prey and potentially affecting the overall health and fitness condition of the game fish population. However, these potential effects of baseline climactic conditions are not attributable to this project, and the project's potential contribution to those effects would be expected to be minor overall.

Snake River downstream of American Falls Dam

Previously-identified effects to the Snake River fishery downstream of American Falls Reservoir include the potential for reduced water quality, reduced levels of dissolved oxygen, increased sediment causing fish mortality, reduced rearing habitat, and fish loss through stranding. Effects due to water quality, dissolved oxygen, hydrodemolition, road fill particle size, and increased sediment are addressed in the Water Quality section of this document.

Effects resulting from increased sediment could also include reduced rearing habitat in lower velocity areas of the river downstream from American Falls. Lower velocity areas are often used as overwintering habitat for juvenile and small sized fishes that rely on these areas to avoid predation. Preventative measures that are anticipated to minimize the potential for increased sediment are described in the Water Quality section. Any effects due to loss of habitat would be anticipated to be minor and short-term, as they would be ameliorated the following irrigation season when discharge is increased and fine sediment is mobilized and redistributed.

A reduction in the abundance of juvenile and small sized fishes could result in decreased prey availability for game fishes during subsequent years. This loss to the prey base could take multiple spawning seasons to recover.

The increased winter discharge during the revised construction season could cause stranding of fishes when discharge is reduced, if down-ramping is performed rapidly. Fish migrate to overwintering habitat in the late fall; this habitat often includes lower velocity, shallow areas along the margins of shorelines or islands and in side-channels. Following construction, discharge would be reduced, causing overwintering habitat to be reduced or dewatered and fish in these habitats to be displaced or stranded. However, this fall/winter flow reduction occurs annually under normal operations. Minimum flows would be maintained throughout the project and down-ramping would be performed gradually at the conclusion of each construction season; therefore, stranding effects are anticipated to be negligible.

Lake Walcott

Effects to the fish community in Lake Walcott during drawdown include the potential for displacement and stranding of fishes in the reservoir and increased entrainment of all fishes.

The increased drawdown during the revised construction season could cause stranding of fish along the reservoir shoreline. Established shoreline habitat along the margins of Lake Walcott is

used as rearing habitat for juvenile and small sized fishes, making them susceptible to stranding. A loss of that habitat could strand or displace fish, making them more susceptible to predation. Although an increased amount of shallow shoreline habitat would be temporarily unavailable due to drawdown, the drawdown would occur gradually enough to allow displaced fish to relocate to other shallow habitat and this effect would be short-term and minor.

At lower water elevations, fish experience greater entrainment into Lake Walcott's two main feeder canals if drawdown occurs when the canals are still delivering water. This could occur during the overlapping weeks when the Lake Walcott water level would be drawn down below 4,240 feet and before the canal intakes have been shut off at end of the irrigation season (in October). Increased entrainment into both the canals and river would be a loss to the fish community in the reservoir, including the portion of the fish community that migrates between the reservoir and the Snake River upstream of Lake Walcott. Entrainment into the river downstream of Lake Walcott would supplement that fishery; however, entrainment into the canals would be an unrecoverable loss. The potential for increased entrainment could be monitored and mitigation such as increased fish salvage efforts performed in the canals would reduce effects of entrainment to insignificant levels.

Carryover targets would likely be achieved post-construction and the anticipated drawdown levels are within the range of historical levels. Therefore, the overall effects to fisheries of the construction-related drawdown are anticipated to be minor and short-term. Losses to the prey base could take multiple spawning seasons to recover but could be reduced to an insignificant level via the mitigation measures listed below.

Cumulative effects

No changes from the original EA.

Mitigation

- Reclamation would implement a down-ramping strategy for American Falls Dam following each in-waterway construction period that allows fishes using shallow habitats to volitionally relocate as discharge from American Falls Dam is reduced to usual winter flows. This action would minimize fish mortality due to stranding and reduce potential effects to the fish community to an insignificant level.
- Reclamation would coordinate with the Idaho Department of Fish and Game (IDFG) to increase fish salvage efforts in the canals downstream of Lake Walcott following cessation of canal flow. The need for this mitigative action would be reevaluated after first year of construction.
- In the event of documented significant effects to fisheries downstream from American Falls Dam, Reclamation would agree to support increased fish stocking efforts, if determined necessary, to reach pre-construction numbers. Stocking should not exceed target levels identified in IDFG's most recent Fisheries Management Plan. A comparison

of IDFG's fish community sampling data from Lake Walcott pre- and post- construction could be used to determine if a statistically significant loss to the Lake Walcott game fish community occurs; this would support the case for increased stocking efforts to reach target levels.

Transportation

Environmental Consequences

The previously-anticipated need for the closure of westbound SH 39 and for the implementation of intermittent traffic restrictions on eastbound SH 39 for extended periods during construction in 2020 and 2021 has been alleviated by Winspear's proposal to construct a temporary access road into the stilling basin. This would preclude the need for any work to occur from the SH 39 bridge. Based on the contractor's proposed work plan, which includes alternate access to the work site, traffic control on SH 39 as a result of this project would no longer be necessary.

As indicated in the original EA-FONSI, residents and visitors would still be anticipated to experience increased traffic supporting construction activities on SH 39 and within the city of American Falls traveling to and from the worksite. This traffic increase is minor and short-term, as it is limited to the two-year duration of the project.

Cumulative effects

No changes from the original EA.

Mitigation

No changes from the original EA.

Summary of Effects and Recommendation

Hydrology: The changes to the proposed action would result in an alteration of location and timing of water storage and releases; however, this would not significantly affect the overall system reservoir management and would still fall within the historic range of operations. There would be no significant effects to reservoir system storage, river flows, or water delivery. Effects anticipated as a result of the proposed action remain substantially unchanged from those identified in the original EA-FONSI.

Water Quality: Temporary sediment/turbidity increases could result from the changes in the proposed action; however, these effects would be mitigated to an insignificant level by the implementation of BMPs and the contractor's compliance with the terms of an IDEQ-administered NPDES permit. DO levels during summertime in-waterway construction would still be a concern, but the likelihood of occurrences of low DO would be anticipated to be mitigated to an insignificant level by measures outlined in the Water Quality Restoration Plan and a data-based adaptive management approach to identifying favorable in-waterway construction timeframes. Effects to water quality remain temporary and insignificant and are not substantially changed from those identified in the original EA-FONSI.

Aquatic Resources (Fisheries): The changes to the proposed action would result in potential prey base losses in American Falls Reservoir due to entrainment, temporarily reduced rearing habitat in the Snake River below American Falls Dam due to increased sediment and post-construction down-ramping and in Lake Walcott due to increased drawdowns, increased entrainment into the irrigation canals at Lake Walcott during drawdown, and potential impacts to fisheries in the Snake River below American Falls Dam from occurrences of low DO during in-waterway construction. Due to increased mitigation measures including a data-based adaptive management approach to identifying favorable in-waterway construction timeframes, increased fish salvage from the Minidoka canals as necessary, and support of IDFG stocking measures if determined necessary for rapid recovery of fish populations, these effects remain insignificant and are not substantially changed from those identified in the original EA-FONSI.

Transportation: The traffic control on SH 39 and associated disruptions to transportation that were identified in the original EA-FONSI would no longer be needed. Due to the changes to the proposed action, effects anticipated as a result of the proposed action are reduced in magnitude from those identified in the original EA-FONSI.

Recommendation

Based on the information and analyses contained in this supplemental report, the changes to the project description are minor and do not represent a substantially different proposed project from that analyzed for environmental effects in the original EA. The anticipated environmental effects from these changes do not substantially vary in type or magnitude from the original effects identified, and no environmental effects are anticipated to rise to a level of significance that would necessitate the completion of a separate formal EA or FONSI. It is therefore my recommendation that this documentation of additional information/analyses be added to the record in support of the original project FONSI, dated 5/20/2019.

Recommended:

AMY GOODRICH

Amy Goodrich
Natural Resources Specialist
Snake River Area Office, Boise, Idaho

Digitally signed by AMY GOODRICH
Date: 2020.05.29 11:35:16 -06'00'

Date

Approved:

BRYAN HORSBURGH

Bryan Horsburgh
Acting Snake River Area Manager
Pacific Northwest Region, Boise, Idaho

Digitally signed by BRYAN HORSBURGH
Date: 2020.05.29 13:00:26 -06'00'

Date

References

- Merrick 2020 Merrick, R. 2020. Personal communication. Email conversation between Ryan Merrick (Idaho Power Corp.), and Nicole Carson, Project Manager (Bureau of Reclamation). Subject: Installation of new powerplant blowers, observed and predicted efficiency, and supporting data. May 21, 2020.
- Reclamation 2019 Bureau of Reclamation. 2019. *Final EA-FONSI: Maintenance and Rehabilitation of Spillway and Dam Structures at American Falls Dam, Minidoka Project, Power County, Idaho*. Bureau of Reclamation, Pacific Northwest Region, Snake River Area Office, Boise, Idaho. May 2019.
- Reclamation 2020 Bureau of Reclamation. 2020. *Water Quality Restoration Plan for Maintenance and Rehabilitation of Spillway and Dam Structures at American Falls Dam Project*. Bureau of Reclamation, Columbia-Pacific Northwest Region, Snake River Area Office, Boise, Idaho. February 2020.
- Sigler and Zaroban 2018 Sigler J.W. and D.W. Zaroban. 2018. *Fishes of Idaho: A Natural History Survey*. Caxton Press, Caldwell, Idaho. First Edition. 2018.
- Winspear 2020 Winspear Construction, LLC. 2020. Section 01 14 10-1.2 *Use of Site Plan, Revision 2. American Falls Spillway Repair Narrative Explanation of Site Plan* (Submittal). March 31, 2020.

Appendix A

Water Quality Restoration Plan

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Water Quality Restoration Plan for Maintenance and Rehabilitation of Spillway and Dam Structures at American Falls Dam Project

Prepared by
U.S. Bureau of Reclamation

Introduction

The Bureau of Reclamation (Reclamation) is proposing to conduct maintenance and rehabilitation construction activities to cut, remove, and replace existing damaged concrete and reinforcing on the spillway, spillway gate operating decks, downstream dam face concrete, and stilling basin structures. In addition, the proposed action would include replacement or modification of the existing drain grate at American Falls Dam. This Water Quality Restoration Plan has been developed in conjunction with the National Environmental Policy Act (NEPA) compliance process. A Draft version was included as a companion document to the Final Environmental Assessment (EA) for the proposed action. The Final EA fully documents the analysis.

This Water Quality Restoration Plan outlines mitigation actions to be taken to avoid and/or minimize the possibility of low dissolved oxygen (DO) concentrations in the Snake River below American Falls Dam due to the proposed project. This plan is not meant to be all-encompassing. If unforeseen impacts to water quality occur that are out of scope of this plan, additional mitigation may need to be collaboratively developed and implemented.

Project Scope and Purpose

The purpose of the proposed action is to maintain and improve the structural integrity of the spillway and stilling basin structures at American Falls Dam. These efforts will provide a more feasible means of access for future maintenance activities and prevent further deterioration, which could lead to serious structural deficiencies.

The need for action comes from the current cracked and damaged state of concrete on the spillway, spillway gate operating decks, downstream dam face concrete, and stilling basin floor structures. These concrete components of the dam structure are exhibiting significant deterioration, cracking, and spalling, and they require repair. Minor repairs have been completed to the spillway face throughout its lifetime, including an overlay of the stilling basin floor that was completed in 1978 to repair damaged concrete after the initial spill season. However, over the ensuing 40 years of service these structures have undergone ongoing deterioration. A Value Engineering Study was completed in September 2015, which recommended the following corrective actions: removal and replacement of 6 inches of

concrete on the spillway face and stilling basin floor; repair of concrete on the upper spillway gate operator decks (referred to as “pier decks” in these recommendations); and complete replacement of the spillway adits (access entryways).

Reclamation plans to perform construction activities necessary for the maintenance and rehabilitation of the spillway, spillway gate operating decks, downstream dam face concrete, and stilling basin floor structures at American Falls Dam. The project consists of the cutting, removal, and replacement of existing damaged concrete and reinforcing, and replacement or modification of an existing drain grate. This project would address the need for the replacement and repair of concrete on these dam structure components which has cracked, spalled, and otherwise deteriorated over 40 years in service. These components require repair before further deterioration compromises the integrity of the dam.

The major construction components of the proposed action are:

- **Stilling basin floor concrete removal/repair:** A 4-inch thick epoxy bonded overlay plus an additional 2 inches of original concrete below the overlay would be removed. The removed concrete would be replaced with a 6-inch overlay and single mat of reinforcing doweled into the existing concrete.
- **Spillway face concrete removal/repair:** Approximately 6 inches of concrete on the spillway face would be removed to expose sound concrete. The removed concrete would be replaced with a 6-inch lift of replacement concrete.
- **Gallery adit replacement:** The adits located on the east and west sides of the spillway would be removed and replaced. It is anticipated this will require complete removal and replacement of the adit concrete from the downstream face of the dam outward.
- **Spillway gate operator deck (pier deck) repair:** Repair of deteriorated concrete on the edges of all spillway gate operator decks would be performed.
- **Downstream dam face concrete repair:** Localized repair of cracked and damaged concrete on both the left and right downstream faces of the dam would be performed.
- **Drain grate replacement:** The existing drain grate would be removed and replaced or modified to provide a removable section to facilitate future access for maintenance.

Specific construction methods used to accomplish each of these tasks will be proposed by the contract awardee and subject to approval by Reclamation. Compliance with industry best practices would be required of the contract awardee.

This work will occur in two separate years within a proposed seasonal construction window of May 1 to November 23 in both 2020 and 2021. The portions of the proposed construction work taking place within the waterway will require a lockout and complete dewatering of the spillway and stilling basin, during which time all flows will instead have to pass through the powerplant. This in-waterway work will begin on or after August 1 and cease by November

23 in both 2020 and 2021. For the 2 years this project would occur, a Memorandum of Agreement (MOA) between Reclamation and Idaho Power provides for the continued passage of flows through the powerplant throughout this late season timeframe, which will enable uninterrupted water deliveries. Reclamation will in turn agree to provide 1,000 cfs of water (an increase from typical winter flows) from October 16 to November 23, which will enable Idaho Power to continue minimal generation rather than passing water at “speed no load” for an extended timeframe. Work will occur in the waterway for an estimated maximum of 152 days within the 2-year duration of this project and all water will pass through the Idaho Power powerplant during this timeframe.

Background

The Minidoka Project was authorized by the Secretary of the Interior in 1904 and was the first Reclamation project constructed in Idaho. The Project was constructed in the Snake River Basin in the southeastern part of the state. American Falls Dam is a 94-foot-high composite concrete and earth gravity-type dam on river mile 714.7 of the Snake River near American Falls, Idaho. American Falls Reservoir is the largest reservoir of the Project. In 1927, Project storage was increased by 1,700,000 acre-feet with the completion of the dam. The dam itself is located in Power County, Idaho, but the reservoir stretches northeast into both Bingham and Bannock counties. American Falls Dam and Reservoir comprise a multipurpose facility that creates principle benefits including irrigation, power generation (through a powerplant owned and operated by Idaho Power), flood control, fish and wildlife resources, and recreation (Reclamation 1995).

A core-drilling program in the early 1960s revealed that the concrete in portions of the dam was in a relatively advanced stage of deterioration due to a chemical reaction between alkalis in the cement and the aggregate. This type of reaction, unknown at the time of construction, resulted in a significant loss in strength and durability. The reaction threatened the competence of the dam and reduced the storage capacity of the reservoir to about 66 percent of its maximum design capacity. By congressional act of December 28, 1973, the American Falls Reservoir District, acting as the constructing agency representing the storage spaceholders, was authorized to finance and contract for the replacement of American Falls Dam. The replacement was completed in 1978 and the original structure was demolished. Reclamation repaid the District, acquired title, and assumed responsibility for operations and maintenance after completion of the dam.

In 1976, Idaho Power built the current dam’s hydroelectric powerplant, which consists of three generators that are authorized by the Federal Energy Regulatory Commission (FERC) to produce 92.4 megawatts of hydroelectricity (FERC 2018). Idaho Power generates hydroelectricity at this powerplant at American Falls Dam when sufficient head conditions allow, generally from the end of March through mid-October.

American Falls Reservoir and associated Reclamation-administered lands are operated to accommodate a wide variety of resource needs in accordance with existing Federal laws and Reclamation policy. However, the primary operation strategy is storage of water for irrigation

of lands. Cooperative agreements have been signed with other agencies and organizations for programs focused on control of erosion and enhancement of wetlands and other wildlife habitat. Local jurisdictions and organizations have leased Reclamation lands to develop and operate recreational facilities. Project operations are monitored and evaluated to provide resource management that provides the greatest benefit within statutory and policy guidelines (Reclamation 1995).

American Falls Dam Water Release Configurations

Water released from American Falls Dam flows into the Snake River via two routes (or a combination)—through penstocks that pass through the dam structure and feed into the powerplant owned by Idaho Power, which then discharges it directly into the river channel; or through lower regulating gates on the dam that discharge into the stilling basin, which then overflows into the river channel once it is filled.

The American Falls Dam powerplant is capable of passing a maximum of 15,000 cubic feet per second (cfs) and hydropower generation is possible when flows through the powerplant are at least 1,000 cfs. Idaho Power halts hydropower production when flows drop below the 1,000 cfs needed for power generation at the end of irrigation season (typically on or around October 15th). Although it is possible for the powerplant to pass water at “speed no load”¹ (without generating power), standard dam operations are to cease all releases through the powerplant at the end of the irrigation season and all water is then passed through the stilling basin until power generation resumes in the spring.

Water passing through the stilling basin may come through the upper radial gates, or through lower regulating gates on the dam structure, but is all broadly referred to as “spill.”

Regardless of which gates are used, in order for spilled water to reach the river channel downstream, the stilling basin must first fill completely. Because the maximum powerplant discharge is 15,000 cfs, passage of flows above 15,000 cfs requires the use of spill. Flows from either of the two routes (powerplant or spill) converge together approximately 1,000 feet downstream from the dam.

Water Operations Considerations

Under normal operations, water releases at American Falls Dam generally adhere to the following operational guidelines²:

¹ “Speed no load,” also referred to as “full speed no load” or FSNL, is a power generation configuration where one or more turbines are in operation (spinning), but no power generation load is applied. In hydrogeneration, speed no load operation generally occurs at startup, or at times when power demand is low but continued water passage is desired. Due to the potential for equipment damage, it is generally undesirable to maintain a speed no load configuration for an extended timeframe.

² Formal flood control rule curves have not been developed for American Falls Reservoir; therefore, there is no formally designated amount of minimum space that must be maintained for flood control. However, American Falls is generally operated with the goal of limiting discharge from Minidoka Dam to less than 20,000 cfs.

Irrigation season (April through September): Irrigation releases are determined by the diversion demands at Minidoka and Milner Dams. All flows are passed through the powerplant except in the rare events that the powerplant is offline, the capacities of the powerplant and outlet works are exceeded, or low dissolved oxygen downstream from the dam necessitates the use of spill. River changes are formally called in to Idaho Power and the powerplant operator makes the required changes. Normal flows are 12,000 to 13,000 cfs and are typically adjusted through the irrigation season to maintain Lake Walcott (above Minidoka Dam) at a constant elevation of 4,245 feet. In the late irrigation season, drawdown of Lake Walcott in preparation for winter can also be used to meet some downstream irrigation demand.

Winter (October through March): The Idaho Power powerplant requires a minimum flow of 1,000 cfs to generate power and so typically stops power generation mid-October at the time when releases from the dam are reduced to winter flows. All flows are then passed through the regulating gates on the dam and into the stilling basin, which overflows into the Snake River downstream from the dam once it is filled. There is no official minimum winter release, but an unofficial minimum release of 300 cfs in the non-irrigation season is generally targeted in consideration of benefits to fish and wildlife. Idaho Department of Fish and Game (IDFG) prefers that Reclamation maintain post-irrigation fall releases above 2,000 cfs until November 1st to prevent over-harvest of fish in the reach downstream from American Falls. In years when releases during this timeframe must be reduced to 1,000 cfs or less, IDFG may close fishing in this reach. Higher spring flows are passed as needed for flood control with a target reservoir refill date of April 1. All flows are passed as spill until the powerplant resumes power generation in the spring, typically in March.

Past Water Quality Impacts

Dissolved Oxygen

The 2012 American Falls Subbasin Total Maximum Daily Load (TMDL) Plan: Subbasin Assessment and Loading Analysis identified that American Falls Reservoir can have low DO concentrations. The low DO concentrations may be attributed to the algae population collapse that tends to occur in the late summer. The report speculates that cloud cover or late summer rainstorms reduce the available sunlight and that phytoplankton respire more, consuming oxygen rather than photosynthesizing, which decreases the reservoir DO concentrations. In the late summer, the reservoir could pass water with low DO concentrations through the dam directly into the Snake River.

Idaho Power monitors DO concentration and water temperature per their FERC hydropower license. Per IDA 2019, from May 15 to October 15 minimum DO concentration standards to be met below American Falls Dam are as follows:

- 30 day mean of 5.5 mg/L;
- 7 day mean minimum of 4.7 mg/L; and
- Instantaneous minimum of 3.5 mg/L.

Idaho Power uses up to two aerators just downstream from the dam to infuse oxygen into the river water to meet or exceed the minimum DO concentration standards. If DO concentration minimums cannot be met, Idaho Power passes water through American Falls Dam as spill, increasing DO concentrations through turbulent, aerated water. There have been isolated instances where DO concentrations could not be increased to levels in compliance with minimum DO standards below American Falls Dam. This occurred most recently in late summer of 2018 and was likely caused by the combination of algae population collapse and a series of overcast days, by high winds pushing low oxygenated water in the dam intake (Grossarth 2018), or a combination of these conditions.

Sediment

Sediment and siltation can become an issue at American Falls Reservoir. During drought and low water years, American Falls Reservoir can be drawn down to low levels to meet water delivery demands. This draw down can create natural channels through the reservoir bottom sediment causing the water to become sediment-laden and murky before passing through the dam. The entrained sediment is discharged into the Snake River and can cause instream total suspended solids (TSS) and turbidity to increase, which may impact recreational fishing and boating and the cold-water aquatic life beneficial use. Idaho Department of Environmental Quality (IDEQ) documented these occurrences in the 2012 Lake Walcott Subbasin Assessment and Total Maximum Daily Loads Five Year Review document. IDEQ stated, “This situation occurred during a 45-day period from August 31–October 14, 2007, during which the BOR’s [Reclamation’s] management actions caused the water in American Falls Reservoir and the Snake River downstream to have elevated sediment and turbidity levels such that water quality violations and a fish kill occurred. In 1994 and 2001, similar water quality violations occurred due to similar BOR [Reclamation] management actions. However, this most recent event occurred for a much longer duration than in past years” (IDEQ 2012).

In 2010, IDEQ and Reclamation finalized and implemented a Water Quality Management Action Plan for American Falls Reservoir and the Snake River below American Falls Dam during periods of drought or low flow. Reclamation would target a minimum content of 100,000 acre-feet in American Falls Reservoir from the beginning of the storage delivery season to avoid increased sediment discharged below the dam. This and shoreline protection measures would decrease sediment discharged below the dam. However, in some years if hydrologic conditions (typically drought) and irrigation demand on reservoir storage preclude retaining the target volume of 100,000 acre-feet, discharges below American Falls may not be in compliance with TSS targets and the Snake River below the dam would be affected. Effects from the excess sediment would be similar to those identified by IDEQ in the 2012 Lake Walcott Subbasin Assessment and Total Maximum Daily Loads Five Year Review document.

Potential Impacts from Construction Actions

Construction activity is expected to have only minimal short-term water quality effects. Of greatest concern is the release of low DO water from the reservoir into the Snake River below

the dam if the use of Idaho Power's aerators cannot raise DO concentrations to compliance during construction when water cannot be passed as spill.

Attachment 1 shows the daily average DO concentrations at the dam penstocks and in the Snake River just below the dam, water temperature in relation to reservoir storage (percent of full volume), and the dates when aerators (blowers) and/or spill were used in order to bring low DO concentrations up to compliance minimums below the dam. This data is shown for the period of June through September from 2002 through 2018. Most instances of low DO concentrations occur in July and August with very few occurrences in the first half of September. Data in Attachment 1 can be separated into three groupings (A, B, and C) based on when and how often spill was used to raise low DO concentration below the dam as follows:

- Group A: in years 2003, 2006, 2014, and 2016 spill was necessary over a few, discrete days to meet state DO concentration standards.
- Group B: in 2002, 2005, 2004, 2007 through 2011, 2013, and 2015, Idaho Power's aerators alone were able to raise DO concentrations to meet state DO concentration standards.
- Group C: low DO occurrences in 2017 and 2018 required spill for a much longer duration (compared to group A) to mitigate for the low DO concentrations.

Mitigation

This Water Quality Restoration Plan outlines mitigation actions to be taken to avoid and minimize low DO concentrations in the Snake River below American Falls Dam. Reclamation engaged with IDEQ and IDFG in 2018 and discussed the potential impacts and possible mitigation measures for the proposed project. Reclamation also engaged with Idaho Power in 2018 and discussed how Idaho Power manages flows for power production and facility limitations. The MOA in place between Reclamation and Idaho Power defines specific roles and responsibilities associated with water operations and water quality monitoring and restoration during the American Falls Spillway Concrete Repair project.

After the in-waterway construction period in 2020, Reclamation, in coordination with IDEQ, IDFG, and Idaho Power, will assess mitigation measures and evaluate adjusting mitigation measures for the 2021 construction period, if necessary. Water quality in American Falls Reservoir near the dam and in the Snake River below the dam will be closely monitored before and during project implementation to provide metrics for predicting lowering DO concentrations, or other water quality issues that may arise.

Goal and Objectives

The goal of this Water Quality Restoration Plan is to ensure the proposed project does not contribute to violations of Idaho State water quality standards. Objectives include:

1. Avoid and minimize incidences of low DO concentrations in the Snake River below American Falls Dam during project construction.

2. Monitor water quality above and below American Falls Dam before and during construction to ensure compliance with Idaho State water quality standards.

Work Plan

The Snake River below American Falls Reservoir is a popular fishery and recreation area. During the in-waterway construction period (August 1 through November 23) of 2020 and 2021, the use of spill will not be readily available to supplement Idaho Power's two aerators to raise DO concentrations below the dam. This operational limitation, in light of the recent fish kill that occurred below American Falls Dam due to low DO concentrations, makes DO mitigation below the dam a primary concern for Reclamation's proposed construction.

Reclamation collaborated with IDEQ and IDFG to define a path forward to minimize water quality effects. Reclamation also consulted with Idaho Power to identify technical considerations of power generation operations at American Falls. Reclamation has signed a MOA with Idaho Power defining specific roles and responsibilities associated with water operations and water quality monitoring and restoration during the American Falls Spillway Concrete Repair project.

A Water Quality Action Team has been formed to advise Reclamation's Upper Snake Field Office (USFO) management of the potential need for emergency use of spill during construction. This team would be comprised of USFO, Reclamation Snake River Area Office (SRAO), Idaho Power, IDEQ, and IDFG technical personnel. Team members will evaluate environmental conditions, assess agency needs, and make recommendations to USFO management related to spill, who would identify potential impacts from its use. Team members will need to be available for immediate communications during critical times in the in-waterway construction period (August 1 through September 15).

Reclamation, Idaho Power and IDEQ will monitor current reservoir conditions before and during construction, or as needed to predict downward trends in DO concentrations.

- Idaho Power will monitor DO concentrations at the dam's penstocks and make available real-time information to Reclamation.
- IDEQ will monitor reservoir water quality parameters and communicate with Reclamation.
- Reclamation will monitor weather conditions forecasts and be in regular communications with IDEQ and Idaho Power to facilitate adjustment of mitigation approaches as needed to meet changing environmental conditions.

Reservoir Operations

The primary method of mitigating potentially low DO concentrations in the Snake River below American Falls Dam is to operate American Falls Reservoir at seasonal elevations similar to those which in the past have not produced low DO concentrations, or have produced marginally low DO concentrations that could be quickly brought into compliance

with state DO standards through use of one or both of Idaho Power's aerators. Years when this been accomplished include 2002, 2004, 2005, 2007 through 2011, 2013 and 2015.

All flows will have to be passed through the powerplant for approximately six additional weeks after the powerplant would typically shut down. From 1981 to 2010, the daily average discharge from American Falls Dam during the late October to late November timeframe was approximately 540 cfs. To mitigate the potential for damage to equipment that passing water at speed no load for an extended period could create, Reclamation has agreed to provide a minimum of 1,000 cfs of flow throughout the in-waterway construction period to enable minimal power generation by the turbine unit that would be passing the flow. This represents a flow increase of approximately 460 cfs, sustained for approximately 6 weeks from October 15th until November 23rd, in each of the two construction years. Over this 6 week period, the additional water released and moved from American Falls Reservoir into Lake Walcott will total approximately 38,000 acre-feet, which corresponds to an approximate 1 foot water level change in American Falls Reservoir.

To preserve the overall management approach of the upper Snake River watershed and not "lose" this additional water, the extra flow that will be released during the 6 week period starting October 15th will be captured in the next downstream reservoir, Lake Walcott, which is regulated by Minidoka Dam. To enable this, beginning in September and ending by October 15th a temporary storage deficit of approximately 38,000 acre-feet of storage in Lake Walcott will be created by reducing releases from American Falls Dam to levels below the irrigation demand downstream of American Falls Dam. This will allow Lake Walcott to draft approximately 38,000 acre-feet lower than it normally would during the September and October time frame.

The 38,000 acre-feet temporary storage deficit in Lake Walcott corresponds to a decrease in pool level of approximately 4 feet below the normal pool level of 4,245 feet. This decrease in pool level will begin in early September and reach the maximum drawdown point in mid-October. The target drawdown pool elevation will be 4,241 feet by October 15th in 2020 and 2021. If local inflows into Lake Walcott are exceptionally high in the years during construction, a drawdown level of 4,240 feet may be needed to enable recapture of the increased releases from American Falls Reservoir during the time from October 15th to late November.

Under this management scenario, by the mid-October timeframe, storage content in Lake Walcott will be reduced to between 40,000 and 57,200 acre-feet. Recapture of the additional discharge from American Falls during the October to November construction period will then refill Lake Walcott, which will be approximately full by the end of the work window. After that time, discharge from American Falls Dam will be reduced to typical winter flows of 540 cfs or less.

Emergency Spill

If DO concentrations that do not meet state standards persist despite implementation of the previously discussed mitigative measures, the Water Quality Action Team (composed of

USFO, SRAO, Idaho Power, IDEQ, and IDFG personnel) would advise USFO management if they believe emergency discharge of spill is warranted. If deemed necessary, USFO management could discharge spill (upon a 48-hour notice) to increase DO concentrations below the dam. This action would have potentially serious effects on spillway construction.

Exemption

Reclamation applied for an IDEQ Short-Term Activity Exemption, identified in the Idaho State Water Quality Standards section 080.02.b.vi: Maintenance of existing structures (IDA 2019) for construction periods August 1 through November 26 of 2020 and 2021. If/when granted, this would ensure compliance with state water quality standards for DO concentration by exempting construction activities that may affect DO concentrations below the dam for a short time period.

Performance Standards

Performance standards are as follows:

1. Signed MOA between Reclamation and Idaho Power before construction activities that will define specific roles and responsibilities associated with water operations, water quality monitoring, and mitigative measures to be implemented during the American Falls Spillway Concrete Repair project.
2. Establishment of a Water Quality Action Team and a Communications Plan.
3. Implementation of water quality monitoring and communications between IDEQ, Idaho Power and Reclamation.
4. Adherence to the methods described in this Water Quality Restoration Plan.

Project Success

Project success will be determined by Reclamation's ability to meet the performance standards and by avoiding violation of state water quality standards during construction. Meetings with IDEQ, IDFG, and Idaho Power following the 2020 construction period will provide an opportunity to track and discuss the completion of objectives, and for potential adjustment of mitigative measures for the next construction season, as necessary.

Literature Cited

Parenthetical Reference	Bibliographic Citation
FERC 2018	Federal Energy Regulatory Commission (FERC). 2018. Complete List of Active Licenses available online at: https://www.ferc.gov/industries/hydropower/gen-info/licensing/app-new.asp (last accessed December 11, 2018).
Grossarth 2018	Grossarth, E. 2018. "Officials have figured out why hundreds of fish are dying near American Falls Dam." EastIdahoNews.com. Published August 7, 2018, update September 10, 2018. Available online at: https://www.eastidahonews.com/2018/08/officials-have-figured-out-why-fish-are-dying-near-the-american-falls-dam/ (last accessed May 6, 2019)
IDA 2019	Idaho Department of Administration (IDA), Office of the Administrative Rules Coordinator. 2019. IDAPA 58 Administrative Rules, 58.01.02 Idaho Water Quality Standards. Available online at: https://adminrules.idaho.gov/rules/current/58/580102.pdf (last accessed May 6, 2019)
IDEQ 2012	Idaho Department of Environmental Quality (IDEQ). 2012. "Lake Walcott Subbasin Assessment and Total Maximum Daily Loads Five-Year Review." May 2012.
Reclamation 1995	U.S. Bureau of Reclamation (Reclamation). 1995. "American Falls Resource Management Plan." Reclamation, Pacific Northwest Region, Boise, Idaho. April 1995.

American Falls Reservoir Water Quality Data

American Falls Reservoir water quality data collected 100 meters from the outlet works (site code AFE009) from 2003 through 2018. Data includes field measurements and nutrient concentrations at differing depths.

Date Sampled	Depth (m)	Field Temp C	Field DO mg/L	Field pH	Field EC uS/cm	NO3/NO2 mg/L	Ortho-P mg/L	Total-P mg/L	NH3 mg/L	TKN mg/L
5/31/2018	1	16.9	8.1	8.09	365	0.06	0.004	0.065	0.08	0.36
6/20/2018	1	17.9	7.6	8.04	347	0.05	0.009	0.025	0.1	0.33
7/16/2018	1	22	12.1	8.22	336	< 0.01	< 0.003	0.02	0.02	0.26
7/25/2018	1	22.3	7.4	8.3	345	< 0.01	< 0.003	0.025	< 0.01	0.45
8/15/2018	1	21.5	5.8	7.78	345	< 0.01	0.004	0.049	< 0.01	0.51
8/15/2018	11	20.7	0.2	7.28	361	< 0.01	0.058	0.103	0.49	0.88
7/25/2018	15	19.4	0.7	7.37	355	0.02	0.005	0.018	0.1	0.26
6/20/2018	17	16.4	3.4	7.6	349	0.05	0.022	0.049	0.26	0.56
7/16/2018	18.2	18.7	2.4	7.43	350	0.05	0.03	0.051	0.21	0.39
5/31/2018	19	13.1	3.9	7.71	380	0.06	0.022	0.206	0.3	1.02
8/14/2017	1	21.6	6.7	7.91	345	0.03	0.01	0.036	0.13	0.5
7/18/2017	1	23.8	9.1	8.25	337	0.01	0.003	0.022	< 0.01	0.36
6/28/2017	1	19.4	8.5	8.23	366	0.08	0.004	0.016	0.04	0.29
5/30/2017	1	18.2	11.6	8.51	383	0.07	0.005	0.025	< 0.01	0.41
8/14/2017	15	18.3	0	7.24	362	< 0.01	0.222	0.302	0.79	1.07
7/18/2017	17	18	2.8	7.62	348	0.1	0.06	0.082	0.24	0.44
6/28/2017	19	16	6.5	7.83	355	0.14	0.019	0.036	0.08	0.25
5/30/2017	19	11.9	6.9	8.05	390	0.16	0.016	0.028	0.1	0.33
7/20/2016	1	20.4	7.9	7.26	439	0.05	0.008	0.023	< 0.01	0.31
6/20/2016	1	18.8	8	7.63	436	0.08	0.015	0.033	0.09	0.34
5/25/2016	1	13.3	8.6	7.85	447	0.18	0.005	0.02	0.08	0.38
7/20/2016	12.8	19.1	4.3	7.96	442	0.11	0.032	0.056	0.1	0.35
6/20/2016	16.2	16.1	1.5	7.86	445	0.07	0.091	0.109	0.32	0.57
5/25/2016	18	12.6	4.2	7.77	452	0.18	0.024	0.05	0.2	0.49
8/24/2015	0					0.04	0.021	0.064	0.19	0.77
8/24/2015	0					0.04	0.027	0.06	0.28	0.71
7/29/2015	0					0.01	0.014	0.041	< 0.01	0.45

Date Sampled	Depth (m)	Field Temp C	Field DO mg/L	Field pH	Field EC uS/cm	NO3/NO2 mg/L	Ortho-P mg/L	T-Phos mg/L	NH3 mg/L	TKN mg/L
7/29/2015	0					0.03	0.023	0.036	0.05	0.25
7/27/2015	0					0.03	0.024	0.058	0.06	0.34
7/27/2015	0					0.03	0.032	0.085	0.11	0.42
6/29/2015	0					0.04	0.189	0.229	0.42	0.62
6/29/2015	0					0.02	< 0.003	0.011	< 0.01	0.16
5/26/2015	0					0.12	0.005	0.011	0.06	0.28
5/26/2015	0					0.12	0.021	0.045	0.18	0.44
8/21/2014	1	21	7.4	8.07	359	0.05	0.019	0.078	0.09	0.84
7/30/2014	1	22.8	11.1	8.24	400	< 0.01	0.007	0.026	0.02	0.4
7/21/2014	1	22.4	7.5	8.02	412	0.02	0.045	0.066	0.09	0.47
6/23/2014	1	18.1	9.1	8.11	425	0.03	< 0.003	0.016	0.02	0.37
5/27/2014	1	14.6	9.1	8.08	438	0.03	< 0.003	0.014	0.06	0.33
7/21/2014	11	20.5	0.5	7.36	425	< 0.01	0.143	0.173	0.47	0.86
8/21/2014	11.6	20.9	6.6	8.03	360	0.05	0.023	0.121	0.17	0.67
7/30/2014	11.7	21.6	5.4	7.85	413	0.01	0.023	0.065	0.09	0.48
6/23/2014	15	16.3	6.4	7.91	425	0.04	0.014	0.049	0.12	0.38
5/27/2014	18	11.4	6.7	7.83	441	0.03	0.014	0.032	0.13	0.42
7/12/2013	1	21.6	7.8	8.39	453	0.06	0.013	0.045	0.05	0.43
6/24/2013	1	18.7	7.8	7.9	455	0.09	0.014	0.03	0.08	0.33
7/12/2013	13.5	18.9	0.6	7.72	466	0.07	0.095	0.139	0.24	0.58
6/24/2013	15.9	16.8	5	7.62	457	0.09	0.025	0.048	0.12	0.32
7/23/2012	1	23.1	10.5	8.72	381	< 0.01	< 0.003	0.035	< 0.01	0.56
7/23/2012	12.9	20.8	1.3	7.8	410	< 0.01	0.005	0.053	0.09	0.45
8/9/2011	1	22.1	12.2	8.88	299	< 0.01	< 0.003	0.037		0.78
8/9/2011	20.1	18.5	0.6	7.44	313	0.02	0.097	0.111		0.35
7/19/2010	1	18.9	7.4	8.55	429	0.02	0.016	0.038		0.29
7/19/2010	17.5	16.9	3.4	8.06	435	0.06	0.109	0.163		0.46
7/27/2009	1	23.2	9.4	8.49	358	< 0.01	< 0.003	0.015		0.36
7/27/2009	18.1	17.2	0.2	7.37	356	0.03	0.201	0.22		0.61

Date Sampled	Depth (m)	Field Temp C	Field DO mg/L	Field pH	Field EC uS/cm	NO3/NO2 mg/L	Ortho-P mg/L	Total-P mg/L	NH3 mg/L	TKN mg/L
6/29/2007	1	20.4	8	8.26	464	0.08	0.051	0.081		0.4
6/29/2007	15.2	17.4	2.1	7.96	468	0.09	0.08	0.103		0.4
7/31/2006	1	22.6	7	8.77	397	0.01	0.075	0.099		0.47
7/31/2006	15.1	18.8	0.1	7.81	399	< 0.01	0.38	0.4		0.95
6/21/2004	1	17.4	7.5	8.66	428	0.02	0.026	0.043		0.32
6/21/2004	15.2	15.2	4.2	8.34	435	0.02	0.025	0.045		0.29
7/15/2003	1	23.2	7.7	8.61	454	0.07	0.052	0.082		0.43
7/15/2003	10.9	20.4	1.3	7.94	461	0.1	0.089	0.113		0.51

Measured water parameters such as DO concentrations were predictable with the lowest concentrations at depth. The pH ranged between 7.2 and 8.8, with most water samples being more alkaline than neutral. Nitrate, nitrite, and ammonia concentrations are notably low, however total phosphorus concentrations were somewhat high, with 30 out of 64 samples being over 0.05 mg/L.

American Falls Reservoir water quality data collected 100 meters from the outlet works (site code AFE009) from 2003 through 2018. Data includes alkalinity, cation and anion concentrations at differing depths.

Date Sampled	Depth (m)	Alkalinity mg/L	SO4 mg/L	Cl mg/L	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SiO2 mg/L	Fl mg/L	As ug/L	Se ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Fe ug/L	Mn ug/L	Zn ug/L
8/15/2018	1	128	30.7	12.5	34.1	11.8	13.2	2.4	15.7	0.51	2.4	< 2	< 2	< 2	< 2	6.67	26.1	28.6	< 5
7/25/2018	1	134	28.8	10.5	39.5	11.7	12.4	2.4		0.49	2.43	< 2	< 2	< 2	< 2	5.49	21.8	< 10	< 5
7/16/2018	1	135	28.4	10.1	40.3	11.1	11.5	2.2		0.48	2.47	< 2	< 2	< 2	< 2	5.82	25.7	< 10	5.28
6/20/2018	1	135	30.1	9.8	40.5	11	11.2	2.2		0.47	3.24	< 2	< 2	< 2	< 2	8.76	264	66.3	6.95
5/31/2018	1	137	34.7	11.1	42.1	11.7	12.2	2.2		0.51	2.16	< 2	< 2	< 2	2.12	7.3	32	12.4	< 5
8/15/2018	11	137	28.6	12.4	37.1	11.9	13.2	2.5	17.5	0.51	2.08	< 2	< 2	< 2	< 2	7.8	43.8	198.3	< 5
7/25/2018	15	139	28.3	10.1	41.9	11.5	11.9	2.4		0.48	2.78	< 2	< 2	< 2	< 2	5.61	21	14.9	< 5
6/20/2018	17	137	30.5	9.7	40.8	11	11.2	2.2		0.49	3.05	< 2	< 2	< 2	< 2	6.45	36.1	< 10	< 5
7/16/2018	18.2	139	28	9.8	40.7	10.8	11.2	2.2		0.46	3.01	< 2	< 2	< 2	< 2	9.58	303.6	36.1	< 5
5/31/2018	19	145	37.9	11.9	42.4	11.9	12.5	2.2		0.55	2.94	< 2	< 2	< 2	< 2	12.09	1133.4	136.4	< 5
8/14/2017	1	134	27.4	10.8	39.2	12	12	2.3	11.7	0.44	2.04	2.6	< 2	< 2	< 2	13.08	29.4	24.1	< 5
7/18/2017	1	139	27.2	10.3	40.1	11.4	12	2.3	11.3	0.41	2.25	4.19	< 2	< 2	2.48	8.99	14.5	< 10	< 5
6/28/2017	1	149	29.7	11.7	43.2	11.5	12.3	2.3	11.5	0.48	2.41	< 2	< 2	< 2	9.36	16.8	31	< 10	14.52
5/30/2017	1	149	34.2	13.6	44.3	13	12.9	2.5	11.6	0.5	< 2	< 2	< 2	< 2	< 2	17.08	33.9	< 10	< 5
8/14/2017	15	152	23.6	10.1	43.4	11.8	11.4	2.4	17.6	0.42	3.01	3.07	< 2	< 2	3.31	20	202.1	546.3	< 5
7/18/2017	17	144	25.5	< 0.4	40.2	10.5	10.7	2.1	14.8	0.39	3.45	< 2	< 2	< 2	2.98	15.42	174.3	125.6	8.8
6/28/2017	19	145	27.9	10.5	41.4	11.2	11.3	2.2	12.4	0.44	2.28	< 2	< 2	< 2	4.29	18.33	130.5	13	< 5
5/30/2017	19	152	35.1	13.9	44.5	13	13.1	2.5	12.4	0.46	2.35	< 2	< 2	< 2	< 2	23.1	138	13.8	< 5
7/20/2016	1	160	42.3	17.7	47.2	14.4	19.4	3.2	17.1	0.65	3.11	< 2	< 2	< 2	< 2	14.15	109.6	< 10	< 5
6/20/2016	1	157	41	18.4	43.6	13.7	18.4	3	11.7	0.72	4.26	< 2	< 2	< 2	< 2	17.08	29.4	14.5	26.61
5/25/2016	1	161	43.4	21.7	45.4	14.9	21.7	3.5	15.7	0.86	5.17	< 2	< 2	< 2	< 2	< 2	41	< 10	< 5
7/20/2016	12.8	160	41.9	17.4	47.1	14.1	19.2	3.2	18.6	0.63	3.5	< 2	< 2	< 2	< 2	23.31	404.4	27.2	< 5
6/20/2016	16.2	161	40.1	18.9	44.5	14	19	3.1	15.1	0.77	4.52	< 2	< 2	< 2	2.29	22.94	189.5	129.2	10.36
5/25/2016	18	163	43	21.5	43.2	14.8	21.1	3.6	17	0.86	3.86	< 2	< 2	< 2	< 2	2.16	312.6	58.2	< 5
8/24/2015	0	148	39.4	16.2	41.1	14.4	15.8	3.1		0.53									
8/24/2015	0	150	39.1	16.1	40.2	14.3	16.8	3		0.52									
7/29/2015	0	161	39.2	15.5	46.5	14.1	15.9	2.8		0.63									

Date Sampled	Depth (m)	Alkalinity mg/L	SO4 mg/L	Cl mg/L	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SiO2 mg/L	Fl mg/L	As ug/L	Se ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Fe ug/L	Mn ug/L	Zn ug/L
7/29/2015	0	160	39.4	15.6	45.9	14.3	15.6	2.8		0.63									
7/27/2015	0	162	40.1	15.8	42.7	13.7	16.6	2.8	13.6	0.68									
7/27/2015	0	161	40.2	16	48	14.5	16.6	2.9	14.1	0.7									
6/29/2015	0	162	37.4	15.9	46.3	14.6	18	3		0.73									
6/29/2015	0	152	38.8	15.2	43	13.7	15.4	2.8		0.67									
5/26/2015	0	162	40.5	18.6	45.6	15.2	19.2	3.3		0.75									
5/26/2015	0	163	40.6	19.1	45.7	15.2	20	3.3		0.75									
8/21/2014	1	138	32.3	12.3	40	12.3	12.1	2.8		0.59									
7/30/2014	1	148	37.1	16.1	40.5	14	16.5	3.1	18.5	0.61									
7/21/2014	1	156	36	15.6	44.4	14.1	16.6	3.1		0.6									
6/23/2014	1	155	40.2	17	45	14.5	20	3.1		0.63									
5/27/2014	1	159	44.9	19.8	44.7	15.7	20.3	3.6		0.79									
7/21/2014	11	166	35	15.8	46	14.4	16.9	3.3		0.65									
8/21/2014	11.6	144	32.1	11.9	40.4	13.8	13.8	2.9		0.58									
7/30/2014	11.7	156	36.9	16.1	42.8	14.4	16.7	3.1	18.8	0.63									
6/23/2014	15	169	40	16.7	45.5	14.5	17.6	3.1		0.66									
5/27/2014	18	161	44.4	20	44.2	15.7	20	3.7		0.82									
7/12/2013	1	162	42.8	19.4	46.6	14.9	18.8	3.4	14.6	0.74							133.7	< 10	9.95
6/24/2013	1		42.9	19.4	48.6	14.9	19.4	3.4		0.82									
7/12/2013	13.5	165	42	19.5	47.6	14.9	19	3.4	19.2	0.74							314.2	138.8	13.12
6/24/2013	15.9		42.9	19.4	48.6	14.9	19.4	3.4		0.83									
7/23/2012	1	139	34.8	15	40.9	14.4	16.1	2.9	12.8	0.75	4	< 2	< 1	< 2	< 2	< 2	< 20	< 10	< 5
7/23/2012	12.9	148	37.5	15.9	42.4	14.2	16	2.9	13.3	0.65	5	< 2	< 1	< 2	< 2	< 2	240	30	< 5
8/9/2011	1	132	22.4	8.4	42.5	10.7	10.3	2.1	9.2	0.5	3	< 2	< 1	< 2	< 2	< 2	30	< 10	< 5
8/9/2011	20.1	131	21.1	8.1	41.9	10.4	10	2.2	12.1	0.5	4	< 2	< 1	< 2	< 2	< 2	80	98	< 5
7/19/2010	1	152	37.7	15.7	47.3	14.1	16.8	3	10	0.76	2	< 2	< 1	< 2	< 2	< 2	50	10	< 5
7/19/2010	17.5	156	37.1	15.8	47.3	14	17.2	3.1	14.4	0.81	3	< 2	< 1	< 2	< 2	< 2	200	143	< 5
7/27/2009	1	142	32.1	12.8	45.7	12.5	13.6	2.5	7	0.57	3	< 2	< 1	< 2	< 2	< 2	30	< 10	< 5
7/27/2009	18.1	143	27.6	11.3	44.9	11.8	12.3	2.6	14.2	0.54	4	< 2	< 1	< 2	< 2	< 2	150	287	< 5

Date Sampled	Depth (m)	Alkalinity mg/L	SO4 mg/L	Cl mg/L	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SiO2 mg/L	Fl mg/L	As ug/L	Se ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Fe ug/L	Mn ug/L	Zn ug/L
6/29/2007	1		41.5	19.2	49.3	15.9	19.6	3.4	16.1	0.74	4	< 2	< 1	< 2	< 2	< 2	70	< 10	< 5
6/29/2007	15.2		41	18.9	48.7	15.7	19.5	3.4	17.4	0.74	3	< 2	< 1	< 2	< 2	< 2	130	10	< 5
7/31/2006	1		33	15.4	45.8	13.5	15.4	2.9	14.2	0.64	3	< 2	< 1	< 2	< 2	< 2	40	40	< 5
7/31/2006	15.1		28.8	14.2	45.9	13	14.2	2.9	21	0.63	4	< 2	< 1	< 2	< 2	< 2	130	470	< 5
6/21/2004	1		43.4	19.7	48.9	15.9	21	3.4	10.8	0.84	3	< 2	< 1	< 2	< 2	< 2	110	40	70
6/21/2004	15.2		44.8	20.6	50.7	16.4	21	3.4	10.9	0.75	3	< 2	< 1	< 2	< 2	< 2	120	30	< 5
7/15/2003	1		43.7	21.1	47.3	16.5	21.4	3.6	20	0.84	4	< 2	< 1	< 2	< 2	< 2	120	20	< 5
7/15/2003	10.9		43.3	20.9	47.7	16.3	21.6	3.6	23	0.85	4	< 2	< 1	< 2	< 2	< 2	120	70	6

Alkalinity ranged between 128 to 169 mg/L, and the major anions and cations show no alarming trends. Many water samples have trace metal concentrations higher than testing equipment detection limits such as arsenic (concentration ranged from less than 2 to 5.17 µg/L) and lead (concentrations ranged from less than 2 to 23.31 µg/L). Two water samples contained 3.07 and 4.19 µg/L of selenium, and the remaining 38 water samples were less than detection limits of 2 µg/L.

American Falls Reservoir water quality data collected 100 meters from the outlet works (site code AFE009) from 2003 through 2018. Data includes total suspended solids, turbidity, E. coli, and chlorophyll a at differing depths.

Date Sampled	Depth (m)	TSS mg/L	Turbidity NTU	E. coli ct/100mL	Chl a mg/L
5/31/2018	1	5	1	< 10	0.0228
6/20/2018	1	< 1	1	< 2	0.0214
7/16/2018	1	2	2	< 2	0.0062
7/25/2018	1	5	5	< 2	0.0015
8/15/2018	1	5	3	< 2	0.0011
8/15/2018	11	4	7	52	
7/25/2018	15	2	2	< 2	
6/20/2018	17	7	8	< 2	
7/16/2018	18.2	3	3	< 2	
5/31/2018	19	57	27	< 10	
8/14/2017	1	4	2	2	0.0137
7/18/2017	1	3	1	< 2	0.0127
6/28/2017	1	2	1	< 2	0.0074
5/30/2017	1	2	1	2	0.0044
8/14/2017	15	6	5	180	
7/18/2017	17	7	5	< 2	
6/28/2017	19	4	3	< 2	
5/30/2017	19	4	3	< 2	
7/20/2016	1	4	3	< 2	0.013
6/20/2016	1	3	< 1	< 2	0.0021
5/25/2016	1	2	1		
7/20/2016	12.8	12	10	< 2	
6/20/2016	16.2	6	4	< 2	
5/25/2016	18	13	8		
8/24/2015	0				>0.00006
8/24/2015	0				0.0358
7/29/2015	0				0.0268

Date Sampled	Depth (m)	TSS mg/L	Turbidity NTU	E. coli ct/100mL	Chl a mg/L
7/27/2015	0	11	8	< 2	0.0046
7/27/2015	0	19	15	< 2	0.0003
6/29/2015	0				
6/29/2015	0				
5/26/2015	0				
5/26/2015	0				
8/21/2014	1				
7/30/2014	1	2	2	< 2	0.0632
7/21/2014	1				0.0112
6/23/2014	1				0.0089
5/27/2014	1				0.0075
7/21/2014	11				0.0017
8/21/2014	11.6				
7/30/2014	11.7	22	12	< 2	
6/23/2014	15				
5/27/2014	18				
7/12/2013	1	5	4	< 2	
6/24/2013	1				0.0128
7/12/2013	13.5	13	12	< 2	0.0032
6/24/2013	15.9				
7/23/2012	1	9	7	< 2	
7/23/2012	12.9	15	11	< 2	0.0287
8/9/2011	1	6	8	< 2	
8/9/2011	20.1	3	2	< 2	0.0396
7/19/2010	1	2	2	< 2	
7/19/2010	17.5	8	4	< 2	0.0061
7/27/2009	1	2	4	< 2	
7/27/2009	18.1	5	3	< 2	0.016

Date Sampled	Depth (m)	TSS mg/L	Turbidity NTU	E. coli ct/100mL	Chl a mg/L
6/29/2007	1	3	2	< 2	0.008
6/29/2007	15.2	4	3	< 2	
7/31/2006	1	3	2	< 2	0.008
7/31/2006	15.1	6	3	12	
6/21/2004	1	3	2	< 2	0.008
6/21/2004	15.2	4	2	6	
7/15/2003	1	5	4	< 2	0.0061
7/15/2003	10.9	4	3	< 2	

*measured by volume

Total suspended solids and turbidity were low, with the highest concentration/value being 57 mg/L and 27 NTUs, respectively. Most of the water samples were less than 10 mg/L or NTUs. E. coli concentration were also very low, with most samples less than the detection limit of 2 organisms/100 mL. There was one sample in 2017 that was 180 organisms/100 mL, but that is less than half the concentration necessary to affect Idaho State's Primary Contact Recreation beneficial use criteria of a single sample maximum of more than 406 organisms/100 mL. A target of 0.015 mg/L of Chlorophyll-a has been recommended by IDEQ. There are eight water samples out of 31 samples that are above 0.015mg/L. Chlorophyll-a concentrations ranged from below detection limit to 0.06 mg/L.

American Falls Reservoir water quality data collected at reservoir surface near the boat ramp (site code AFE010) in 2017. Data includes nutrient concentrations and chlorophyll a.

Date Sampled	NO3/NO2 mg/L	Ortho-P mg/L	Total-P mg/L	NH3-Diss mg/L	TKN mg/L	Chl a mg/m3
11/29/2017	0.08	< 0.003	0.021		0.36	0.0099
9/27/2017	0.05	0.005	0.032		0.48	0.0122
8/30/2017	< 0.01	0.004	0.018	< 0.01	0.28	0.009
8/15/2017	0.01	0.018	0.041	0.16	0.44	0.0073
7/31/2017	< 0.01	< 0.003	0.02	< 0.01	0.42	0.0168
7/6/2017	< 0.01	0.003	0.029	0.02	0.7	0.0324
6/19/2017	0.16	0.012	0.024	0.06	0.26	0.005
5/3/2017	0.12	0.004	0.016	0.04	0.31	0.0112
4/11/2017	0.22	0.005	0.024	0.04	0.32	0.0115
3/29/2017	0.3	< 0.003	0.022	0.03	0.42	0.0234
1/18/2017	0.56	0.01	0.031	0.07	0.3	0.017

Nutrient concentrations are low except for total phosphorus and are similar to concentrations found in American Falls Reservoir water quality data collected 100 meters from the outlet works (first table). A target of 0.015 mg/L of Chlorophyll-a has been recommended by IDEQ. There are 5 water samples out of 11 samples that are above 0.015mg/L. Chlorophyll-a concentrations ranged from below .005 to 0.032 mg/L.

American Falls Dam outlet works water quality data (site code AFE101) collected from 2003 through 2016. Data includes surface field measurements, alkalinity and nutrient concentrations.

Date Sampled	Field Temp C	Field DO mg/L	Field pH	Field EC uS/cm	Alkalinity mg/L	NO3/NO2 mg/L	Ortho-P mg/L	Total-P mg/L	NH3-Diss mg/L	NH3 mg/L	TKN mg/L
7/27/2015	20.5	6.9	8.49	411	159	0.03	0.024	0.064	0.06		0.37
7/30/2014	22.7	9	8.21	404	155	0.05	0.018	0.051	0.05		0.77
7/12/2013	21	6.7	8.17	460	162	0.08	0.046	0.08	0.12		0.48
7/23/2012	22.5	8	8.55	389	145	0.02	0.01	0.065	0.05		0.53
8/9/2011	21.6	9.1	8.75	303	132	0.02	0.011	0.048		0.02	0.63
7/19/2010	18.3	6.9	8.52	433	154	0.05	0.04	0.071		0.09	0.64
7/27/2009	21.4	6.9		358	143	0.03	0.038	0.058		0.07	0.36
6/29/2007	19.3	7.4	8.24	464		0.08	0.062	0.093		0.05	0.58
7/31/2006	21.4	4.8	8.38	401		0.04	0.2	0.21		0.26	0.62
6/21/2004						0.02	0.022	0.049		0.07	0.42
7/15/2003	22.3	6.7	8.57	453		0.1	0.068	0.102		0.11	0.42

Parameter concentrations are directly related to reservoir water quality parameters and follow similar patters with pH and nutrient concentrations as mentioned in the previous tables.

American Falls Dam outlet works water quality data (site code AFE101) collected from 2003 through 2016. Data includes surface water cation and anion concentrations.

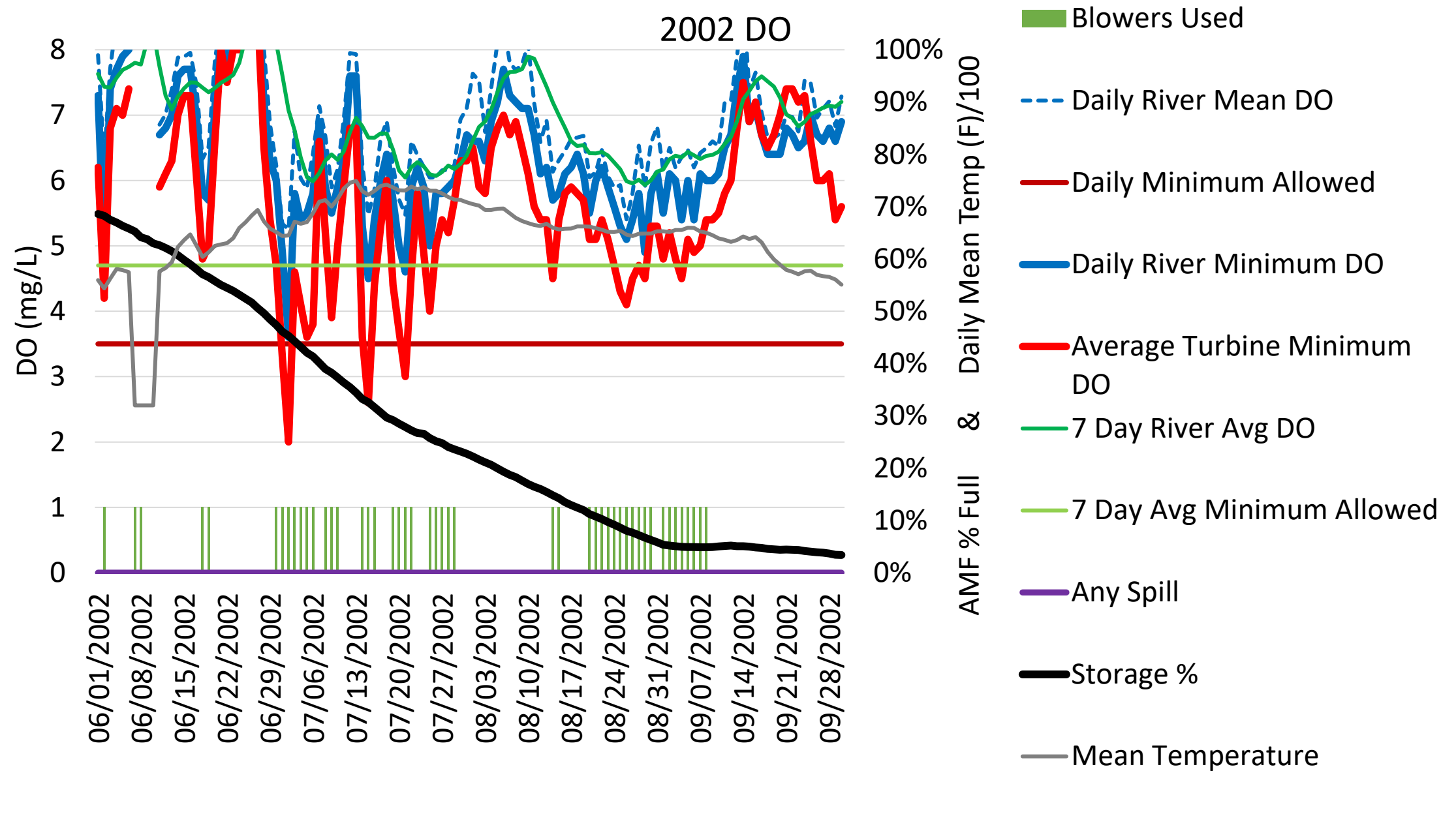
Date Sampled	SO4 mg/L	Cl mg/L	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SiO2 mg/L	Fl mg/L	Boro n ug/L	As ug/L	Se ug/L	Hg ng/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Fe ug/L	Mn ug/L	Zn ug/L
7/27/2015	40.4	15.9	45.1	14.4	16.4	2.8	14	0.68											
7/30/2014	38.5	18.1	42.5	14.6	17.7	3.3	19.3	0.64											
7/12/2013	42.5	19.5	47.1	14.9	18.8	3.4	14.4	0.75									288.3	78.6	14.3
7/23/2012	36.3	15.2	42.1	14.4	16.7	3	13.6	0.75		5	< 2		< 1	< 2	< 2	< 2	100	40	27
8/9/2011	22.5	8.8	41.9	10.7	10.4	2.2	9.5	0.53		3	< 2		< 1	< 2	< 2	< 2	40	15	< 5
7/19/2010	38.1	16	47.7	14.1	17	3.2	11	0.8		3	< 2		< 1	< 2	< 2	< 2	40	36	< 5
7/27/2009	30.1	12.2	44.7	12.3	12.9	2.5	8.6	0.54		3	< 2	< 0.2	< 1	< 2	< 2	< 2	70	54	< 5
6/29/2007	41.3	19	48.7	16.3	19.7	3.4	16.5	0.74		3	< 2	< 0.2	< 1	< 2	< 2	< 2	140	10	< 5
7/31/2006	32.1	15.2	46.5	13.5	15.2	3	17	0.64		3	< 2	< 0.2	< 1	< 2	< 2	< 2	60	200	< 5
6/21/2004	43.4	19.8	49.1	15.7	21	3.4	10.8	0.76	110	3	< 2	< 0.2	< 1	< 2	< 2	< 2	90	30	< 5
7/15/2003	43.7	21.2	46.9	16.6	24.5	3.6	22.2	0.85	110	4	< 2	< 0.2	< 1	< 2	< 2	< 2	90	50	< 5

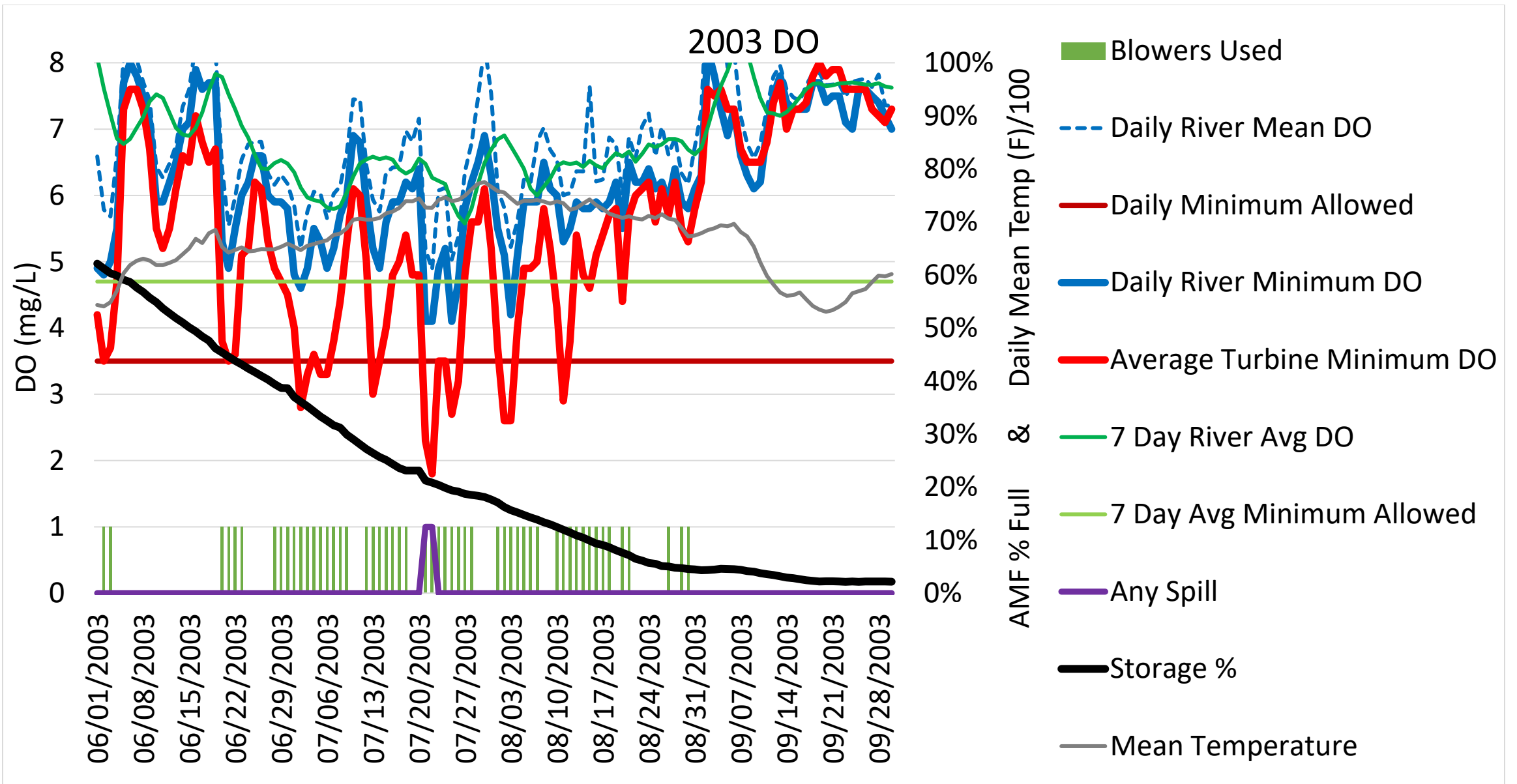
The major anions and cations show no alarming trends. Most of the tested trace metals were below detection limits for the water quality laboratory equipment. Arsenic concentrations are low but detectible and ranged between 3 and 5 µg/L.

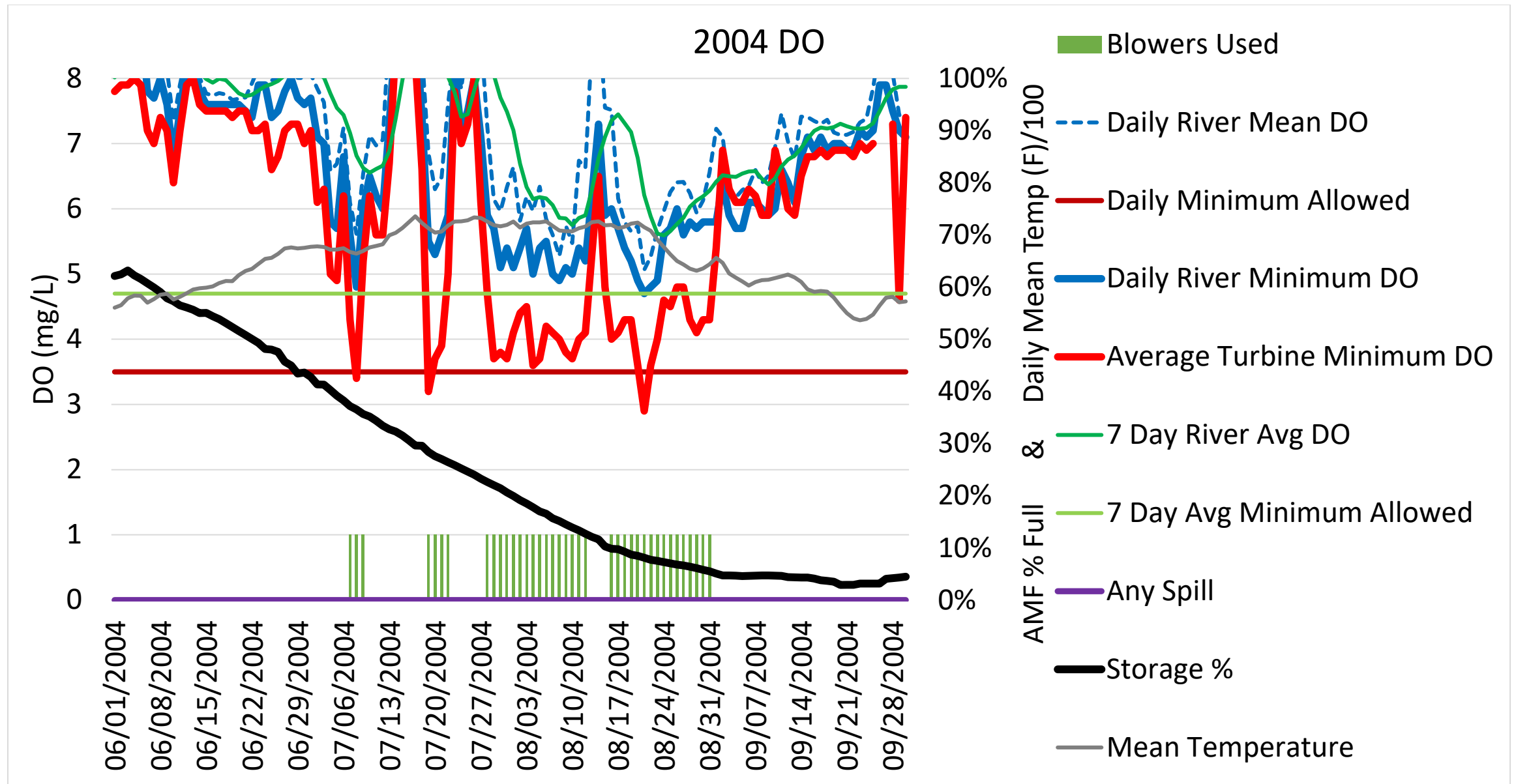
American Falls Dam outlet works water quality data (site code AFE101) collected from 2003 through 2016. Data includes surface water sediment concentrations, E. coli, fecal coliform, and per cent dissolved gas.

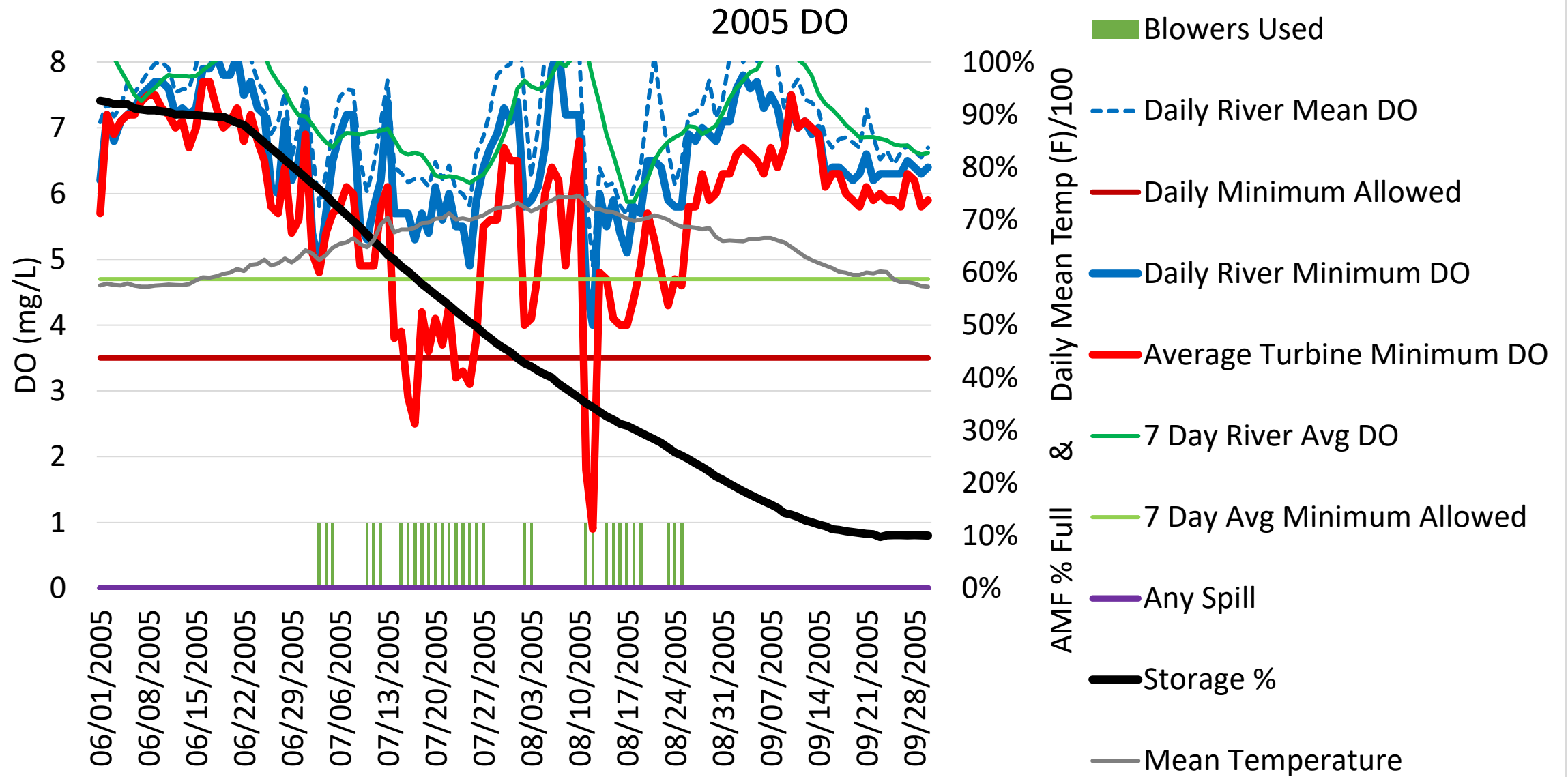
Date Sampled	TDS mg/L	TSS mg/L	SSC mg/L	Turbidity NTU	E. coli ct/100mL	Fecal ct/100mL	Diss. Gas %
9/7/2016	235		6				
7/27/2015	248	13		11	< 2	2	100.4
7/30/2014	251	10		6	2	4	
7/12/2013	262	11		8	< 2	< 2	105.4
7/23/2012	232	10		8	< 2	< 2	99.7
8/9/2011	188	5		4	< 2	< 2	107.1
7/19/2010	243	2		2	< 2	< 2	104.6
7/27/2009	212	2		2	24	56	106.7
6/29/2007	270	8		3	< 2	2	101.2
7/31/2006	240	4		2	26	8	102.1
6/21/2004	261	5		3	2	4	101.7
7/15/2003	283	4		3	4	40	99.5

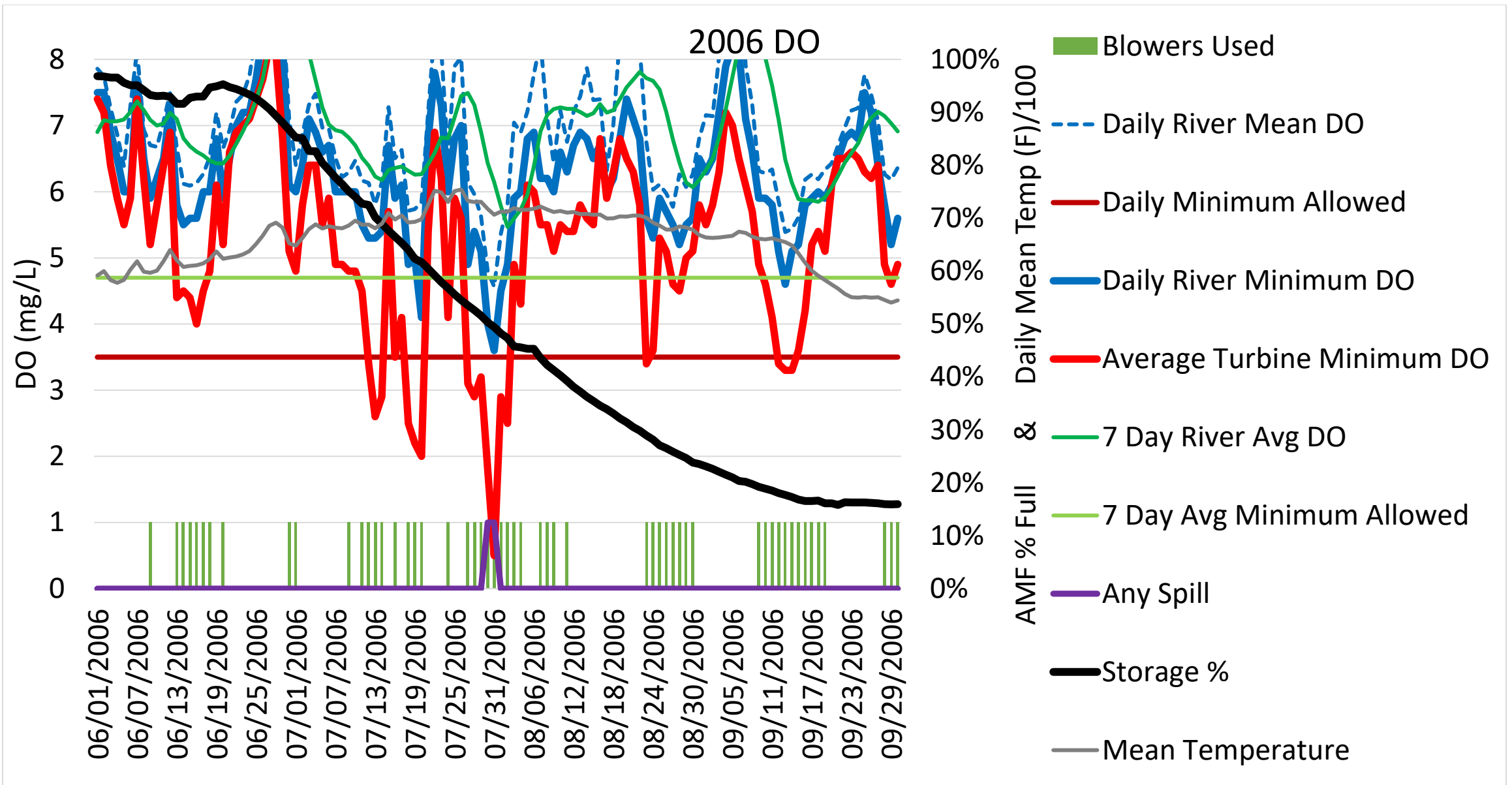
Total dissolved solids, total suspended solids, suspended sediment concentrations and turbidity are all measure of sedimentation. These parameter concentrations are low except for total dissolved solids, which ranged between 188 to 283 mg/L. E. coli and fecal coliform concentrations were also low. Dissolved gas percentages ranged between 99.5 to 107.1%, and are within the state’s dissolved gas standard of 110%.

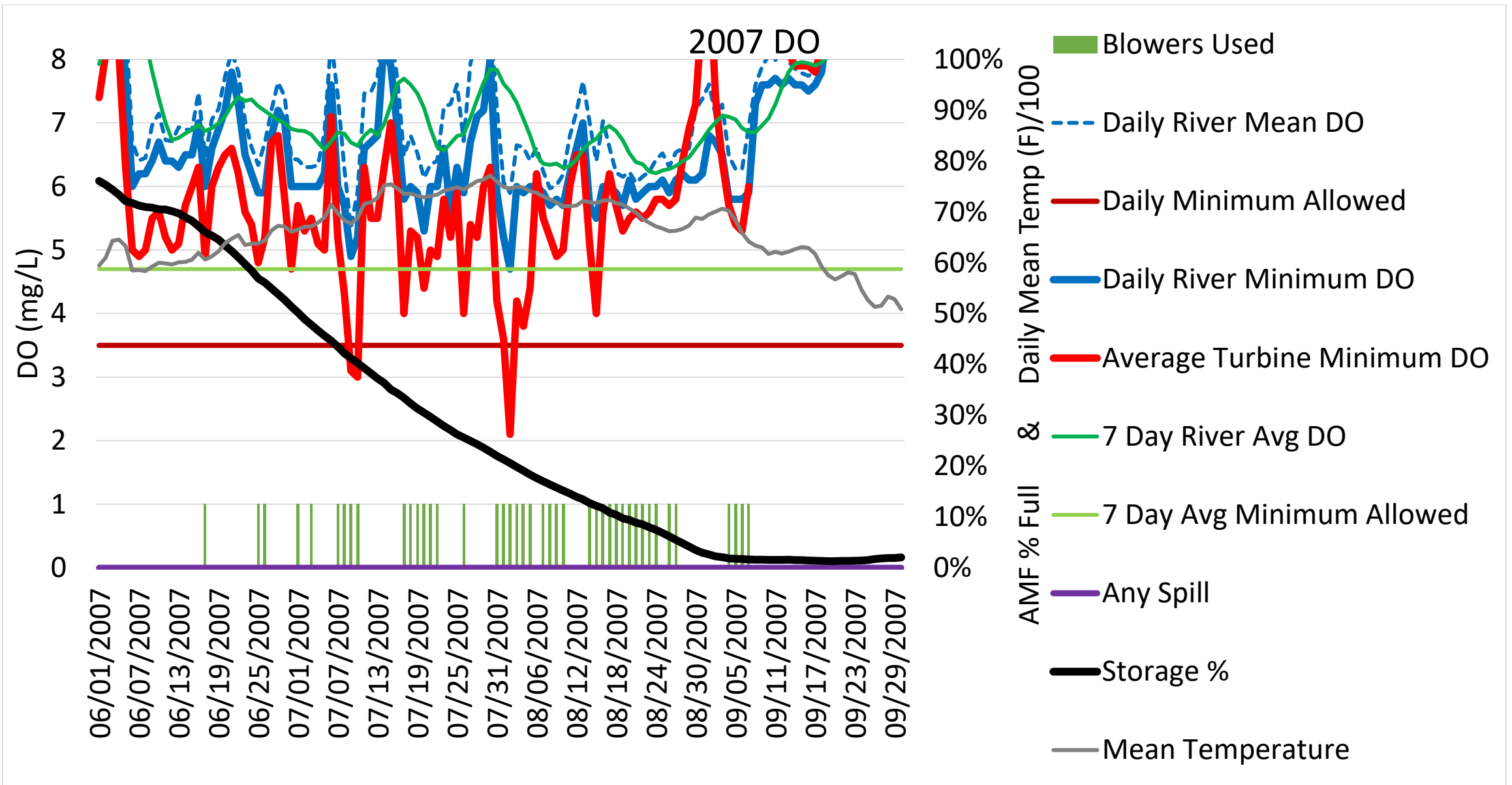


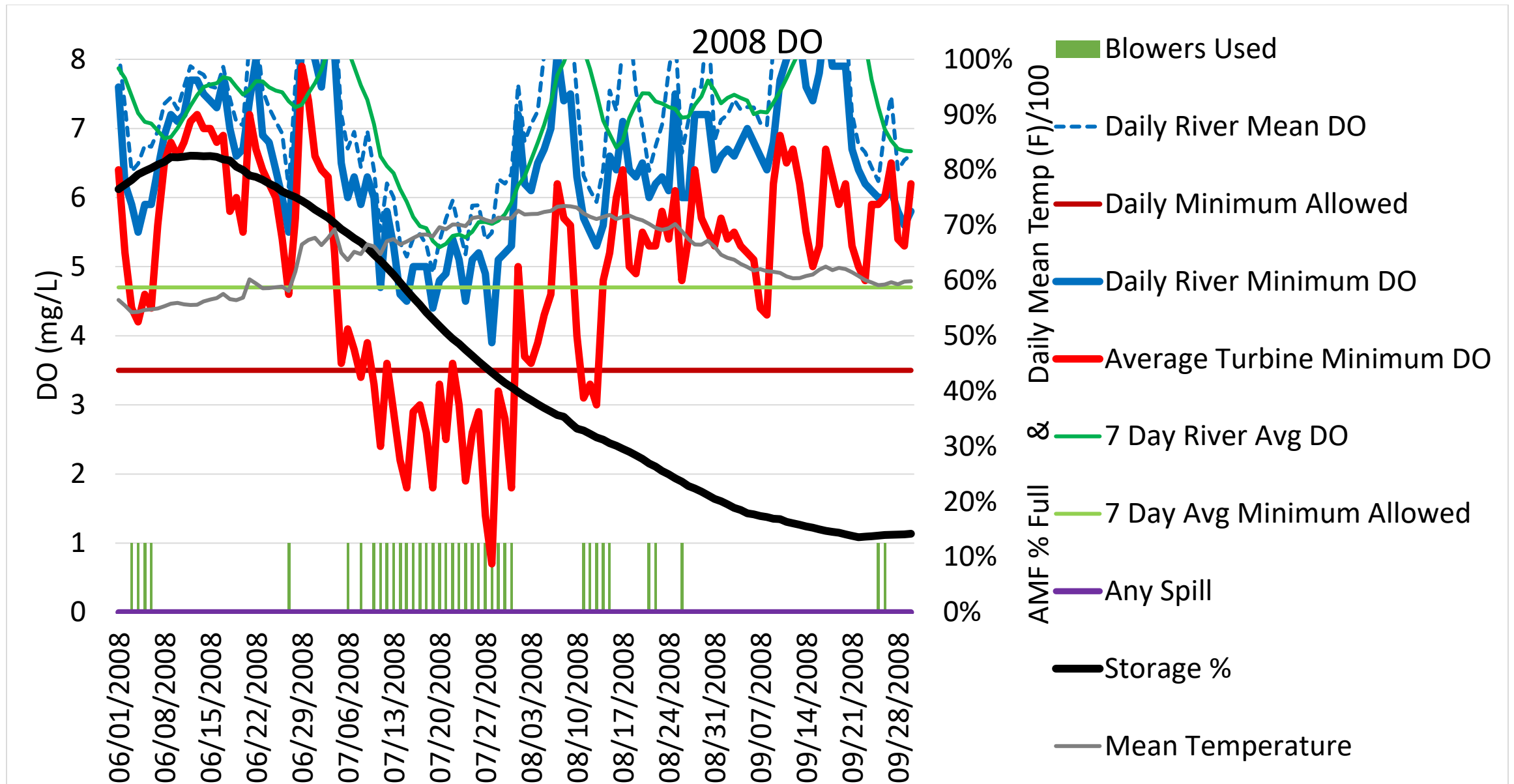


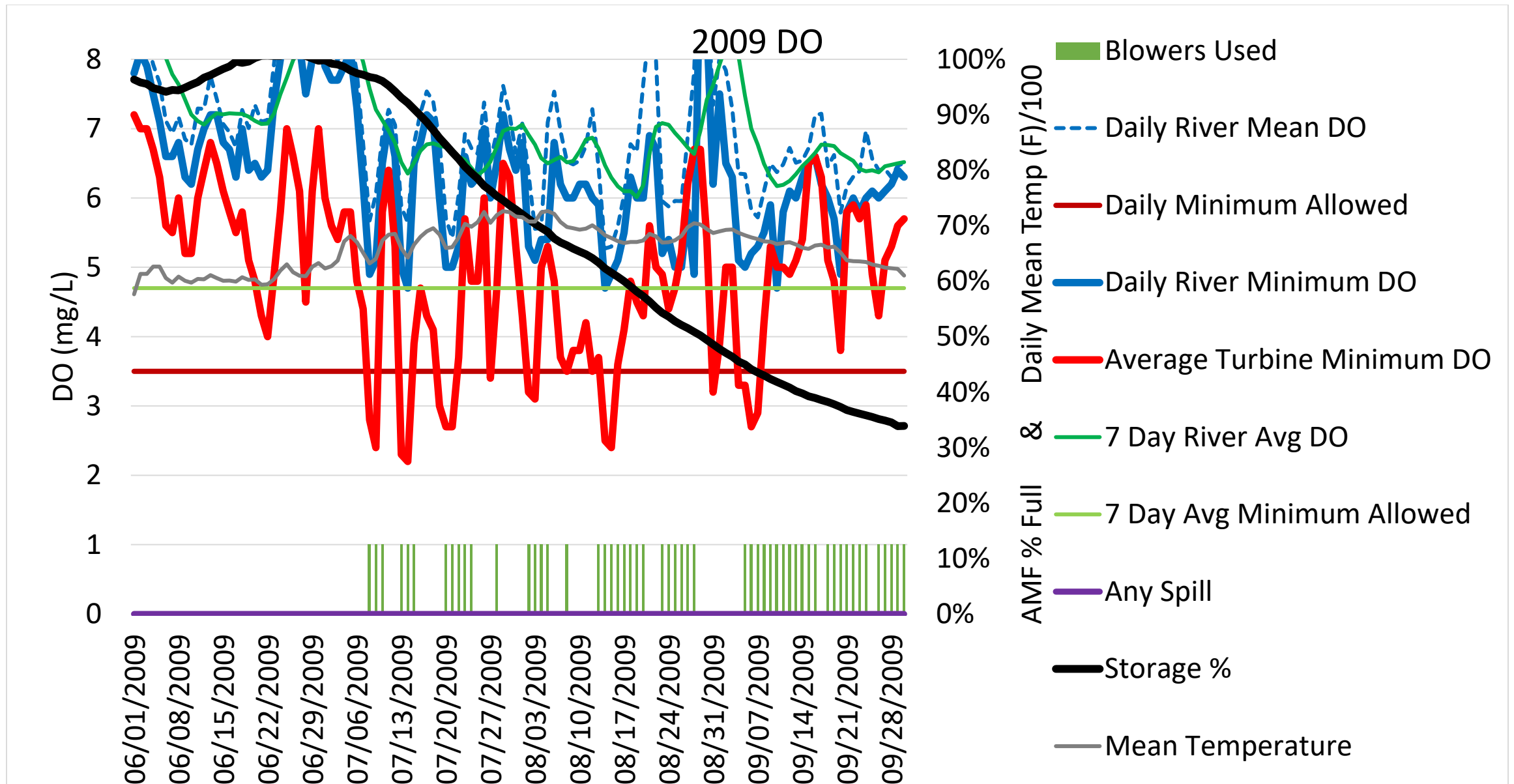


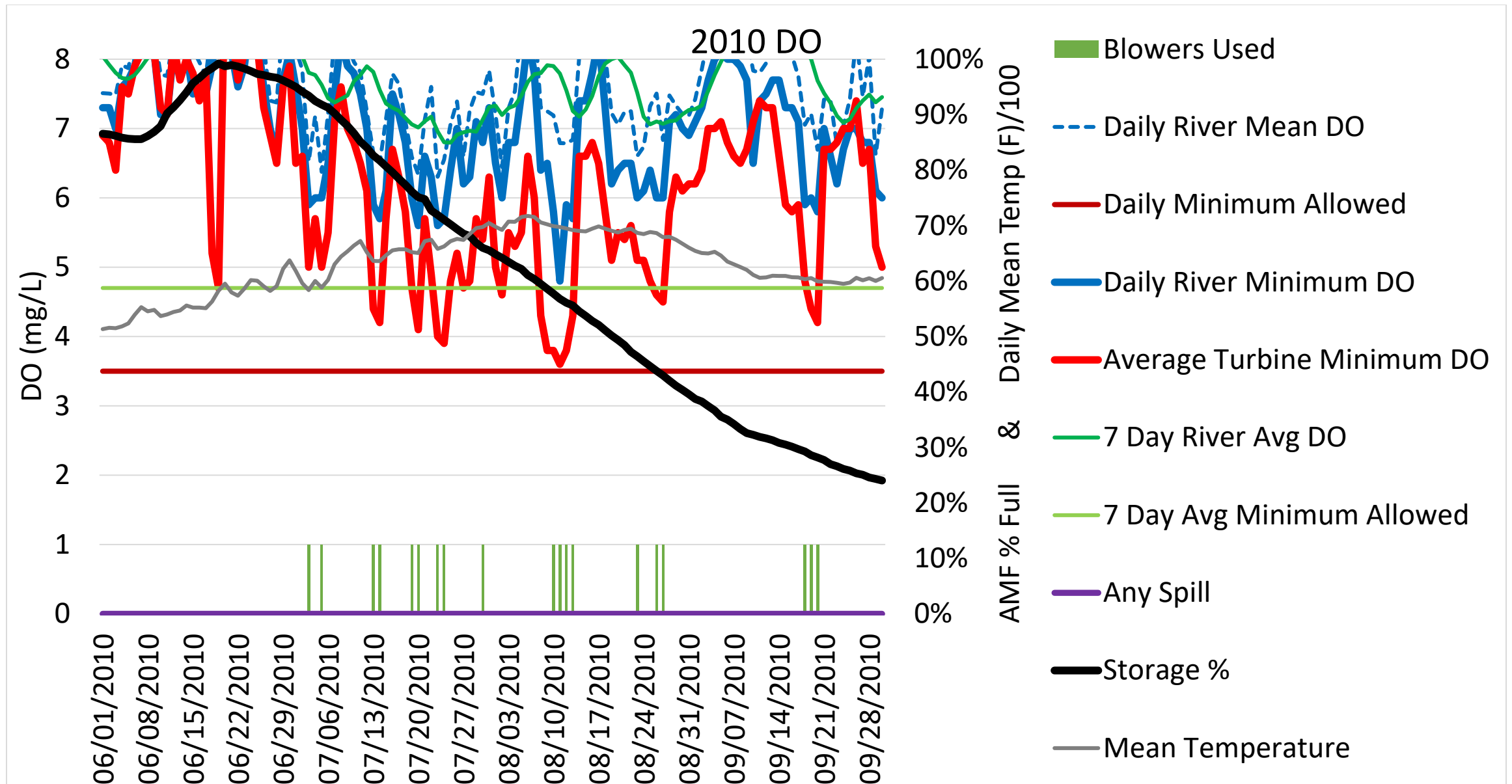


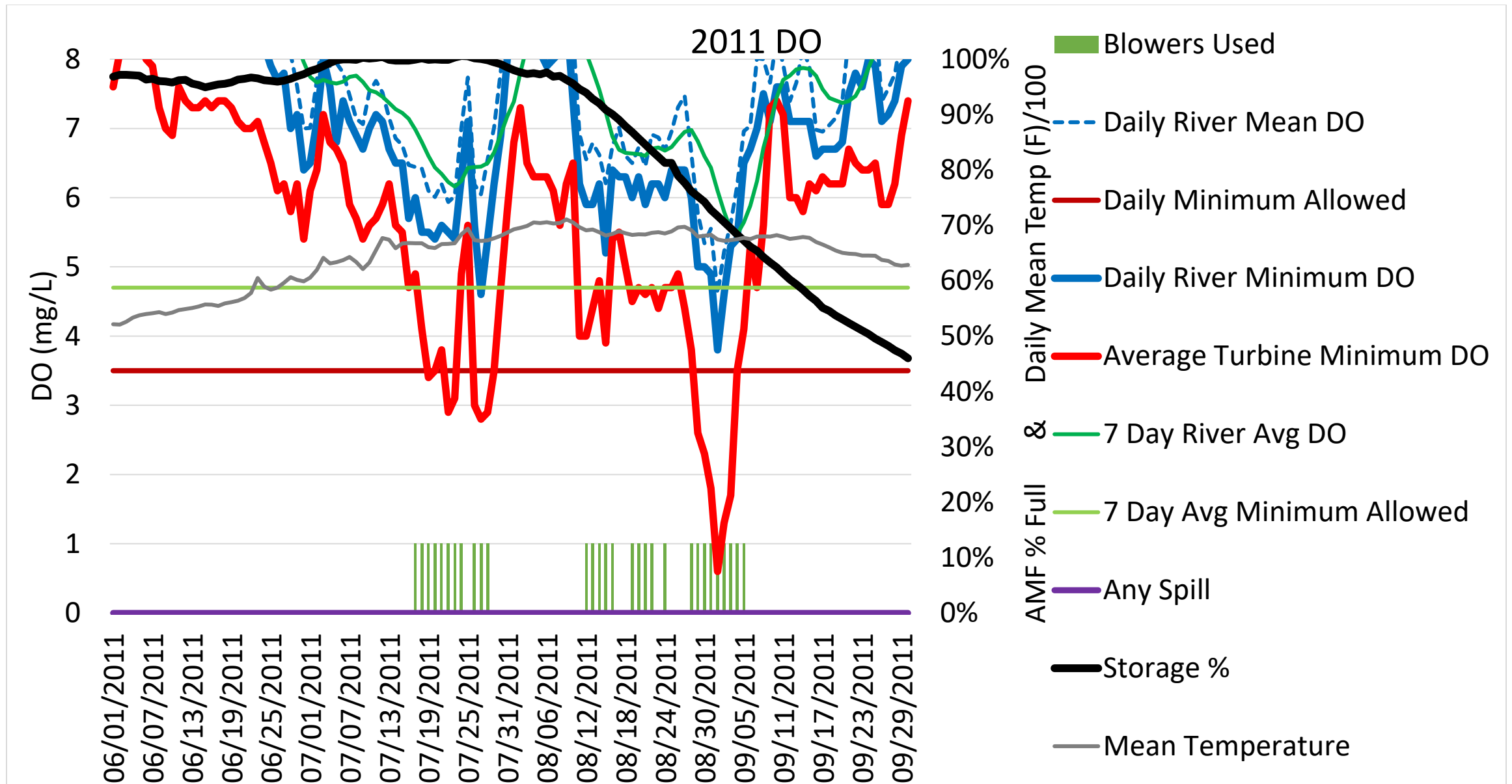


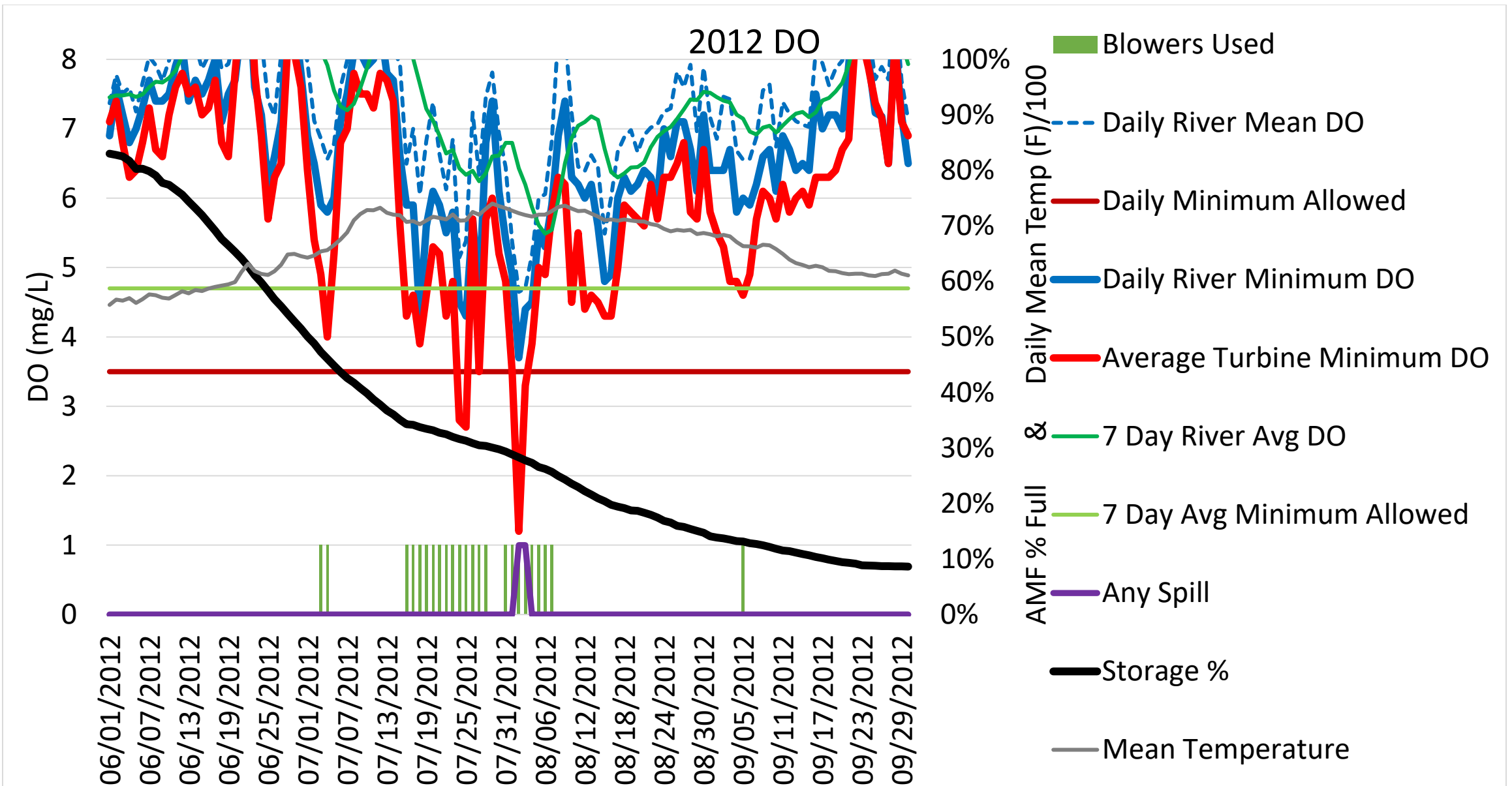


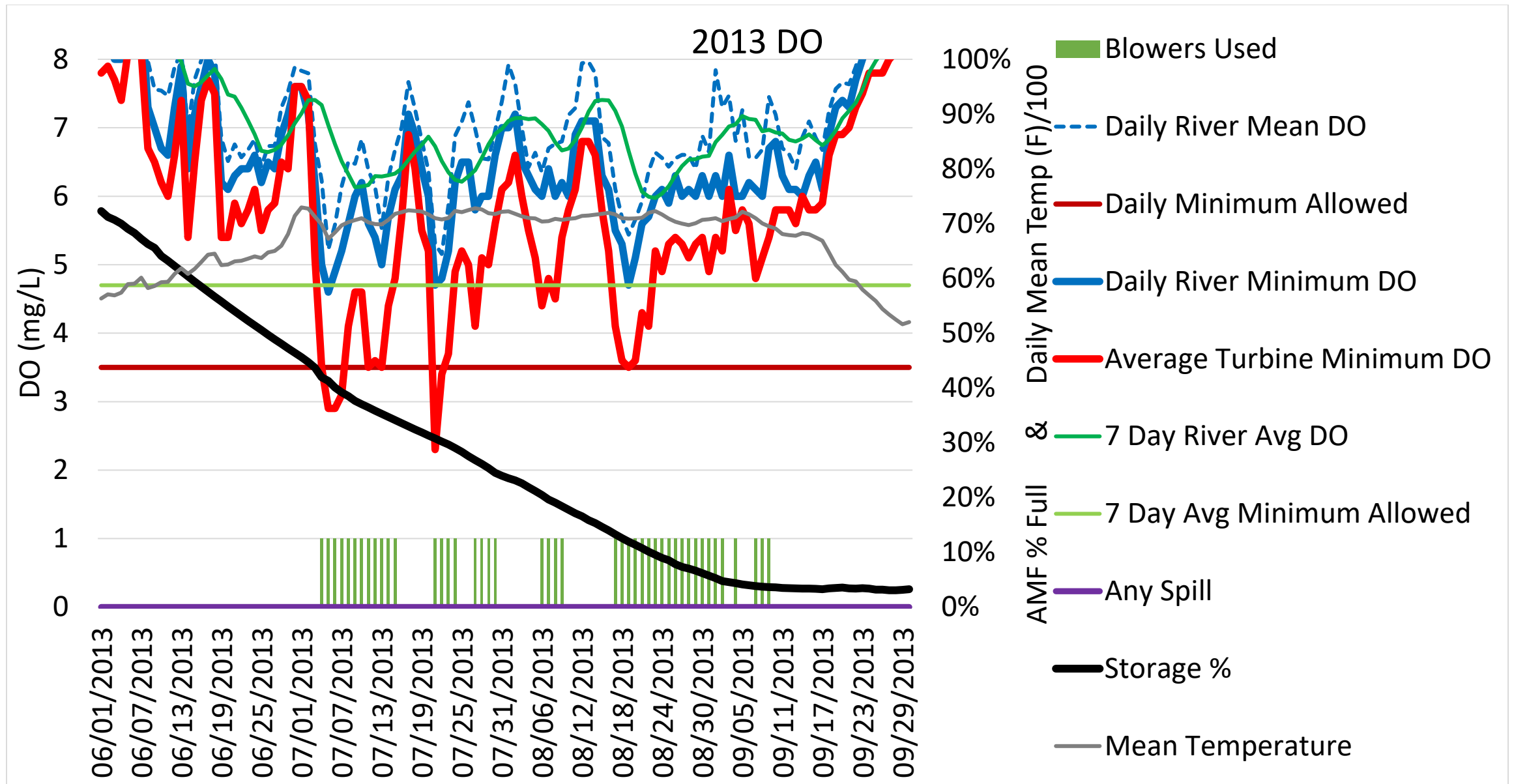


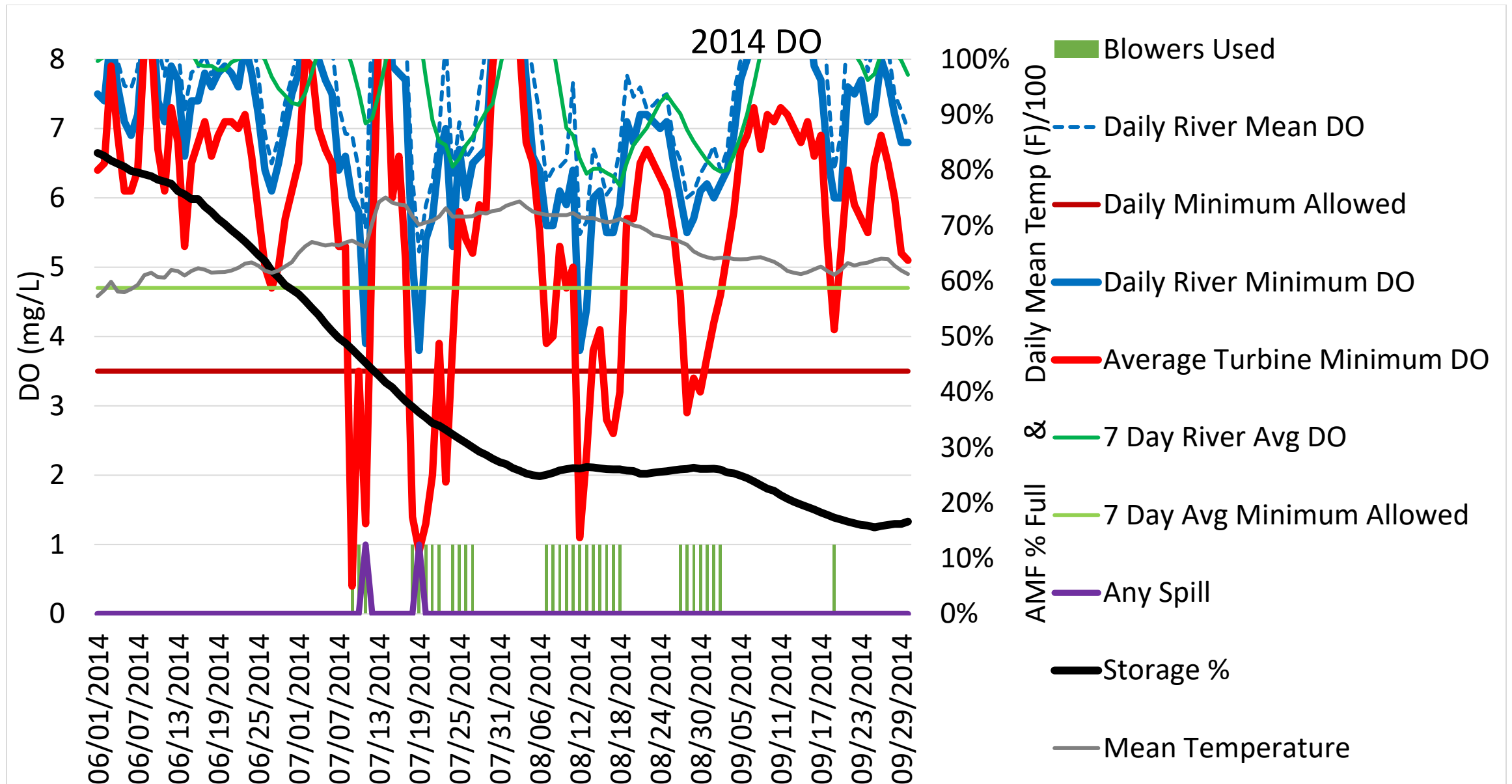


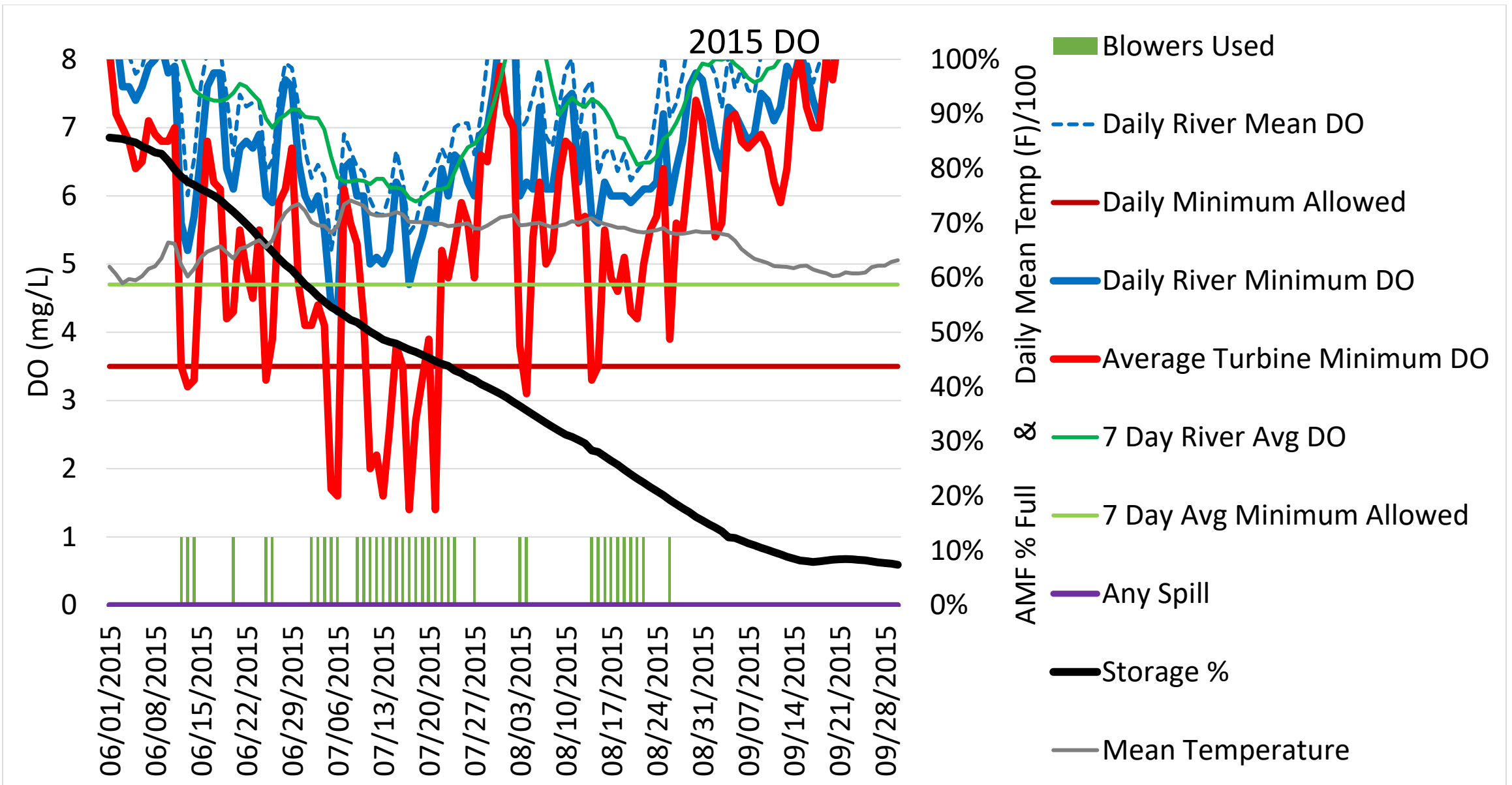


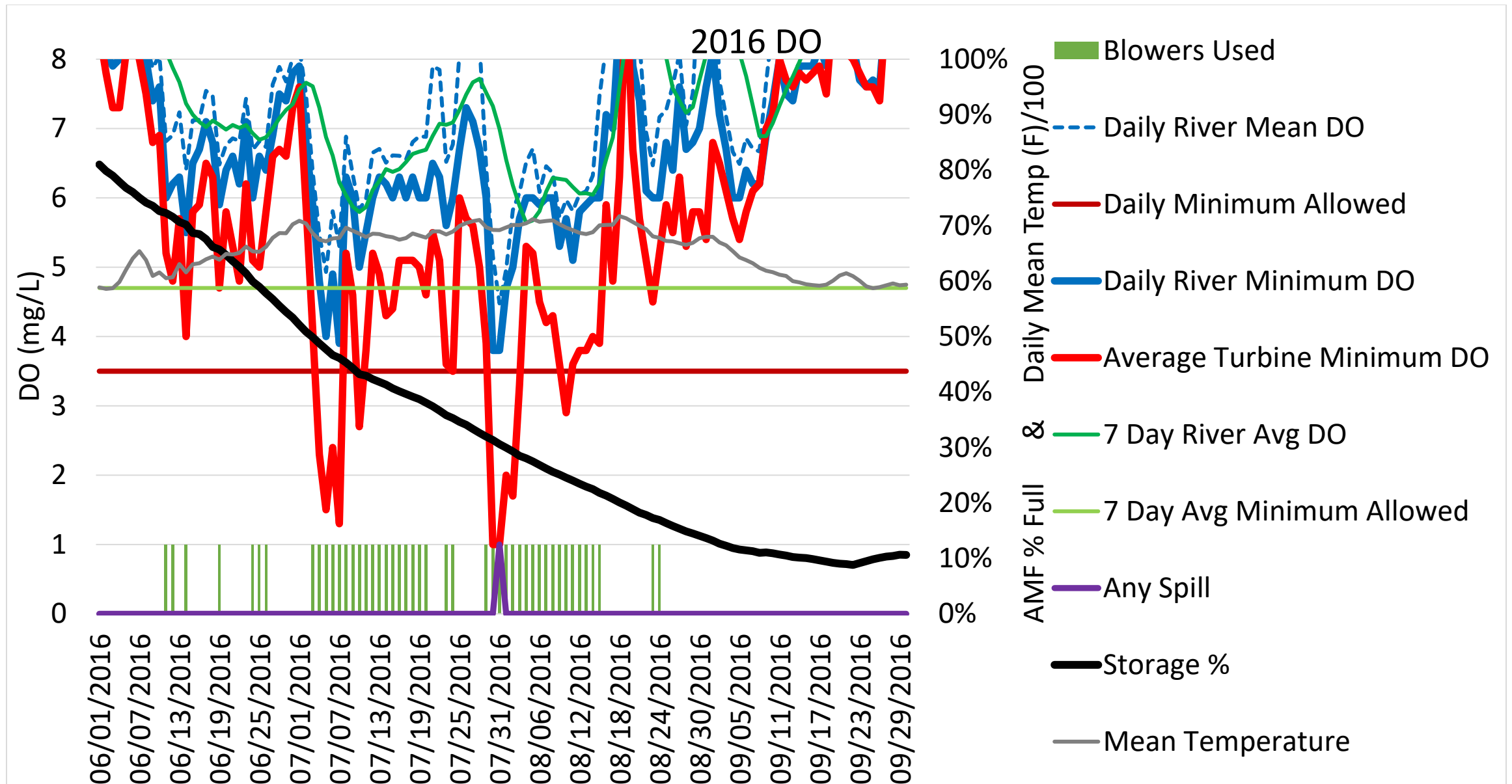


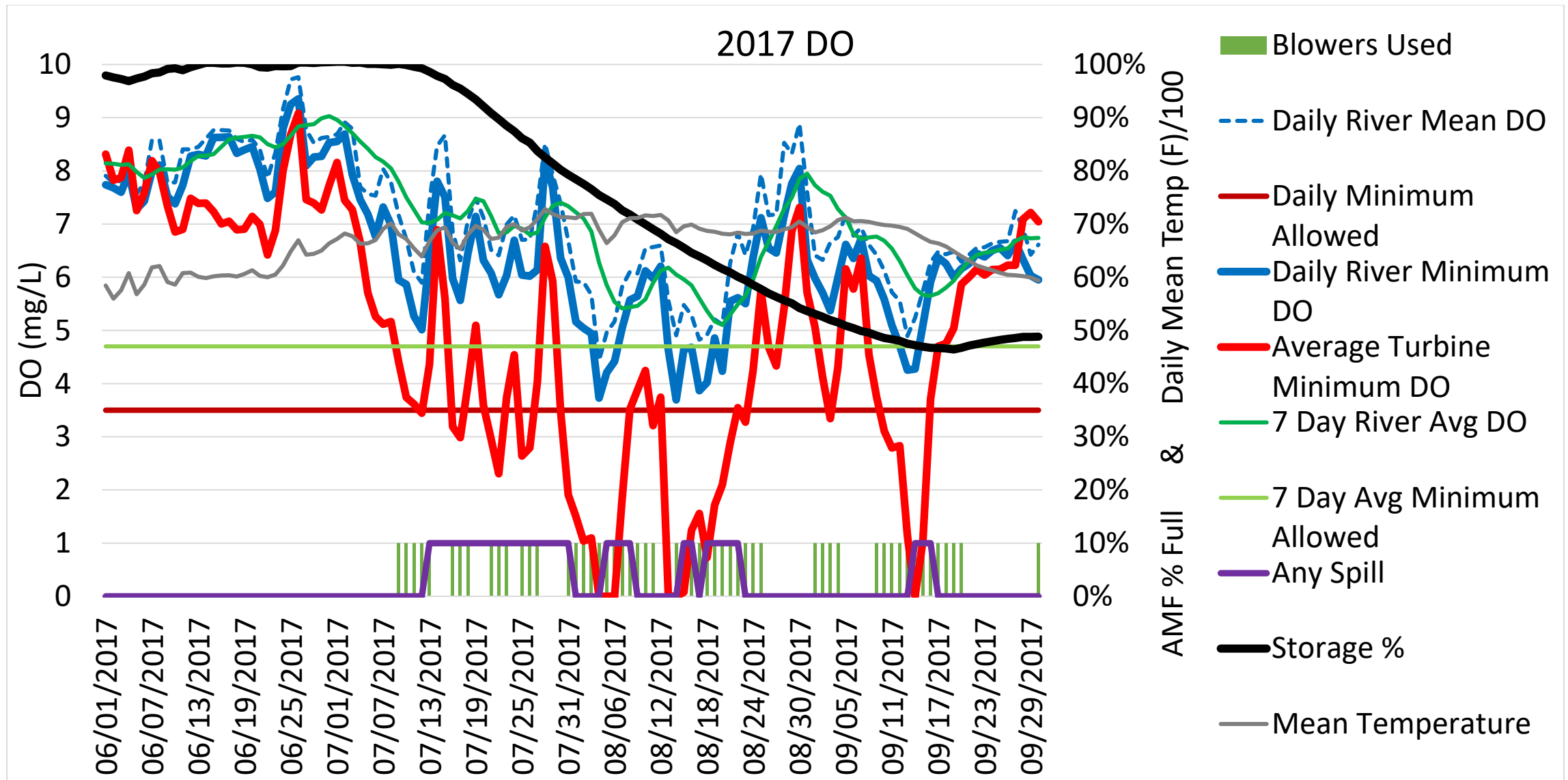


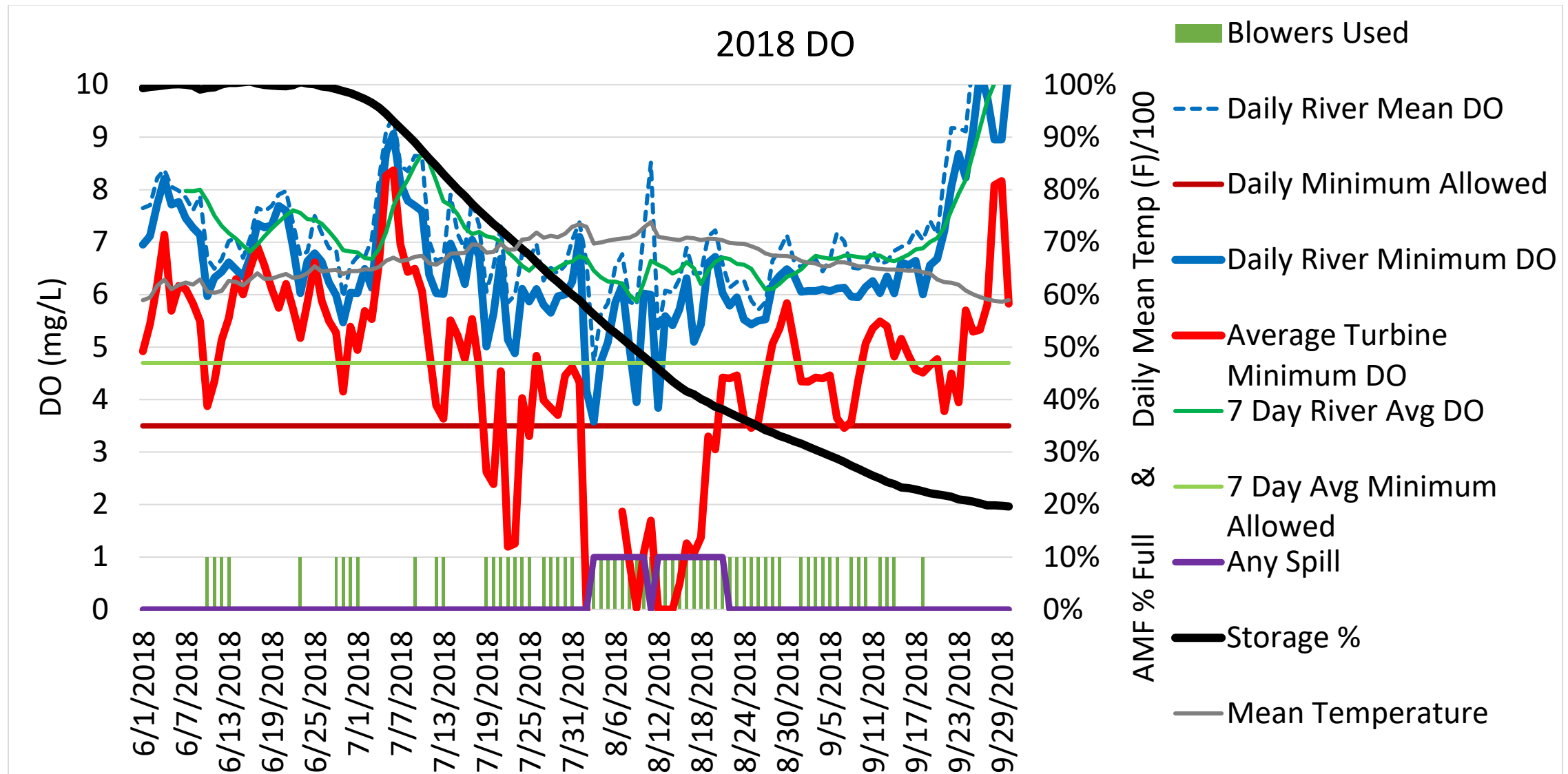




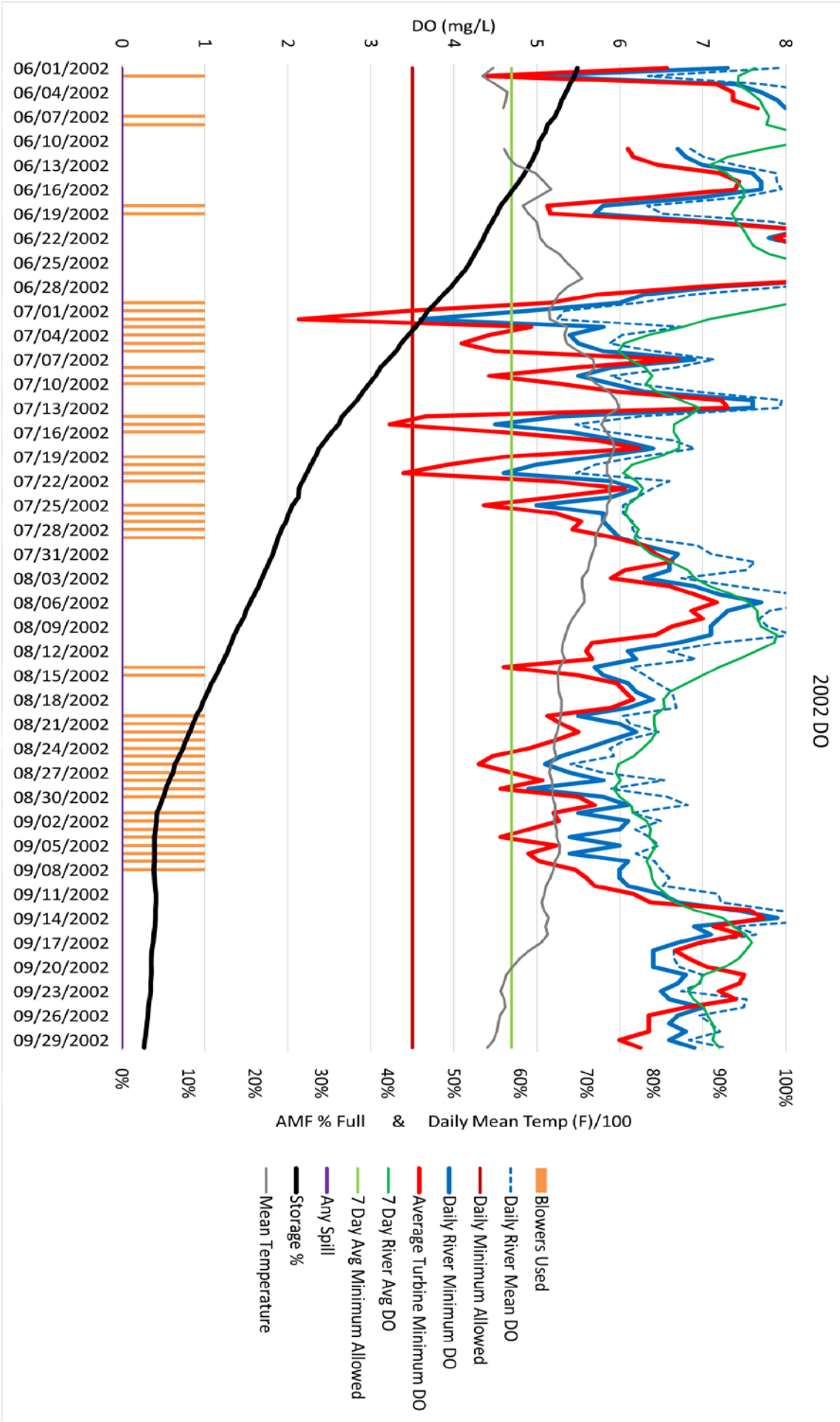


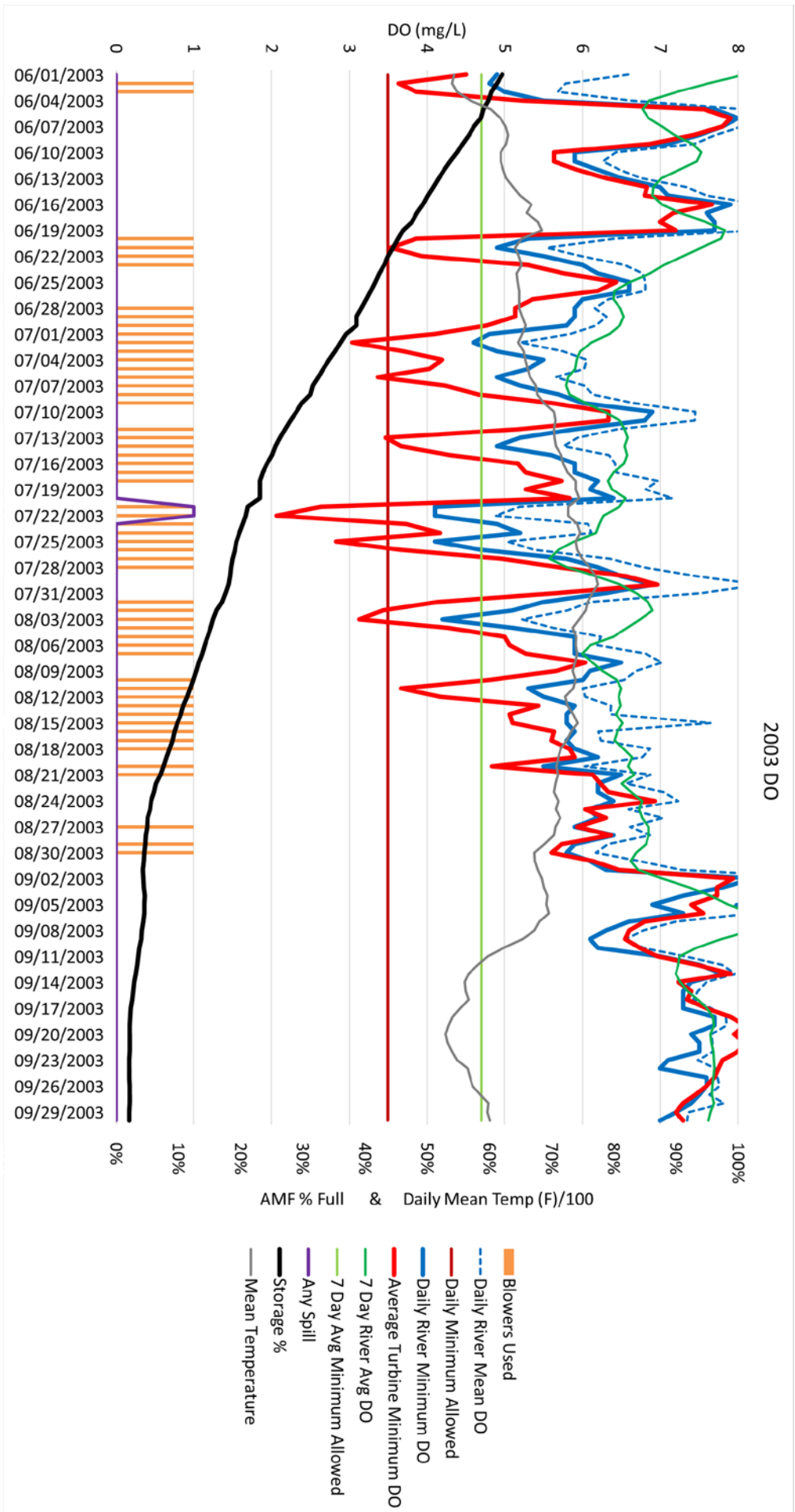


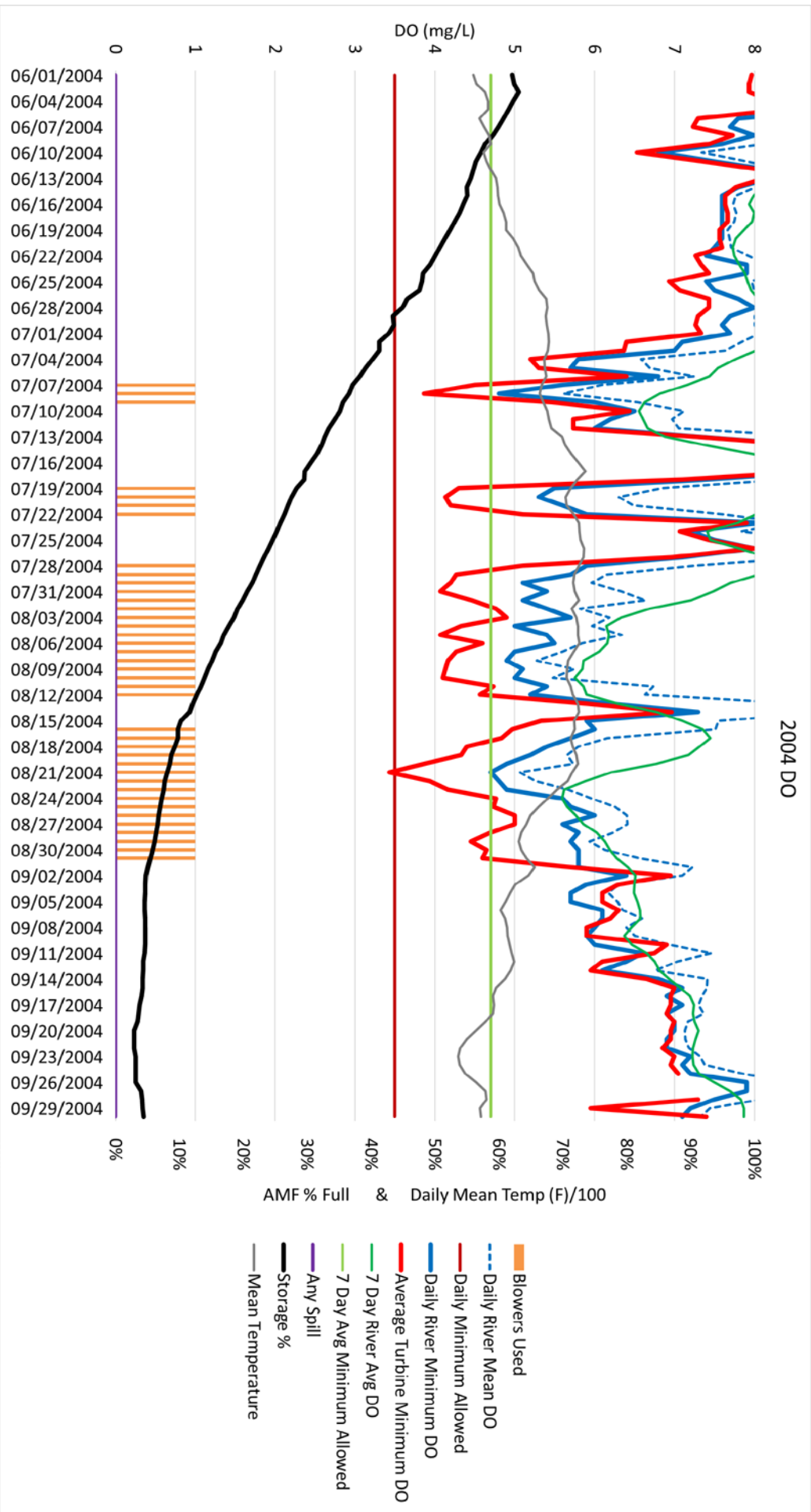


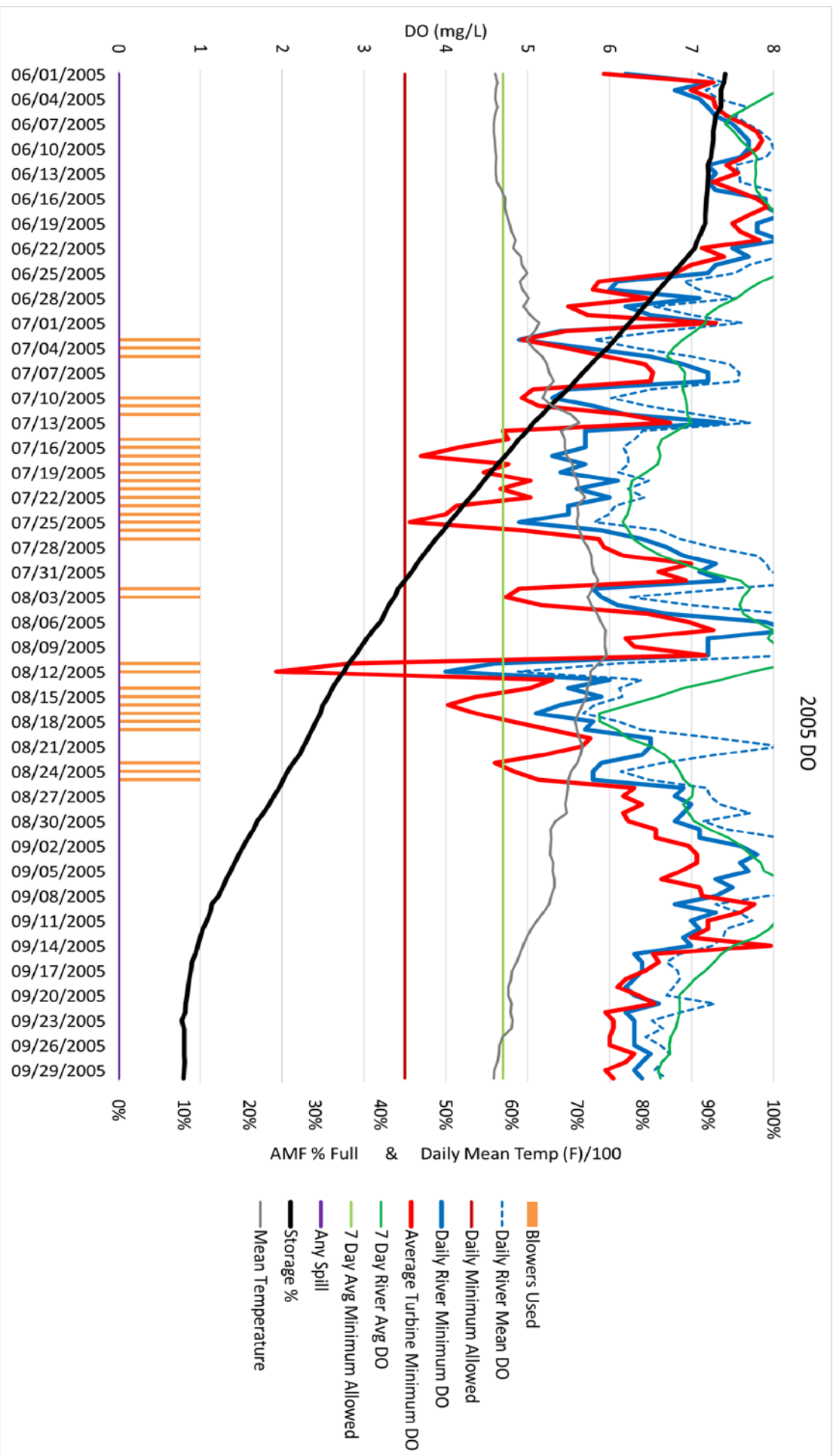


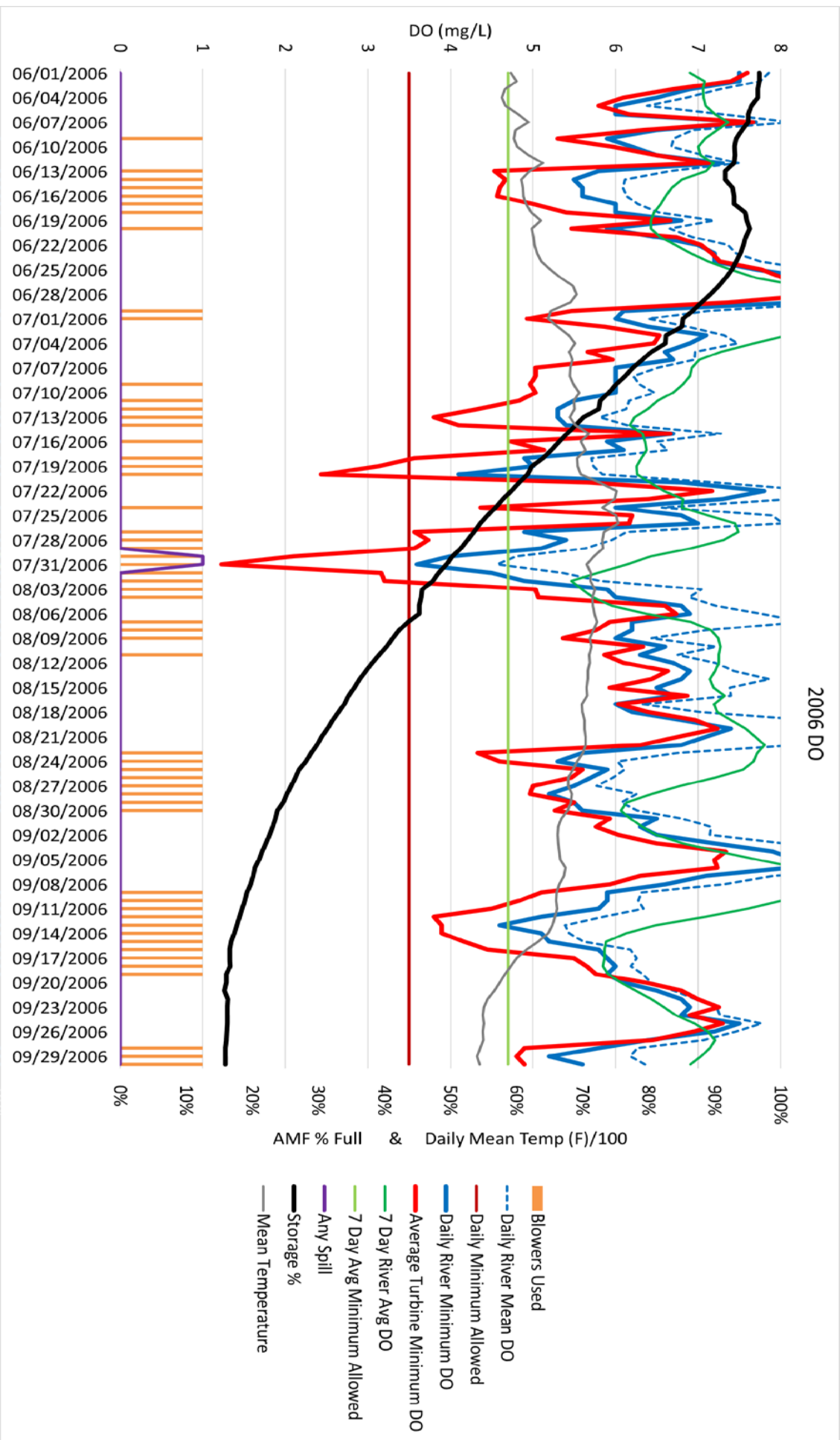
These Graphs replace the ones represented in Appendix C, Water Quality Data. Average Turbine Minimum DO was adjusted and 2019 graph added. Analyses based on previous data are still valid because overall trends and shape of new graphs are similar to previous graphs in the EA.



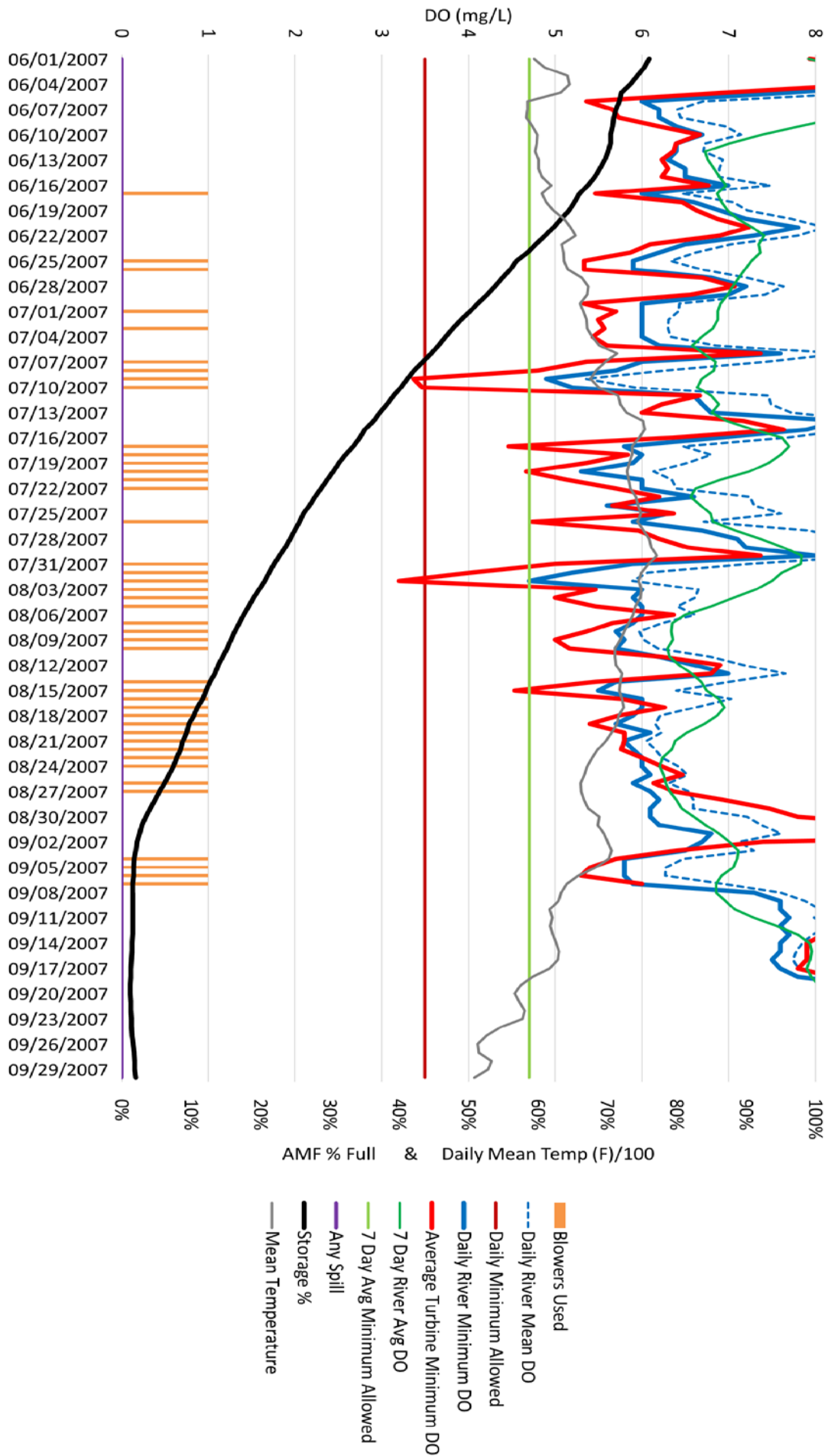


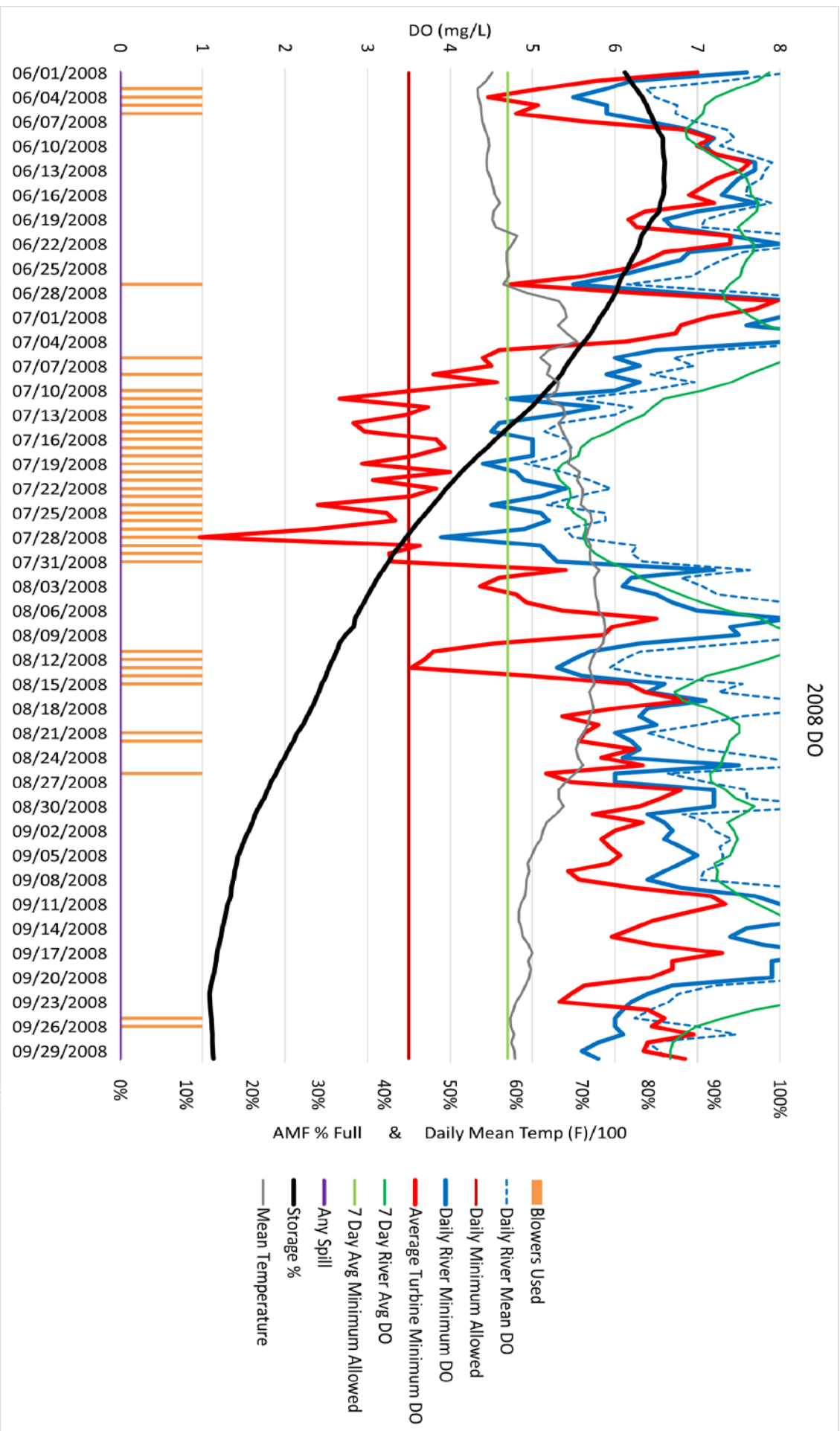




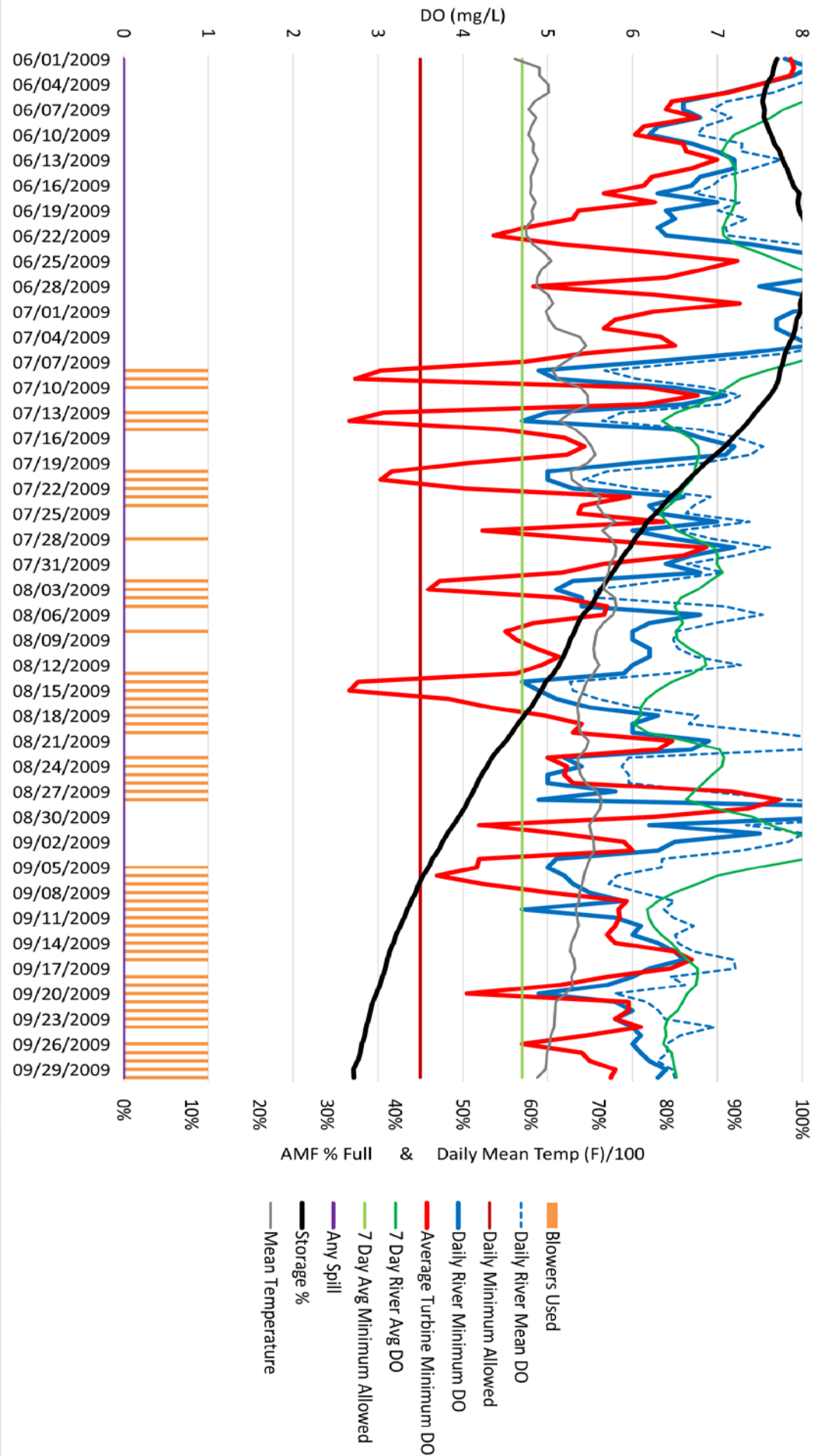


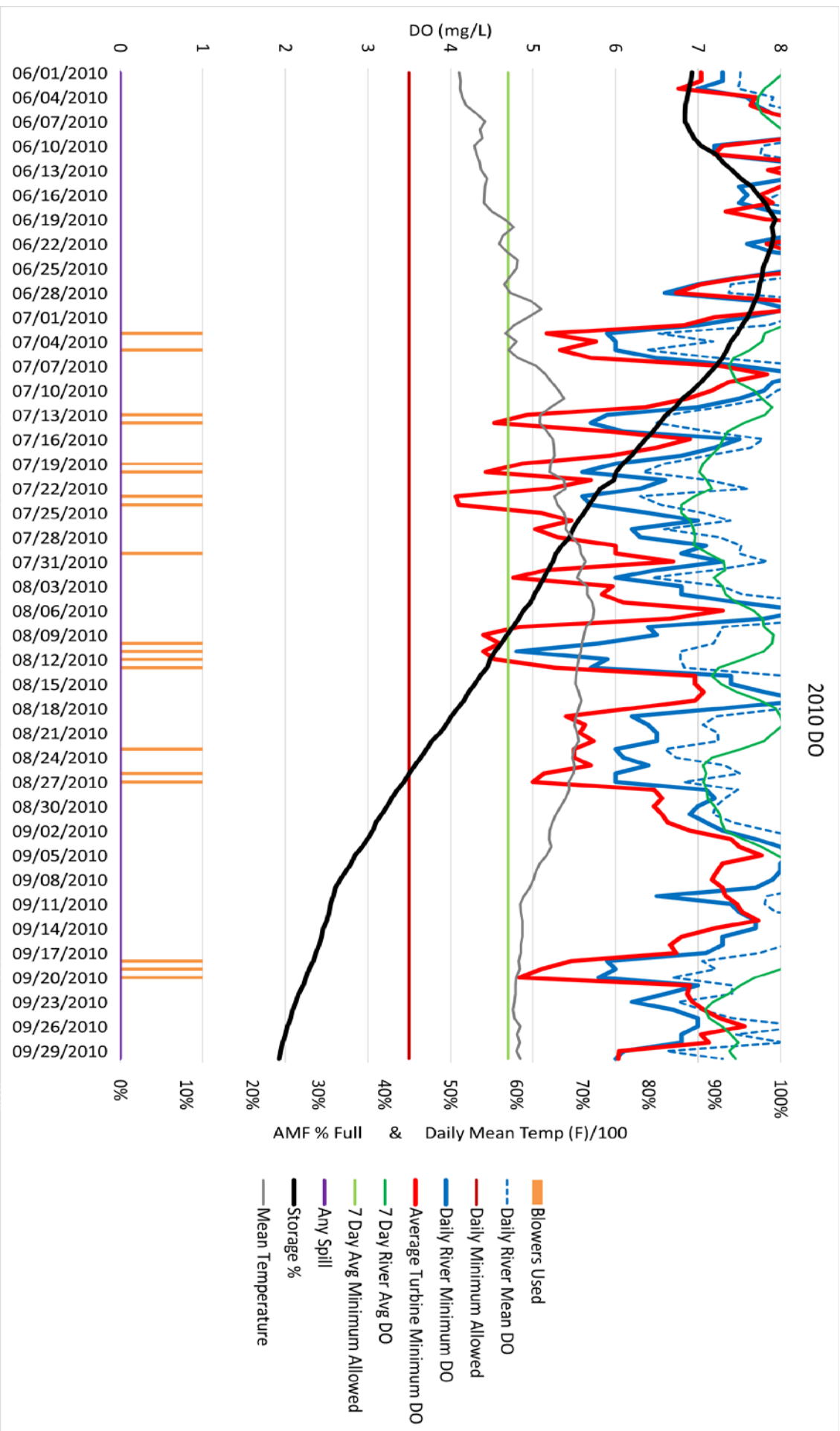
2007 DO

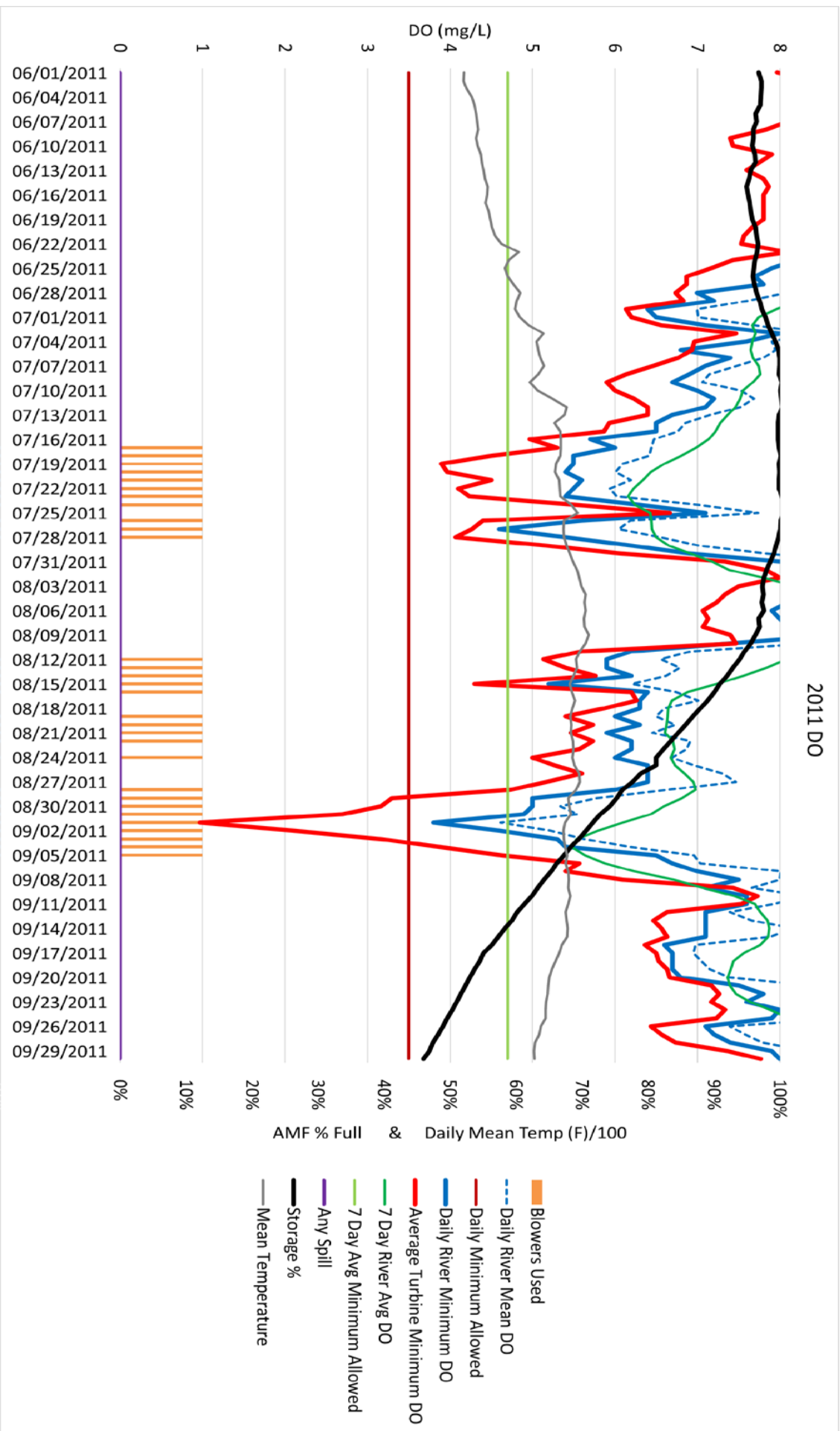


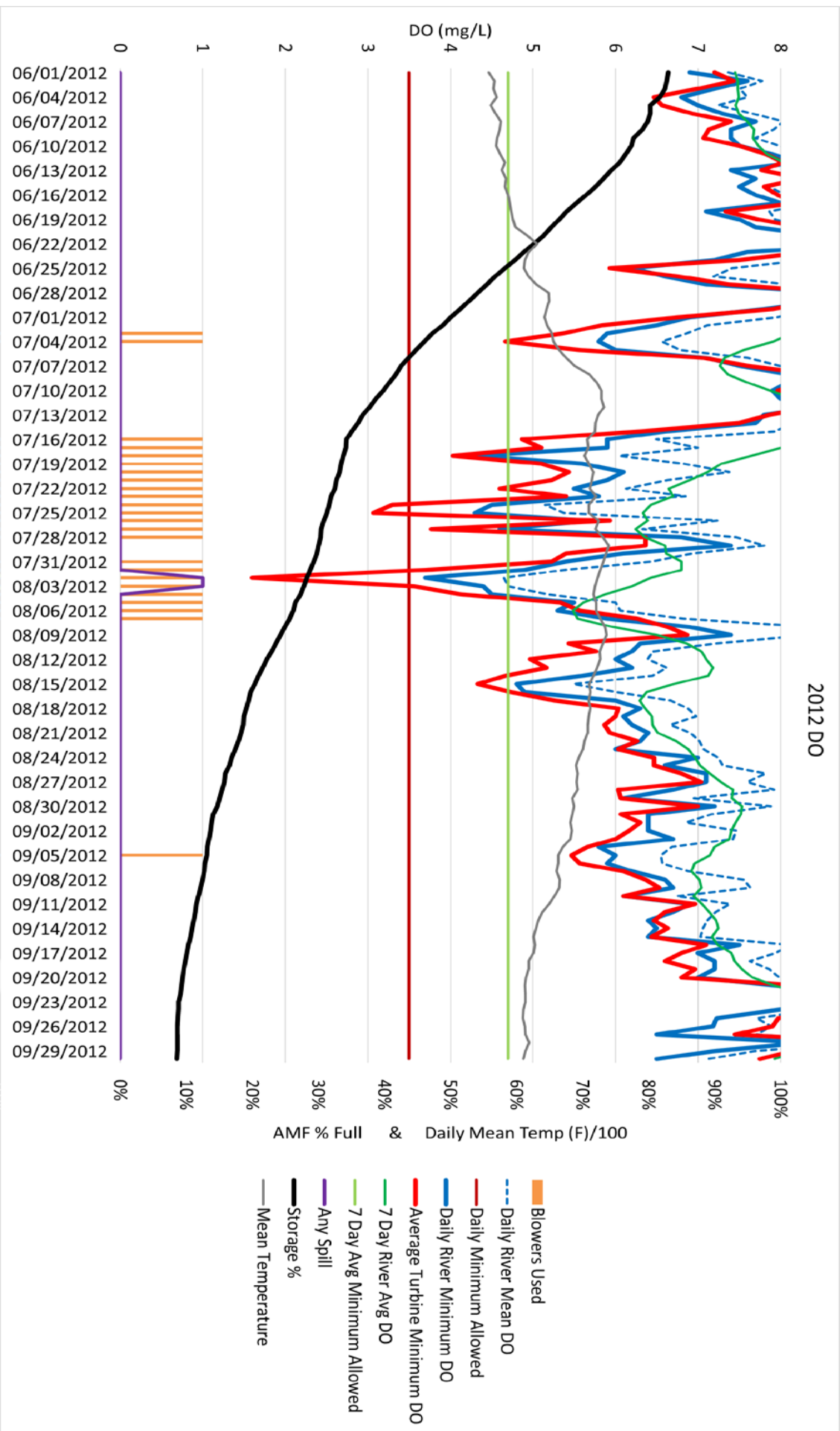


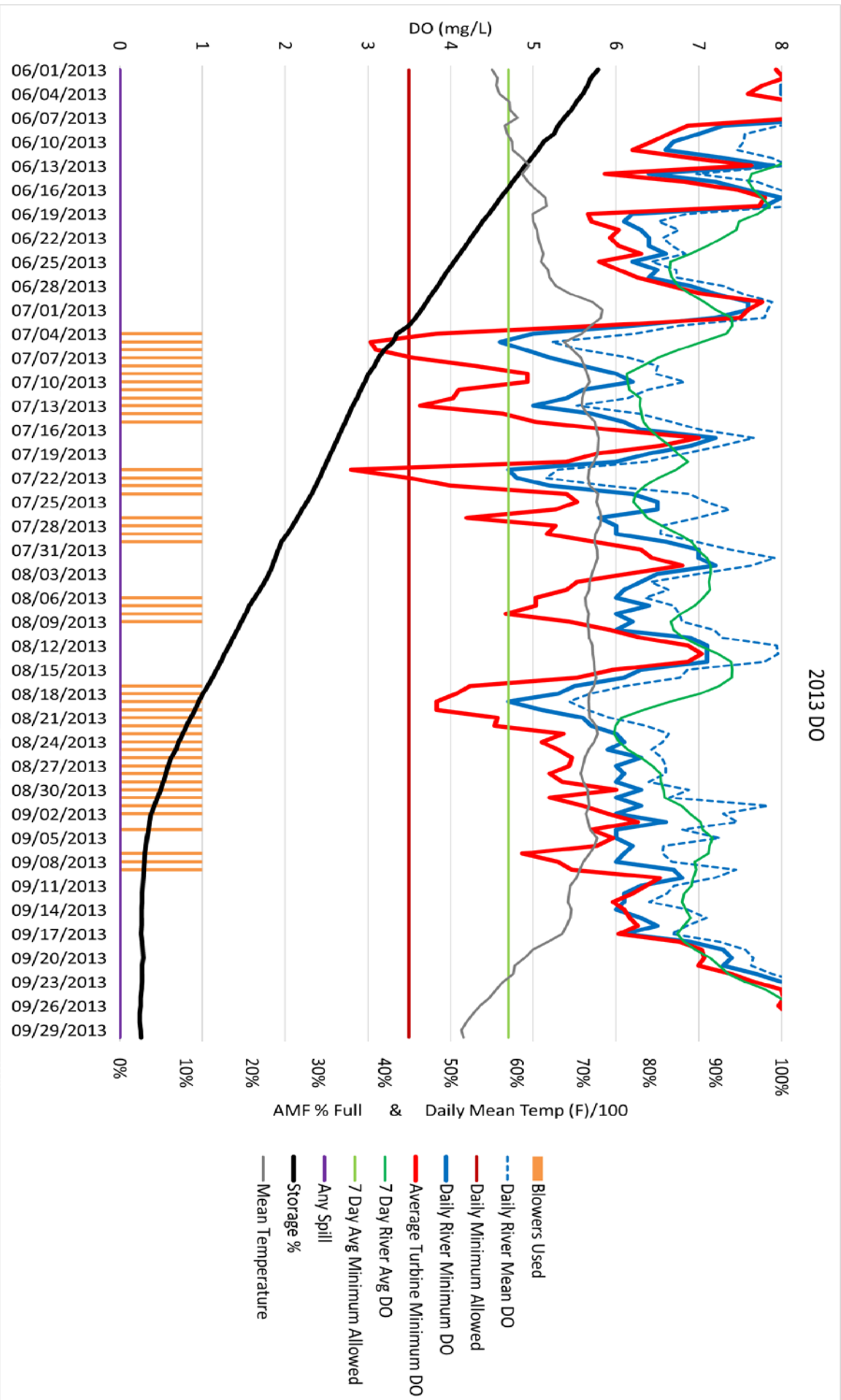
2009 DO



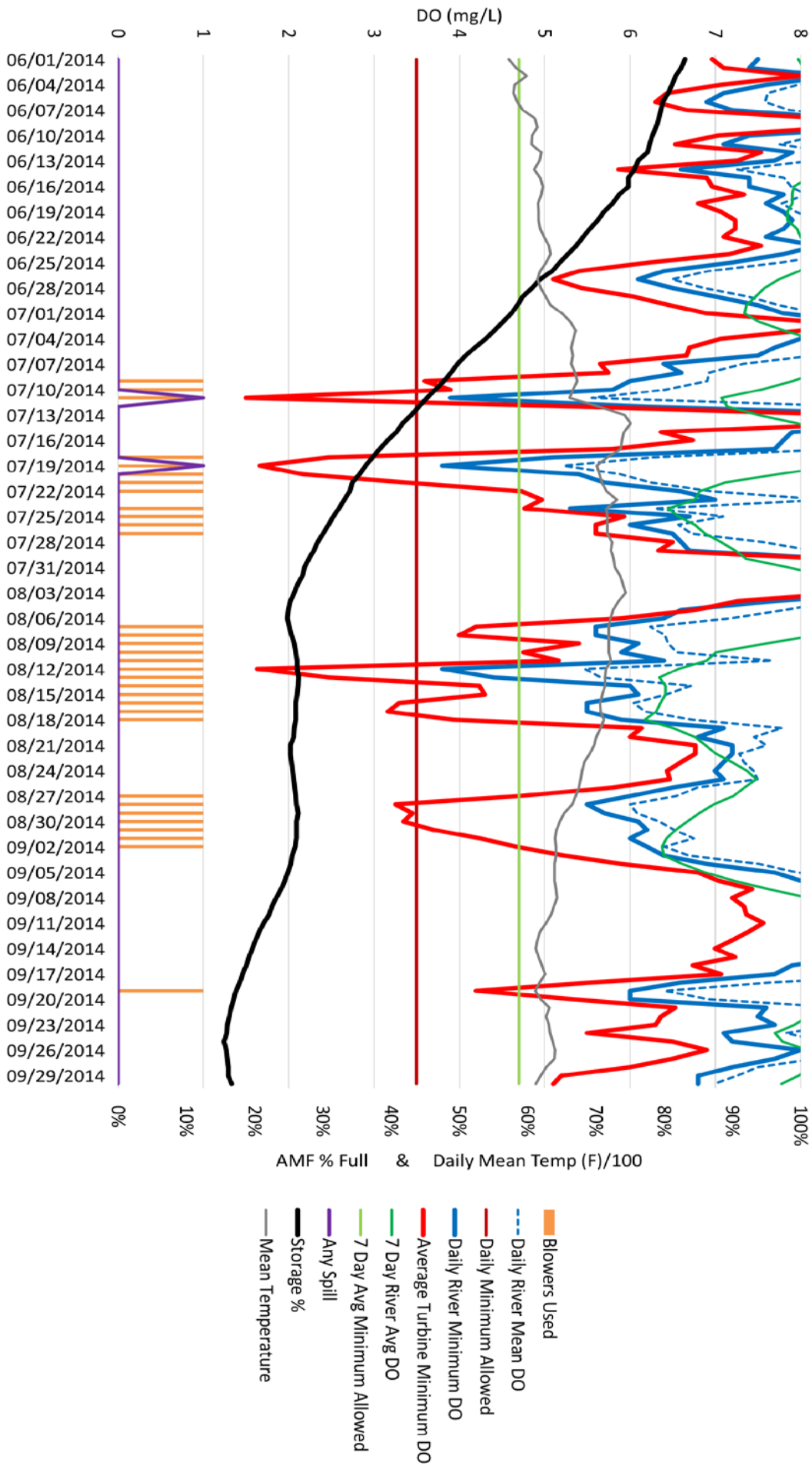


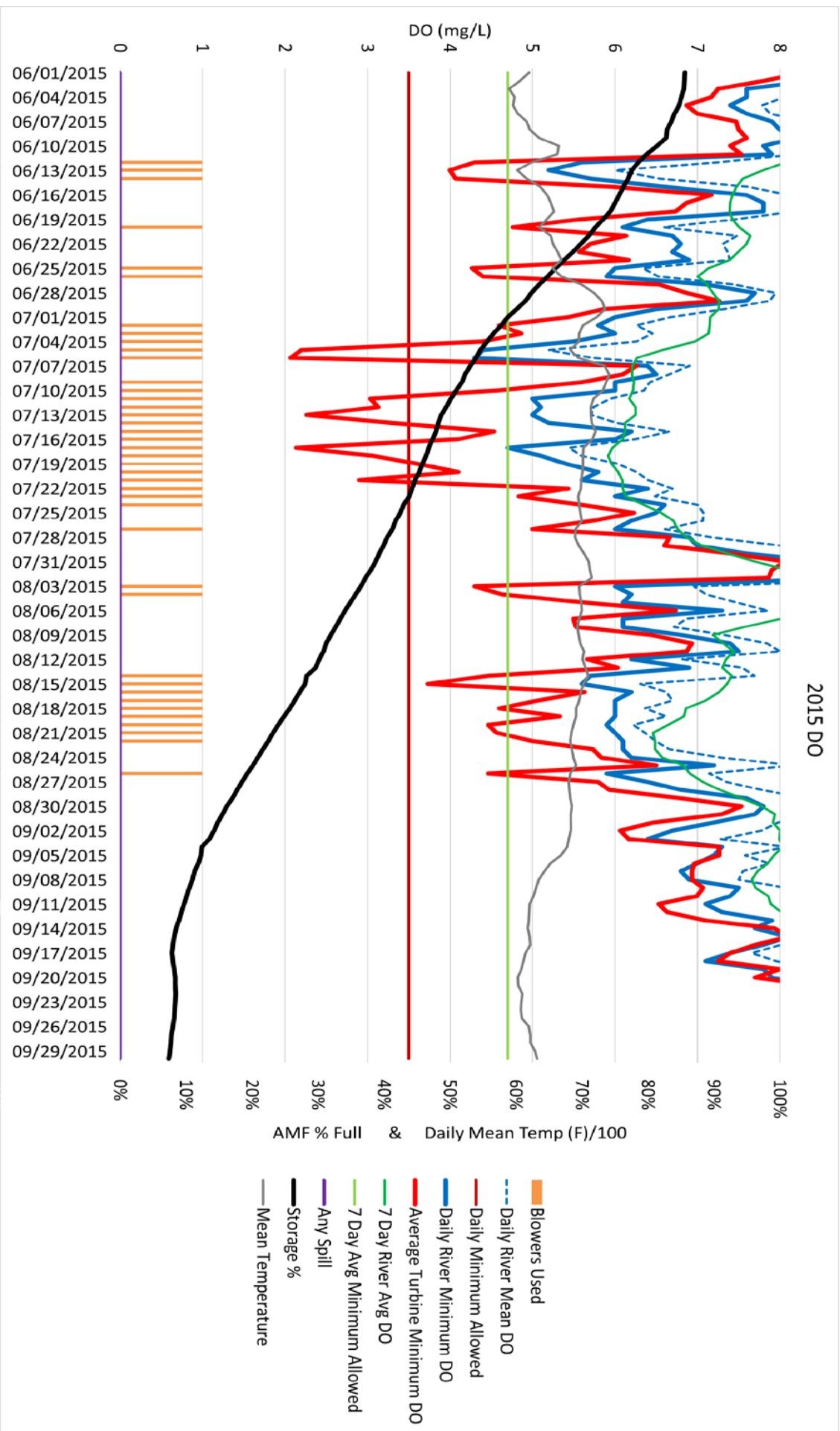




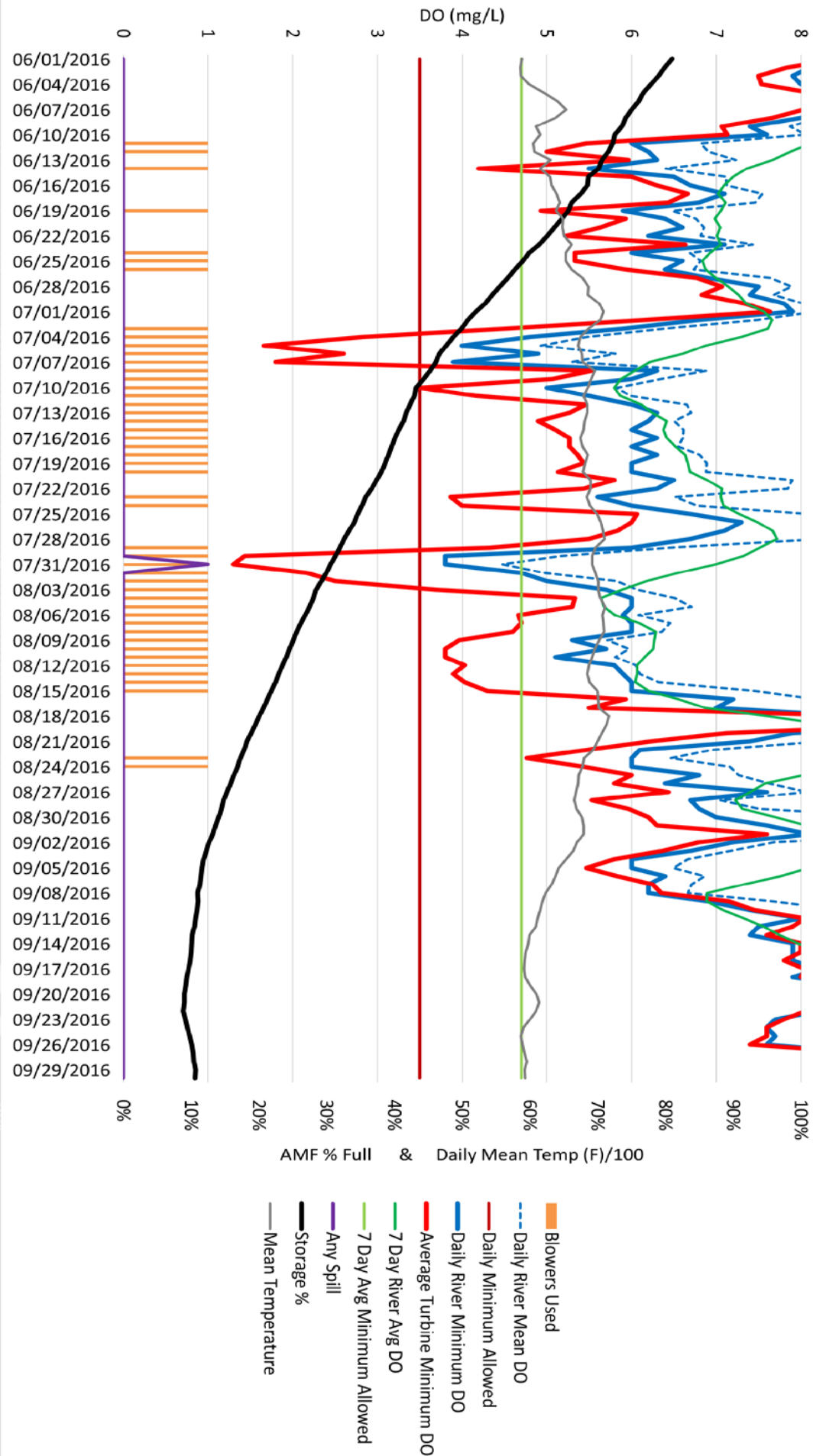


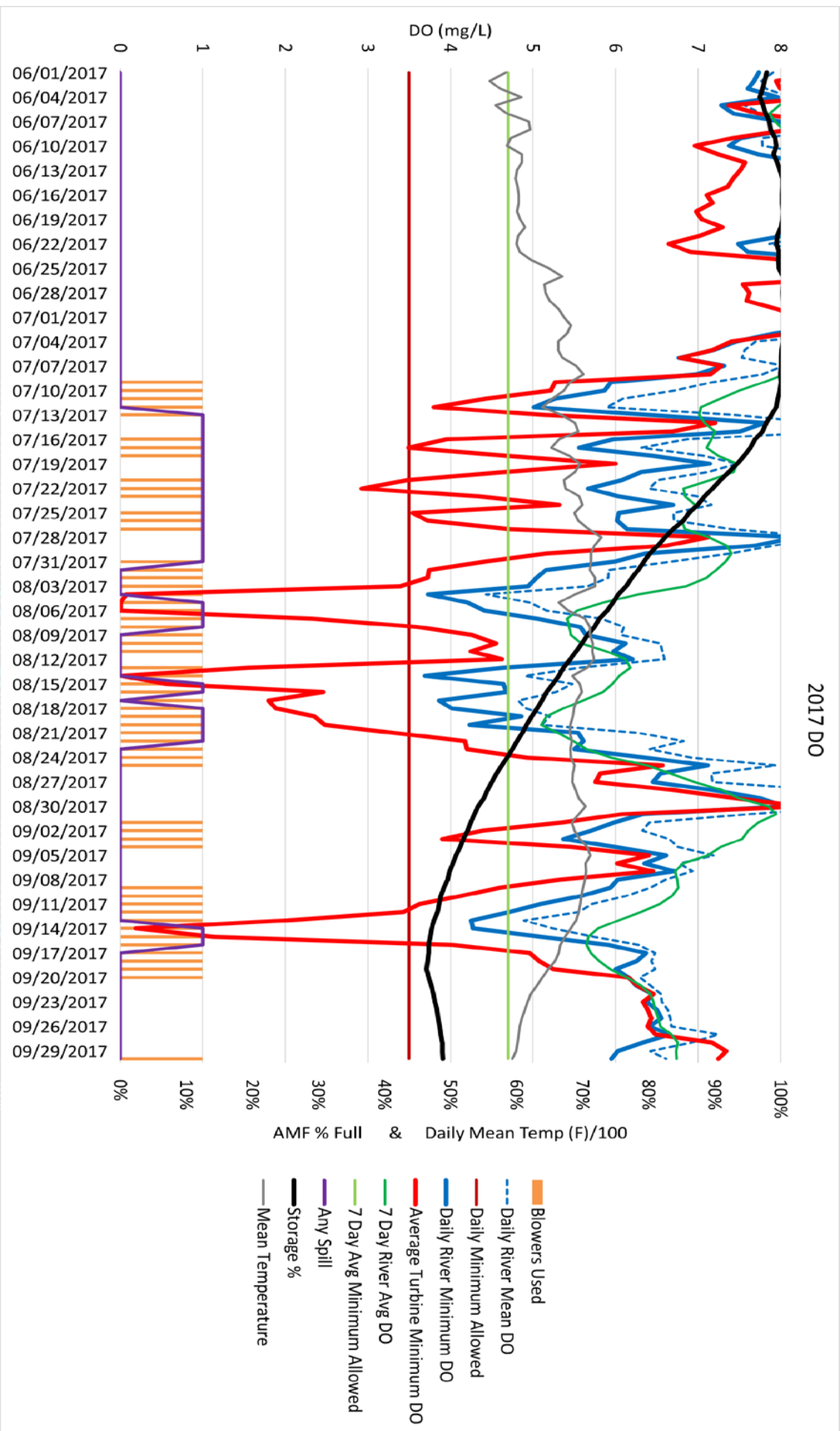
2014 DO



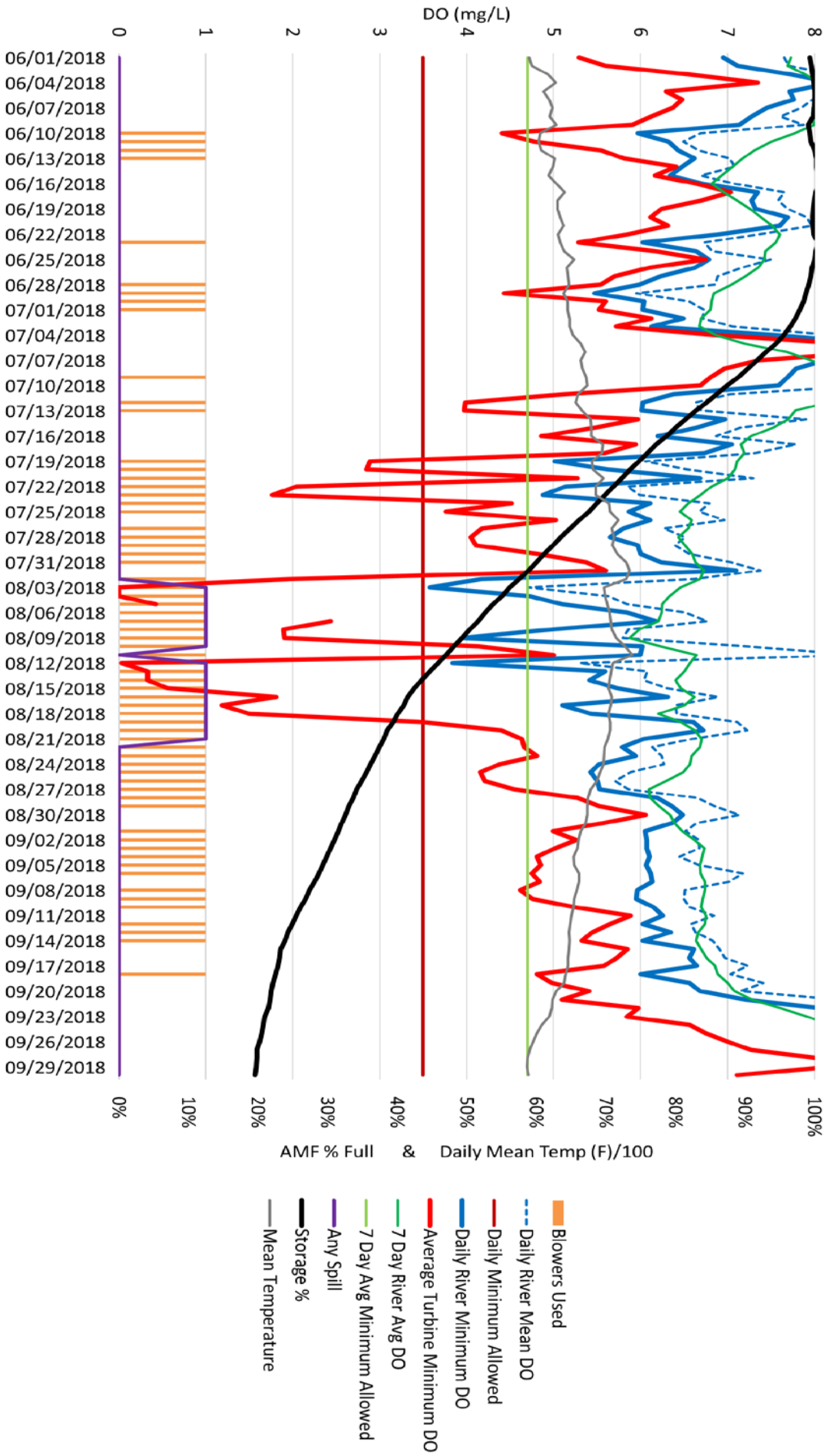


2016 DO

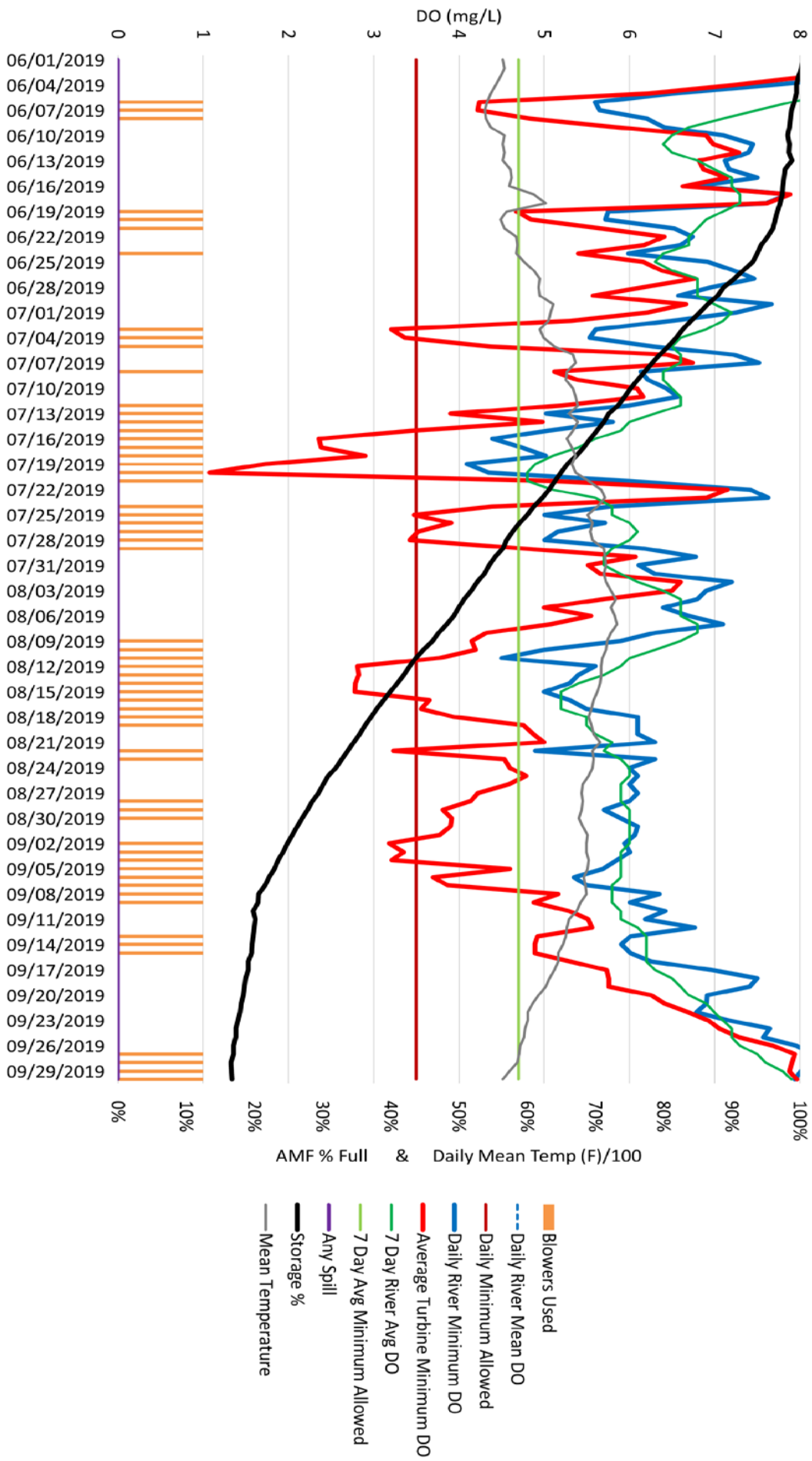




2018 DO



2019 DO



Appendix B

Contractor Use of Site Plan

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**U.S. Department of the
Interior Bureau of
Reclamation**

**AMERICAN FALLS
SPILLWAY REPAIR**

Solicitation No. 140R101 B0003

RSN: Section 01 14 10-1.2 Use of Site

Responsible Code: A

Revision: 2

1735 S Federal Way Boise, Idaho 83705 | 208.333.7738 | neil@winspearconstruction.com

American Falls Spillway Repair

Narrative Explanation of Site Plan

Project conditions

Scheduling of activities is based on the following information and understanding.

- Mobilization to the jobsite will occur during June of 2020
- Work is anticipated to occur over a 2-year period
- Work outside of the waterway can occur prior to July 15th, 2020.
- Work between the days of August 1st to November 23rd will not be subject to either flood flow, or augmentation flow through the spillway outlet gates.
- Construction work in the waterway may be accepted outside the designated limits by the government with approved construction measures.
- Additionally, if the residual forecast through July issued in April is for the Snake River nr Heise is 4 Million Acre Feet (MAF) (120% of average) or less, the waterway construction start date will be July 15 with the potential of starting earlier if conditions allow.
- Equipment, Materials, Debris and Access must be removed within 48 hours

If the forecast for the Snake River nr Heise is 120% of average or greater, the waterway construction start date will be August 1 with the potential of starting earlier if conditions

Contractor Staging Yard (Exhibit A)

Winspear construction will mobilize to the project site during the month of June in 2020. Construction crews will locate office trailers, conex storage containers, temporary power and water, portlet restrooms, building materials and fencing. The primary location of the temporary laydown yard will be located at the north east corner of the site. (see exhibit A). The office configuration will allow for onsite meetings between the Bureau of Reclamation and Winspear construction. The office will also serve as the primary location for first aid and medical supply.

Winspear will begin by establishing the extents of the contractor laydown yard. Once established, the area will be cleared of vegetation and rough graded. Care will be made to remove the least amount of material and limit the disturbance area. Proper erosion control measures will be installed along the perimeter of the laydown yard. The area will be sloped to allow for proper drainage. Protection of any adjacent drainage structures and electrical equipment will be done.

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Silt fence and erosion controls will be implemented. A track out pad will be prepared to prevent the transmission of dirt, vegetation and other organic material. Care will be made to prevent the introduction of noxious weeds and invasive species.

The area will be bordered with a perimeter security fence to prevent any unwanted intrusion. Winspear construction will create temporary parking for the project staff and subcontractors. Signage will be posted in the area that describes the location of material laydown and equipment storage.

Winspear construction does not anticipate any need for onsite fueling. Any fuel cells will be contained within the appropriate berm as described in the hazardous storage submittal (01 35 20-02)

After completion of the project, in 2021. Winspear will regrade the area to match the existing terrain. Care will be made to allow for proper and natural drainage.

Temporary Access Road (exhibit B)

As soon as practical, Winspear construction will prepare a temporary access road into the stilling basin. The access road will replace the need to work from the SH39 bridge. Access will begin on Bridge Street near the electrical substation. The access gate located near station ARS 00+68 will be secured during non- working hours, Winspear construction will protect the gate from damage during construction.

The route between station ARS 00+68 to ARS 03+70 will follow the alignment of the existing pumping plant intake line. The working distance between the bridge pier of SH39 and the face of the intake pipe is shown to be 14 feet (168 inch). Currently, Winspear anticipates that typical vehicle width will fall under 9'-2" feet. Winspear will provide temporary traffic control items, reflective taping or, if needed barriers between the pipe and the roadway.

The road will curve around the thrust block near station ARS 03+70. Please note, vehicle traffic may have to make additional turns to negotiate the curve. Proper access will be provided around the curve for vehicles with trailers.

At the base of the ramp at station ARS 04+49, the road will curve to meet an access ramp built onto the berm. Winspear will remove a segment of the existing chain link fence that currently sits on top of the berm (near ARS 04+81).

Winspear will pioneer a road along the embankment by removing rock and replacing on the stilling basin side of the berm. (See exhibit C) The road will travel along the slope of the rock berm, adjacent to the centerline, along the western slope. Earthwork crews will construct a rockfill roadway into the downstream of stilling basin channel from station ARS 04+81 to ARS 06+53. The overall grade from the top of the berm to the bottom of the stilling basin channel segment will not be greater than 12%.

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At the base of the berm, the road will curve into downstream stilling basin channel. Once entry into the stilling basin is established, vegetation will be cleared. The roadbed will be filled with crushed rock to establish the elevation of the roadbed. At station ARS 08+36, the roadway meets the concrete stilling basin. The road bed will be elevated to meet the first curb wall near station ARS 08+69. The roadbed will consist of $\frac{3}{4}$ " - 4" stone, is approximately 184 ft long, 16 ft wide, and will have a 6-8 in thick section.

A temporary ramp will be constructed to allow access into the stilling basin. (see exhibit D) The ramp will maintain a grade not be greater than 12% and will be constructed to allow for a timely disassembly. The proposed ramp will be made using concrete ecology blocks wingwalls, super sack abutments, and a rock fill ramp with geogrid. All materials sourced for the ramp will be scour and wear resistant. The ramp will finish at the top of the step transition between 4273 and 4271.33. The step will be built up to with material to accommodate the elevation difference and protect the concrete at the step.

The table below describes the alignment as proposed; elevation and stations are approximate.

Station	Segment	Elevation	Note
ARS 00+00	Entry		
ARS 00+68 – ARS 03+70	Intake Pipe Segment	~4300	
ARS 03+70 – ARS 04+49	Thrust Block Curve	~4300	
ARS 04+49	Riprap Berm- Roadway entrance	4300	Transition: roadway - up ramp
ARS 04+81	Riprap berm- Top of ramp	4305*	Cut into existing, replace Rockfill
ARS 06+53	Riprap berm- Bottom of ramp	4284*	no more than 12%
ARS 06+53 – ARS 08+36	Downstream area	~4284	downstream of stilling basin
ARS 08+36 – ARS 08+69	Curb ramp transition	4283 - 4281	Transition into downstream of stilling basin channel to stilling basin
ARS 08+69 – ARS 09+37	Curb to Top of temp ramp	4281 - 4284	Elevation to top of crane mat
ARS 09+37 – ARS 10+30	Top of temp ramp to stilling basin	4284 – 4273	Entry into stilling basin (no more than 12%)

* proposed

Stilling Basin Use of Site

Access into the stilling basin will be achieved by use of the temporary access road (ARS). The access road between ARS 06+53 – ARS 08+36 will be constructed in the same manner as the spillway season. The road will terminate near the downstream weir block at station ARS 09+37.

Entry into the downstream stilling basin will not involve the same ramp concept as shown on Exhibit D. Additionally, work within the stilling basin will not include the same equipment as required for the spillway face; equipment will be lowered into position by crane. The equipment removal will be done by crane.

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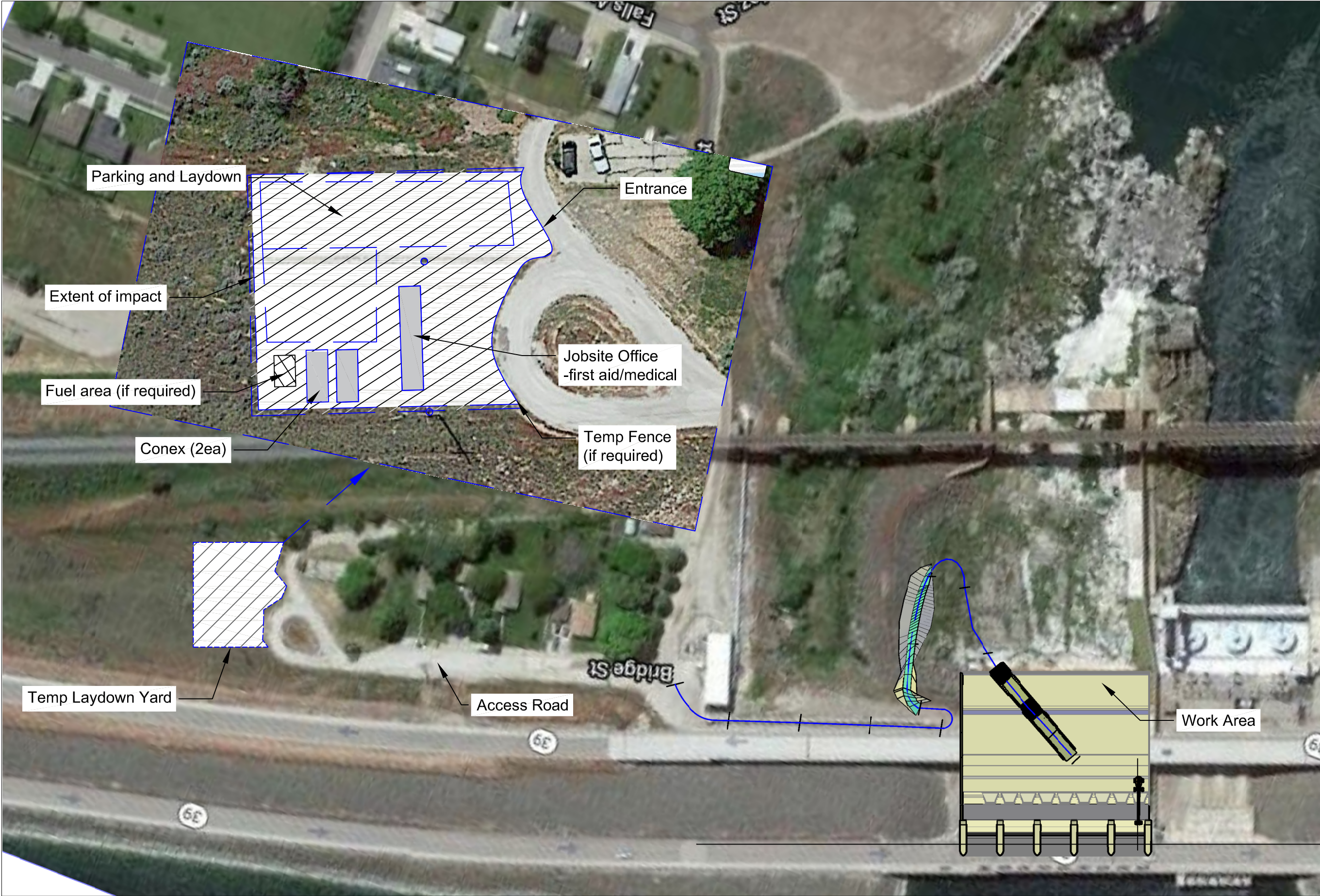
Evacuation Event

As described within the specification, the ability to spill water through the outlet gates must always be maintained to regulate flow in the Snake River. Contractor must maintain the ability to evacuate all workers, equipment, and debris from the stilling basin within 48 hours of notification. Work and equipment located above the waterline can always remain in place.

Winspear construction will retain equipment on standby for purposes of removal. This includes excavators, forklifts, hauling and delivery equipment, cleaning and protection equipment. As shown below, Winspear will perform the work during a two-shift operation.

The table below shows a list of items, and estimated time, required for evacuation during the first season of work. Winspear will use the same plan for the stilling basin portion of work. The analysis below represents rebar installation and formwork while hydrodemolition work is ongoing. Estimated durations are intended to represent a conservative production; tasks are shown to be consecutive. It is anticipated that all removal activities will be performed concurrently. The table is meant to represent a worst-case scenario during the busiest point of time. Removed material will be taken to the temporary laydown yard for use in the future.

#	Task / Item	Beg.	End	Equipment	Estimate Duration (hr.)	Total (hr.)
1	Winspear construction receives evacuation notice. American Falls spillway construction team begins evacuation procedures	0600	0630		-	-
2	Remove spillway & / or stilling basin access / formwork/ drilling equipment/ rebar	0630	1630	RTH Manti 6.30 Forklift JLG 1200SJ (or larger)	10.00	10
3	Remove and uncouple hydrodemolition equipment	1630	1830	RTH Manti 6.30 Forklift	2.00	12
4	Remove water supply for pumps from water source (Snake River)	1830	2030	RTH Manti 6.30 Forklift	1.00	13
5	Remove high pressure pumps from Stilling Basin to upper laydown yard, load up on flatbed truck, run pumps up ramp to upper yard	2030	2230	RTH Manti 6.30 Forklift	2.00	15
6	Remove water treatment pumps (2 ea.) and discharge hose	2230	0230	RTH Manti 6.30 Forklift	3.00	18
7	Remove Sandbag / Cofferdam containment	0230	0330	JD 329 Skidsteer	1.00	19
8	Remove Lower Stilling Basin remaining items (tools etc)	0330	0530	JD 329 Skidsteer, RTH Forklift	2.00	21
9	Clean lower spillway area / prepare for spill event from outlet pipes	0530	0730	JD 329 Skidsteer brush attachment	2.00	23
10	Remove Crane Mat from Stilling basin ramp	0730	0930	RTH Manti 6.30 Forklift, Flatbed	2.00	25
11	Remove Lower Ramp- ~ 300 cy (ARS 10+30 to ARS 09+37)	0930	1330	CAT 325, JD 329 Skidsteer, Dumptruck	4.00	29
12	Remove Lower Ecology Blocks (60 ea.) (ARS 10+30 to ARS 09+37)	1330	1830	CAT 325, dumptruck, RTH Manti 6.30 Forklift	5.00	34
13	Remove Lower Super Sack (75 ea.)	1830	2230	CAT 325, dumptruck, RTH Manti 6.30 Forklift	4.00	38
14	Remove Upper Ramp- ~ 150 cy (ARS 09+37 to ARS 08+69)	2230	0030	CAT 325, JD 329 Skidsteer, Dumptruck	2.00	40
15	Remove Upper Ecology Blocks (26 ea.) (ARS 09+37 to ARS 08+69)	0030	0230	CAT 325, dumptruck, RTH Manti 6.30 Forklift	2.00	42
16	Remove Upper Super Sack (50 ea.) (ARS 09+37 to ARS 08+69)	0230	0530	CAT 325, dumptruck, RTH Manti 6.30 Forklift	3.00	45
17	Clean and Secure Stilling Basin / Remove debris / Road removal (60 cy)	0530	0730	CAT 325, JD 329 Skidsteer, Dumptruck	3.00	48



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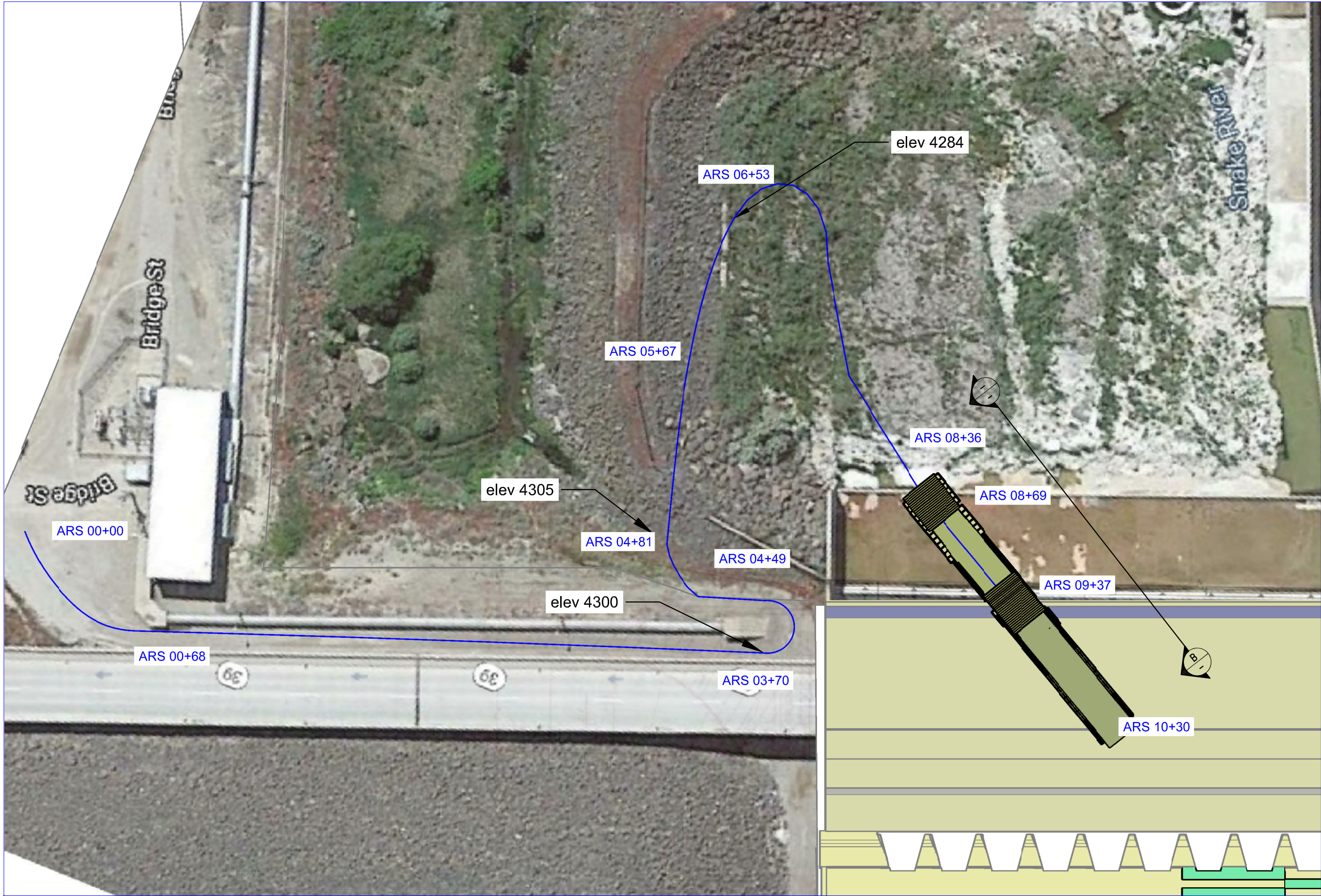
AMERICAN FALLS SPILLWAY REPAIR

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
ISSUE DATE:	

SHEET TITLE:
PROPOSED
LAYDOWN
YARD

SHEET NUMBER:
EXHIBIT- A

SCALE:



REVISIONS			

AMERICAN FALLS SPILLWAY REPAIR

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DRAWN BY:	
CHECKED BY:	
ISSUE DATE:	

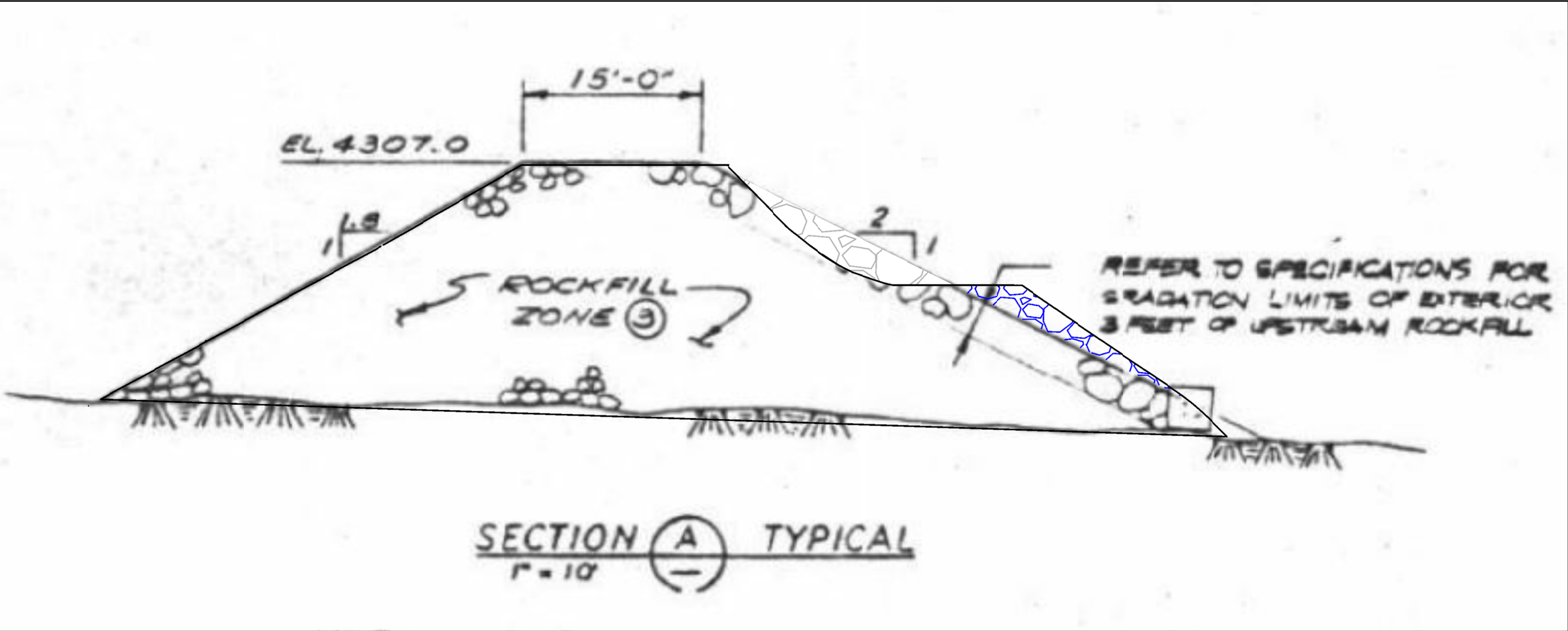
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ROADWAY
ACCESS

SHEET NUMBER:
EXHIBIT- B

SCALE:

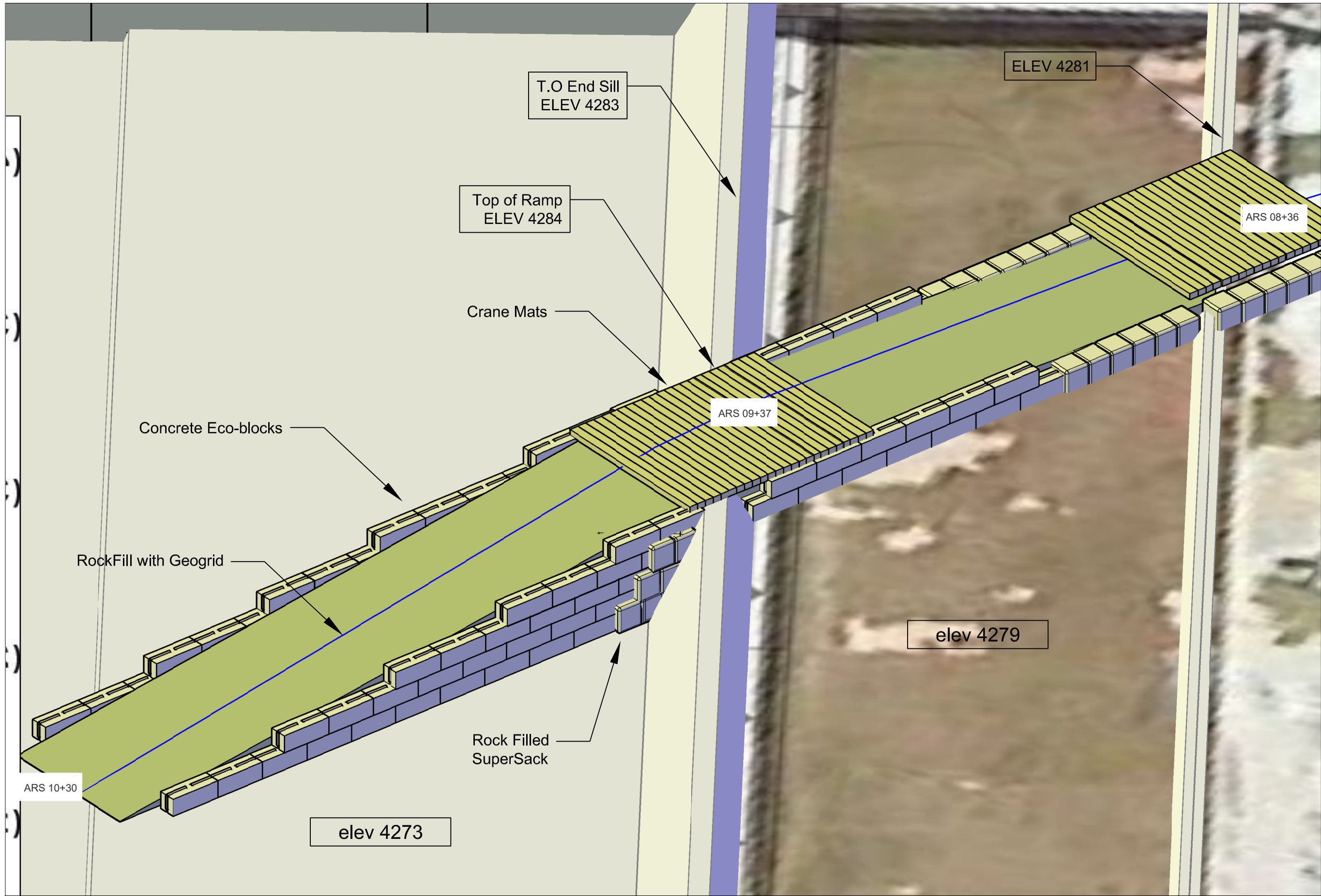
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AMERICAN FALLS SPILLWAY REPAIR



Proposed
Section

DESIGNED BY:	
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PROPOSED SECTION 05+67	
SHEET NUMBER:	
EXHIBIT- C	
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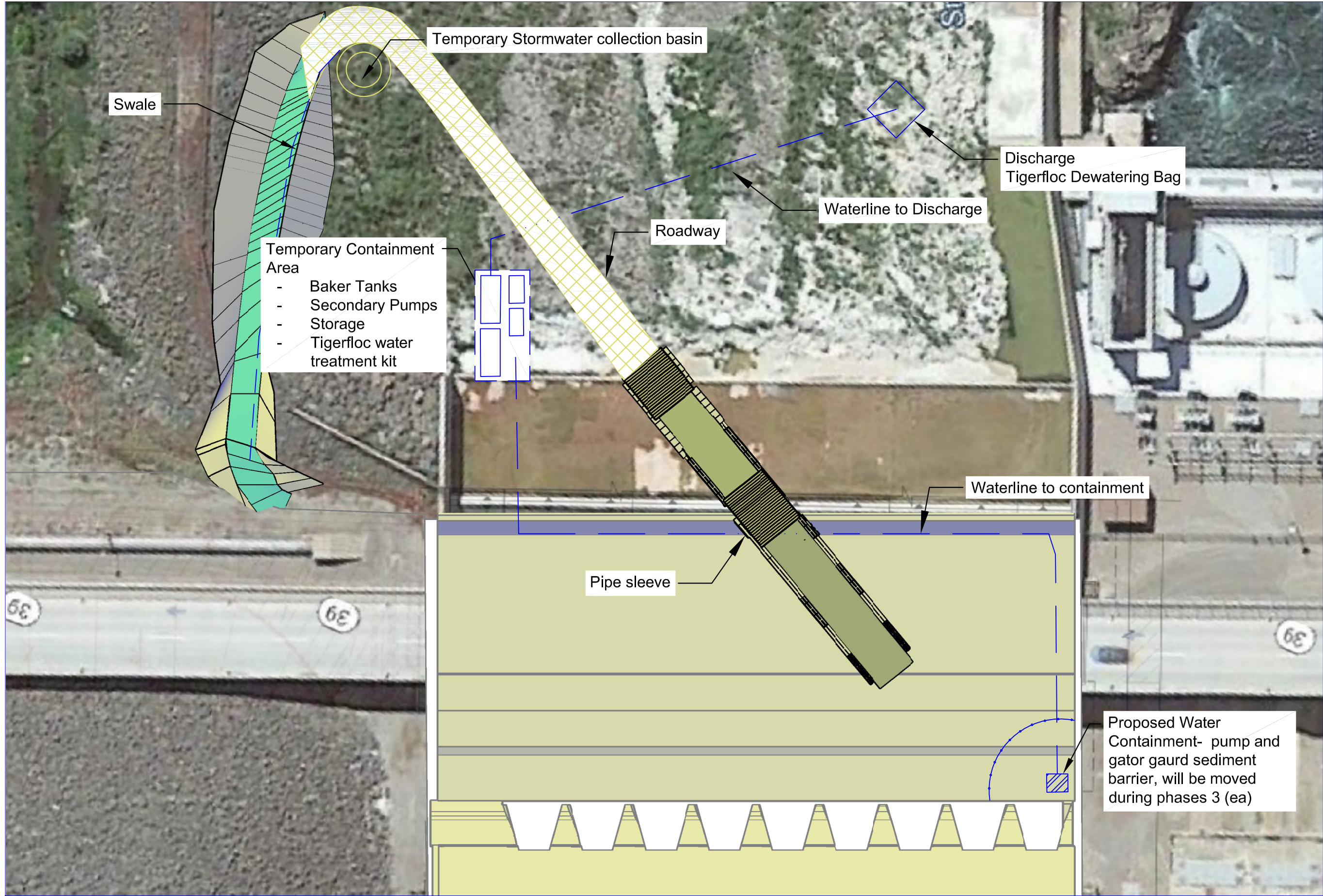
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CHECKED BY:	
ISSUE DATE:	

SHEET TITLE:
**PROPOSED
ACCESS
RAMP**

SHEET NUMBER:
EXHIBIT- D

SCALE:



REVISIONS	
AMERICAN FALLS SPILLWAY REPAIR	
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DRAWN BY:	
CHECKED BY:	
ISSUE DATE:	
SHEET TITLE: PROPOSED ROADWAY ACCESS	
SHEET NUMBER: EXHIBIT- H	
SCALE:	

Appendix C

Contractor Water Management Plan

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IN REPLY REFER TO:

PN-3513
2.2.4.22

United States Department of the Interior

BUREAU OF RECLAMATION
1150 North Curtis Road
Boise, ID 83706-1234



March 31, 2020

Mr. Jordan P. Winspear
Winspear Construction, LLC.
401 W. Ada Street,
Boise, ID 83702

Subject: Required Submittal Number, RSN 01 57 30-3-0, Water Management Plan – Contract No. 140R1019C0022 – American Falls Spillway Repair, American Falls Dam, American Falls, Idaho.

Dear Mr. Winspear:

The subject submittal is approved as submitted.

Approval does not relieve the Contractor of responsibility for errors or omissions.

This completes the submittal requirements of RSN 01 57 30-3, Water Management Plan.

If you have any questions, please contact David Bareither at (208) 378-5096, or Harlan Sangrey, at 208-378-5314.

Sincerely,

HARLAN SANGREY

Digitally signed by
HARLAN SANGREY
Date: 2020.03.31
09:22:54 -06'00'

Harlan Sangrey, P.E.
Contracting Officer's Representative
Construction Engineering Group



**U.S. Department of the
Interior Bureau of
Reclamation**

**AMERICAN FALLS
SPILLWAY REPAIR**

Contract No. 140R1019C0022

RSN: Section 01 57 30-3 – Water
Management Plan

Responsible Code: A

Revision: 0

American Falls Spillway Repair
Contract No. 140R1019C0022

Submittal Type: ☐ Documentation
RSN 01 57 30-3-0 ☒ Shop Drawing
☐ Sample

APPROVED:

- ☒ Approved as Submitted
☐ Approved as Noted
☐ Incomplete Submittal, Approved as
Noted (Complete and Resubmit)

DISAPPROVED: (Resubmittal Required)

- ☐ Make Corrections
☐ As Noted, Develop Replacement

Approval does not relieve the Contractor
of responsibility for errors or omissions.

By Harlan Sangrey 03-30-20
Bureau of Reclamation Date





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3.a.2	Contractor Responsibilities	
3.a.3	Accidental Discharge Precautions	
3.a.4	Waste Disposal Compliance	
3.a.5	Wastewater Handling	
3.a.6	Runoff Prevention and Controls	
3.a.7	Best Management Practices (BMP's)	



SECTION 3.a.1 – Responsible Person

1735 S Federal Way Boise, Idaho 83705 | 208.333.7738 |

Responsible Persons

For the Water Management Plan, Winspear Constructions responsible person will be Lyle Dawson. Lyle has a large background in heavy civil work and implementing environmental protection and environmental management

Lyle Dawson

SUMMARY OF QUALIFICATIONS

Construction General Superintendent with a diverse background in commercial and civil construction. Ability to lead, train, and provide a productive and safe working environment. Strong work ethic with track record of completed projects, well rounded field construction experience with proven management and leadership skills.

WORK HISTORY

2019 - Present

Winspear Construction, LLC.

- **General Superintendent** of Winspear Construction, LLC; Provide onsite management of various civil and commercial projects. Oversee and implement company safety program. Manage tight schedules and complete projects on time. Track and manage critical budgets. Provide quality control and quality assurance on company projects.

2017 – 2019

Guho Corp.

- **Project Manager** for various commercial and civil projects in the Treasure Valley area. Skills include schedule management, coordination with subcontractors and owners, safety plan implementation, environmental protection, quality control, and document control.

2015-2017

MJT

- **General Superintendent / Assistant Project Manager** for various commercial projects in the Western United States. Skills include schedule management, coordination with subcontractors and owners, safety plan implementation, environmental protection, quality control, and document control.

2013-2015

RSCI

- **Project Superintendent** for various civil projects in Idaho and California. Skills include schedule management, daily supervision of self-performed work, coordination with subcontractors and owners, safety plan implementation, environmental protection, quality control, and document control.

2002-2012

Skanska USA Civil

- **Area Superintendent** for various civil projects in the Eastern United States. Skills include schedule management, daily supervision of self-performed work, coordination with subcontractors and owners, safety plan implementation, environmental protection, quality control, and document control.
-

1735 S Federal Way Boise, Idaho 83705 | 208.333.7738 |

EDUCATION

2017 - 2019

Colorado State University

▮ Bachelor of Science in Construction Management

1992 - 1994

Virginia Polytechnical University

▮ Engineering Studies

TRAINING & CERTIFICATIONS

- OSHA 30 Hour
- Competent Person – Excavation
- Competent Person – Confined Space
- NCCO Rigger/Signal Person
- Cal/OSHA Trenching and Excavation

*Additional Projects and/or information Available Upon Request



SECTION 3.a.2 – Contractor Responsibilities

1735 S Federal Way Boise, Idaho 83705 | 208.333.7738 |

Contractor Responsibilities

Permits

- NOI Permit
 - Reference RSN 01 57 30-1
- Pollutant Discharge Permit 402
 - Reference RSN 01 57 30-1
- Storm Water Pollution Prevention Plan
 - Reference RSN 01 57 30-2

Monitoring

Winspear Construction will comply with all monitoring requirements for the permits. This may include sampling, site inspections, and required laboratory tests to determine effluent characteristics.

Reporting Results

Winspear Construction will comply with all Specific Reporting Requirements for noncompliance when effluent limitations are exceeded.

Record Keeping

Winspear Construction will comply with all recordkeeping requirements. This includes retaining records and data required by permits.



SECTION 3.a.3 – Accidental Discharge Precautions

1735 S Federal Way Boise, Idaho 83705 | 208.333.7738

Accidental Discharge Precautions

Winspear Construction will limit all and any discharge or accidental spills. During this project, there will be practices and procedures to limit, and respond if necessary, to any type of discharge. Attached is the Winspear Construction Environmental Management Plan. This is Winspear Construction's corporate standard to mitigate all discharge and spills in order to protect and prevent these events.

As applicable, Winspear Construction will be implementing the plan as particular to the project. Within this RSN 01 57 30-3, there are more details and procedures specifically detailed to the site and construction that is to take place. Please reference specific sections 3.a.5 and 3.a.7 within this submittal package for more information.

Bureau of Reclamation

American Falls Spillway Repair

Environmental Management Plan



March 2020

Contractor / Operator Contact:

Winspear Construction
1735 S Federal Way
Boise, ID 83706
(208) 333-7738

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SECTION 1

INTRODUCTION

1.1 Introduction

This site-specific Environmental Protection Plan (EPP) has been developed to identify the methods necessary to prevent and control pollution that may occur to the Project area and surrounding environment during construction activities conducted by Winspear Construction, LLC (Winspear) or their designated subcontractors. This EMP has been prepared by Winspear as part of the pre-construction submittal requirements (Section 01 57 30-3) and outlines the environmental protection measures that are applicable to the project as outlined in the Solicitation Number 140R1019B0003 (and associated amendments) and approved under Contract No. 1401019C0022. Once this EMP has been completed and accepted, it will be available at the Project site for reference by construction crews and for review by interested parties during construction.

1.2 Project Description

The main objective of this project is to demo the existing surface of the American Falls Spillway and then reconstruct the new spillway. This will include hydro-demolition and concrete placing activities.

1.3 Environmental Protection Plan Measures

The Project is located in American Falls based in Eastern Idaho. All construction activities will be conducted in a manner to minimize environmental pollution and damage that may occur within and outside the project boundaries as specific in the project specifications. This EMP analyzes and describes protection plan measures for known or potential environmental issues within the following components:

- Section 1 Introduction
- Section 2 Work Area Plan & Site Sketch
- Section 3 Hazardous Material Management Plan
- Section 4 Non-Hazardous Solid Waste Disposal Plan
- Section 5 Erosion & Sediment Control Plan
- Section 6 Traffic Control Plan
- Section 7 Site Specific Contingency Plan
- Section 8 Spill Response Plan
- Section 9 Non-Hazardous Solid Waste Disposal Plan
- Section 10 Contaminated Soil Plan
- Section 11 Asbestos Abatement Procedures
- Section 12 Lead Based Paint Abatement Procedures
- Section 13 Air Pollution Control Plan
- Section 14 Natural & Cultural Resources Plan

Contaminated soils are not expected for this project. Therefore, a Contaminated Soil Plan was not prepared for this EMP.

There is no known Asbestos within the Project boundary. Therefore, an Asbestos Abatement Procedure Plan was not prepared for this EMP.

1.4 Winspear Construction Contacts

Winspear is responsible for adhering to and implementing this EMP which follows applicable environmental regulations. The following Winspear employees have been assigned the responsibility of each respective task associated with the Project:

- Environmental Protection Plan Adherence
 - Onsite: Lyle Dawson (Winspear Construction Onsite Superintendent) will be responsible that all site work is performed in accordance with this plan and applicable regulations. Winspear Construction will also coordinate with the Bureau of Reclamation for any required surveying and monitoring of biological resources during the course of construction activities.
- Hazardous Waste Removal Manifestation
 - Not Applicable

SECTION 2

WORK AREA PLAN & SITE SKETCH

2.1 Introduction

This section describes the limits of the work area where construction activities will commence. Reference RSN (01 14 10-1) for specific details and sketches of the site use plan.

2.2 Limits of Work Area

The work area plan for construction activities identifies the outer limits of disturbance for the project. Prior to start of any onsite construction activities, Winspear and the Bureau of Reclamation will make a joint condition survey. Immediately following the survey, Winspear will prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to Winspear's assigned staging areas and access route(s).

Construction fencing will be installed for security purposes at staging areas.

2.3 Restoration

Upon completion of the Project, Winspear will clean up all areas used for construction and return it to its general pre-construction condition. These areas include temporary access, work areas, staging areas, and any other area used for construction purposes. Materials such as signage, trailers, materials, equipment and any other temporary products will be removed before removing fencing.

The project site post-construction will be compared to pre-construction photographs.

2.4 Construction Spoils and Debris Handling

Spoils and debris will be created from excavation and demolition work. All debris & spoils that cannot be reused in the construction will be hauled off-site for disposal. Soil will be temporarily stockpiled within the limits of the construction work area until removal, if necessary.

SECTION 3

HAZARDOUS MATERIALS MANAGEMENT PLAN

3.1 Introduction

This section describes the measures that will be implemented to prevent contamination to the environment from hazardous materials. Reference RSN (01 35 10-1) for more details.

3.2 Hazardous Materials Management Plan

Contamination prevention will be applied throughout Project construction to ensure that the air, water and ground do not become contaminated. Table 7-1 below identifies the anticipated materials, estimated quantities, storage location and location of associated Safety Data Sheets (SDS) that will be used on site.

Table 3-1. Hazardous Material Inventory

Type	Quantity	Location	
Acetone	5 Gallons	Job Trailer	Job Trucks
Antifreeze	5 Gallons	Job Trailer	Job Trucks
Batteries	Varies	Job Trailer	Job Trucks
Concrete Cure	25 Gallons	Storage Container	Job Trucks
Diesel	400 Gallons	Equipment Tanks	Job Trucks
Engine Oil	5 Gallons	Job Trailer	Storage Container
Epoxy	Varies	Job Trailer	Job Trucks
Form Release	25 Gallons	Storage Container	Job Trucks
Grease	25 Tubes	Job Trailer	Storage Container
Hydraulic Oil	25 Gallons	Job Trailer	Service Trucks
Inverted Marking Paint	40 Cans	Storage Container	Job Trucks
Regular Unleaded Fuel	<i>None will be stored onsite</i>		
Two Stroke Oil	20 Quarts	Job Trailer	Service Trucks
WD 40	5 Cans	Job Trailer	Service Trucks

Hazardous materials will be sealed and stored in a designated location on the Project site (as listed in Table 7-1) away from active construction totaling a maximum of approximately 500 gallons. Where attainable, they will be stored at least 75 feet from all storm drain inlets.

Hazardous materials will be labeled accordingly so that these materials are not accidentally introduced into the air, water or ground causing contamination. The SDS for each of the hazardous materials listed in Table 3-1 will be kept on site in a separate folder from this EMP in the main office trailer to comply with Federal, State and Local laws and regulations. Proper personnel protective equipment will be used when handling the hazardous materials, and all materials will be contained.

As new hazardous materials are brought on-site or taken off-site, this contaminant prevention plan will be updated by (Onsite Superintendent).

3.2.1 Construction Equipment

Personnel will service construction equipment using proper containment methods to prevent the release of hazardous fluids.

3.3 Environmentally Preferable Materials

The use of environmentally safe materials will be incorporated into the project to a reasonable extent. Raw material acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance and disposal will be selected which has the least effect on the environment.

3.3.1 Prohibited Materials

The following materials will be prohibited from use in the project:

- Products containing asbestos;
- Mercury or polychlorinated biphenyls,
- Lead-based paint;
- Products containing mercury or polychlorinated biphenyls;
- Products containing di-isocyanates; and
- Radioactive materials or instruments capable of producing ionizing/non-ionizing radiation

SECTION 4

NON-HAZARDOUS SOLID WASTE DISPOSAL PLAN

4.1 Introduction

This section describes the measures that will be implemented to dispose of non-hazardous solid waste.

4.2 Waste Disposal Plan

Winspear will be using equipment for the project and will transport material to an approved disposal facility. Smaller waste materials, including wrappers, cans, food scraps, packaging materials and other non-hazardous solid waste, will be stored in a garbage container and removed from the site as needed.

4.1.1 Non-Hazardous Solid Waste

Non-hazardous solid waste (refuse) includes all debris including organic materials such as brush, tree stumps or felled trees. Refuse is anticipated to include clearing and grubbing debris, general construction waste, and demolition material. Solid waste will be collected and stockpiled in a location on a daily basis, and the methods for removal will depend on the type of material. Small waste at the project site will be collected by Winspear personnel and stored in a Winspear waste container at one of the project staging areas. Large waste will be collected in large portable bins or stockpiled and removed from the site. Vegetation removal will only occur within the marked project boundaries.

There will be no burning of refuse and debris associated with this project.

SECTION 5

TRAFFIC CONTROL PLAN

5.1 Introduction

This section describes the measures that will be implemented to control traffic around the site laydown yard as well as access roads to the site. Measures will be taken to minimize the amount of track out transported from the project site onto public roads. Reference RSN (01 55 20-1) for more details.

5.2 Construction Access

Most vehicle access (passenger cars and trucks) will be conducted on Falls Avenue and Bridge Street

Staging area will consist of; Materials Staging Area and Office Staging Area. Equipment access (excavators, dozers, all-terrain vehicles, etc.) will be limited to the project site location.

To reduce airborne dust, if necessary, water trucks or similar methods may be applied.

If portions of the existing roads within the project area become damaged as a result of Winspear construction activities, proper repairs will be made to allow the unobstructed movement of trucks and equipment. Additional photographs of work areas will be taken prior to the start of construction throughout the project to document pre-, during, and post-construction conditions as stated in.

5.1.1 Communication

Winspear personnel will communicate with each other throughout the project area via cell phones and radios.

SECTION 6

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN

6.1 Introduction

This section describes the measures that will be implemented to prevent, contain and respond to spills within the Project area.

6.2 Spill Control Plan

A Spill Prevention, Control and Countermeasure Plan (SPCCP) has been prepared for the Project and outlines the procedures, instructions, and reports to be used in the event of an unforeseen spill of a regulated substance according to and regulated under State or Local laws and regulations. Reportable Quantities for hazardous materials that will be located on the project site are listed in Table 3-1.

6.1.1 Spill Reporting Procedures

If you observe a release of a hazardous material, report it to your supervisor. Winspear will do all necessary and required reporting to Federal, State and local agencies in the case of an emergency.

Lyle Dawson (Winspear Construction Onsite Superintendent), will be responsible to document and report any spills or hazardous substance (diesel fuel, radiator fluid, hydraulic fluid, etc.) releases to the following agencies and people:

- COR: Harlan Sangrey (208) 378-5314
- CO: Colby Clifford (208) 378-5142

The implementation and supervision of containment and cleanup of the spill will be the responsibility of Lyle Dawson (Onsite Construction Superintendent). Following cleanup of the spill, complete documentation for the event will be recorded and submitted to the Bureau of Reclamation and appropriate agencies.

Mohammad Khan (Project Engineer) or Neil Smart (Project Executive) will be an alternate to implement and supervise the containment and cleanup of spills.

6.1.2 SPCRP Training

Winspear personnel will undergo spill cleanup training prior to performing work on the Project. This training will be completed by each construction worker during their initial environmental protection personnel training of the Project. Specific elements of this training will include the following:

- The proper agencies and people to notify as listed above;
- Material Safety Data Sheets overview and location;
- Spill size classification
- Required information
 - Name, and company, of individual reporting the spill;
 - Location and Class of the spill or release;

- Number of injured personnel and nature of injuries (if applicable);
- Substance spilled or released, based on knowledge, labels, signs, etc.;
- Estimated rate of substance release;
- Time spill occurred;
- Extent to which spill has traveled; and
- Any additional information that might aid the fire department, such as other potential hazards at the site.

6.1.3 Spill Response Equipment

A spill response kit will be present on-site to cleanup spills that may occur from machinery. This kit will include necessary materials to clean up hazardous materials present on-site. Hazardous materials that may be present at onsite include hydraulic fluid, diesel fuel, gasoline, motor oil, radiator fluid, etc. Appropriate absorbent material will be placed on the spill and allowed to absorb the spilled material. The absorbent material will then be immediately disposed of in a properly labeled and sealed container. Soil that may be affected by the spill will be excavated and placed in the same container.

In the event of a large spill that would require expeditious cleanup, an emergency spill response company will be contacted to clean up the spill.

6.1.4 Spill Prevention

Winspear will implement the following construction practices to minimize the potential for spills:

- **Equipment:** Equipment that is stored onsite will be inspected daily for leaks.
- **Work Practices:** Utilize work practice controls to prevent spills during refueling and maintenance operations that involve power tools, site vehicles, and equipment (this will include the use of spill pans to collect spilled materials). Work practices include (but not limited to) the following:
 - Ensuring connections are tight where fluid is transferred,
 - Providing containment drawing substances from one container to another,
 - Closing containers when not in use,
 - Using proper equipment for the job
- **Decontamination:** Develop and implement decontamination procedures that may be necessary for the removal and clean-up of spilled materials.

Equipment will be checked prior to delivery on-site for any potential hazardous fluid leaks. If observed, the equipment will be replaced or repaired, and the leak will be properly contained and removed prior to construction activities. Equipment will also be monitored for any new leaks or potential leaks and will be mitigated at that time if any items are found that need immediate attention.

6.1.5 Inspections

Inspections of the hazardous material storage areas at the staging areas and on service vehicles will occur on a daily basis. The inspections will be performed by the construction superintendent (or authorized representative).

6.1.6 Security

The Materials Staging Areas will be secured during non-operation hours using a security fence and a lockable entrance gate.

6.1.7 Spill Response Procedures

In the event that a hazardous material is released, Winspear will take the appropriate actions to remedy the situation and report the release to the proper authorities. Specific remedial actions will include the following in the order listed:

1. Identify the source of the spill.
2. Stop the source of the spill without risking personal injury.
3. Stop all construction actions that may further spread the spill.
4. If flammable substances are involved, remove and restrict ignition sources in the spill area.
5. Identify the extent of the spill.
6. Contain the spilled material (if manageable) to prevent further spread.
7. If the spill is too large to contain with on-site materials, the emergency spill response company will be contacted.
8. Absorb all free-standing product using the spill prevention kit. Used materials shall be appropriately containerized and disposed.
9. Secure the area so that unauthorized personnel do not approach or become endangered.
10. If applicable, remove contaminated soil.
11. Dispose of all soiled materials appropriately.
12. Repair or replace the cause of the spill to prevent further spills.

SECTION 7 CONTAMINATED SOIL PLAN

7.0 Introduction

No contaminated soil is expected on this project. If contaminated soil is found, the proper plan and disposal procedures will be discussed and submitted.

SECTION 8 ASBESTOS ABATEMENT PLAN

8.0 Introduction

No hazardous asbestos abatement is planned for this project. If asbestos is discovered during interior demolition, the proper plan and procedures will be discussed and submitted.

SECTION 9 LEAD BASED PAINT ABATEMENT PLAN

9.0 Introduction

No hazardous Lead-Base Paint (LBP) is planned for this project. If Lead-Base Paint is discovered during interior demolition, the proper plan and procedures will be discussed and submitted.

SECTION 10 AIR POLLUTION CONTROL PLAN

10.1 Introduction

This section describes the measures that will be implemented to control air pollution.

10.2 Dust Control

Winspear personnel will make efforts to limit the amount of related dust emissions during excavations and other construction activities.

Local regulations will be applied while hauling and disposing of waste.

All existing roads and staging areas are at a distance from public roads, that track-out is not expected to occur.

10.3 Air Quality

All equipment used for construction activities will be in accordance with all Federal, State and Local air emission and performance laws and standards. Equipment will be maintained and serviced in accordance with manufacturers' recommendations to reduce gaseous pollutant emissions.

Air quality monitoring is not anticipated to be required for this project at this time. There will be no burning of refuse and debris associated with this project.

Construction related debris and materials will be properly disposed in an appropriate container or hauled off-site. The containers will be secured so that debris and materials are not able to become airborne and travel off the project site.

SECTION 11

NATURAL & CULTURAL RESOURCES PLAN

11.1 Introduction

This section describes the measures that will be implemented to preserve natural and cultural resources.

11.2 Historical, Archeological and Cultural Resources Plan

There are no known historical, archeological or cultural issues associated with this Project area. If historical, archaeological, or cultural resources are discovered during excavation, all potentially damaging activities will be temporarily suspended. If items are found within the limits of the Project boundaries, they will be marked and the Bureau of Reclamation COR will be notified of the finding so the appropriate authorities can be contacted. Work in the area of the artifact(s) will be suspended until a qualified person properly inspects the item. The area will be secured to prevent further disruption of the artifact(s).

Bureau of Reclamation COR – Harlan Sangrey (208) 378-5314

11.3 Natural Resources Protection Plan

Natural and Biological resources that require preservation within the work area will be identified prior to construction. Methods to preserve and mark the boundaries of these areas are described in Section 2 and will generally include surveyor stakes and flagging. Major land resources that will be identified include clearing limits for vegetation, preservation of specified habitat, and grading limits for temporary construction access roads. Winspear will meet with Bureau of Reclamation on-site to discuss the sensitive biological resources associated with this project.



SECTION 3.a.4 – Waste Disposal Compliance

- Winspear Construction will be in compliance with all state and local waste disposal regulations
- Reference section 3.a.3 – Accidental Discharge Precautions for more information
- Reference section 3.a.5 – Wastewater Handling for more information
- Reference section 3.a.7 – Best Management Practices for more information



SECTION 3.a.5 – Wastewater Handling

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Wastewater Handling

During the Hydro demolition phase of work and contract duration, dewatering will occur in order to keep the work area operational. Winspear Construction plans to implement practices and methods that effectively and efficiently handle the wastewater from entering adjacent bodies of water without proper filtration. Below are descriptions that will describe Winspear Constructions means and methods of handling wastewater. Refer to Exhibit- H

Containment Area

Once the Bureau of Reclamation has performed the initial dewatering and fish removal in the basin, Winspear Construction will construct a temporary containment area outside the basin. This is where the dewatering and filtration storage tanks and pumps will be setup. Winspear Construction will construct a flat area with a berm surrounding the perimeter and then line with plastic to prevent any spill and contamination. These areas will be monitored and recorded as apart of Winspear Constructions SWPPP. If any issues occur, action will be taken to repair or replace the containment area controls. For more information see section 3.a.7 – Best Management Practices.

Pumping

Water collection will occur within the basin from a contained area during hydro demolition. The hydro demolition perimeter within the basin will be contained with Gator Guard sediment barrier. The Gator Guard containment area will be moved from phase to phase during hydro demolition. The water will then be collected and pumped to the water tanks in the filtration area setup outside the basin. Once the water enters the first tank, it will go through a manifold and then be pumped into the next storage tank where it will repeat the process. As the water comes out of the second tank, it will be pumped through a Tigerfloc Water Treatment Kit. This water will then be released via Tigerfloc Dewatering Bag just above the flow line for final discharge into the river. The Tigerfloc Dewatering Kit will have replacement pieces and parts on standby. Any change in water quality will be addressed immediately onsite, stopping flow if necessary. These areas and controls will be monitored and recorded as apart of Winspear Constructions SWPPP. If any issues occur, action will be taken to repair or replace the controls.



SECTION 3.a.6 – Runoff Prevention and Controls

- Reference section 3.a.3 – Accidental Discharge Precautions for more information
- Reference section 3.a.5 – Wastewater Handling for more information
- Reference section 3.a.7 – Best Management Practices for more information

SECTION 3.a.7 – Best Management Practices (BMP's)

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Best Management Practices

During the construction period, Winspear Construction will be implementing multiple controls to prevent any erosion and storm water runoff to protect the site. As show in section 3.a.3, Winspear Construction has proposed our standard Environmental Management Plan to be used during the duration of construction. In addition to this, Winspear provides the items as described below to use as controls on the site. Our proposed responsible person, Lyle Dawson, will be implementing these Best Management Practices in and around the site to protect the work area and its surroundings. See Exhibit H for further depictions of controls as described below.

Inlet Protection

All inlets and drain grates within the construction site will have filter fabric protection to prevent foreign soils or material entering. Each drain inlet will be monitored and recorded as apart of Winspear Constructions Storm Water Prevention Pollution Plan (SWPPP) monitoring process. If any issues occur, action will be taken to repair or replace the fabric controls.

Access Road

Winspear Construction will be building a temporary access road down to the construction area. A swale along temporary access road will be used to control storm water so it can be properly diverted. At approximately Sta. 07+00, there will be a temporary stormwater collection basin. Winspear Construction will construct a flat area with a berm surrounding the perimeter and then line with plastic to prevent any spill and contamination. All stormwater runoff will be collected in this basin and then pumped to the filtration area where it will be cleaned and filtered (Reference this submittal, section 3.a.5 for more information). These areas will be monitored and recorded as a part of Winspear Constructions SWPPP. If any issues occur, action will be taken to repair or replace the swale and basin controls.

Construction Entrance

Winspear Construction will build two construction entrances to be used during the construction phase. A construction entrance will be put in place at the main access road into the site, near the existing above ground utility pipe, and at the offsite laydown yard. These will be used to prevent cars, trucks, and equipment from tracking out any soils or contaminates. These construction entrances will also work as a barrier to keep any foreign soils and contaminants from coming onsite. These areas will be monitored and recorded as a part of Winspear Constructions SWPPP. If any issues occur, action will be taken to repair or replace the construction entrance controls.

Containment Area

Winspear Construction plans to setup containment areas where the filtration pumps and tanks are located outside the basin. Winspear Construction will construct a flat area with a berm surrounding the perimeter and then line with plastic to prevent any spill and contamination. These areas will be

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monitored and recorded as apart of Winspear Constructions SWPPP. If any issues occur, action will be taken to repair or replace the containment area controls.

Concrete Washout

Winspear Construction will construct a concrete washout located in the staging yard. This concrete washout will be built with a berm around the perimeter and lined with plastic to prevent contamination. The washout will be monitored and recorded as apart of Winspear Constructions SWPPP. If any issues occur, action will be taken to repair or replace the concrete washout.

Products Catalogue

For current pricing,
order inquiry or questions
call: 1 (604) 343-2046



Tigerfloc Flocculant Belt/Sock

Description: nylon mesh w/ 4 - 1/2 lb pouches of Tigerfloc flocculant agent

Dimensions: 36"L x 5.5"W x 2"H

Product No: TF-01



Tigerfloc Flocculant Belt/Sock (5/box)

Description: nylon mesh w/ 4 - 1/2 lb pouches of Tigerfloc flocculant agent

Dimensions: 36"L x 5.5"W x 2"H (per belt/sock)

Product No: TF-02



Tigerfloc Tube

Description: Tigerfloc Belt/Sock housing tube adapter for use with 2" pump hose

Dimensions: 7' length

Product No: TF-03



Tigerfloc Dewatering Bag

Description: micro-pored and durable filtration bag

Dimensions: 14' x 14'

Product No: TF-04



Tigerfloc Water Treatment Kit

Description: includes 3 Flocculant Belts/Socks, 1 Tube, 1 Dewatering Bag, zip ties and a Tigerfloc hat

Dimensions: N/A

Product No: TF-05



Tigerfloc Flocculant Agent (50lb)

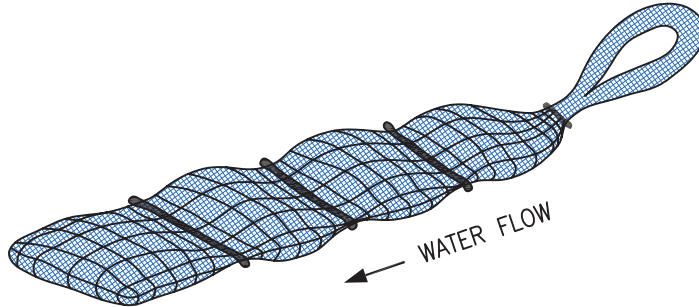
Description: raw granular coagulant/flocculating agent

Dimensions: N/A

Product No: TF-06

Technical Drawings

FLOCCULANT BELT/SOCK



USES:

PLACED IN WATER FLOW WHERE TURBIDITY, HEAVY METALS, OR HYDROCARBONS EXIST TO ACCELERATE PARTICLE DEPOSITION (I.E. SEDIMENT PONDS, SWALES, PUMPED WATER).

PRODUCT DESCRIPTION:

SEWN NYLON MESH WITH FOUR, ½ LB. SEALED POUCHES OF TIGERFLOC INSERTED ALONG THE FLOCCULANT BELT LENGTH. NYLON LOOP AT TOP FOR ATTACHMENT EASE TO HOOKS, CARABINERS, STRING, ETC. FOR OPTIMAL PERFORMANCE MAINTAIN TIGERFLOC BELT MOIST AT ALL TIMES.

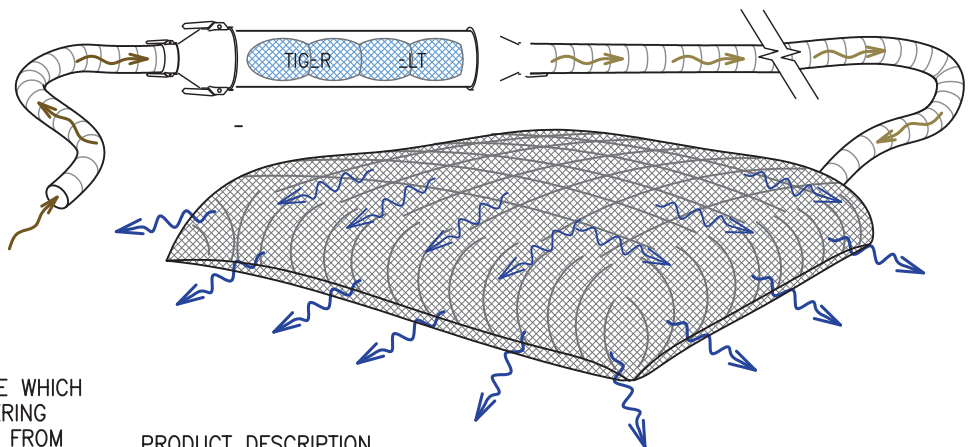
APPROXIMATE DIMENSIONS:

36" (L) X 5.5" (W) X 2" (H)

FIRST AID PROCEDURES (IF TIGERFLOC POUCHES ARE PUNCTURED, AND IRRITATION OCCURS):

- SKIN: WASH WITH SOAP AND WATER UNTIL CLEAN.
- EYES: FLUSH WITH WATER UNTIL IRRITATION CEASES. IF IRRITATION PERSISTS CONTACT PHYSICIAN.
- INHALATION: MOVE TO AREA FREE OF DUST. IF SYMPTOMS OF IRRITATION PERSIST CONTACT PHYSICIAN. INHALATION MAY AGGRAVATE EXISTING RESPIRATORY ILLNESS.

WATER TREATMENT KIT



USES:

BY INSERTING A TIGERFLOC BELT INTO THE TUBE WHICH THEN LEADS THROUGH A MICRO-PORED DEWATERING BAG, THE RESULT IS REMOVING MOST SEDIMENT FROM STORM WATER OR SITE DISCHARGE FROM EXCAVATION PUMPING. THE TIGERFLOC TUBE AND DEWATERING BAG UNIT IS DESIGNED FOR A 2" ELECTRIC PUMP, AND IS PORTABLE AND EASY TO USE BY ONE PERSON, ELIMINATING HIGH MOBILITY AND SERVICE CHARGES. EXITING WATER FLOW FROM THE DEWATERING BAG CAN BE DIRECTED BY CONSTRUCTING A 17' X 17' OR LARGER WOOD FRAME WITH AN OPENING, LINED WITH POLY SHEETING, COIR MATTING, OR CLEAR GRAVEL TO MAXIMIZE DEWATERING BAG SURFACE AREA (FLOW RATE).

PRODUCT DESCRIPTION

(REFER TO LETTERS ON DRAWING):

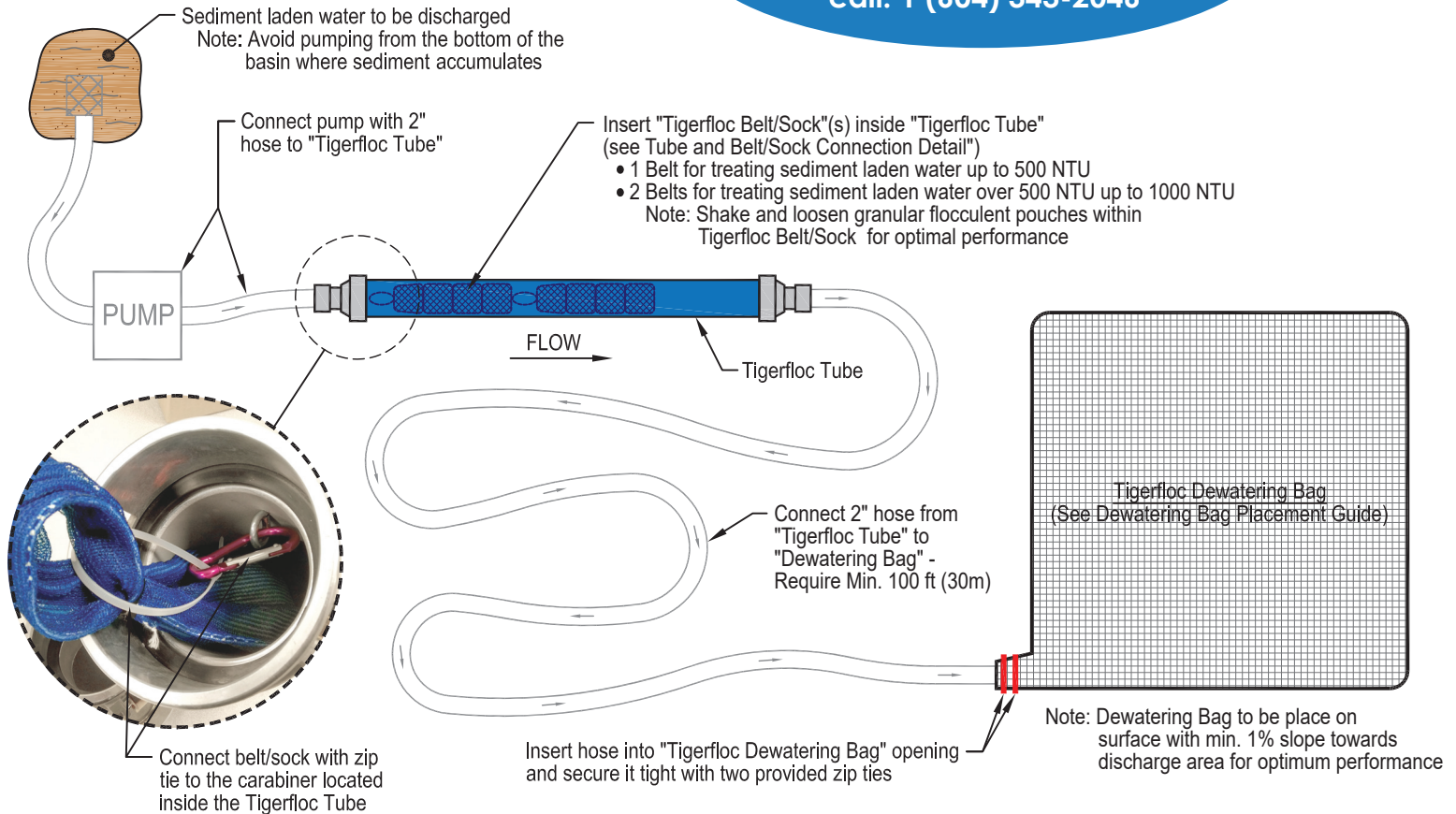
- TIGERFLOC TUBE: 60" (L) X 4" (W) LAYFLAT HOSE OR PVC SCHEDULE 40 OR 80 PIPE SECURED WITH 2"-4" CAMLOCK FITTINGS.

2" PUMP HOSE: MIN. 50' LENGTH FOR OPTIMAL UNIT PERFORMANCE.

DEWATERING BAG: 14' X 14' SIZE MANUFACTURED BY FLOC SYSTEMS INC. THE DEWATERING BAGS ARE CUSTOM CUT AND ASSEMBLED WITH SEAM FOLD TO ENSURE SEDIMENT MATERIAL DOES NOT ESCAPE AT THE SEAM AS IT DOES WITH OTHER D=W-T=RING B- .

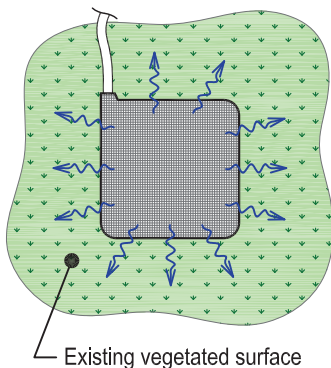
WATER TREATMENT KIT SETUP GUIDE

Any questions on setup or
to re-order more belts/socks or
dewatering bags,
call: 1 (604) 343-2046

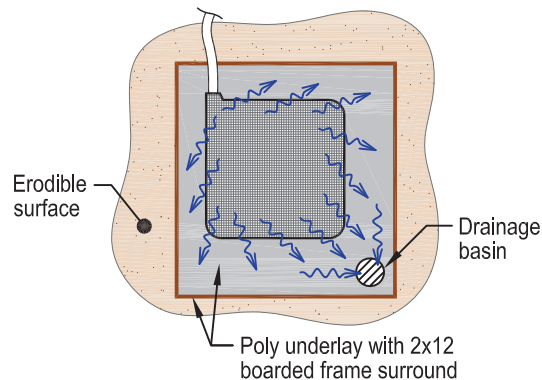


Dewatering Bag Placement Guide

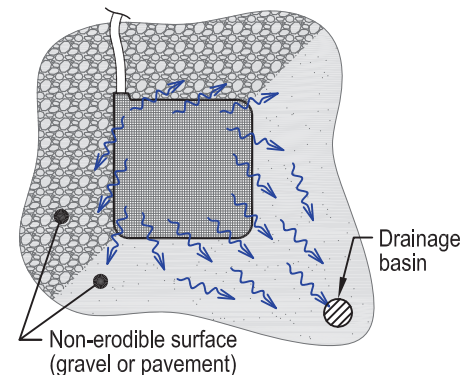
A. Place over existing vegetated surface for infiltration



B. Place on poly with boarded frame over erodible surface



C. Place over non-erodible surface and discharge to nearby drainage basin



All-Terrain Consulting Ltd.

MATERIAL SAFETY DATA SHEET

NFPA FIRE HAZARD

Health	Flammability
1	0
Hazard	Reactivity
1	0

IDENTIFICATION SYSTEM

I. PRODUCT IDENTIFICATION

Trade Name(s): Tigerfloc (other names include number sequences.)

Generic Name(s): Mixture of Montmorillonite and other proprietary ingredients.

Chemical Name(s): Sodium Montmorillonite and other proprietary ingredients

Manufacturer: N/A
Address:

Telephone Numbers:
Information: (778) 230-4174
EMERGENCY: Contact local health agency

II. HAZARDOUS INGREDIENTS

Ingredient	CAS No.	%	Hazard
Crystalline Silica (SiO ₂) as Quartz	14808-06-7	1-5%	Low concentrations of crystalline silica (SiO ₂) in the form of quartz may be present in airborne Montmorillonite dust. The concentration level of total free silica in airborne Montmorillonite dust is variable depending upon origin of Montmorillonite, fineness of product, moisture content of product, local humidity and wind conditions, etc. (See Section VI).

Note: Specific identity of product ingredients withheld as a trade secret. Ingredient identity is available to health professionals and others in accordance with 29 CFR 1910.1200(i). Only the most restrictive data for the ingredients in this product are given here.

III. PHYSICAL DATA

Boiling Point (°F): NA	Specific Gravity (H ₂ O=1): 2.65
Vapor Pressure (mm. Hg): NA	Melting Point: Approx. 1450°C
Vapor Density (Air = 1): NA	Evaporation Rate (Butyl Acetate = 1): NA
Solubility in Water: Slightly soluble, forms flocculated suspension.	
Bulk Density (at 20° C): 89.3 lbs./cu.ft. as dry product.	
Appearance and Odor: Blue gray to gray green as moist solid, light tan to gray as dry powder. No odor.	

IV. FIRE AND EXPLOSION DATA

Flash Point: NA	Flammable Limits: LEL: NA UEL: NA
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: Product will not support combustion.	
Extinguishing Media: None for product. Any media can be used for the packaging. Product becomes slippery when wet.	

V. REACTIVITY

Stability: Stable
Hazardous Polymerization: None
Incompatibility: Hydrofluoric Acid
Hazardous Decomposition Products: Limited amounts of Sulfur Oxide gases may form when product temperature exceeds 760°C. These gases are corrosive oxidizers and are toxic.

NA = Not Applicable ND = Not Determined

Date Prepared : April 27, 2012

VI. HEALTH HAZARD INFORMATION

Routes of Exposure and Effects:

Skin: Prolonged contact may cause irritation and drying resulting in dermatitis.

Eyes: May irritate or burn eyes, wear safety goggles.

Inhalation: Acute (short term) exposure to dust levels exceeding the

PEL/TLV's may cause irritation of respiratory tract resulting in a dry cough.

Chronic (long term) exposure to free silica containing airborne Montmorillonite dust where levels are higher than PEL/TLV's may lead to development of silicosis or other respiratory problems.

Persistent dry cough and labored breathing upon exertion are symptomatic.

Ingestion: May irritate gastrointestinal tract.

Permissible Exposure Limits: (for air contaminants)

OSHA PEL
(8hr. TWA)

ACGIH TLV

Total dust

ND

ND

Respirable dust

2mg/m³

2 mg/m³

Crystalline Quartz (respirable)

10mg/m³

0.025mg/m³

Carcinogenicity: None of the ingredients are listed by NTP, IARC or OSHA. IARC, 1987, concludes that there is limited evidence suggesting the Carcinogenicity in humans of inhaled crystalline silica (IARC Class 2A)

Toxicity to Fish: Pimephales Promelas
LC50/96 hours>13,000 mg/l

Toxicity to daphnia:EC₅₀/48 hours>17,000 mg/l

Toxicity to Oncorhynchus mykiss:EC₅₀/96
hours>10,000 mg/l

Emergency and First Aid Procedures:

Skin: Wash with soap and water until clean.

Eyes: Flush with water until irritation ceases. If irritation persists contact physician.

Inhalation: Move to area free from dust. If symptoms of irritation persist contact physician. Inhalation may aggravate existing respiratory illness.

VII. HANDLING AND USE PRECAUTIONS

Steps to be Taken if Material is Released or Spilled: Avoid breathing dust; wear respirator approved for silica bearing dust. Vacuum up to avoid generating airborne dust. Avoid using water. Product slippery when wetted.

Waste Disposal Methods: Product should be disposed of in accordance with applicable local, state and federal regulations.

Handling and Storage Precautions: Use NIOSH/MSHA respirators approved for silica bearing dust when free silica containing airborne Montmorillonite dust levels exceed PEL/TLV's. Clean up spills promptly to avoid making dust. Storage area floors may become slippery if wetted.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

Ventilation Requirements: Mechanical, general room ventilation. Use local ventilation to maintain PEL's/TLV's.

Respirator: Use respirators approved by NIOSH/MSHA for silica bearing dust.

Eye Protection: Chemical safety goggles. Use of contact lenses not recommended.

Gloves: As appropriate for industrial work.

Other Protective Clothing or Equipment: As appropriate for industrial work.

IX. SPECIAL PRECAUTIONS

Avoid inhalation of airborne dust.

DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Common Ground Clay (NOIBN)

Hazard Class: Not Hazardous

Hazardous Substance: None

Cautionary Labeling: None required

Date Prepared: April 27, 2012

All information presented herein is believed to be accurate, however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances. No warranty or guarantee, expressed or implied is made by All-Terrain Consulting Ltd. as to this information, or as to the safety, toxicity or effect of the use of this product.