

NPDES Permit #IDS027561

Permit Appendix B - Annual Report Form

This Annual Report is due no later than January 30 of each year, beginning in Calendar Year 2023, and reflects the relevant reporting period, starting October 1, 2021. See Permit Part 6.4.2



Annual Reports and any attachments must be sent to IDEQ by U.S. Postal Mail to the following address:

*Regional Administrator
Idaho Department of Environmental
Quality Attn: Water Quality Program
Boise Regional Office
1445 N. Orchard St.
Boise, ID 83706*

Complete Sections 1 through IV. Do not leave any questions blank.

MS4 Permittee Name/Organization: _____ **NPDES**

Permit Number: IDS027561

Reporting Period:

Year 1 Reporting Period: Oct. 1, 2021 – Sept. 30, 2022 – **Annual Report due date:** January 30, 2023

Year 2 Reporting Period: Oct. 1, 2022 – Sept. 30, 2023 – **Annual Report due date:** January 30, 2024

Year 3 Reporting Period Oct. 1, 2023 – Sept. 30, 2024 – **Annual Report due date:** January 30, 2025

Year 4 Reporting Period Oct. 1, 2024 – Sept. 30, 2025 – **Annual Report due date:** January 30, 2026

Year 5 Reporting Period Oct. 1, 2025 – Sept. 30, 2026 – **Annual Report due date: September 30, 2026**

Other _____

Certification: *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Signature: 

Printed Name:

Title:

Date:

Section I. General Information

MS4 Facility Site Name:

MS4 Facility Organization Formal Name:

MS4 Facility Contact Name:

Title:

MS4 Contact Telephone:

MS4 Contact Email Address:

MS4 Facility Contact Type (all that apply): Owner Operator Main Contact

MS4 Facility Site Address:

MS4 Facility Site City, State, Zip Code:

MS4 Facility Site Mailing Address: *if different from above*

Is the MS4 Facility Site Located On Tribal Land? Yes No

MS4 Facility Jurisdiction Type (check all that apply):

- | | |
|--------------------------|------------------|
| Federal | County |
| State | City or Town |
| College or University | Highway District |
| State Highway Department | Tribal |
| Municipal: | Other |

List All Receiving Water(s) For the MS4 Discharges:

Section II. Permittee Responsibility:

Please answer all questions. If the answer is "No," or "Not Applicable" and no other direction is provided, use the Comments field at the end of this section to explain the reason and the expected date(s) that the requirement will be met, and/or to explain why the requirement does not apply.

- 1. This Permittee organization shares implementation responsibility for Permit compliance with one or more Permittees.**

Yes No Not Applicable

Is the agreement between the Permittees described/cited in the Stormwater Management Program (SWMP) Document?

Yes No Not Applicable

- 2. This Permittee organization shares implementation responsibility for Permit compliance with one or more outside (non-Permittee) entities.**

Is the agreement with these other entity(ies) described/cited in the SWMP Document?

Yes No Not Applicable

- 3. This Permittee organization maintains relevant ordinances or other regulatory mechanisms to control pollutant discharges into and from the MS4 to meet the requirements of the permit.**

Yes No Not Applicable

(If "No," use the Comment field to specify on overall progress to adopt adequate ordinances or utilizing available regulatory mechanisms.)

- 4. This Permittee organization's SWMP Document is posted on a publicly accessible website.**

Yes

Identify the URL for the webpage where the SWMP Document can be accessed:

http://

No

Not Applicable

- 5. The Permittee provided a summary of total costs associated with the SWMP implementation over the reporting period.**

Yes

Note: Permit Part 6.4.2.2.5 requires Permittees to provide annual expenditures for the reporting period, and estimated budget for the reporting period following each Annual Report.

No

Not Applicable

6. **This Permittee organization regularly tracks certain activities to set priorities and assess compliance with the Permit requirements.**

Yes

No

Not Applicable

7. **During the reporting period, responsibility for SMWP implementation has changed due to a Transfer of Ownership or Operational Authority over a geographic portion of the MS4.**

This Permittee's SWMP Document has been updated to reflect these changes in responsibility for any new or transferred areas served by the MS4.

Yes

If yes, use the Comments field to provide a brief statement summarizing the change in ownership or operational authority.

No

Not Applicable

Section II Comments:

Section III. Status of SWMP Control Measures

Please answer all questions for each SWMP control measure and associated component activity. In the Comments field, cite any relevant information and/or statistics that helps illustrate the Permittee's implementation of the required action/activity.

If the answer is "No," use the Comments field to explain the reason, and outline the expected dates that the requirement will be met.

If the requirement does not apply to the Permittee's organization, mark "NA" and explain why it does not apply in the Comments field.

Public Education, Outreach and Involvement Program (Permit Part 3.1)

- 8. This Permittee organization conducts an education, outreach, and public involvement program based on stormwater issues of significance in the Permittee's jurisdiction.**

Yes, this organization conducts the education, outreach, and involvement activities required by the Permit

Yes, this organization works through contract with other entities to conduct the education, outreach, and involvement activities required by the Permit

No

Not Applicable

- 9. Target Audience: During the reporting period, this Permittee organization focused its education, outreach, and public involvement messages to the following audience(s):**

General Public (including homeowners, homeowner's associations, landscapers, and property managers)

Business/Industrial/Commercial/Institutions (including home based and mobile businesses)

Construction/Development (e.g., Engineers, Contractors, Developers, Landscape Architects, Site Design Professionals)

Elected Officials, Land Use Policy and Planning Staff

Other (describe in Comments section below)

- 10. Topics: During the reporting period, this Permittee organization focused its education, outreach, and public involvement messages on the following topics (select all that apply):**

General impacts of stormwater flows into surface water, and appropriate actions to prevent adverse impacts;

Impacts from impervious surfaces, techniques to avoid adverse impacts;

Yard care techniques protective of water quality, such as composting;

Proper use, application & storage of pesticides, herbicides, and fertilizers;

Litter & trash control and recycling programs;
BMPs for power washing, carpet cleaning, auto repair & maintenance;
Low Impact Development/green infrastructure techniques, including site design, pervious paving, retention of mature trees/vegetation, landscaping and vegetative buffers;
Maintenance of landscape features providing water quality benefits;
Stormwater treatment and volume control practices;
Technical standards for stormwater site plans; including appropriate selection, installation, and use of required construction site control measures
Source control BMPs and environmental stewardship;
Impacts of illicit discharges and how to report them;
Actions and opportunities for pet waste control/disposal,
Water wise landscaping, water conservation, water efficiency
BMPs for use and storage of automotive chemicals, hazardous cleaning supplies, vehicle wash soaps and other hazardous materials;

11. During the reporting period, this Permittee organization began and/or continued distribution of the selected messages/activities to the intended target audience.

Yes

Please summarize the message/activity conducted during the reporting period in the Comments section below.

No

*Note: Permit Part 3.1.3 requires Permittees to conduct at least eight (8) educational messages or activities no later than **September 30, 2026**.*

Not Applicable

12. During this reporting period, this Permittee organization assessed, or participated in efforts to assess, the understanding and adoption of intended behaviors by the target audience.

Yes; In the Comments section below, please summarize efforts to assess the selected education, outreach and public involvement activities conducted during the reporting period. If information is available, describe how this information is used to improve the education/outreach efforts.

No

Not Applicable

13. During this reporting period, this Permittee organization offered (or worked with others to offer) training/education regarding construction site runoff control measures to site operators working in the Permittee's jurisdiction.

Yes

No

*Note: Permit Part 3.1.7.1 requires Permittees to offer outreach/training on construction site control measures at least once per year during the permit term, no later than **September 30, 2026**.*

Not Applicable

14. During this reporting period, this Permittee organization offered (or worked with others to offer) training/education regarding permanent stormwater controls to audiences working in the Permittee's jurisdiction.

Yes

No

*Note: Permit Part 3.1.7.2 requires Permittees to offer outreach/training on permanent stormwater controls at least once per year during the permit term, no later than **September 30, 2026**.*

Not Applicable

15. This Permittee organization maintains and promotes a publicly-accessible website that provides current SWMP-related information cited in Permit Part 3.1.8. This website was recently updated prior to submitting this Report.

Yes

URL for the Permittee's webpage:

http://_____

No

Not Applicable

Comments on Public Education, Outreach, and Involvement Program:

Use this Comments field to explain or discuss unique implementation schedules, summarize nature of the education, outreach, and public involvement activities conducted during the reporting period

Illicit Discharge Detection and Elimination Program (Permit Part 3.2)

- 16. To the extent allowable pursuant to authority granted under Idaho law, this Permittee organization conducts and enforces a program to detect and eliminate illicit discharges into the MS4.**

Yes

No

*Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary to comply with Permit Parts 3.2.2 through 3.2.9 no later than **April 3, 2026**.*

Not Applicable

- 17. This Permittee organization maintains a current MS4 Map and Outfall Inventory as described in Permit Part 3.2.2.**

Yes

No

*Note: Permit Part 3.2 requires Permittees to update their Map(s) and Inventory no later than **April 3, 2026**.*

Not Applicable

- 18. To the extent allowable pursuant to authority granted under Idaho law, this Permittee organization prohibits non-storm water discharges into the MS4 (except those identified in Permit Part 2.4) through an ordinance or other regulatory mechanism.**

Yes – if yes, please provide citation/web address to the ordinance/regulatory mechanism:

No

*Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary no later than **April 3, 2026**.*

Not Applicable

- 19. This Permittee organization maintains a dedicated telephone number, email address, and/or other means for the public to report illicit discharges,**

Yes – if yes, please provide phone number/web address :

No

*Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary no later than **April 3, 2026**.*

Not Applicable

20. This Permittee organization responds and investigates illicit discharge complaints or reports within two working days.

Yes

No

*Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary no later than **April 3, 2026**.*

Not Applicable

21. Number of public Complaints/Reports Received During this Reporting Period:

22. Number of Illicit Discharge Complaints/Reports Investigated through field visits, sampling or other follow-up action

23. Number of Illicit Discharge Complaints/Reports Resolved

24. This Permittee organization conducts a dry weather analytical and field screening monitoring program to identify non-stormwater flows from MS4 outfalls.

Yes

No

Not Applicable

25. During the reporting period, this Permittee organization used its written protocols to prioritize and identify MS4 outfalls for dry weather discharge investigation.

Yes

No

Not Applicable

26. Total Number of MS4 Outfalls in the Permittee's jurisdiction of the Permit Area:

27 During the reporting period, this Permittee organization completed visual dry weather screening on at least 20 percent of MS4 outfalls.

Yes— Total # outfalls < 7, so only one outfall screened this reporting period.

No

Not Applicable

28. Of the 20 percent of outfalls screened during the reporting period:

How many outfalls were discharging during dry weather?

How many of these identified dry weather discharges were sampled or otherwise investigated to determine the discharge source?

How many of the identified dry weather discharges resulted in the Permittee action to address and eliminate the discharge source?

29. During this reporting period, how many of the Permittee's MS4 outfalls have been identified as having dry weather flows caused by irrigation return flow or ground water seepage?

Number of outfalls identified this reporting period

Total number of MS4 outfalls identified to date, as having dry weather flows from irrigation or groundwater seepage

Note: Permit Part 3.2.6 requires Permittees to provide a complete list of MS4 outfalls locations identified as having dry weather flows caused by irrigation return flow or ground water seepage as part of the Permit Renewal Application no later than April 3, 2026.

30. This Permittee organization maintains written spill response procedures and coordinates appropriate spill prevention, containment and response activities with other organizations in the Permit Area to ensure maximum water quality protection at all times.

Yes

No

Not Applicable

31. This Permittee organization coordinates with appropriate local entities to educate employees and the public of the proper management and disposal or recycling of used oil, vehicle fluids, toxic materials, and other household hazardous wastes.

Yes

No

Not Applicable

32. This Permittee organization's staff responsible for investigating, identifying and eliminating illicit discharges, spills, and illicit connections into the MS4 are trained to conduct such activities

Yes

No

Not Applicable

Comments on Illicit Discharge Detection and Elimination Program:

Use this Comments field to explain any unique implementation schedules, highlight investigation results or follow-up actions, discuss subsequent enforcement actions, etc. that were conducted during the relevant reporting period.

Construction Site Runoff Control Program (Permit Part 3.3)

- 33. This Permittee organization uses an ordinance or other regulatory mechanism to require erosion, sediment, and waste material management controls at construction project site activity that results in land disturbance of one (1) or more acres and discharges to the MS4.**

Yes

No

*Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than **April 3, 2026**.*

Not Applicable

- 34. This Permittee organization requires construction site operators to submit construction site plans for Permittee review.**

Yes

No

*Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than **April 3, 2026**.*

Not Applicable

- 35. This Permittee organization inspects construction sites to ensure compliance with applicable requirements for erosion, sediment and waste material management controls.**

Yes

No

*Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than **April 3, 2026**.*

Not Applicable

- 36. This Permittee organization inspects construction sites using an inspection prioritization system.**

Yes

No

*Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than **April 3, 2026**.*

Not Applicable

37. This Permittee organization implements a written escalating enforcement response policy or plan (ERP) for construction site runoff control.

Yes

No

*Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than **April 3, 2026**.*

Not Applicable

38. This Permittee organization ensures that all persons responsible for preconstruction site plan review, site inspections, and enforcement of construction site runoff control requirements are appropriately trained to conduct such activities – specifically, this organization provides orientation and training for new staff working on construction runoff control issues within the first six (6) months of employment.

Yes

No

*Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than **April 3, 2026**.*

Not Applicable

Comments on Construction Site Runoff Control:

Use this Comments field to explain unique implementation schedules, summarize the number of site inspections, follow-up actions, and/or any subsequent enforcement actions, etc that were conducted during the relevant reporting period.

**Post Construction Stormwater Management in New Development & Redevelopment
(Permit Part 3.4)**

39. Through ordinance or other regulatory mechanism, this Permittee organization requires the installation and long-term maintenance of permanent stormwater controls at new development and redevelopment project sites that result from land disturbance of 5,000 square feet or more, excluding individual one- or two-family dwelling development or redevelopment and the infill or redevelopment of public pedestrian infrastructure projects. Required controls are sufficient to retain onsite the runoff volume produced from the first 0.6 inches of rainfall from a 24-hour event preceded by 48 hours of no measurable precipitation, and/or require runoff treatment providing equal or greater level of water quality benefit as this onsite retention standard.

Yes

Please cite to the ordinance containing the permanent stormwater control requirements:

No

*Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

40. This Permittee organization requires permanent storm water controls through written specifications.

Yes

Please cite to the document containing the permanent stormwater control requirements:

No

*Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

41. This Permittee organization requires preconstruction site plan review and approval for permanent storm water controls at new development and redevelopment sites.

Yes

No

*Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

41.b This Permittee organization cooperates in the implementation of the Green Infrastructure Strategy to employ innovative approaches to control stormwater quality and quantity in the Lower Boise River watershed.

Use this field below to describe any relevant Permittee actions during the reporting period, as applicable. .

42. **This Permittee organization has identified high priority locations in the jurisdiction where the Permittee regularly inspects the installation, and long-term operation, of permanent stormwater controls.**

Yes

No

*Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

43. **This Permittee organization has an enforcement strategy to ensure and maintain the functional integrity of permanent stormwater controls within this jurisdiction.**

Yes

No

*Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

44. **This Permittee organization uses a database inventory to track and manage the operational condition of permanent stormwater controls within this jurisdiction.**

Yes

No

*Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

45. **This Permittee organization requires enforceable and transferable O&M Agreements, where parties other than this Permittee organization are responsible for operation and maintenance of permanent storm water controls?**

Yes

*No - Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

46. **This Permittee organization ensures that all persons responsible for reviewing site plans for permanent stormwater controls and/or for inspecting the installation and operation of permanent controls are trained to conduct such activities**

Yes

*No - Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026**.*

Not Applicable

Comments on Post Construction Stormwater Management in New Development and Redevelopment

Use this Comments field as necessary to explain any unique implementation schedules, summarize inspections, actions, etc. that were conducted during the relevant reporting period.

Stormwater Infrastructure and Street Management (Permit Part 3.5)

- 47. This Permittee organization inspects all MS4 catch basins and inlets in the jurisdiction at least once every two years and takes appropriate maintenance or cleaning action based on those inspections.**

Yes

No – Permittee uses an alternate inspection & maintenance schedule as outlined in the SWMP Document.

No

*Note: Permit Part 3.5 requires Permittees to update their pollution prevention and good housekeeping as needed to properly operate and maintain their MS4s no later than **April 3, 2026**.*

Not Applicable

Total Number of catch basins and inlets inspected this reporting period _____

- 48. This Permittee organization operates and maintains Streets, Roads, Highways and/or Parking Lots in its jurisdiction in a manner that protects water quality and reduces the discharge of pollutants through the MS4.**

Yes

No

*Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than **April 3, 2026***

Not Applicable

- 49. This Permittee organization operates all street/road maintenance material storage locations in a manner that prevents pollutants in stormwater runoff from discharging to the MS4 or into any receiving waterbody. A description of each Material Storage Location is included in the SWMP Document, as required by Permit Part 3.5.4**

Yes

No

Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than .

Not Applicable

50. **This Permittee organization sweeps all streets, roads, highways, and parking lots according to a sweeping management plan and the sweeping schedule outlined in Permit Part 3.5.5.**

Yes

No

*Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than **April 3, 2026***

Not Applicable

51. **This Permittee organization has reviewed its operation and maintenance activities for the types of activities listed below and confirms that all such activities are conducted in a manner that protects water quality and reduces the discharge of pollutants through the MS4.** Municipal Activities to be addressed include: *grounds/park and open space maintenance operations; fleet maintenance and vehicle washing operations; building maintenance; snow disposal site operation and maintenance; solid waste transfer activities; municipal golf course maintenance; materials storage; hazardous materials storage; used oil recycling; and spill control and prevention measures for municipal refueling facilities.*

Yes

No

*Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than **April 3, 2026***

Not Applicable

52. **This Permittee organization ensures appropriate practices to reduce the discharge of pollutants to the MS4 associated with the application, storage and disposal of pesticides, herbicides and fertilizers. All employees or contractors applying pesticides, etc. are instructed to follow all label requirements, including those regarding application methods, rates, number of applications allowed, and disposal of the pesticide/herbicide/fertilizer and rinsate.**

Yes

No

*Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than **April 3, 2026**.*

Not Applicable

- 53. This Permittee organization uses site specific Storm Water Pollution Prevention Plans for all Permittee-owned material storage facilities, heavy equipment storage areas, and maintenance yards located in the Permit Area.**

Yes

No

*Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than **April 3, 2026**.*

Not Applicable

- 54. This Permittee organization ensures that all persons responsible for municipal operations and maintenance activities are trained to conduct such activities**

Yes

No

*Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than **April 3, 2026**.*

Not Applicable

Comments on Stormwater Infrastructure and Street Management

Use this Comments field as necessary to explain any unique implementation schedules, summarize inspections, actions, etc. that were conducted during the relevant reporting period

Industrial and Commercial Stormwater Discharge Management (Permit Part 3.6)

55. This Permittee organization maintains an inventory of industrial & commercial facilities within the Permit Area, and inspects such facilities on a prioritized basis as required by Permit Part 3.6.

Use this comment box to summarize Permittee activities related to Permit Part 3.6.

Section V. Response To Excursions Above Idaho Water Quality Standards

- 56. During this or any prior reporting period, did the Permittee submit written notification to EPA and IDEQ regarding MS4 discharge that are causing or contributing to an excursion above the WQS as directed by Permit Part 5.1?**

Yes – if yes, proceed to Q.56

No

Not Applicable

- 57. During this or any prior reporting period, did the Permittee submit an Adaptive Management Report to EPA and IDEQ, as directed by Permit Part 5.2?**

Yes – if yes, proceed to Q.57

No

Not Applicable

- 58. Provide a summary of the Permittee's efforts to date that address the MS4 discharges contributing to the original water quality excursion, including the results of any monitoring, assessment, or evaluation efforts conducted during the reporting period.**

59. List any attachments submitted as part of this Annual Report:

Note: Part 6.2.1 requires an updated *Stormwater Outfall Monitoring Plan* to be submitted as part of the Year 1 Annual Report, due January 30, 2023.

Appendix A

Draft Stormwater Sampling

Scope of Work - ACHD Stormwater Sampling Phase I

Ada County Highway District (ACHD)

ACHD Stormwater Sampling Phase I
December 19, 2023



Executive Summary

This Scope of Work (SOW) has been prepared at the request of Ada County Highway District (ACHD) for Jacobs Engineering Group Inc. (Jacobs) to assist in maintaining compliance with ACHD's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Phase I Permit. The duration of this Scope of Work extends through the end of the 2024 Fiscal Year and will terminate on September 30, 2024.

This Scope of Work is to assist ACHD with the following tasks:

- Task 0: Project Management
- Task 1: Stormwater Monitoring
 - Task 1.1 Storm Event Coordination
 - Task 1.2: Weather Forecasting
 - Task 1.3: Monitoring Station Setup
 - Task 1.4: Sample Collection
 - Task 1.5: Storm Event Debrief
- Task 2: Training

Jacobs is proposing a Scope of Work for the tasks as described below.

Task 0: Project Management

Project Management activities as outlined below will occur throughout the duration of the Phase I Permit support.

- Prepare and maintain the detailed project management plan that will be used during the execution of this project work. Specific elements of the plan include:
 - Project instructions: Define ACHD and Jacobs project organization, communication, document control, deliverables, schedule, health and safety considerations, and other project management requirements.
 - Quality Management Plan (QMP): Jacobs will use its standard quality control process. For technical documents, Jacobs will manage internal QA/QC review activities.
 - Project Health and Safety: Jacobs will develop a health and safety plan consistent with the requirements of the project to apply to all employees working on this project. It will address safety in the office and during field work and will include any requirements of ACHD.
- Prepare monthly progress reports and invoices, and review these with ACHD. The reports will include a status summary of current project tasks, activities planned for the next month, budget status, and identification of items of concern.
- Conduct internal coordination efforts

Assumptions

- Monthly meetings with ACHD project manager, Jacobs project manager, and Jacobs deputy project manager
- Biannual meetings with key team members
- ACHD to review and approve Invoice and Monthly Project Status Report

Deliverables

- Monthly Project Status Report (updated monthly and included with invoice)
- Earned Value Report
- Monthly invoice

Communication

Primary communication will flow from Jacobs' project manager (PM), Zack Billingsley, through ACHD's PM. However, effective communication relies on avoiding bottlenecks, so active and open communication between all team members will be encouraged.

Task 1: Stormwater Monitoring

Task 1 consists of supporting ACHD with stormwater monitoring to meet the requirements of the NPDES MS4 Phase I Permit. This task is divided into the following subtasks: Storm Event Coordination, Weather Forecasting, Equipment Setup, Sample Collection, and Storm Event Debrief. This task will be jointly completed by ACHD and Jacobs. Phase I consists of four stormwater monitoring sites and one subwatershed monitoring site.

Task 1.1: Storm Event Coordination

ACHD will obtain daily weather forecasts and precipitation records from the National Weather Service (NWS) website. Forecast information including storm probability, the expected amount of precipitation, and timing of a storm within the next 72 hours will be communicated to Jacobs using the Sampling Event Communication Form. Storm events within the next 72 hours will be evaluated using the following selection criteria:

- Forecasted precipitation depth 0.11 inch or greater in a 12-hour period
- Antecedent dry period (<0.11 inch) of 72 hours or greater
- Probability of precipitation 70 percent or greater

Storm event selection criteria may be modified at the discretion of ACHD.

If the forecast meets storm selection criteria, ACHD will call Jacobs to determine if a stormwater sampling event is to be initiated. To allow sufficient time for team establishment and station setup during daylight hours, the decision to sample a forecasted storm must be made at least eight hours prior to the estimated precipitation. If a storm is estimated to begin during the night or early next morning, a decision must be made by 4:00 pm the day before the storm is forecasted. If a storm is forecasted to occur during the weekend, ACHD and Jacobs will confer on the Friday before the weekend to arrange a schedule for checking the forecast, station setup, and storm event coordination.

Once the decision to target a storm for a sampling event, the Jacobs team will complete storm event coordination efforts to organize the sampling team and conduct an internal storm event coordination call.

Assumptions

- Jacobs team coordinator will hold a 15-minute call with ACHD to initiate a stormwater sampling event
- Jacobs team coordinator will spend no more than 2 hours per event for internal team storm event coordination
- Jacobs will hold a 30-minute call with internal sampling team
- Jacobs sampling team will dedicate no more than 30 minutes each to prepare for a stormwater sampling event
- Budget assumes a maximum of five storm event coordination efforts

Task 1.2: Weather Forecasting

Once the decision is made to target a storm for a sampling event, one person on the Jacobs team will be assigned to forecast the weather prior to the stormwater sampling event. The forecaster will take over

monitoring the weather and will call the NWS for frequent updates on the storm event. The forecaster will ask the NWS about storm characteristics including precipitation totals, storm probability, timing, intensity, and chance of rainshadowing in the area of monitoring stations and communicate updates to ACHD and the Jacobs team members. The forecaster will also have access to the ACHD remote desktop to monitor the flow rate at the monitoring station locations with remote capabilities. Once rain begins and flow increases in the storm drain system, the forecaster will call ACHD lead and Jacobs sampling team members to initiate stormwater sampling.

In the event that a storm does not arrive within two hours of the forecasted time or the forecast changes so that the storm is predicted to no longer produce sufficient precipitation or runoff, a decision to terminate the sampling event or call off grab samples will be a mutual decision with the ACHD representative (if available), Jacobs forecaster, and Jacobs team leader. Based on the discussion and available information, the ACHD representative, Jacobs forecaster, and Jacobs team leader will make the decision to terminate or more forward with the sampling.

Assumptions

- Forecaster will provide frequent updates to sampling team prior to a storm event and call sampling team members to initiate sampling
- Forecaster will spend no more than six hours of weather monitoring per storm event
- Budget assumes a maximum of five weather monitoring efforts

Task 1.3: Monitoring Station Setup

Prior to a storm event, Jacobs will provide one team leader for setup and ACHD will also provide one person for setup. The setup team will perform setup activities at each of the monitoring stations following the procedures described in the *Storm Water Outfall Monitoring Plan (SWOMP)* and *Americana Subwatershed Monitoring Plan*.

Station setup procedures include the following:

- Before leaving the office/ACHD lab:
 - Estimate trigger volumes specific for each site
 - Fill out station setup checklist
 - Identify any special conditions for the storm
- At each monitoring station
 - Install charged batteries (if necessary)
 - Clean automatic sampler tubing with 5% hydrochloric acid
 - Purge 1 gallon of distilled water through the tubing system
 - Check for kinks in tubing
 - Install composite sample bottle and ice
 - Check condition of desiccant
 - Inspect enclosures and equipment for damage, obstructions, or loose connections
 - Note irregular equipment operations

Scope of Work - ACHD Stormwater Sampling Phase I

- Download logged data (if necessary)
- Program and start low meter and automatic sampler
- Record progress and observations on the Set-up/Shut-down Checklist

When feasible, attempts will be made at the time of station setup to troubleshoot and correct any irregular equipment operations or other site conditions that would hinder the collection of representative data or cause a safety hazard. Any abnormalities in programming or station setup will be communicated to ACHD before the start of the event.

Setup will be completed by two people to ensure all steps and procedures are done in accordance with the *SWOMP*. Station setup activities generally do not require confined space entry. If confined space entry is required, ACHD may need to supply additional personnel, equipment, and required permitting to assist with these activities.

Assumptions

- One Jacobs staff and one ACHD staff will conduct setup
- Equipment necessary for setup will be in good working order and necessary supplies will be stocked and readily accessible to load at the beginning of setup
- Setup for the five Phase I monitoring sites will take no more than five hours per storm event
- Budget assumes a maximum of five monitoring station setup events
- The scope assumes an additional four hours of troubleshooting support for one Jacobs staff member

Task 1.4: Sample Collection

The NPDES MS4 Phase I Permit requires the Permittees to continue to conduct wet weather outfall monitoring according to the *SWOMP* and subwatershed monitoring according to the Americana Subwatershed Monitoring Plan. The stormwater monitoring, including the collection of stormwater discharge samples for laboratory analysis is conducted at a minimum frequency of three wet weather events in each permit year (October 1 – September 30) from the four stormwater monitoring sites and one subwatershed monitoring site. Attempts will be made to separate sampling events by a minimum of 30 days to represent seasonal variability. Jacobs will support ACHD with collecting a minimum of three complete samples from each monitoring site for each permit year. At a maximum, Jacobs will mobilize for five storm events. Stormwater samples will be collected in a clean, laboratory-supplied containers and will be analyzed for the constituents identified in the *SWOMP*.

Field and laboratory activities will be conducted in accordance with the *Quality Assurance Program Plan (QAPP)*. Quality control (QC) samples will be collected as provided in the *QAPP* and identified in the *SWOMP*. The City of Boise Water Quality Lab (WQL) will perform laboratory analysis; one sampling team with a City of Boise contractor badge will transfer samples to the WQL. Results of WQL quality assurance (QA) procedures will be included in laboratory reports. Data collected as part of this monitoring program, and QA/QC data will be stored in an electronic format and shared with Jacobs as needed.

One member from the Jacobs' sampling team will act as the site safety officer (SSO) for each sampling event. Jacobs is responsible for ensuring that the SSO has met necessary health and safety training requirements. The SSO will conduct a safety briefing before monitoring efforts begin.

Stormwater samples will be collected in teams of two, one team leader and one team technician. Jacobs will provide one team leader and two team technicians for five stormwater sampling events. With prior

notice, Jacobs can provide an additional team member. After notification from forecaster, the Jacobs sampling team members will mobilize and arrive at the ACHD laboratory building within 30 minutes. Two types of stormwater samples will be collected, grab sample and composite samples. The sample team leader will be responsible for sample collection and field parameter measurement according to the standard operation procedure. The sampling team will also perform troubleshooting of any irregular equipment operations while onsite.

Field parameters will be measured onsite and recorded on the corresponding forms. Grab samples will be collected, labeled, and stored on ice before being transferred to the ACHD laboratory or WQL. In addition, sampling teams will check on the status of the composite samples, setup prior to the storm event. Sampling teams will change the composite bottle as necessary throughout the storm. Jacobs will dedicate one team leader to continue to support ACHD with the composite sampling component for the remainder of the storm event. The supporting position requires extensive understanding of the ACHD monitoring program, Boise weather patterns, and monitoring equipment. Outfall monitoring program criteria for sample representativeness targets composite samples made of subsamples representing at least 75% or more of the stormwater runoff volume, or at least six hours of flow. The composite sample team will be available for at least six hours from the start of runoff up to 12 hours to provide an opportunity for meeting representativeness criteria. Once composite samples are complete, the sampling team will drop off at the WQL.

When dropping off grab and composite samples at the WQL, the Jacobs and/or ACHD team leaders will review chain-of-custody forms, field forms, and sample labels for accuracy and completeness. The field coordinator may also coordinate with the analytical laboratory regarding method holding times and desired detection limits. After sample delivery is complete, monitoring equipment will be returned to the ACHD laboratory.

Assumptions

- Jacobs will support ACHD with the collection of three complete samples per each Phase I monitoring station
- Budget assumes Jacobs will support a maximum of five stormwater sampling events
- Jacobs will provide one team leader and two team technicians for each Phase I stormwater sampling event
 - 12 hours assumed for team leader per storm event
 - 6 hours for each team technician per storm event
- In the event ACHD staff are not available, additional hours are assumed for another Jacobs team leader that may be needed (Budget assumes Jacobs to provide another team leader for two storm events. If additional support is needed, ACHD will discuss any budget changes with the Jacobs project manager)
- Jacobs staff members may charge two hours minimum when deployed on a storm event
- Jacobs to provide one vehicle for sampling; if ACHD team leader is not available, Jacobs to provide two vehicles for sampling
- Mileage will be billed upon meeting at ACHD lab for Jacobs vehicle(s)

Task 1.5: Storm Event Debrief

After each storm event, the Jacobs team coordinator and Jacobs team lead will meet with the ACHD team members to discuss the stormwater sampling event.

Assumptions

- The scope assumes 1-hour debrief meeting for each storm event for two Jacobs team members
- Budget assumes a maximum of five storm event debrief meetings

Task 2: Training

Task 2 consists of training for sampling team members. Jacobs will work with ACHD to set up a training event for all members of the stormwater sampling team. The training will consist of:

- ACHD's Phase I & II Permit NPDES MS4 Permits
- Permit Requirements
- Stormwater sampling procedures
- Monitoring site functionality

The following assumptions have been for Task 3:

- 4-hour general stormwater sampling training for 12 Jacobs team members
- 4-hour team leader and setup training for 4 Jacobs team members

Schedule and Budget

Schedule

Project schedule, assuming NTP of January 1, 2024, are presented below.

- Project Management: To be completed throughout the project
- Sample Collection: Three complete sampling events by end of Permit Year
- Training: January 2024

Jacobs will make every effort to meet the deliverable schedule listed above, but outside factors may prohibit certain dates from being met. Jacobs PM will update the schedule monthly and will coordinate with the ACHD PM if scheduling issues are anticipated.

General Assumptions

- Mileage will be billed at \$0.595 per mile, starting at the ACHD lab. Mileage by the sampling team to arrive to the lab for each sampling event will not be billed.
- ACHD will provide all equipment for grab sampling, composite sampling, measuring field parameters, and supply each sampling team with a first aid kit
- ACHD to provide confined space entry equipment for routine maintenance and equipment troubleshooting
- ACHD to provide access to ACHD lab, monitoring stations, and support getting access to WQL
- ACHD to provide access to the remote desktop for FlowLink and DataSight

Basis of Billing

This section provides Jacobs' fee estimate for the services identified in this SOW. ACHD will pay Jacobs for its services and reimbursable expenses on a Time and Material (T&M) basis with a Not to Exceed (NTE) amount of **\$54,743**, as described in the compensation schedule in Table 1. The budget will be managed at the overall project level, and not at the level of individual task budgets.

Table 1: Compensation Schedule

Task	Task Budget
Task.0: Project Management	\$8,792
Task 1: Stormwater Sampling	
Task 1.1: Team Coordination	\$4,055
Task 1.2: Weather Forecasting	\$4,177
Task 1.3: Monitoring Station Setup	\$4,043

Scope of Work - ACHD Stormwater Sampling Phase I

Task	Task Budget
Task 1.4: Sample Collection	\$19,077
Task 1.5: Storm Event Debrief	\$1,516
Sampling Contingency	\$3,482
Task 2: Training	\$9,600
Budget Not to Exceed	\$54,743

Appendix B:

Americana Sub Watershed Summary

Americana Subwatershed Monitoring Summary Report

Water Year 2023

Prepared by
Brown and Caldwell

Prepared for
Ada County Highway District
December 20, 2023



This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated October 4, 2023. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Americana Subwatershed Monitoring Summary WY 2023

Ada County Highway District
12/20/2023

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Section 1: Introduction

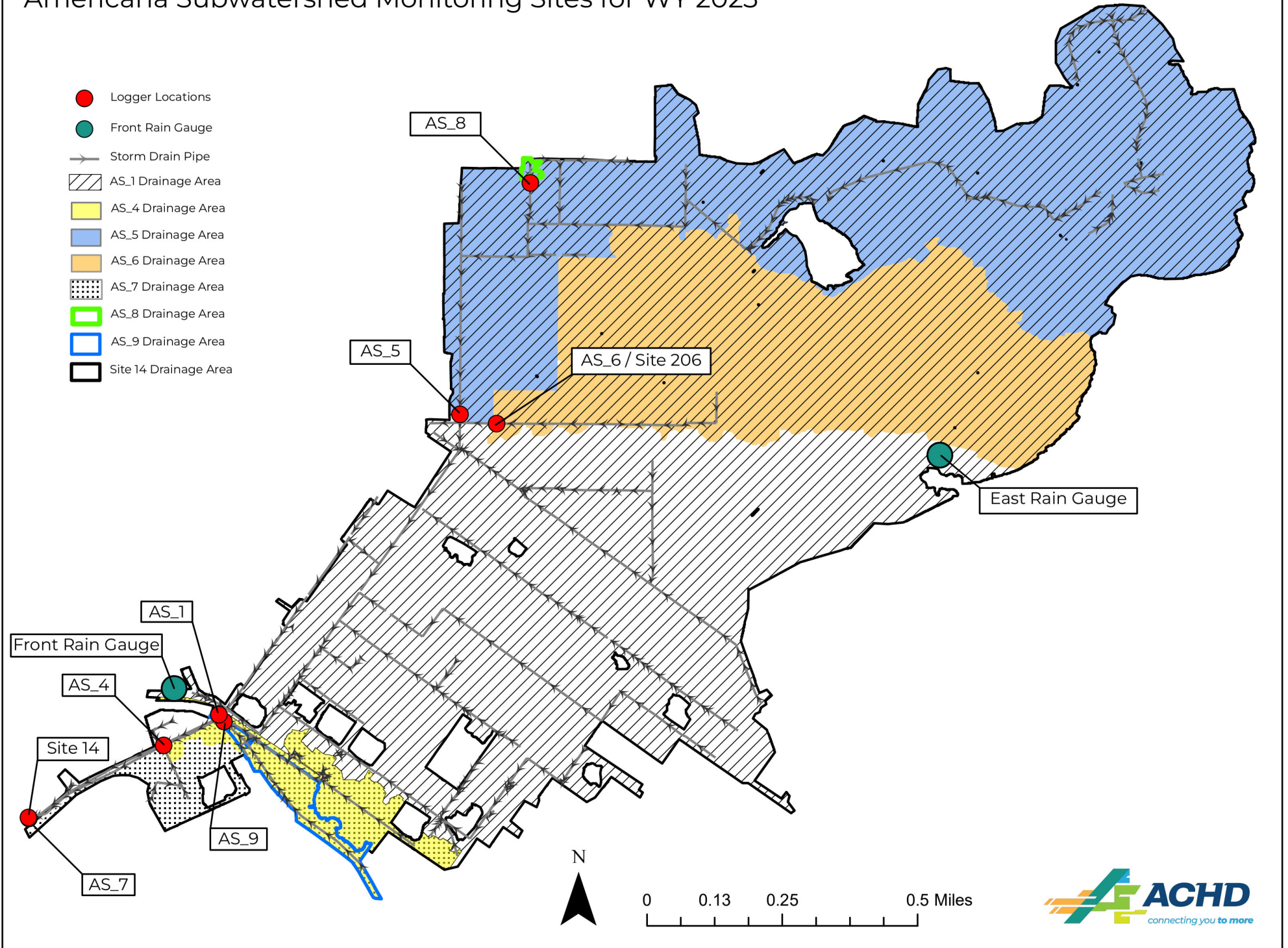
Ada County Highway District, Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a National Pollutant Discharge Elimination System Phase I Permit #IDS027561 (Permit) on October 1, 2021. The Permit authorizes the Permittees to discharge from municipal separate storm sewer system outfalls to the Boise River and its tributaries. According to Permit Part 6.2.2, *Subwatershed Monitoring*, Permittees are required to conduct monitoring within the Americana subwatershed to better define wet weather and dry weather flow volumes, sources, and pollutant loads.

The Americana subwatershed is one of the largest urban subwatersheds on the lower Boise River and drains a significant portion of downtown Boise and the North End and Foothills residential areas. Stormwater discharge monitoring (flow measurement and analytical sample collection) is currently conducted at the Americana outfall as identified in the [Stormwater Outfall Monitoring Plan](#) (ACHD, 2022). While data collected at the outfall is important for understanding discharges to the Boise River, the dataset does not provide much information about the pollutant load and dry weather sources farther up in the storm drain system. Guided by the [Americana Subwatershed Plan](#) (ACHD, 2020), the Americana subwatershed is divided into subcatchments at major nodes in the system to parse out non-stormwater flow sources and characterize pollutant contributions. The following summary describes Americana subwatershed monitoring activities during water year (WY) 2023 (October 1, 2022–September 30, 2023).

In WY 2023, data collection throughout the Americana subwatershed included precipitation, water level, flow, and water quality samples. Precipitation data were collected at two representative locations, and water level data were collected at eight subwatershed locations and at the Americana monitoring station. The water level data were compared to the precipitation data to look for anomalies in the municipal separate storm sewer system, such as instances when the water level in-pipe increases or decreases without a corresponding precipitation event and when the water level increases from isolated subcatchment areas. Additionally, water quality data from wet weather discharges were collected from one subcatchment site (Site 206) to compare with the Americana outfall site (Site 14). The water quality data, along with flow data, were used to calculate pollutant loads and identify pollutants discharging from Site 206 that are disproportionately high compared to Site 14.

Figure 1

Americana Subwatershed Monitoring Sites for WY 2023



Section 2: Monitoring Sites, Equipment, and Sample Types

Data was collected at the following monitoring sites during WY 2023: AS_1, AS_4, AS_5, AS_6, AS_7, AS_8, AS_9, Site 14, Site 206, Front, and East (Figure 1). Details on each of the monitoring sites, including subcatchment areas, pipe characteristics, and equipment deployment start and end dates, are found in Table 1. Figure 2 shows the locations of the monitoring sites in relation to each other using a conceptual layout of the storm drain system.

Site 14 is the Americana outfall monitoring station used in the National Pollutant Discharge Elimination System Phase I Stormwater Outfall Monitoring program. This monitoring site is equipped with a flowmeter and sampler to collect water level, velocity, flow, and composite samples. Water level, velocity, and flow data are collected at 15-minute intervals during dry weather and 1-minute intervals when the equipment is setup to monitor a forecasted storm event

Site 206 is a subcatchment of the Americana subwatershed. Similar to Site 14, it is equipped with a flowmeter and sampler to collect flow and water quality data during targeted storm events.

AS_7 is a secondary outfall to Site 14, with a connection between storm drain pipes farther up in the system. This site is equipped with a flowmeter to capture continuous water level, velocity, and flow data at 5-minute intervals.

The AS_8 site was installed during the second quarter of WY 2023 to replace the AS_5 site. Past data from AS_5 subwatershed has shown that the AS_5 subwatershed is not a source of dry weather flow, with the exception of Hull's Gulch influence during high flow. The AS_8 subwatershed is much smaller than the AS_5 subwatershed, however it still captures Hull's Gulch flows into the Americana storm drain system.

The AS_9 site was added to measure dry weather flow at AS_4 by splitting the subwatershed into two areas, with AS_4 representing the upstream portion of the AS_9 subwatershed.

The AS_6 logger site was discontinued in the second quarter of WY2023, however site 206 still collects flow and water quality data during targeted storm events.

AS_1, AS_4, AS_5, AS_6, AS_8, and AS_9 represent subcatchment areas within the Americana subwatershed. Each site is equipped with a water level logger to collect in-pipe water level data. The loggers continuously record pressure readings at 5-minute intervals. The pressure readings are corrected using local barometric pressure and converted to water level.

Front and East are rain gauge sites and are equipped with tipping bucket rain gauges. The rain gauges collect continuous precipitation data in 0.01-inch increments using event data loggers. The precipitation data are used to determine the date and times of wet weather storm events and dry weather periods.

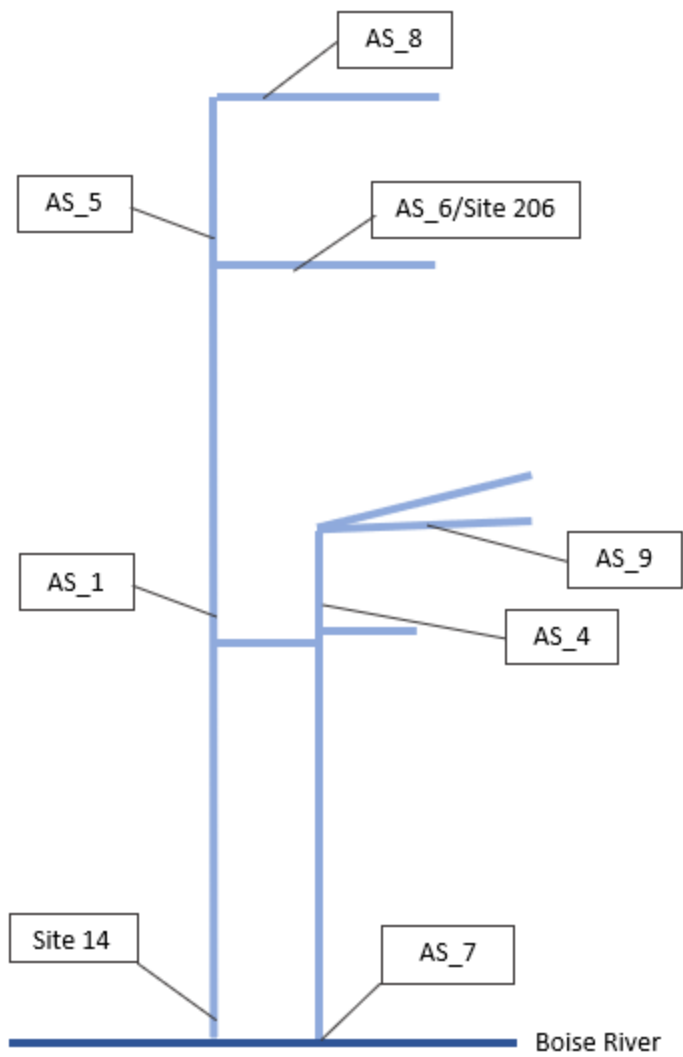


Figure 2. Conceptual Layout of Monitoring Sites

2.1 Water Quality Sample Types

The sample types collected during WY 2023 include grab samples and composite samples. Grab samples represent a discrete measurement from the overall storm discharge while composite samples represent the entire discharge.

Grab samples were manually collected from the discharge stream using a swing sampler. The grab samples were submitted to the Boise City Water Quality Laboratory and analyzed for *E. coli*. At the time that the grab samples were collected, field parameters (temperature, pH, dissolved oxygen, and conductivity) were measured using In-Situ smarTROLL or In-Situ Aqua TROLL handheld instruments.

Composite samples were collected using automatic samplers, which worked in conjunction with flowmeters. After a predetermined volume of flow was discharged, the flowmeters triggered the sampler to collect a subsample. Each subsample was deposited into a 15-liter carboy, resulting in a flow-proportional composite sample. The composite samples were submitted to Boise City Water Quality Laboratory where they were split for analysis. The following constituents were analyzed: biological oxygen demand, 5-day (BOD₅); chemical oxygen demand (COD); hardness as calcium carbonate (CaCO₃); turbidity; total suspended solids (TSS); total dissolved solids; total phosphorus; orthophosphate, as P; ammonia; nitrate + nitrite; total Kjeldahl nitrogen (TKN); total arsenic; dissolved and total cadmium; dissolved and total copper; dissolved and total lead; dissolved and total mercury; and dissolved zinc.

Section 3: Americana Subwatershed Monitoring Results

This section describes water level monitoring results and water quality results and provides high-level conclusions and outcomes based on WY 2023 data.

3.1 Water Level Monitoring Results

For WY 2023, water level data from eight monitoring sites (AS_1, AS_4, AS_5, AS_6, AS_7, AS_8, AS_9, and Site 14) were evaluated for occurrences of increasing or decreasing water level not attributed to precipitation. Though the pipe size at each site differs, the change in water level is still evident in the data. When a change in water level is seen at one or more sites, the discharge must originate from the site that is farthest “up-pipe” in the storm drain system. Figures 3–6 show hydrographs for each quarter of WY 2023. Color bands were applied to the hydrographs to indicate periods where no rain was recorded, but the water level fluctuated at one or more sites. Fluctuations of less than 2 hours were not included in the analysis as non-stormwater sources. Fluctuations lasting more than 72 hours are marked as extended periods of non-stormwater flow and are denoted in the hydrographs with hatched color bands. The following conclusions were extracted from visually inspecting the hydrographs:

- Sudden water level increases and decreases were observed, which are likely caused by human-related activities such as turning on a pump or opening a headgate.
- Concurrent water level increases and decreases were observed at AS_1, AS_4, AS_7, and Site 14. Using the conceptual pipe layout in Figure 2 as a reference, it becomes apparent that there must be another piped connection between the AS_1 and AS_4 subcatchments.
- Extended periods of non-stormwater flow originating from AS_1 subcatchment (which includes downtown Boise) occurred on the following dates:
 - October 17, 2022–January 30, 2023 (approx. 105 days)
 - January 31, 2023–February 2, 2023 (approx. 2 days)

- February 2, 2023–February 10, 2023 (approx. 7 days)
- February 18, 2023–February 20, 2023 (approx. 3 days)
- February 20, 2023–February 25, 2023 (approx. 5 days)
- Extended periods of non-stormwater flow originating from AS_8 subcatchment occurred on the following dates:
 - March 14, 2023–March 24, 2023 (approx. 10 days)
 - March 30, 2023–March 31, 2023 (approx. 1 day).
 - April 10, 2023–April 13, 2023 (approx. 3 days).
 - September 15, 2023 (approx. 9.5 days)

The non-stormwater source is likely snow melt in Hull’s Gulch.

- No sudden water level increase or decrease was observed at AS_9. There are extended periods of non-stormwater flow originating from the AS_9 subcatchment detailed below. After the installation of the AS_9 monitoring point there continued to be sudden water level fluctuations originating from the AS_4 subcatchment.
- Extended periods of non-stormwater flow originating from the AS_9 subcatchment occurred on the following dates:
 - July 26, 2023–August 15, 2023 (approx. 19 days)
- Extended periods of non-stormwater flow originating from Site 14 subcatchment occurred on the following dates:
 - April 20, 2023–April 25, 2023 (approx. 5 days)
 - April 25, 2023–May 19, 2023 (approx. 24 days)

The non-stormwater source from April through June is likely from the Boise River surcharge.

- Non-stormwater discharge originated from the AS_7 subcatchment 64 times.
 - Quarter 1 and quarter 2 had no fluctuations of AS_7 independently (no other concurrent fluctuations with other monitoring points) observed.
 - In quarter 3 there were 16 anomalies observed generally occurring between 0000-0100 (93%) with no anomalies occurring on Fridays.
 - In quarter 4 there were 48 anomalies observed generally occurring between 0000-0200 (88%) with no anomalies occurring on Fridays.
 - During routine field work it was noted that flow was being recorded when there was no flow observed in the pipe.
 - Possible debris on the sensor was noted during quarter 4.
 - Troubleshooting of the equipment is recommended to determine if equipment error is the source of the observed fluctuations.

3.2 Water Quality Monitoring Results

During WY 2023, water quality samples from wet weather discharges were collected from one subcatchment site (Site 206) to compare with the Americana outfall site (Site 14). Samples were collected from six storm events. A summary of the storm dates and sample types collected is provided in Table 3-1. Attempts were made to collect samples from both Site 14 and Site 206 during the same storm event. When paired samples were successfully collected from both sites, the water quality results were directly compared to one another. Results from samples that were collected

from only one of the two sites were omitted from the subsequent discussion; however, the values will be used when calculating statistics for the final report. Comprehensive analytical results from all samples collected are included in Table 2, attached.

Table 3-1. Storm Event Summary		
Storm Event Date	Site 14	Site 206
10/22/22	Grab, composite ^a	Grab, composite ^a
01/09/23	Grab ^b	Grab ^b
03/10/23	Grab	Grab, composite ^c
03/29/23	Grab, composite	Grab, composite ^c
05/05/23	-	Composite
08/21/23	Composite	Composite

- No data

^a Composite sample is qualified due to lack of representativeness (50%–75%).

^b Data rejected due to insufficient rainfall (< 0.08 inch).

^c Incomplete water quality analysis due to low composite sample volume.

3.2.1 Grab Samples

Paired grab samples were collected from Site 14 and Site 206 on October 22, 2022, and March 29, 2023. They were analyzed for *E. coli*, temperature, pH, dissolved oxygen, and conductivity. Notable conclusions from each storm event are provided below.

October 10, 2022

- *E. coli* at Site 206 was 1.5 times higher than at Site 14.

October 22, 2022

- *E. coli* at Site 206 was two times higher than at Site 14.

March 29, 2023

- *E. coli* at Site 206 was nearly five times higher than at Site 14.

3.2.2 Composite Samples

Paired composite samples were collected from Site 14 and Site 206 on March 29, 2023, and August 21, 2023. Due to low composite sample volume, the March 29, 2023, composite from Site 206 was not analyzed for TSS.

Event-specific pollutant loads for each analyzed constituent were calculated by multiplying the volume of discharge as measured at the site by the constituent concentration. The pollutant loads, in pounds, are in Table 3, attached.

To evaluate the contribution Site 206 had on the overall pollutant load discharging from the Americana outfall, the percentage of the pollutant load was compared to the percentage of discharge volume. When the percentage of the pollutant load is greater than the percentage of discharge volume, the pollutant load discharging from the subcatchment is disproportionately high. This logic statement is illustrated below.

$$\begin{array}{c}
 \text{IF} \\
 \frac{\text{pollutant load (lbs) from subcatchment}}{\text{pollutant load (lbs) from outfall}} > \frac{\text{discharge volume (cf) from subcatchment}}{\text{discharge volume (cf) from outfall}} \\
 \text{THEN} \\
 \text{pollutant load from subcatchment is disproportionately high}
 \end{array}$$

The percent contribution of pollutant load and the percent contribution of discharge volume was calculated for both Site 206 and Site 14 from each storm event (Figures 7 and 8). The graphs include a vertical orange line indicating the value for the percent of discharge. Constituent loads that exceed the red line are disproportionately high. Noteworthy outcomes from each paired storm event are presented below.

March 29, 2023

- Load contributions from Site 206 were disproportionately high for most constituents except for the following parameters: hardness as CaCO₃, nitrate + nitrite as N, total arsenic, and total mercury.
- The percent pollutant load from Site 206 was between 2.5 to 3.0 times higher than the percent discharge volume for the following parameters: total phosphorus, orthophosphate as P, and dissolved lead.
- The percent pollutant load from Site 206 was between 2.0 to 2.5 times higher than the percent discharge volume for the following parameters: BOD₅, and COD.
- The percent pollutant load from Site 206 was between 1.5 to 2.0 times higher than the percent discharge volume for the following parameters: TKN, total cadmium, and total lead.
- TSS was not evaluated as the TSS parameter was not analyzed by the lab due to incomplete water quality analysis due to low composite sample volume.

August 21, 2023

- Load contributions from Site 206 were disproportionately high for most constituents except for the following parameters: hardness as CaCO₃, ammonia as nitrogen, nitrate + nitrite as N and total cadmium.
- The percent of BOD₅ load from Site 206 was approximately 4 times higher than the percent of discharge volume.
- The percent pollutant load from Site 206 was between 3.0 to 3.5 times higher than the percent discharge volume for the following parameters: COD, total phosphorus, and orthophosphate as P.
- The percent pollutant load from Site 206 was between 2.0 to 2.5 times higher than the percent discharge volume for the following parameters: total dissolved solids, TKN, and dissolved lead.

- The percent pollutant load from Site 206 was between 1.5 to 2.0 times higher than the percent discharge volume for the following parameters: TSS, dissolved cadmium, dissolved copper, and total mercury.

Tables

Table 1. Monitoring Site Information

Table 2. Field and Analytical Data Summary

Table 3. Event Pollutant Loading Estimates in Pounds

Table 1. Monitoring Site Information

Location Name	Study ID	Latitude/ Longitude	Manhole ID (SWMM File)	Manhole ID (Americana Manholes Files)	Subcatchment Total Area (acres)	Subcatchment Impervious Area (acres)	Pipe Diameter (in)	Pipe Construction	Manning's Coefficient (n value)	Pipe Slope	Water Level During Installation (in)	Equipment ID	Equipment Deploy Start Date	Equipment Deploy End Date	Installation Notes
Americana Monitoring Station	Site 14	Americana Monitoring Station	NA	NA	915	291	48	concrete	NA	NA	NA	Hach Flowmeter (FL-23)	2013	9/8/2020	
												Hach Sampler (SA-17)	2013	9/8/2020	
												ISCO Signature Flowmeter (FL-29)	9/8/2020	NA	
												ISCO 6712 Sampler (SA-20)	9/8/2020	NA	
16th & Front St	AS_1	43°37'7.57"N 116°12'52.66"W	J87872	33634	869	255	42	concrete	0.015	0.0001	4.13	HOBO logger SN:20029104	8/10/2018	11/7/2023	Logger installed downstream of manhole with conduit facing downstream
												HOBO Logger SN: 20029105	11/7/23	NA	
												ISCO 2150 Flowmeter (FL-21)	10/25/2019	1/24/2020	
Americana_River_South	AS_2	43°37'4.63"N 116°13'0.20"W	J5567	35568	39	28	42	concrete	0.015	0.0001	1.5	HOBO logger (SN:20029109)	8/10/2018	4/28/2020	Large pipe downstream of manhole (south) that leads to secondary outfall with conduit facing downstream flow
Americana_River_East	AS_3	43°37'4.63"N 116°13'0.20"W	J5567	35568	10	5	16	concrete	0.015	0.0001	2	HOBO logger (SN:20029106)	8/10/2018	1/6/2021	Small pipe upstream of manhole (east) with conduit facing upstream
Americana_River St	AS_4	43°37'4.63"N 116°13'0.20"W	J5567	35568	29	23	42	concrete	0.015	0.0001	2 1.7	HOBO logger (SN:20029101)	8/10/2018	NA	Large pipe upstream of manhole (north) with conduit perpendicular to flow
												ISCO 2150 Flowmeter (FL-21)	7/10/2020	3/5/2021	Water level at installation: 2.7 inches
15th_Resseguie	AS_5	43°37'36.17"N 116°12'21.10"W	J5577	23810	289	49	30	concrete	0.015	0.0001	1.5	HOBO logger (SN:20029105)	8/10/2018	2/17/2023	Logger installed downstream of manhole with conduit facing downstream
14th_Resseguie	AS_6/Site 206	43°37'35.73"N 116°12'16.60"W	J16834	13187	206	23	22	corrugated metal	0.024	0.0001	NA	HOBO logger (SN:20029102)	8/17/2018	3/7/2023	Installed downstream of vault
					203	22	22	corrugated metal	0.024	0.0001	NA	Hach Flowmeter (FL-25)	1/23/2020	3/4/2020	Installed upstream of vault, has smaller drainage area than HOBO logger
												Hach Flowmeter (FL-18)	3/4/2020	NA	Installed upstream of vault, has smaller drainage area than HOBO logger
												Hach Sampler (SA-11)	1/23/2020	10/9/2020	
												Hach Sampler (SA-13)	10/9/2020	12/10/2021	
Hach Sampler (SA-09)	12/10/2021	NA													
Americana East	AS_7	43°36'57.66"N 116°13'17.75"W	NA	NA	40	30	42	concrete	0.015	0.0001	NA	ISCO 2150 Flowmeter (FL-20)	1/11/2019	NA	ISCO flowmeter installed
13th_Lemp to Heron	AS_8	43°37'59.05" 116°12'11.83"	NA	NA	1	0	36	corrugated metal	0.024	0.0001	NA	HOBO logger (SN: 20029106)	2/24/2023	11/7/2023	
												HOBO logger (SN:20029104)	11/7/2023	NA	
16th_Rhodes	AS_9	43°37'7.18" 116°12'52.07"	NA	NA	10	5	21	concrete	0.015	0.0001	NA	HOBO logger (PT09)	2/24/2023	NA	

Table 2. Field and Analytical Data Summary

Sample Date	Monitoring Station	Sample ID Grab	Field Parameters						Sample ID Composite	Analytical Parameters																	
			Dissolved Oxygen mg/L	pH S.U.	Conductivity uS/cm	Temperature C	E. coli mpn/100 mL	BOD ₅ mg/L		COD mg/L	Hardness as CaCO ₃ mg/L	Turbidity NTU	TSS mg/L	TDS mg/L	Total Phosphorus mg/L	Orthophosphate as P mg/L	Ammonia as N mg/L	Nitrate + Nitrite as N mg/L	TKN mg/L	Arsenic, total ug/L	Cadmium, dissolved ug/L	Cadmium, total ug/L	Copper, dissolved ug/L	Lead, dissolved ug/L	Lead, total ug/L	Mercury, total ug/L	Zinc, dissolved ug/L
10/22/2022	Site 14	221022-14-WG	8.05	7.03	367.6	17.12	648.8	221022-14-WC	225 ^{2j}	416 ^{2j}	55.9 ^{2j}	62.5 ^{2j}	125 ^{2j}	244 ^{2j}	1.07 ^{2j}	0.712 ^{2j}	1.25 ^{2j}	0.927 ^{2j}	5.26 ^{2j}	5.1 ^{2j}	<0.025 ^{2j}	0.19 ^{2j}	10.1 ^{2j}	0.14 ^{2j}	8.2 ^{2j}	0.0147 ^{2j}	61.6 ^{2j}
	Site 206	221022-206-WG	8.30	7.08	325.9	14.83	1299.7	221022-206-WC	680 ^{2j}	1200 ^{2j}	51.3 ^{2j}	106 ^{2j}	301 ^{2j}	542 ^{2j}	2.84 ^{2j}	1.96 ^{2j}	1.5 ^{2j}	0.890 ^{2j}	9.29 ^{2j}	4.5 ^{2j}	<0.025 ^{2j}	0.23 ^{2j}	13.6 ^{2j}	0.77 ^{2j}	15.0 ^{2j}	0.0309 ^{2j}	119 ^{2j}
1/9/2023	Site 14	230109-14-WG	9.98 ^{2k}	6.60 ^{2k}	517.1 ^{2k}	9.51 ^{2k}	2850.0 ^{2k}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Site 206	230109-206-WG	7.66 ^{2k}	6.89 ^{2k}	200.8 ^{2k}	6.36 ^{2k}	157.6 ^{2k}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/10/2023	Site 14	230310-14-WG	11.16	7.44	1282.6	6.68	547.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Site 206	230310-206-WG	10.84	7.53	1252.9	6.01	920.8	230310-206-WC	50.9	964	184	665	1190	565	1.7	0.218	0.284	0.181	11.5	13.6	-	0.54	--	--	66.2	0.0782	-
3/29/2023	Site 14	230329-14-WG	10.42	7.67	481.7	7.65	218.7	230329-14-WC	9.64	62.0	133	45.8	38.6	318	0.205	0.0914	0.633	1.08	1.90	3.6	0.023	0.065	3.4	0.080	3.6	0.0300	20.5
	Site 206	230329-206-WG	9.41	7.85	247.3	5.75	1046.2	230329-206-WC	21.4	145	123	69.4	-	354	0.528	0.266	0.600	0.387	2.84	3.2	0.028	0.099	4.8	0.22	6.5	0.0181	23.9
5/5/2023	Site 206	-	-	-	-	-	-	230505-206-WC	74.9	298	42.0	88.0	204	163	1.51	0.927	1.33	0.310	5.23	3.5	0.022	0.14	15.7	0.72	10.6	0.0182	54.5
	Site 14	-	-	-	-	-	-	230821-14-WC	67.7	213	57.7	57.1	80.0	184	0.625	0.355	0.676	0.758	3.41	3.6	0.023	0.13	9.0	0.22	5.6	0.0118	62.5
8/21/2023	Site 206	-	-	-	-	-	-	230821-206-WC	309	875	55.5	83.5	136	420	2.54	1.47	0.529	0.417	8.40	3.8	0.040	0.12	18.3	0.61	6.7	0.0237	99.1

Notes:

- No data

^{2j} Data qualified due to lack of representativeness (50%–75%)

^{2k} Data rejected due to insufficient rainfall (< 0.08 inch)

Table 3. Event Pollutant Loading Estimates in Pounds																				
Event Date	BOD ₅		COD		Hardness as CaCO ₃		TSS		TDS		Total Phosphorus		Orthophosphate as P		Ammonia as N		Nitrate + Nitrite as N		TKN	
	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206
3/29/2023	32.9	2.13	212	14.4	454	12.2	132	-	1086	35.2	0.700	0.0524	0.312	0.0264	2.16	0.0596	3.69	0.0384	6.49	0.282
8/21/2023	617	142	1942	401	526	25.4	729	62.3	1678	192	5.70	1.16	3.24	0.673	6.16	0.242	6.91	0.191	31.1	3.85

Notes:

- No data

Table 3. Event Pollutant Loading Estimates in Pounds																
Event Date	Arsenic, total		Cadmium, dissolved		Cadmium, total		Copper, dissolved		Lead, dissolved		Lead, total		Mercury, total		Zinc, dissolved	
	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206
3/29/2023	0.0123	0.000318	0.0000785	0.00000278	0.000222	0.00000983	0.0116	0.000477	0.000273	0.0000219	0.0123	0.000646	0.000102	0.00000180	0.0700	0.00237
8/21/2023	0.0328	0.00174	0.000210	0.0000183	0.00119	0.0000550	0.0821	0.00838	0.00201	0.000279	0.0511	0.00307	0.000108	0.0000109	0.570	0.0454

Notes:

- No data

Figures

Figure 3. Americana Subwatershed Water Level WY 2023 October–December

Figure 4. Americana Subwatershed Water Level WY 2023 January–March

Figure 5. Americana Subwatershed Water Level WY 2023 April–June

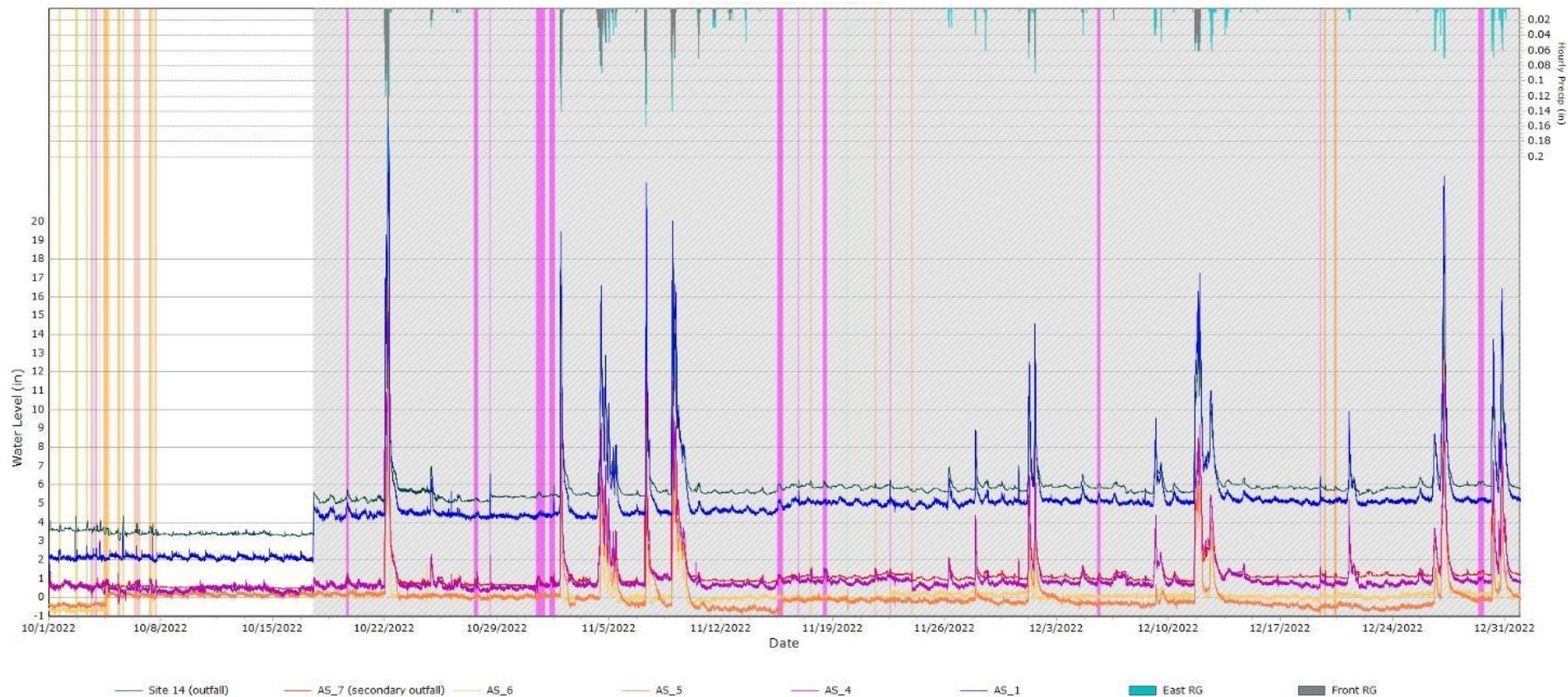
Figure 6. Americana Subwatershed Water Level WY 2023 July–September

Figure 7. Percent Contribution for Storm Event 03/29/2023

Figure 8. Percent Contribution for Storm Event 08/21/2023

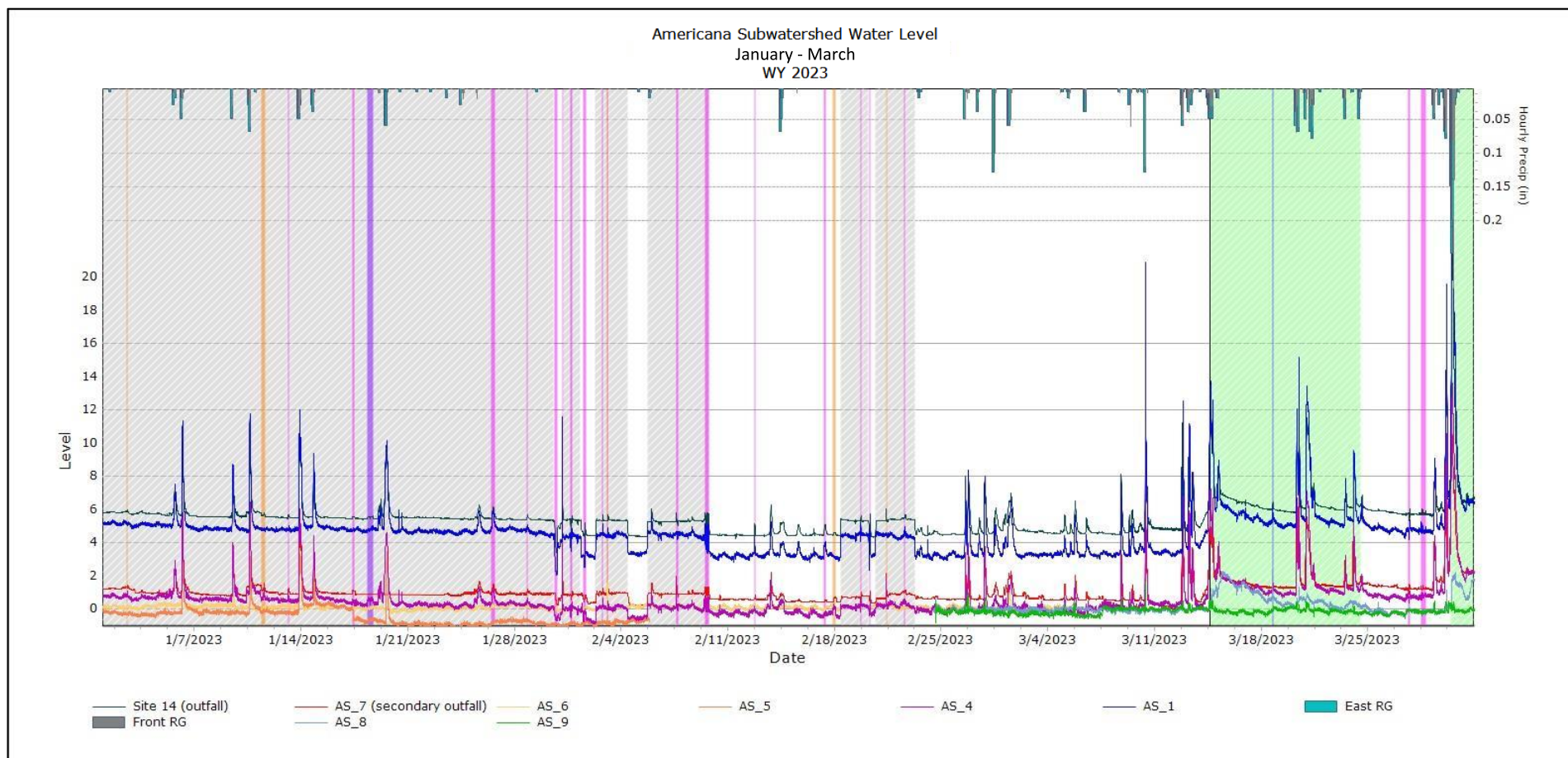
Figure 3

Americana Subwatershed Water Level
October - December
WY 2023



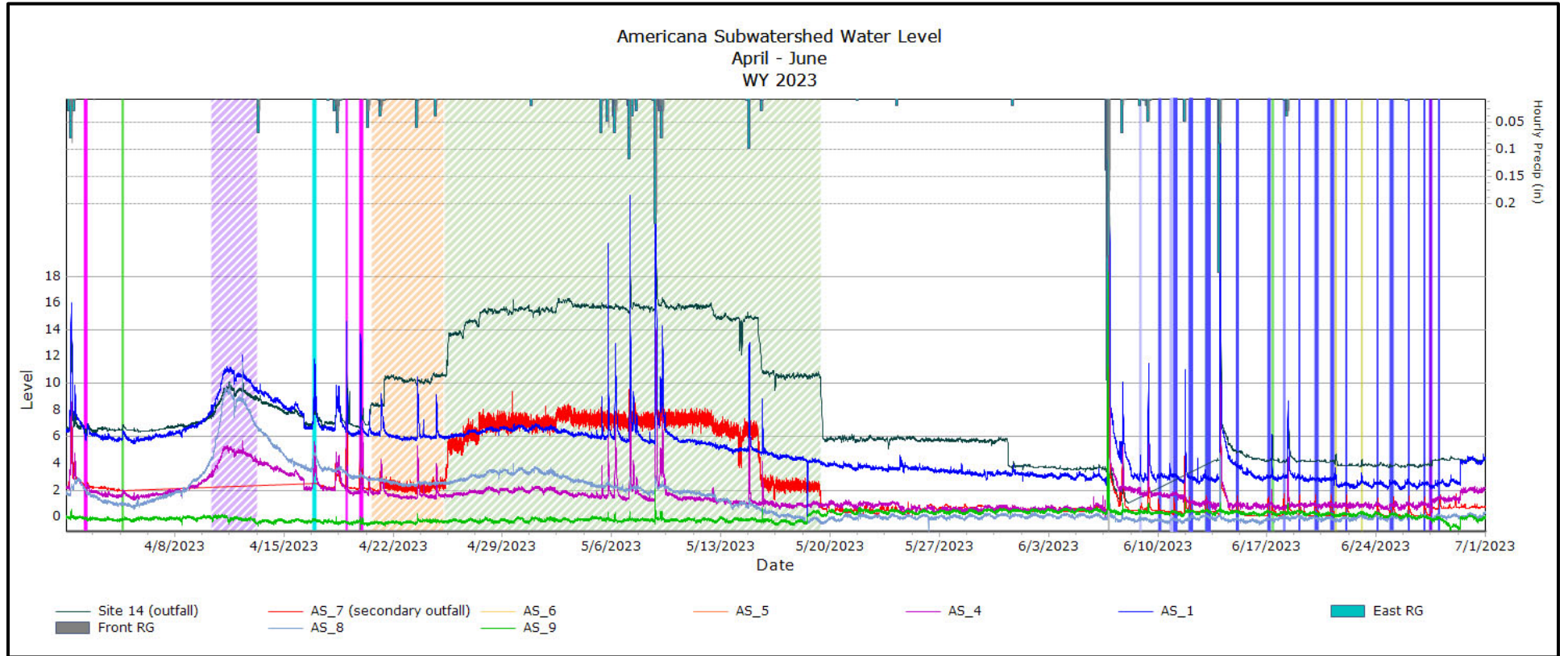
Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	10/1/2022 1:00:00	2.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/1/2022 14:30:00	4.5	AS_1, Site 14	AS_1 subcatchment
	10/2/2022 15:30:00	5.0	AS_1, Site 14	AS_1 subcatchment
	10/3/2022 8:30:00	3.5	AS_1, Site 14	AS_1 subcatchment
	10/3/2022 15:30:00	2.5	AS_4, Site 14	AS_4 subcatchment
	10/3/2022 18:30:00	2.5	AS_1, Site 14	AS_1 subcatchment
	10/3/2022 22:00:00	4.0	AS_1, Site 14, AS_7	AS_1 subcatchment
	10/4/2022 3:30:00	3.0	AS_1, Site 14	AS_1 subcatchment
	10/4/2022 9:30:00	9.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/4/2022 19:00:00	2.0	AS_1, Site 14	AS_1 subcatchment
	10/5/2022 7:30:00	5.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/5/2022 14:30:00	3.5	AS_1, Site 14	AS_1 subcatchment
	10/6/2022 8:00:00	3.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/6/2022 11:30:00	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/6/2022 14:00:00	4.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/7/2022 7:00:00	4.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/7/2022 11:00:00	2.0	AS_1, Site 14	AS_1 subcatchment
	10/7/2022 15:30:00	4.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/17/2022 13:00:00	1811.0	AS_1, AS_4, AS_7, Site 14 (elongated)	AS_1 subcatchment
	10/19/2022 14:00:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/27/2022 14:00:00	7.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/28/2022 14:00:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/31/2022 11:00:00	15.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/1/2022 7:30:00	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/15/2022 13:00:00	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/16/2022 20:30:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/17/2022 14:30:00	3.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	11/18/2022 9:30:00	7.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/19/2022 21:30:00	2.0	AS_5	AS_5 subcatchment
	11/21/2022 15:00:00	3.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	11/22/2022 13:30:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/23/2022 22:30:00	2.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	12/5/2022 13:00:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	12/19/2022 11:00:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	12/19/2022 17:30:00	3.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	12/20/2022 8:00:00	5.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	12/29/2022 8:00:00	10.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment

Figure 4



Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
□	10/17/2022 13:00:00	2057.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/2/2023 14:00	3.0	AS_4, AS_7, Site 14	AS_4 subcatchment
■	1/11/2023 10:00	7.0	AS_4, AS_7, Site 14	AS_4 subcatchment
■	1/13/2023 3:30	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/17/2023 9:00	5.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/18/2023 8:00	11.0	AS_4, Site 14	AS_4 subcatchment
■	1/26/2023 11:00	9.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/28/2023 20:00	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/30/2023 15:30:00	6.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/31/2023 3:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
□	1/31/2023 5:00	28.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	1/31/2023 16:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/1/2023 13:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/1/2023 3:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
□	2/2/2023 7:30	53.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/2/2023 18:30	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/3/2023 2:30	3.0	AS_1, AS_4, AS_6, AS_7, Site 14	AS_6 subcatchment
■	2/5/2023 17:00	98.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/6/2023 10:30	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/7/2023 14:30	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/8/2023 14:00	5.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/9/2023 11:30	8.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/12/2023 17:30	3.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/13/2023 18:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/17/2023 7:30	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/17/2023 21:30	6.5	AS_4, AS_7, Site 14	AS_4 subcatchment
□	2/18/2023 9:00	45.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/19/2023 16:30	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/20/2023 7:30	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
□	2/20/2023 16:30	63.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/21/2023 9:00	2.0	AS_4, AS_7, Site 14	AS_4 subcatchment
■	2/22/2023 13:00	4.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	2/24/2023 2:00	2.5	AS_1, Site 14	AS_1 subcatchment
■	3/2/2023 7:00	11.0	AS_4, AS_7, Site 14	AS_4 subcatchment
■	3/3/2023 8:00	10.0	AS_4, AS_7, Site 14	AS_4 subcatchment
□	3/14/2023 16:00	238.0	AS_8 (previously AS_5)	Likely Hull's Gulch
■	3/18/2023 17:30	2.5	AS_1, AS_4, AS_7, AS_8, and Site 14	AS_8 subcatchment
■	3/27/2023 15:30	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
■	3/28/2023 11:30	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
□	3/30/2023 11:00	37.0	AS_8 (previously AS_5)	Likely Hull's Gulch

Figure 5

































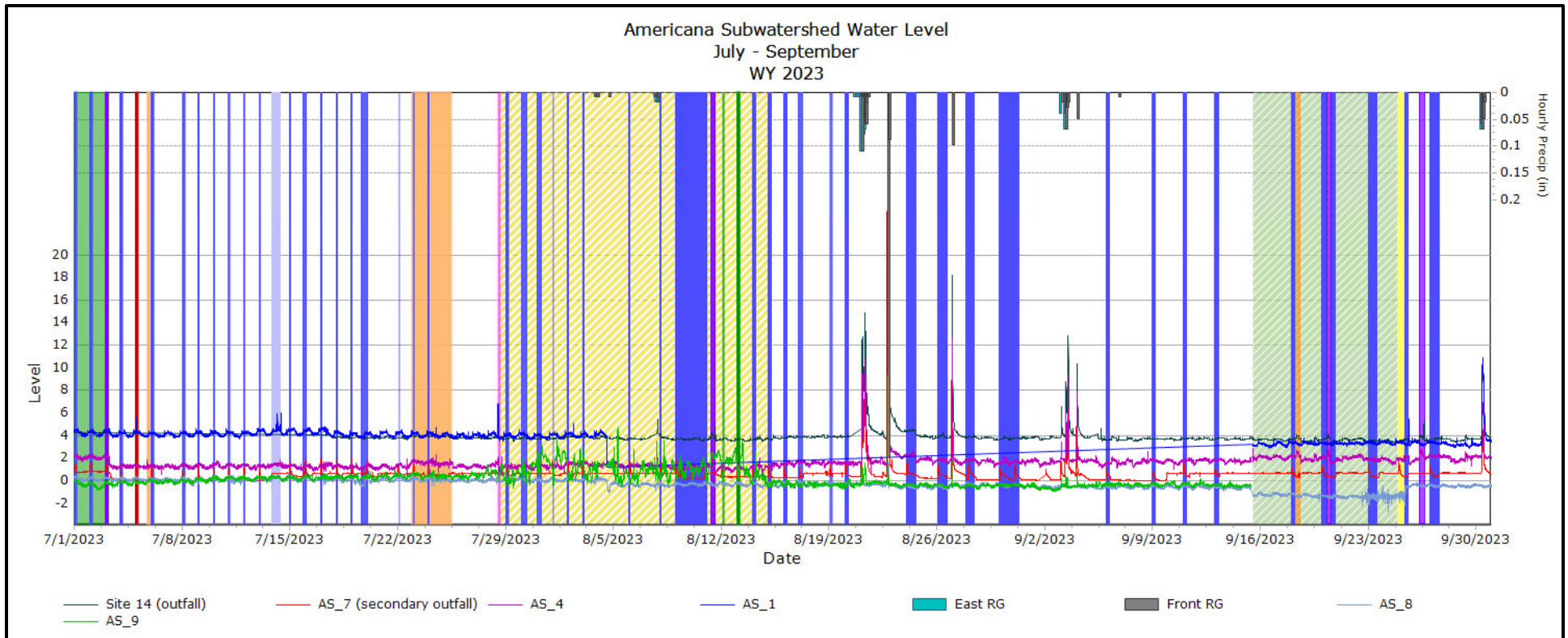
















































Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	4/2/2023 4:30:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	4/4/2023 15:00:00	5.5	AS_1, AS_4, Site 14	AS_1 subcatchment
	4/10/2023 8:00:00	72.5	AS_1, AS_4, AS_8, Site 14 (elongated)	Hull's Gulch
	4/16/2023 20:00:00	5.0	AS_1, AS_4, AS_8, Site 14	Hull's Gulch
	4/18/2023 23:00:00	4.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	4/19/2023 20:30:00	5.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	4/20/2023 15:00:00	113.0	AS_7 Site 14 (elongated)	Site 14 (likely Boise River surcharge)
	4/25/2023 8:00:00	580.0	AS_1, AS_4, AS_7, Site 14 (elongated)	Site 14 (likely Boise River surcharge)
	6/8/2023 20:00:00	2.0	AS_1	AS_1 (likely construction dewatering)
	6/10/2023 0:30:00	3.0	AS_7	AS_7 subcatchment
	6/10/2023 18:30:00	2.5	AS_1	AS_1 (likely construction dewatering)
	6/11/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	6/12/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	6/13/2023 1:00:00	4.0	AS_7	AS_7 subcatchment
	6/15/2023 1:00:00	4.0	AS_7	AS_7 subcatchment
	6/17/2023 1:00:00	2.5	AS_7	AS_7 subcatchment
	6/17/2023 7:00:00	2.0	AS_1, AS_4, Site 14	AS_1 subcatchment
	6/18/2023 1:00:00	2.0	AS_7	AS_7 subcatchment
	6/19/2023 1:00:00	2.5	AS_7	AS_7 subcatchment
	6/20/2023 1:00:00	6.5	AS_7	AS_7 subcatchment
	6/21/2023 0:30:00	7.0	AS_7	AS_7 subcatchment
	6/21/2023 8:30:00	3.0	AS_1, Site 14	AS_1 (likely construction dewatering)
	6/22/2023 1:00:00	4.0	AS_7	AS_7 subcatchment
	6/23/2023 1:00:00	2.0	AS_1, Site 14	AS_1 subcatchment
	6/24/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	6/24/2023 21:00:00	7.0	AS_7	AS_7 subcatchment
	6/26/2023 1:00:00	2.5	AS_7	AS_7 subcatchment
	6/27/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	6/27/2023 10:00:00	5.0	AS_4, Site 14	AS_4 subcatchment
	6/28/2023 0:30:00	3.0	AS_7	AS_7 subcatchment

Figure 6



Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	7/1/2023 0:00:00	56	AS_4, AS_7	AS_4 subcatchment
	7/1/2023 0:00:00	3.5	AS_7	AS_7 subcatchment
	7/2/2023 0:00:00	3.5	AS_7	AS_7 subcatchment
	7/3/2023 0:00:00	3.5	AS_4, Site 14	AS_4 subcatchment
	7/4/2023 0:00:00	2.5	AS_7	AS_7 subcatchment
	7/5/2023 0:00:00	2.5	AS_1, AS_7	AS_1 subcatchment
	7/5/2023 17:30:00	3.5	AS_4	AS_4 subcatchment
	7/6/2023 0:00:00	2.5	AS_7	AS_7 subcatchment
	7/8/2023 0:30:00	3.0	AS_7	AS_7 subcatchment
	7/9/2023 0:30:00	3.0	AS_7	AS_7 subcatchment
	7/10/2023 0:30:00	2.0	AS_7	AS_7 subcatchment
	7/11/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/12/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/13/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/13/2023 20:00:00	15.0	AS_1	AS_1 subcatchment
	7/15/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/15/2023 21:00:00	6.0	AS_7	AS_7 subcatchment
	7/17/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/18/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/19/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/19/2023 16:00:00	11.0	AS_7	AS_7 subcatchment
	7/22/2023 0:30:00	2.0	AS_7	AS_7 subcatchment
	7/23/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/23/2023 23:30:00	3.0	AS_7	AS_7 subcatchment
	7/22/2023 21:30:00	65.0	AS_4	AS_4 subcatchment
	7/26/2023 15:00:00	427	AS_9 (elongated amount of time)	AS_9 subcatchment
	7/28/2023 12:00:00	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	7/29/2023 1:30:00	2.5	AS_7	AS_7 subcatchment
	7/30/2023 1:30:00	4.5	AS_7	AS_7 subcatchment
	7/31/2023 1:30:00	8.5	AS_7	AS_7 subcatchment
	8/1/2023 1:30:00	2.5	AS_7	AS_7 subcatchment
	8/2/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	8/3/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	8/6/2023 0:00:00	4.0	AS_7	AS_7 subcatchment
	8/8/2023 0:00:00	4.0	AS_7	AS_7 subcatchment
	8/9/2023 1:00:00	50.0	AS_7	AS_7 subcatchment
	8/11/2023 8:00:00	8.0	AS_4, Site 14	AS_4 subcatchment
	8/12/2023 1:30:00	2.5	AS_4, AS_7	AS_4 subcatchment
	8/13/2023 1:00:00	2.0	AS_4, AS_7	AS_4 subcatchment
	8/14/2023 1:00:00	7.0	AS_7	AS_7 subcatchment
	8/15/2023 1:00:00	7.0	AS_7	AS_7 subcatchment
	8/16/2023 1:00:00	7.0	AS_7	AS_7 subcatchment
	8/17/2023 1:00:00	8.0	AS_7	AS_7 subcatchment
	8/19/2023 1:00:00	6.0	AS_7	AS_7 subcatchment
	8/20/2023 1:00:00	6.0	AS_7	AS_7 subcatchment
	8/24/2023 1:00:00	16.0	AS_7	AS_7 subcatchment
	8/26/2023 1:30:00	15.5	AS_7	AS_7 subcatchment
	8/27/2023 22:00:00	6.0	AS_7	AS_7 subcatchment

















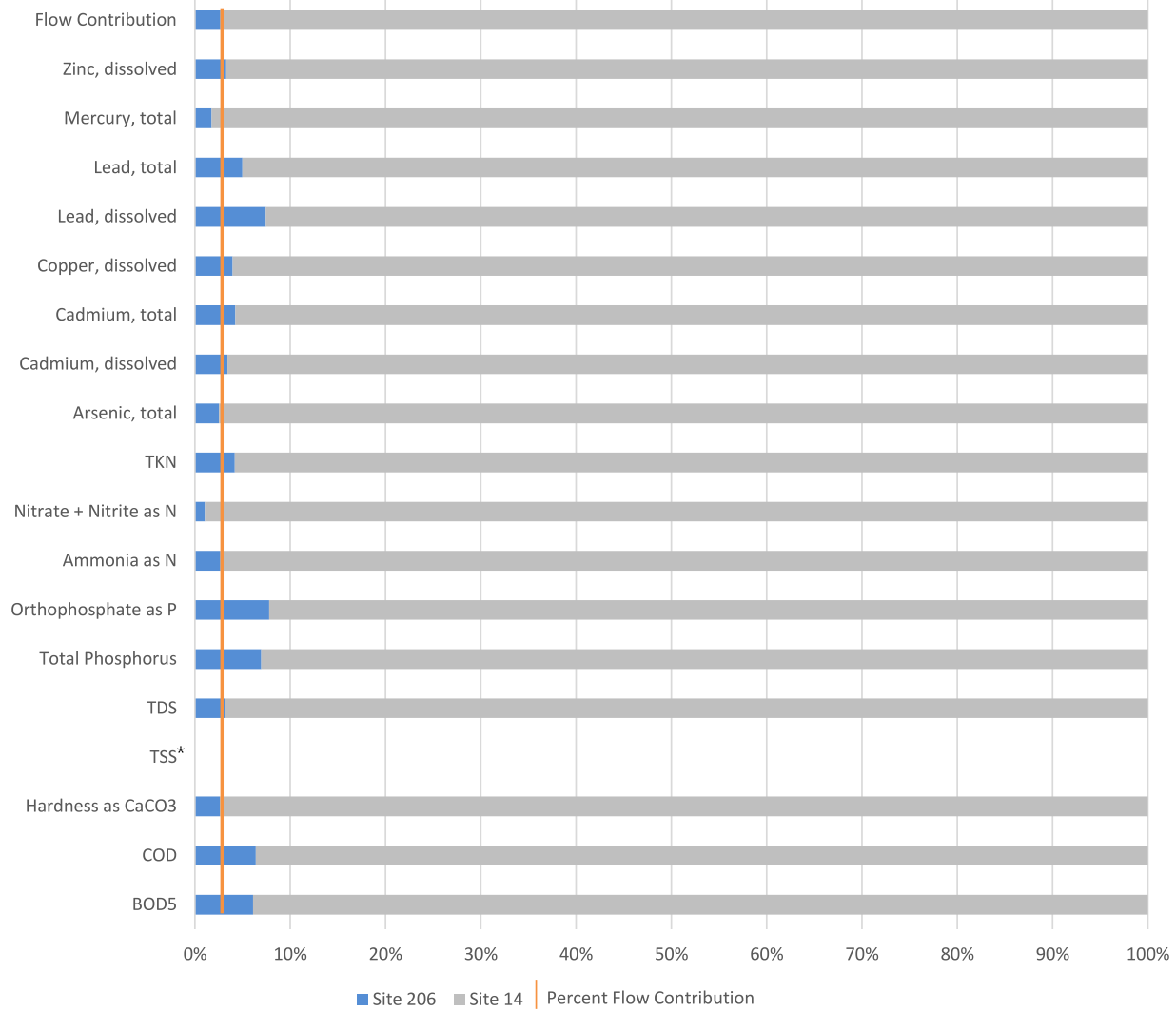
Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	8/30/2023 2:00:00	8.0	AS_7	AS_7 subcatchment
	9/6/2023 0:00:00	6.0	AS_7	AS_7 subcatchment
	9/9/2023 0:00:00	6.0	AS_7	AS_7 subcatchment
	9/11/2023 0:00:00	6.0	AS_7	AS_7 subcatchment
	9/13/2023 0:00:00	9.0	AS_7	AS_7 subcatchment
	9/15/2023 12:00:00	228.0	AS_8 (elongated amount of time)	Likely Hull's Gulch
	9/18/2023 0:00:00	8.0	AS_7	AS_7 subcatchment
	9/18/2023 8:00:00	8.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	9/20/2023 0:00:00	8.0	AS_7	AS_7 subcatchment
	9/20/2023 8:00:00	8.0	AS_4, Site 14	AS_4 subcatchment
	9/20/2023 16:00:00	7.0	AS_7	AS_7 subcatchment
	9/23/2023 0:00:00	16.0	AS_7	AS_7 subcatchment
	9/25/2023 0:00:00	10.0	AS_7, AS_8	AS_8 subcatchment
	9/25/2023 10:00:00	6.0	AS_7	AS_7 subcatchment
	9/26/2023 8:00:00	10.0	AS_4, Site 14	AS_4 subcatchment
	9/27/2023 0:00:00	16.0	AS_7	AS_7 subcatchment

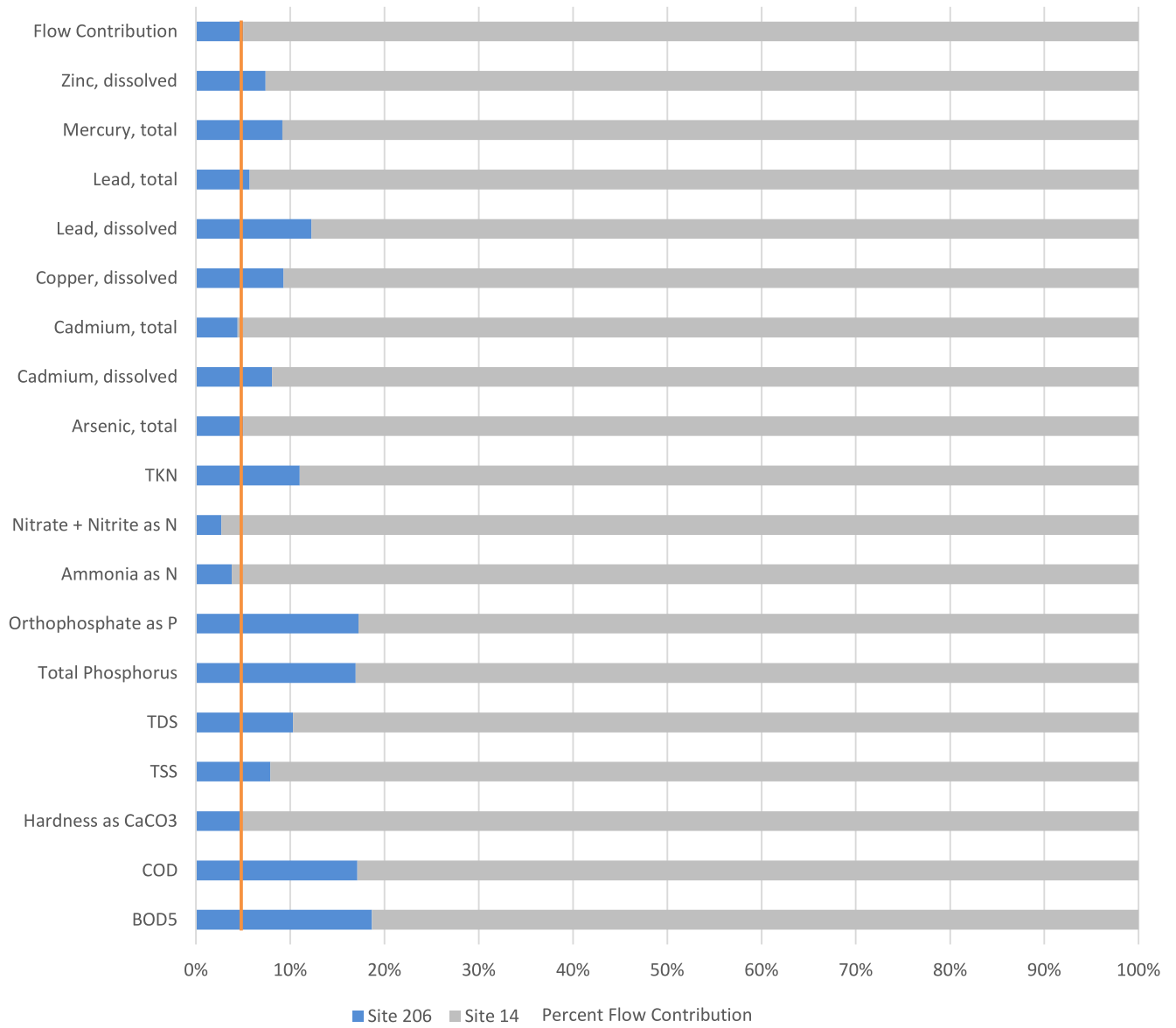
Figure 7: Percent Contribution 03/29/2023



Notes:

*Incomplete water quality analysis (no TSS parameter) due to low composite sample volume

Figure 8: Percent Contribution 8/21/2023



Appendix C:

Draft Temperature Monitoring Summary

Temperature Monitoring Summary WY 2023

Ada County Highway District

1/4/2023

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3. Results.....	2
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1. Introduction

Ada County Highway District, Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a National Pollutant Discharge Elimination System Phase I Permit #IDS027561 (Permit) on October 1, 2021. The Permit authorizes the Permittees to discharge from municipal separate storm sewer (MS4) outfalls to the Boise River and its tributaries. According to Permit Part 4.1, *Temperature Monitoring*, Permittees must monitor temperature in stormwater discharges from the MS4 to the Boise River including assessment units 17050114SW005_06, 17050114SW005_06a, and 17050114SW005_06b. The Boise River assessment units (AU) within the Permit area are 17050114SW011a_06 and 17050114SW005_06. The remaining two AUs, 17050114SW005_06a and 17050114SW005_06b, are not in the Permit area and therefore do not receive Permittee stormwater contributions. Temperature data is collected from all water quality samples collected from the MS4 to the Boise River and other waterways. The following summary provides temperature data collected during water year (WY) 2023 (October 1, 2022 – September 20, 2023) from the MS4 directly to the Boise River assessment units 17050114SW011a_06 and 17050114SW005_06.

2. Monitoring Sites, Equipment, and Sample Type

Temperature monitoring occurred at 13 outfalls that discharge to the Boise River assessment units 17050114SW011a_06 and 17050114SW005_06. Temperature measurements are collected as either discrete or continuous. Discrete measurements represent one instance in time and were measured manually using an In-Situ aquaTroll or smarTroll handheld instrument. Continuous measurements were taken at a specified interval by equipment that is installed at the outfall site. In WY 2023, continuous temperature readings were taken at four outfall locations: three using area-velocity sensors and one using a Hobo Temperature Logger. Table 2-1 below shows the number of outfalls where temperature data was collected, the outfall ID, sample type, receiving water and assessment unit designation. Figure 1 is a map of the sampled outfall locations.

Receiving Water	Assessment Unit	# of Temperature Monitored Outfalls	Outfall ID (Station Name)	Sample Type
Boise River	17050114SW011a_06	11	3n2e04_010 (Main)	Discrete and Continuous
			3n2e05_011	Discrete
			3n2e09_024 (AS_7)	Discrete and Continuous
			3n2e09_025 (Americana)	Discrete and Continuous
			3n2e10_012	Discrete
			3n2e10_022	Discrete
			3n2e14_012	Discrete
			3n2e14_013	Discrete
			3n2e14_017	Discrete
			3n2e24_006	Discrete
			3n2e24_025	Discrete
	17050114SW005_06	2	4n2e30_012 (Plantation)	Continuous
			4n2e32_015	Discrete

3. Results

Discrete temperature results are depicted in Figure 2. These results were derived from both wet weather and dry weather discharges, which are symbolized by a circle or a star, respectively. Table 3-1 contains all discrete measurements by Outfall ID.

Graphs of continuous temperature results are found in Figures 3-6. The graphs from sites where temperature is recorded using an area-velocity sensor (Figures 3-5) displays water temperature, water level and hourly precipitation for reference. Temperature at the Plantation site is recorded using a Hobo Temperature Logger that records data associated with the presence of water. Data gaps in the temperature data shown in Figure 6, indicate water is not present. Unlike the other graphs of continuous temperature results, water level data are not available at this monitoring site. Sediment was observed on the temperature logger in October 2023 during routine data download. The presence of sediment yielded results water was present when it was observed the site was dry. Additionally, water was present, based on the recorded temperature data, when rainfall was not recorded and dry weather flows at this site have not been observed. During WY24, ACHD will increase the frequency of inspections of the Hobo Temperature Logger to learn more about site conditions and if the logger is suitable for the site.

Table 3-1. Discrete Temperature Results			
Outfall ID (Station Name)	Date	Weather	Temperature (C)
3n1e01_010	08/09/22	Dry Weather	19.36
3n2e04_010 (Main)	10/22/2022	Wet Weather	17.07
	3/10/2023		7.99
	3/29/2023		7.74
3n2e05_011	9/11/2023	Dry Weather	20.51
3n2e09_024 (AS_7)	2/22/2023	Dry Weather	12.75
	6/27/23		20.00
3n2e09_025 (Americana)	2/22/2023	Dry Weather	10.67
3n2e09_025 (Americana)	10/22/2022	Wet Weather	17.12
	3/10/2023		6.68
	3/29/2023		7.65
3n2e10_012	3/27/2023	Dry Weather	3.64
	9/12/23		16.19
3n2e10_022	2/22/23	Dry Weather	10.11
	9/12/23		20.84
3n2e14_012	3/27/23	Dry Weather	8.21
	5/22/23		14.78
3n2e14_013	3/27/2023	Dry Weather	7.06
	9/13/23		16.16
3n2e14_017	3/27/2023	Dry Weather	10.2
	9/13/23		19.04
3n2e24_006	5/22/2023	Dry Weather	17.19
3n2e24_025	5/22/2023	Dry Weather	16.15
4n2e32_015	8/1/2023	Dry Weather	17.85

Appendix A: Figures

Figure 1. Overview Map

Figure 2. Discrete Temperature Results

Figure 3. Continuous Temperature Results – Main

Figure 4. Continuous Temperature Results – AS_7

Figure 5. Continuous Temperature Results – Americana

Figure 6. Continuous Temperature Results – Plantation

Figure 1
WY2023 Temperature Monitored Outfalls

Created: 12/20/2023



Figure 2

Discrete Temperature Measurements WY 2023

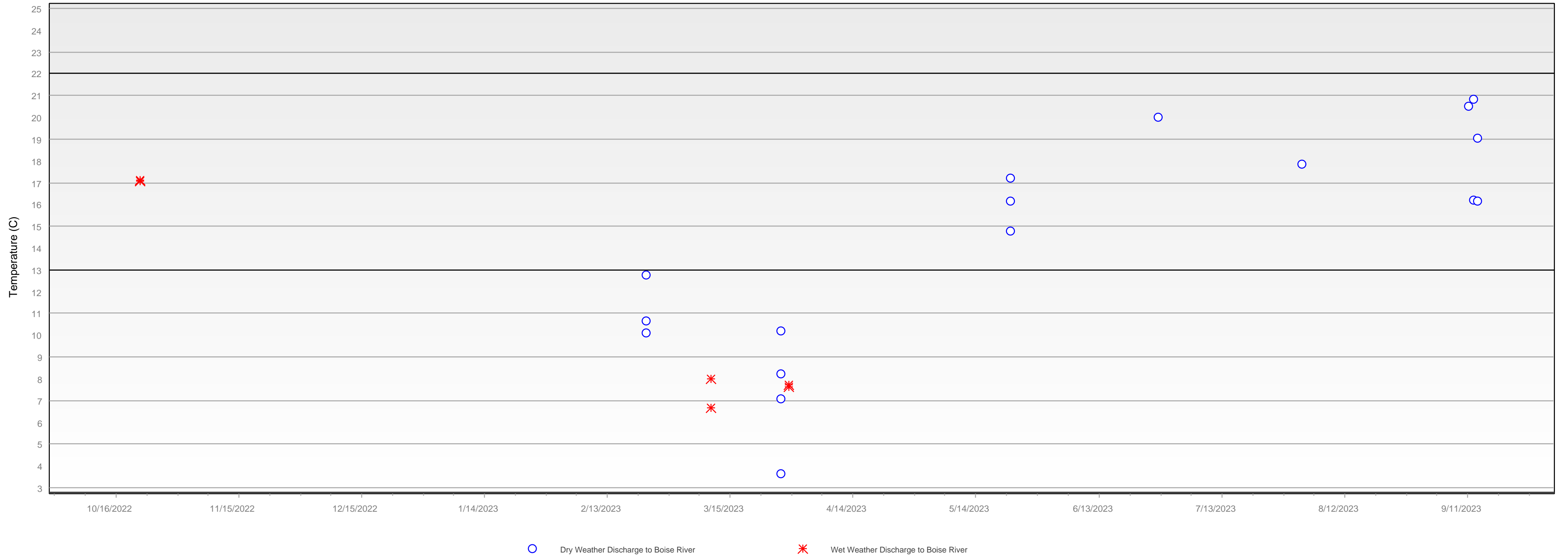


Figure 3

Main Temperature WY 2023

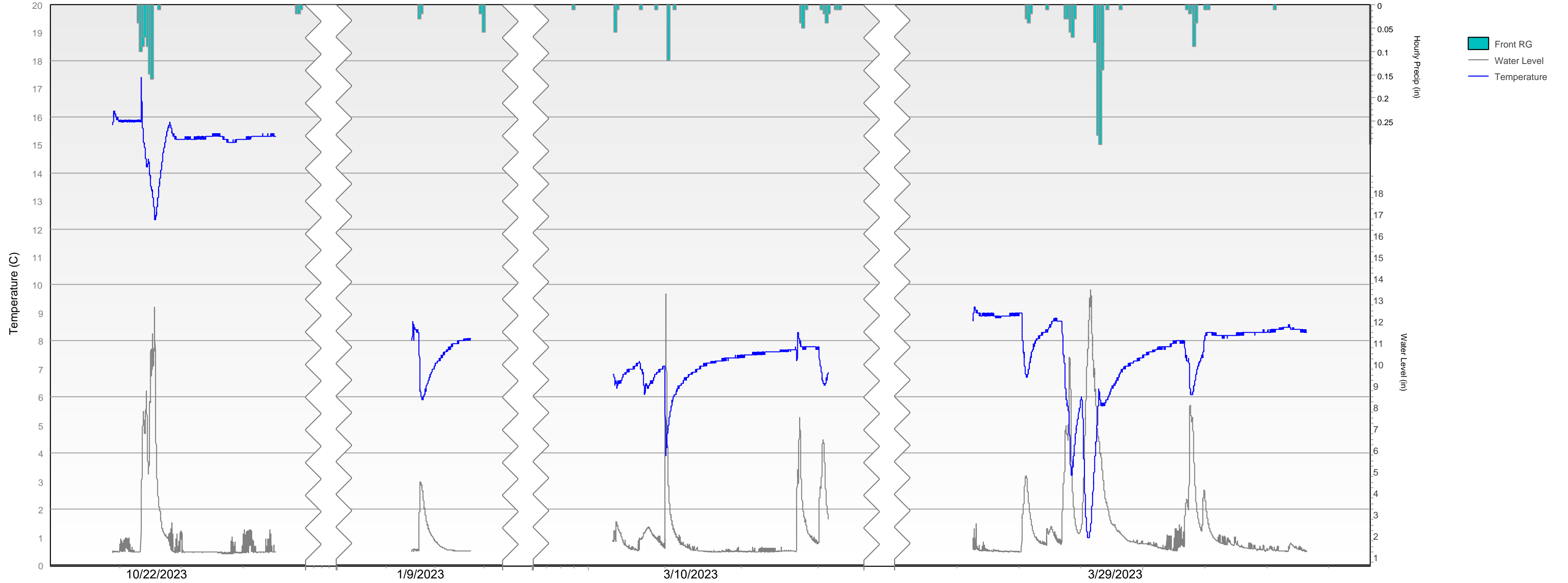


Figure 4

AS_7 Temperature WY 2023

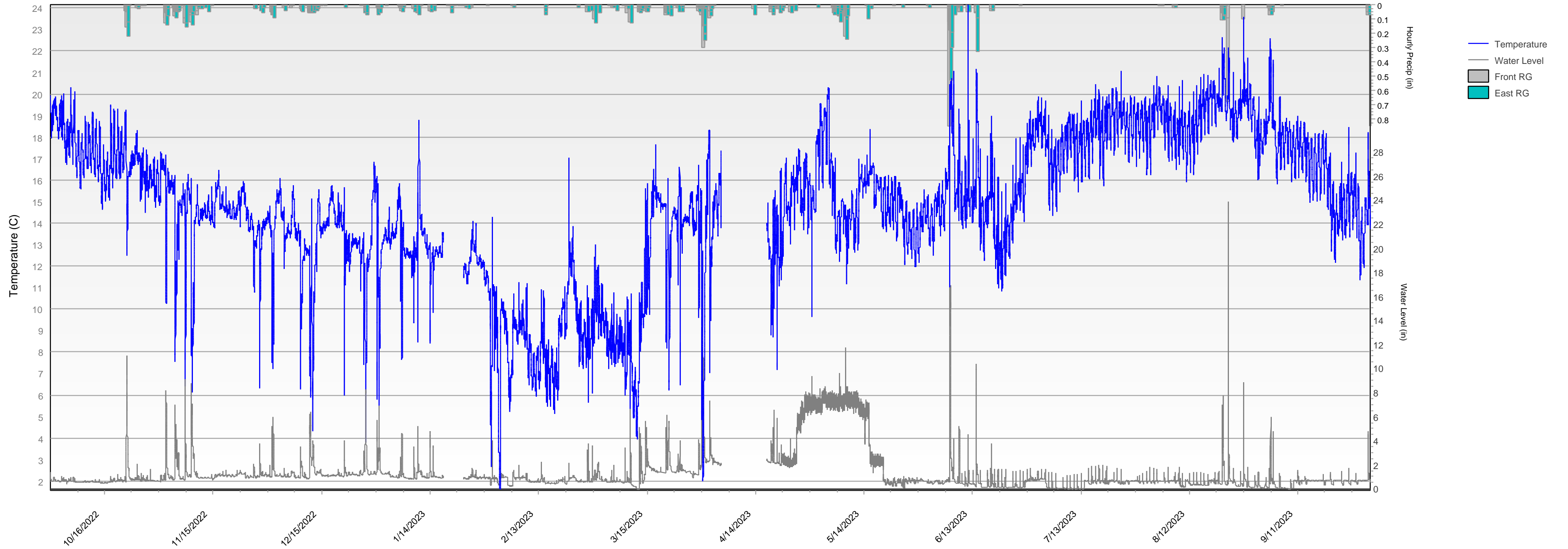


Figure 5

Americana Temperature WY 2023

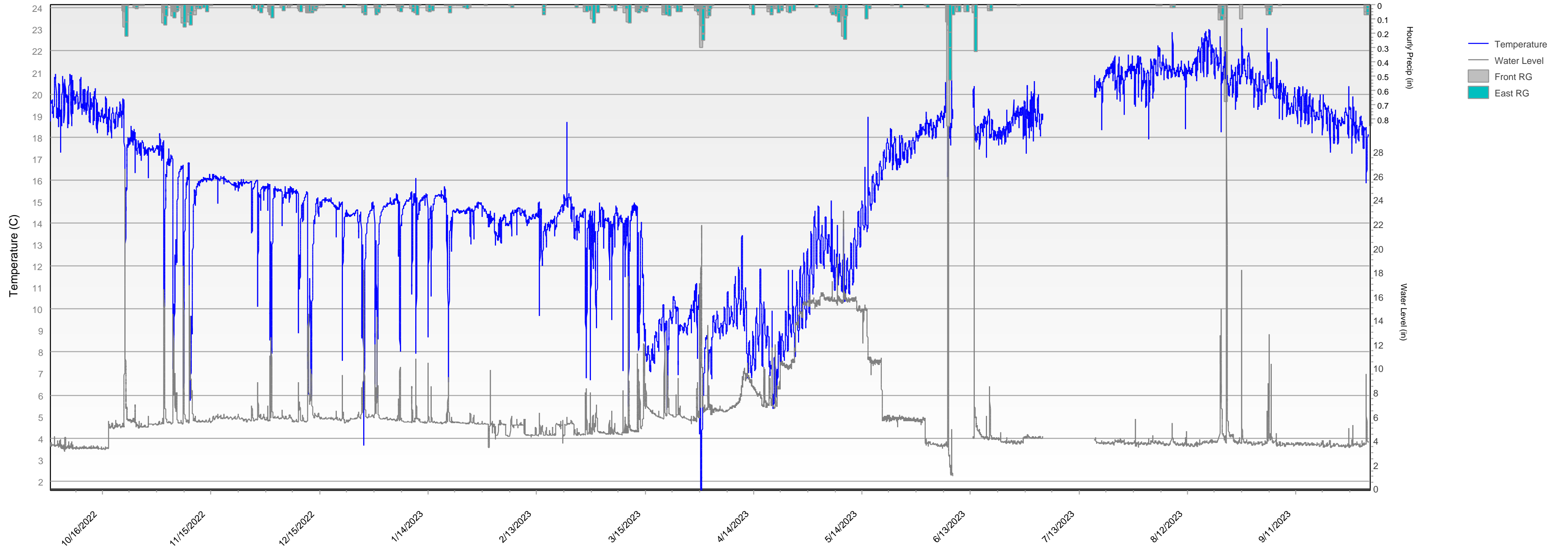
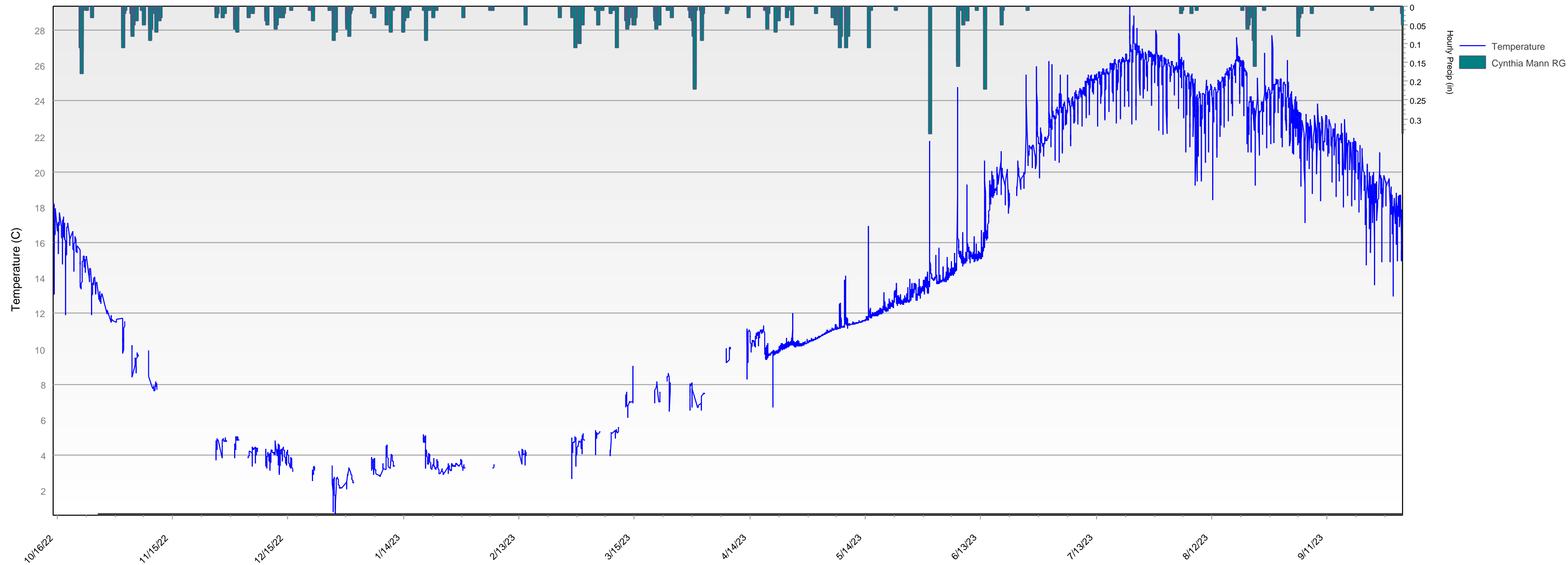


Figure 6

Plantation (4n2e30_012) WY 2023



Appendix D

ACHD Vegetated Basins, Bioretention Swales, and GSI Program Activities

Attachment G: ACHD Vegetated Basins, Bioretention Swales, and GSI Program Activities

Table 1. Phase I ACHD-Owned Vegetated Basins and Bioretention Swales 2022 – 2023

#	STORMWATER FACILITY ID	FACILITY TYPE	NEAREST INTERSECTION	AREA (SQFT)	YEAR BUILT	STRUCTURAL RETROFIT DATE	VEGETATION RETROFIT DATE	NEW GSI VEGETATION INSTALLATION DATE	CITY
1	Basin 63	Detention-Dry	W. Albion St & S Garden St	10,924	1997	-	2019	-	Boise
2	Basin 65	Detention-Wet	W. Ustick Rd & N. Curtis Rd	143,161	1997	-	TBD	-	Boise
3	Basin 294	Detention-Dry	N. Alworth St. & N. Sayer Ave	87,579	1999	-	TBD	-	Boise
4	Basin 322	Detention-Dry	W Airway Ct & S Cole Rd	37,764	2003	-	2018	-	Boise
5	Basin 327	Retention-Wet	E. Boise Ave & S. Betsy Ross Way	15,199	1976	2022	2022	-	Boise
6	Basin 331	Detention-Dry	N Steelhead Way & W Emerald St	21,432	2007	-	2018	-	Boise
7	Basin 332	Detention-Dry	W Irving St & N Maple Grove Rd	23,462	2007	-	2018	-	Boise
8	Basin 333	Detention-Wet	N. Maple Grove & Hyatt Wetlands Park	20,856	2006	-	TBD	-	Boise
9	Basin 334	Retention-Dry	W Ustick Rd & N Chatterton Wy	38,883	2006	-	2019	-	Boise
10	Basin 371	Retention	W. Victory Rd & S. Fry St.	157,482	2004	-	TBD	-	Boise
11	Basin 628	Retention-Dry	N Five Mile Rd & W Milclay St	19,531	2012	-	2016	-	Boise
12	Basin 674	Retention-Dry	858 N. Whitewater Park Boulevard	18,764	2013	-	2018	-	Boise
13	Basin 677	Detention-Dry	N Pierce Park Ln & W Hammermill Dr	14,680	2013	-	2017	-	Boise
14	Basin 685	Detention-Dry	W Emerald St. Dr & N Five Mile Rd	17,508	2014	-	2017	-	Boise
15	Basin 694/695	Retention-Dry	W Hill Rd & Catalpa	8,013	2013	-	2018	-	Boise
16	Basin 696	Retention-Dry	W Hill Rd & N 36th St	5,757	2016	-	2017	-	Boise
17	Basin 697	Retention-Dry	E Gowen Rd & S Eisenman Rd	5,144	2016	-	2018	-	Boise
18	Basin 882	Retention-Dry	E Gowen Rd & S Eisenman Rd	3,586	2016	-	2018	-	Boise
19	Basin 883	Retention-Dry	E Gowen Rd & S Eisenman Rd	3,440	2016	-	2018	-	Boise
20	Basin 1321	Detention-Wet	N VMP & W. Glendale Rd	31,652	2019	-	2019	-	Boise
21	Basin 1324	Detention-Dry	N Cloverdale & W Bowmont St	11,992	2019	2022	2019	-	Boise
22	Basin 1338	Retention-Dry	W. Glendale St. & N Stilson Rd	4,399	2019	-	2018	-	Boise
23	Basin 1339	Retention-Dry	W Alameda St & N. VMP	14,951	2019	-	2018	-	Boise
24	Basin 1370	Retention-Dry	N Arthur St & W State St	2,115	2019	-	2018	-	Boise
25	Basin 1372	Retention-Dry	S Cole Rd & W Lake Hazel Rd	45,619	2019	-	2020	-	Boise
26	Basin 1373	Retention-Dry	W Franklin Rd & Cole Rd	32,400	2019	-	2020	-	Boise
27	Basin 1374	Retention-Dry	N. Cloverdale Rd & W. Edna St.	18,370	2019	-	2019	-	Boise
28	Basin 1440	Retention-Dry	N Collister Dr & Collister Access	2,786	2019	-	2019	-	Boise
29	Basin 1441	Retention-Dry	N Collister Dr & Collister Access	3,207	2019	-	2019	-	Boise
30	Collister Swales	Bioretention Swales	N Collister Dr & W State St	4,746	2019	-	2019	-	Boise

Table 2. Phase I ACHD Basin Improvement Projects 2022 - 2023

#	FACILITY NAME AND LOCATION	IMPROVEMENT	DESCRIPTION
1	Basin 327 (E. Boise Ave & S. Betsy Ross Way)	Plant Installation (2-gal)	Increase basin's resiliency, plant diversity, vegetation stability, and aesthetics. (Shrubs and Forbs)
		Irrigation System	Installed a temporary irrigation system to improve plant establishment.
2	Basin 1338 (W. Glendale St & N. Stilson Rd)	Plant Installation (2-gal)	Increase basin's resiliency, plant diversity, vegetation stability, and aesthetics. (Shrubs and Forbs)
3	Basin 1339 (W. Alameda St. & N. Veterans Memorial Parkway)	Plant Installation (2-gal)	Increase basin's resiliency, plant diversity, vegetation stability, and aesthetics. (Shrubs and Forbs)

Table 3. GSI Projects Designed or Constructed 2022 - 2023

#	PROJECT NAME	GSI TYPE	GSI COUNT	DESIGNED	CONSTRUCTION COMPLETE	AREA TREATED (ACRES)
1	State Street Improvement A	Bioretention Curb Extension	8	2020	In Progress	0.5
2	Reed Street Realignment	Bioretention Swales	5	2022	In Progress	0.19
3	11th St Bikeway & Streetscape	Permeable Pavers	6	2021	In Progress	0.48
4	12th & Idaho	Stormwater Tree Cell	2	2022	In Progress	0.34
5	28th St. Extension	Stormwater Tree Cell	4	2022	In Progress	0.66
6	6th & Grove Bldg.	Stormwater Tree Cell	1	2020	2022	0.19
7	Boise Fire Station NO. 5	Stormwater Tree Cell	2	2023	In Progress	0.09
8	Capital Student Housing	Stormwater Tree Cell	4	2022	In Progress	1.04
9	Fulton Street Improvement	Stormwater Tree Cell	10	2022	In Progress	1.26
10	Linen Blocks	Stormwater Tree Cell	24	2022	In Progress	3.17
11	Lusk St. Apts.	Stormwater Tree Cell	1	2022	In Progress	0.12
12	Old Boise Blocks	Stormwater Tree Cell	8	2022	In Progress	0.63
13	Saratoga Apartments	Stormwater Tree Cell	4	2022	In Progress	0.82
14	St. Luke's	Stormwater Tree Cell	1	2018	In Progress	0.14
15	11th St Bikeway & Streetscape	Stormwater Tree Cell	13	2022	In Progress	1.79

Table 4. Phase I ACHD GSI Program Updates 2022 - 2023

GSI PROGRAM AREA	GSI PROGRAM ACTIVITY	DESCRIPTION
Planning and Design	GSI Designs	Evaluating GSI BMP designs and making design adjustments per project to improve stormwater management. Future work will include design specification updates to policy 8200.
	Integrated Five Year Work Plan	Updated the integrated five year work plan to include standalone GSI projects to more effectively provide offsite stormwater mitigation for future projects, retrofit existing GSIs, and improve water quality.
	Rapid Implementation Plan	Developed and piloted the rapid implementation plan to improve our ability to prioritize smaller retrofit projects and complete the design and construction within one year.
Construction	Capital Project Bid Process	Updated the capital project bid process for basins and swales to allow for more accurate bids and accountability during the 1-year Plant Establishment Period.
	Project Inspector Training	Project Inspector(s) training on new basin design requirements and top soil evaluation and approval.
Facility Maintenance	Stormwater Vegetation Management Contract	Expanded maintenance tasks and altered maintenance timing to improve plant health, aesthetics, and functional capability of GSIs.
	Stormwater Tree Cells Maintenance Plan	Pilot - new stormwater tree cell maintenance plan.
	Permeable Paving Maintenance Plan	Developing maintenance methods and frequency for maintaining permeable paving.
Inventory	Permeable Paving Inventory	Locating and mapping all ACHD maintained permeable paving structures.
	Permeable Paving Inspections	Developed and piloted permeable paving standard inspection and rain event inspection.
	Offsite Mitigation Tracking	Evaluating and updating the offsite stormwater mitigation tracking system.
Implementation	Species Selection - Lowland Areas	Evaluated species success rates of 2-gal plants in lower areas of wet basins to improve vegetation establishment in future vegetated GSIs.

Appendix E

2023 Public Education, Outreach and Involvement Program



1. Overview

The City of Boise, Ada County Highway District, Garden City, Ada County Drainage District #3, Idaho Transportation Department District #3, and Boise State University formed Partners for Clean Water (Partners) to develop a cooperative approach to educating the public on stormwater and water quality issues and ensure compliance with the Permit. The City of Boise is the lead agency for this control measure of the Permit with support from the other Partners. The overarching goal of the program is to educate the public on stormwater issues to change specific behaviors that contribute to nutrient, bacteria, temperature, and sediment pollution to the MS4 and local receiving waters.

The City's Stormwater Public Education and Outreach Program is guided by a step-by-step process when developing educational opportunities.

1. Define goals and desired outcomes
2. Identify and analyze target audiences
3. Create messaging for selected audiences
4. Distribute message through chosen methods of outreach
5. Assess the results in order to direct future efforts

The Partners conduct multiple outreach activities and messaging campaigns each year, designed to reach the various target audiences identified in the Permit and focus on stormwater issues of significance in the Permit area. The permittees collaborate each year on which topics and relevant messages the program will focus their efforts on. These activities and messages are further developed and built upon based on feedback and public participation.

Target audiences in Permit Year 2 included the general public, businesses, homeowners, neighborhood associations, pet owners, landscapers, property managers, engineers, contractors, developers, plan review staff, and students. Specific details that meet Permit Part 3.1 requirements can be found below.

2. Ongoing Efforts (throughout Permit term):

Annual Media Campaign

The Partners continue to participate in an annual media campaign which utilize messaging opportunities with radio advertisements and public service announcements, billboards, and online ads. The media campaign reaches all target audiences with general messages on water quality with a continued focus on pet waste and yard waste in 2023.

Manuals and Reference Materials

Manuals, fact sheets and other education and outreach reference materials are available on the Partners for Clean Water [website](#). These materials are targeted, based on content, to all our targeted audiences. Examples of



these documents include 'Stormwater Facility Maintenance Best Management Practices', 'Stormwater Pollution Prevention: Commercial Landscaping', 'Operation and Maintenance of Stormwater Systems', 'Drainage Plan Checklist' and 'Stormwater Management Resource Guide', among others.

Website

The website (partnersforcleanwater.org) reaches all target audiences with specific messaging based on audience. Please see Section 7 below for more details.

Boise WaterShed Environmental Education Center

The Boise WaterShed Environmental Education Center opened in May, 2008, and is designed to promote water stewardship by teaching people of all ages how to protect and conserve our precious resource for future generations.

The staff at the Boise WaterShed incorporates stormwater pollution prevention and stormwater management information into the programs, water renewal facility tours, and lessons offered to visitors. Education of personal impacts to water quality via stormwater, wastewater and pollution prevention tips are integrated throughout most exhibits, lessons, tours, and the center's library resources.

Partners staff participate in events at the WaterShed, including WaterShed Weekends, Earth Day events, and summer programs.

The facility also provides an outdoor River Campus which presents a new dimension to water education with exterior exhibits that show the big picture of the Treasure Valley's water resources. Presented to simulate the workings of the Lower Boise Watershed, the interactive, walk-able, park-like setting takes visitors on a journey from Lucky Peak Reservoir and Dam, through Boise's urban streets, and the Water Renewal Facility. From here they watch cleaned water returned to the Boise River and see it flow downstream to the agricultural zone that sustains our food industry. Ultimately, visitors realize that what we do upstream not only affects downstream users, but also ultimately the overall health of the Snake River.

The Boise WaterShed is transforming into the nation's first climate and water science center. The all-ages, hands-on exhibits will explore themes of our changing watershed and how the community can take action to help make our community more resilient to the effects of climate change. The Boise Watershed is undergoing renovations and will be closed until the fall of 2024. Limited programming will be offered during renovations.



Social Media

The Partners are active on social media through a Partners Instagram page, as well as each permittee's social media pages. The City of Boise regularly posts messaging on Twitter, Facebook, and Instagram regarding stormwater, water quality, household hazardous waste collection, leaf litter pick up information, etc. to help distribute these messages to the community through a variety of avenues.

3. 2023 Outreach Events and Activities:

Media Campaign

The media campaign for 2023 included radio ads, social media posts, and online ads on websites such as BoiseDev and KTVB.

Themes highlighted in 2023 include picking up pet waste, illicit discharge reporting, and proper fertilizer use, seen in Figures 1-3 below.



Figure 1. 2023 Pet Waste Graphic



Figure 2. 2023 Illicit Discharge Reporting Graphic



Figure 3. 2023 Fertilizer Application Graphic

Around 600 radio ads were aired on radio stations including KIZN 92.3, KKGL 96.9, KQXR 100.3, KSAS 103.5, KOOL 101.5, KSRV 96.1, KDBI 106.7, KPDA 100.7, Boise State Public Radio, and Radio Boise. Radio ads were broadcast in English and Spanish.

Bus Wrap

Partners coordinated with Valley Regional Transit to create a stormwater educational bus wrap to display on a regional bus from May through August. This was a general stormwater message to help people understand that stormwater flows directly to our waterways. The stormwater hotline number was also listed on the bus to report illegal dumping into storm drains. Posters were also present on the interior of the bus.



Figure 4. 2023 Bus Wrap

2022 Events

Several events were held during Permit Year 2 for stormwater education and outreach purposes. Each event targeted the general public and focused on general stormwater awareness, illicit discharge reporting, stormwater pollution prevention tips for homes and businesses, and water quality.

1. Fly Fishing Expo:



2. Shade City BrewFest:



3. WaterShed Earth Day:



4. Neighborhood Concert Series:



5. First Thursday:



6. BSU Engineering Course Outreach: This event was coordinated by Boise Parks and Recreation with a BSU class. Partners staff spoke about the stormwater infrastructure at the Hyatt Hidden Lakes Reserve and the pollutant removal potential of the property. We also discussed the effects of nitrogen and phosphorus on water quality, and the major water quality issues in the region.

Assessment

The Partners are consistently assessing the public's understanding of our public outreach messages and the adoption of behaviors that reduce stormwater pollution by our target audiences.

Assessment includes surveys at events that measure general stormwater knowledge to evaluate which topics are being conveyed already, and which topics need additional messaging and awareness. These surveys also resolve which media avenues are most useful to the respondents to guide our outreach in the future.

Data from website usage, radio ads, and billboard viewership is also used to assess which programs and messages are reaching the most people. The Partners website is updated based on which pages are most viewed and clicked on, in order to make popular topics more accessible (Appendix A).

The results of these continual assessments constantly shape the future of our public outreach and education programming. Focus will be given to programs that are successful in changing the public's behaviors and practices to reduce stormwater pollution.

A more targeted pilot program was started in Permit Year 2 in the Central Rim Neighborhood. The primary goal of this pilot project is to increase stormwater awareness, engage the target audience, and effectively promote proper leaf disposal. By isolating public education and outreach in this neighborhood, we are aiming to achieve higher participation in proper leaf disposal in the Central Rim Neighborhood.

In October 2023, postcards were sent out that outlined the benefits of raking your leaves such as flooding prevention and improved water quality. It also gave instructions for leaf pickup and provided a link to sign up for a free yard sign to encourage neighbors to rake leaves.



Figure 5. Outreach postcard sent to Central Rim Neighborhood residents

Several signs were displayed in the yards of Central Rim Neighborhood residents.

Next, we will send out a post-outreach survey to the Central Rim Neighborhood to evaluate the behaviors surrounding leaf collection for the pilot neighborhood. We will compare post-outreach survey results from the Central Rim neighborhood to other neighborhoods that did not receive targeted outreach; this will allow us to

assess the effectiveness of the outreach conducted. We will also compare Central Rim leaf collection data from 2021 and 2023 to measure if more leaves were collected from this neighborhood. This will provide estimates of self-reported behavior changes as well as leaf volume data from Republic Services to show behavior changes.

More information regarding the pilot program, follow-up outreach, and conclusions will be available in the Permit Year 3 Annual Report.

Tracking

A tracking spreadsheet is used by the City of Boise to track and maintain all records of our stormwater education and outreach activities, events, and trainings. This spreadsheet is shared with other permittees during regularly scheduled permittee meetings and is open to feedback and discussion. The tracking spreadsheet is used to compile the annual report.

Education on SWMP Control Measures

Construction Site Runoff Control Training

To provide the regional construction community with erosion and sediment control and stormwater pollution prevention education, the City and our Partners have developed the Erosion and Sediment Control (ESC) Responsible Person (RP) training and certification program. The class promotes awareness of the impact of polluted construction site runoff and soil erosion on the MS4 and the Boise River. The class curriculum covers local and state stormwater regulations, principles of ESC Best Management Practices (BMPs), installation and maintenance of common erosion and sediment controls, fugitive dust control, stormwater pollution prevention practices, dewatering, how to conduct the required construction site inspections and updating the ESC plan or SWPPP for the site.

The instructors for the City Responsible Person classes must be qualified and approved by the City. Instructors are required to submit a resume to the City detailing their educational history and experience in erosion control. They must also be able to demonstrate knowledge of the principles of erosion; sediment transport; erosion and sediment control technology, implementation, and maintenance; and local and federal ordinances regulating erosion and sediment control.

Courses are offered through third party entities: Engineering with a Mission LLC, Eagle One LLC, Jones Erosion Control, the College of Western Idaho, and Syman Company throughout the year in various locations in the Treasure Valley as well as online offerings. Boise State University's Construction Management Program also presents the class material to their students, who



may receive certification if desired. Additionally, the Nampa school district has a vocational construction site program that utilizes the ESC training presentation. The ESC Inspectors also present the RP course quarterly to train local agency personnel involved in construction projects so that they may implement BMPs on public projects and notify ESC Inspectors if they see runoff pollution and other violations at construction sites. As part of the training participants receive education materials including an illustrated ESC Field Guide to Best Management Practices specific to Idaho.

Construction site operators and contractors must renew their RP certification every 3 years by attending the training and passing an examination. The class is updated regularly to present new ideas and methods in ESC and SWPPP. The Planning and Development permitting system maintains a database of certified RPs. The database is utilized by the City of Boise, ACHD, Garden City, the City of Nampa, and City of Caldwell to verify that construction sites have an individual with ESC training onsite. The RP name and contact information is required to be listed prior to permit issuance, and the RP must have operational control to make corrective actions and knowledge to implement BMPs and work with ESC Inspectors to keep sites in compliance.

In 2023, **xxx** Responsible Person licenses were issued or renewed.

City staff provide ongoing awareness, education and outreach through the website, annual events, and also can provide site specific training as needed to interested parties and industry groups.


Permanent Stormwater Controls Training

The Partners conducted a permanent stormwater controls training in September 2023. The goal of this training was to provide guidance to local audiences on the operation and maintenance activities performed on various stormwater facilities. The training emphasized the importance of maintaining stormwater facilities to prevent stormwater pollution. It covered local ordinances, O&M requirements, and context for property O&M agreements.





**STORMWATER FACILITY
OPERATION AND
MAINTENANCE TRAINING**



This training is free and open to property managers, HOA managers, maintenance providers, inspectors, landscapers, and anyone who has a role in operating and/or maintaining residential, commercial, or industrial permanent stormwater facilities.

Please join us to learn more about maintenance of stormwater facilities, local ordinances, guidance for property O&M agreements, and how to help prevent stormwater pollution.

When: September 26th, 2023 1-2:30pm
Where: Library! at Bown Crossing, 2153 E Riverwalk Dr, Boise, ID 83706

Light refreshments will be provided **Questions? Call 208-608-7565**

Figure 4. 2023 Permanent SW Control ad

7. Publicly Accessible Website

The City of Boise, on behalf of the Partners for Clean Water, maintains a website that educates the public on stormwater issues for multiple audiences. The website is a key source for stormwater information in Boise and the Treasure Valley.

The website contains relevant contacts for each permittee, as well as each permittee's annual reports, SWMPs, and other relevant compliance and regulation materials. The Intergovernmental Agreement (IGA) that outlines permittee responsibilities is posted, as well as the IPDES permit and the MS4 map. Regularly scheduled permittee meeting agendas and meeting notes are also posted.

The website has topics for varying target audiences, such as homeowners, pet owners, engineers, surveyors, developers, mobile businesses, landscapers, and property maintenance companies. Manuals, checklists, fact sheets and guidance documents are organized into the target audience's respective pages. Individual permittee sites are also linked for more information. Information regarding training,

events, and other topics pertinent to educating the community on how to reduce stormwater pollution is easily accessible.

The website continues to be an important way to educate our target audiences and provide a central location for public education and permit compliance information. The Partners continuously develop new outreach materials to post on the website and hand out at events. QR codes that link to the Partners website are often printed on outreach materials.

