

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:

Ada County Highway District

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:

RYAN HEAD
DIRECTOR
JANUARY 21, 2025

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:

See Attachment A of this report for Phase I permit area receiving waters and ownership.

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://

https://www.achdidaho.org/home/showpublisheddocument/286/638418620429000000

☐ No
☐ Not Applicable

5. The Permittee organization provided a summary of total costs associated with 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:

See Attachment C, Phase I MS4 Permit Annual Report Responses #1- #7.

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://

https://www.achdidaho.org/projects/development-resources/environmental

- ☐ 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

See Attachment C - Phase I MS4 Permit Annual Report Responses, #8 - #14. A comprehensive summary of the Partners 2024 Public Education, Outreach and Involvement Program is provided in Attachment D.

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:

<https://www.achdidaho.org/home/showpublisheddocument/460/638243231733670000> (Section 8006 - Legal Authority for Stormwater Management) and Boise City Code 10-6-2.

- ☐ 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:

Stormwater Pollution Hotline 208-395-8888, ACHD Tell Us: <https://www.achdidaho.org/community-resources/report-an-issue>

- ☐ 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:

7

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

22

23. Number of Illicit Discharge Complaints/Reports Resolved

22

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:

935

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

- ☒ Yes
- ☐ No – Total # outfalls < 7, so only one outfall screened this reporting period
- ☐ Not Applicable

28. Of the 20% of MS4 outfalls screened during the reporting period:

How many outfalls were discharging during dry weather? 40

How many of these identified dry weather discharges were sampled or otherwise investigated to determine the discharge source? 40

How many of the identified dry weather discharges resulted in the Permittee action to address and eliminate the discharge source? 0

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

9

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

44

*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.

See Attachment C - Phase I MS4 Permit Annual Report Responses, #17-#31.

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.

See Attachment C - Phase I MS4 Permit Annual Report Response, # 37 and Construction Site Runoff Control Program.

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:

<https://www.achdidaho.org/home/showpublisheddocument/460/638243231733670000> (Section 8007.2), Boise City Code 10-6-3

☐ 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:

<https://www.achdidaho.org/home/showpublisheddocument/462/638243231741230000>

☐ 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. .

See Attachment C - Phase I MS4 Permit Annual Report Responses, #41.b.

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.

See Attachment C - Phase I MS4 Permit Annual Report Responses, #42, #43 and Inspection and Maintenance Activities.

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

7,960.0

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

See Attachment C - Phase I MS4 Permit Annual Report Responses, #47-#53.

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.

See Attachment C - Phase I MS4 Permit Annual Responses, Industrial and Commercial Stormwater Discharge Management (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.57

☒ 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.58

☒ 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.**

Not Applicable.

See Attachment C - Phase I MS4 Permit Annual Report Responses. Temperature Monitoring (Permit Part 4.1) and Stormwater Monitoring and Evaluation Program (Permit Part 6.2).

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.

Attachment A - Phase I Receiving Waters and Outfall Ownership
Attachment B - NPDES Budget Summary
Attachment C - Phase I MS4 Permit Annual Report Form Responses
Attachment D - 2024 Partner's for Clean Water Public Education, Outreach and Involvement Program
Attachment E - ACHD's Stormwater Public Outreach Efforts 2024
Attachment F - Stormwater Management Plan Survey Summary
Attachment G - Dry Weather Outfall Screening Plan, 2024 Update
Attachment H - Dry Weather Outfall Inspection Summary, Map, and Analytical Results WY 2024
Attachment I - Erosion and Sediment Control Reviews, Inspections, and Map
Attachment J - ACHD GSI Program Activities and Project Descriptions 2023-2024
Attachment K - Traditional Stormwater Basin Inspection and Maintenance Form
Attachment L - Street Sweeping Management Plan, 2024 Update
Attachment M - Stormwater Outfall Monitoring Summary WY 2024
Attachment N - Americana Subwatershed Monitoring Summary WY 2024
Attachment O - Temperature Monitoring Summary WY 2024

Attachment A: Phase I Receiving Waters and Outfall Ownership

Phase I Permit Area Receiving Waters and Outfall Ownership WY2024

Receiving Water	Outfall Ownership		Outfall Total
	ACHD	Non-ACHD	
Ash Lateral	3	0	3
Bennett Lateral	2	0	2
Boise City Canal	54	2	56
Boise City Canal-drain of	0	4	4
Boise River	40	25	65
Boise Valley Canal	3	4	7
Bubb Canal	7	3	10
Chaffin Drain	1	1	2
Cloverdale Lateral	1	2	3
Cottonwood Creek	3	5	8
Cottonwood Creek-Trib of	2	0	2
Crane Creek	22	2	24
Crane Gulch	2	1	3
Davis Drain	30	17	47
Dry Creek Canal	10	14	24
Eagle Drain	45	12	57
Eagle Drain-lateral of	3	0	3
Eggers Lateral	2	0	2
Eightmile Creek	6	0	6
Electric Light Lateral	3	2	5
Elmore Drain	12	2	14
Eureka Canal	0	8	8
Farmers Lateral	17	8	25
Farmers Union Canal	11	6	17
Finch Lateral	5	0	5
Fitz Lateral	1	0	1
Fivemile Creek	33	19	52
Fivemile Creek - Intermittent	15	0	15
Fivemile Creek-Trib. to	8	3	11
Gallagher Canal	1	0	1
Green Mile Drain	1	0	1
Gruber Lateral	1	0	1
Helm Lateral	1	1	2
Hulls Gulch	8	2	10
Hulls Gulch-Lateral	1	0	1
Huntington Lateral	2	0	2
Hyatt Lateral	1	0	1
Julia Davis Pond	3	10	13
Karnes Lateral	12	4	16
Lake Elmore	1	1	2
Lake Heron	1	3	4
Lake Heron Creek-north fork	0	4	4
Lake Heron Creek-south fork	1	2	3
Lake Heron-lateral of	1	2	3
Lateral 18	2	0	2
Lateral 22	2	0	2

Receiving Water	Outfall Ownership		Outfall Total
	ACHD	Non-ACHD	
Lateral 39	2	0	2
Lateral 41	9	0	9
Lateral 47	1	0	1
Lateral 49	2	0	2
Logger Creek	12	15	27
Lowell Drain	1	0	1
McMillan #2 Lateral	6	0	6
McMillan Lateral	8	0	8
Milk Lateral	5	0	5
New York Canal	9	2	11
North Slough	71	15	86
Penitentiary Canal	5	0	5
Penninger Lateral	4	0	4
Pierce Creek	6	0	6
Pierce Gulch	1	0	1
Polecat Gulch	31	0	31
Ridenbaugh Canal	77	24	101
Ridenbaugh Ditch	12	4	16
Rust Lateral	5	1	6
Sargent Drain	9	0	9
Seaman Gulch	2	0	2
Settlers Canal	37	8	45
Shavrer Lateral	1	1	2
Snider Lateral	1	0	1
South Slough	16	30	46
Stewart Gulch	8	2	10
Threemile Creek	7	2	9
Threemile Lateral	7	1	8
Thurman Drain	2	0	2
Thurman Mill Canal	18	14	32
Thurman Mill Canal-Lateral	4	0	4
Tuttle Lateral	1	0	1
Unnamed	140	17	157
Walling Creek	2	0	2
Warm Springs Canal	18	13	31
Wilson Fruit Lateral	1	0	1
Zinger Lateral	14	0	14
Total	83	318	1253

Attachment B: NPDES Budget Summary

Table 1. ACHD NPDES MS4 Permit Expenditures FY2023-2024

EXPENSE CATEGORY	SUBTOTAL	TOTAL COST
Environmental Department		
Stormwater Quality Staff	1,122,800.00	
NPDES Monitoring	191,400.00	
Water Quality Programs	805,400.00	
Environmental Total		2,119,600.00
Maintenance Department		
Storm Drain System Cleaning		
Staff	1,216,000.00	
Equipment & Materials	439,000.00	
Contracts	10,000.00	
<i>Storm Drain Cleaning Totals</i>	<i>1,665,000.00</i>	
Street Sweeping		
Staff	1,555,000.00	
Equipment & Materials	1,978,000.00	
Contracts	4,000.00	
<i>Street Sweeping Totals</i>	<i>3,538,000.00</i>	
Basin Maintenance	47,000.00	
Maintenance & Operations Totals		<u>5,250,000.00</u>
Total		\$7,369,600.00

Table 2. ACHD NPDES MS4 Permit Budget FY2024-2025

BUDGET CATEGORY	SUBTOTAL	TOTAL COST
Environmental Department		
Stormwater Quality Staff	1,151,800.00	
NPDES Monitoring	232,000.00	
Water Quality Programs	731,500.00	
Environmental Total		2,115,300.00
Maintenance Department		
Storm Drain System Cleaning		
Staff	1,277,000.00	
Equipment & Materials	461,000.00	
Contracts	10,000.00	
<i>Storm Drain Cleaning Totals</i>	<i>1,748,000.00</i>	
Street Sweeping		
Staff	1,632,000.00	
Equipment & Materials	2,077,000.00	
Contracts	4,000.00	
<i>Street Sweeping Totals</i>	<i>3,713,000.00</i>	
Basin Maintenance	45,000.00	
Maintenance & Operations Totals		<u>5,506,000.00</u>
Total		\$7,621,300.00

Attachment C: Phase I MS4 Permit Annual Report Form Responses

ATTACHMENT C

PHASE I MS4 PERMIT ANNUAL REPORT RESPONSES

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

See Attachment A of this report for Phase I permit area receiving waters and outfall ownership.

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 - The Amended and Restated Intergovernmental Agreement for Roles and Responsibilities Under the NPDES Permit #IDS027561 and Operating Guidelines were updated in September 2022 and executed in December 2022. These documents are available in ACHD's SWMP, Appendix A.

#2 - ACHD works cooperatively with other State and local entities as described in the ACHD Stormwater Management Program (SWMP) Table 9, Coordinated Compliance Activities.

#5 - A budget summary of annual expenditures for reporting year 3 (fiscal year 2024), and estimated expenditures for reporting year 4 (fiscal year 2025) is provided in this annual report, Attachment B. The numbers reflect those of the Environmental Department and Maintenance Department, the two primary groups responsible for Permit implementation. Environmental personnel expenditures for FY 2023-2024 consist of nine Full-Time Equivalent (FTE) positions and one student intern. The FY 2023-2024 expenses and the budget for FY 2024-2025 include Maintenance staff, equipment and materials, and contract costs associated with street sweeping, storm drain cleaning, and basin maintenance. Stormwater related FTEs in the Maintenance Department include 14 FTEs dedicated to stormwater system cleaning and maintenance, and 32 FTEs dedicated to street sweeping activities. These maintenance positions also perform maintenance activities such as utility potholing, chip removal during chip sealing activities (June – August), and winter maintenance as weather conditions demand. Stormwater related capital project expenditures and budget are not included in these financials. Permittee cost share reimbursements are also not included.

#7 - ACHD implements Phase I and Phase II SWMPs throughout Ada County. City annexations, if any, are evaluated annually and mapping is updated. Whereas City boundaries may change slightly, this does not impact ACHD's overall jurisdiction and implementation of control measures.

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)

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

#8 – ACHD conducts education, outreach, and involvement activities throughout Ada County. Additionally, the City of Boise is the lead Permittee responsible for implementing the education, outreach and involvement activities required by the Permit throughout the Phase I permit area, according to the Intergovernmental Agreement and Operating Guidelines provided in ACHD's SWMP, Appendix A. A comprehensive summary of the 2024 Partners for Clean Water Public Education, Outreach and Involvement Program is provided in this Annual Report, Attachment D.

#9 – Check mark specifies elected officials were a target audience, not land use policy and planning staff.

#11 – In addition to the Partners for Clean Water messaging provided in Attachment D, ACHD staff address education and outreach on stormwater topics through daily interactions with the public, contractors, and other agencies throughout Ada County. ACHD's stormwater public outreach efforts include verbal communication social media, websites, and fact sheets. The ACHD maintains an inventory of fact sheets that address the following topics:

- General stormwater education.
- Permanent stormwater control maintenance and inspection.
- Best management practices for construction activities, dewatering, landscape maintenance, sidewalk and street cleaning, automobile maintenance, pest control, and mobile businesses; and
- Identification and reporting of stormwater pollution.

Fact sheets are available on the ACHD website and PDF files are frequently emailed or distributed to the public via hardcopy in response to questions and complaints. During reporting year 2023-2024, three fact sheets were updated. The updated fact sheets and a summary of ACHD's stormwater public outreach efforts throughout Ada County are provided in this Annual Report, Attachment E.

#12 – Assessment of public education and outreach understanding, conducted on behalf of the Partners for Clean Water, is described in Attachment D (Section 4, pg.7) of this report. Additionally, ACHD collected public comments on ACHD's Stormwater Management Programs for NPDES Phase I and Phase II permit areas through a three-month online survey. A summary of responses is provided in this Annual Report, Attachment F.

#14 – The ACHD offers educational and technical resources to residents, homeowner's associations, property management groups, and the design, construction and development communities. These resources address design, inspection, maintenance, identification of permanent stormwater controls and include the following:

- ACHD Policy 8200 – Stormwater Design Manual, Inspection Checklist for Basins and Swales;
- Caring for Neighborhood Basins and Swales fact sheet; and
- HOA Stormwater Basins and Swales video.

Distribution of permanent stormwater control resources is conducted verbally, by email, and by directing the public to the ACHD Policy Manual, fact sheets and video on the ACHD website at (<https://www.achdidaho.org/projects/development-resources/environmental/stormwater-education-for-hoas>).

Illicit Discharge Detection and Elimination Program (Permit Part 3.2)

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.

#17 - The Phase I permit area outfall inventory and map are included in the Phase I SWMP, Appendix C. ACHD's Phase I MS4 Map is available at <https://achd.maps.arcgis.com/home/item.html?id=934c340c2488436aa23b8124429d62bb>.

#18 – ACHD has developed an Illicit Discharge Detection and Elimination Enforcement Response Policy pending final adoption.

#21 - Seven of the 22 illicit discharge or potential illicit discharge complaints received in the Phase I permit area originated from the public. The remaining complaints were received from ACHD staff and/or routed through other agencies/departments.

#22 & #23 - A location map depicting where the illicit discharges occurred, a list of complaints received, and a summary of follow-up actions taken are included in Appendix E of the Phase I SWMP. Table 11 in the Phase I SWMP summarizes complaints received by pollutant type and category.

#25 – ACHD's Dry Weather Outfall Screening Plan (DWOSP) Version 1.0 was developed in 2014 to document analytical and field procedures to detect and eliminate illicit discharges in the NPDES Phase I Permit Area. In 2024, the DWOSP was updated (Version 2.0) to guide Dry Weather Outfall Screening throughout Ada County (NPDES Phase I and Phase II permit areas) and incorporate updated strategies to prioritize efforts and identify dry weather flows associated with irrigation return flows or groundwater. The updated DWOSP is available in this Annual Report, Attachment G.

#26 – The Phase I permit area outfall inventory and map is included in the Phase I SWMP, Appendix C.

#28 – A total of 204 outfalls were screened during the reporting period. Forty-seven of the 204 outfalls were flowing during dry weather and were sampled or otherwise investigated to determine the source of flow. A map of the outfalls sampled, outfall inspection summary, and analytical results for reporting year 3 (October 1, 2023 – September 30, 2024) are provided in this annual report, Attachment H.

#29 - Phase I MS4 outfall locations with confirmed irrigation or groundwater dry weather flows are listed in the Phase I SWMP, Appendix C.

#31 – In reporting year 2023-2024, ACHD worked cooperatively with the Ada County Landfill to develop a video (<https://youtu.be/teAL0plm0lo>) for employees and the public on proper management and disposal or recycling of household hazardous wastes. Additionally, ACHD provides educational fact sheets to the public and directs the public to the Partners for Clean Water website (<https://www.partnersforcleanwater.org/>) and ACHD's website <https://www.achdidaho.org/projects/development-resources/environmental/stormwater->

[documents-and-resources-284](#) for information on proper waste disposal and pollution prevention measures for routine activities around the home and yard.

Construction Site Runoff Control Program (Permit Part 3.3)

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.

#37 – The Construction Site Discharge Control (CSDC) Enforcement Response Policy (ERP) was revised in May 2022 and approved by the ACHD Commission in September 2022 for incorporation into the CSDC Program and ACHD Policy. The CSDC ERP is available in the Phase I SWMP, Appendix H.

ACHD implements the Construction Site Runoff Control Program county-wide. In reporting year 2023-2024, qualified ACHD staff reviewed 148 Site Specific Erosion and Sediment Control (ESC) Plans in the Phase I permit area. Fifty-eight construction site ESC inspections were conducted by ACHD staff or ACHD contractors in the Phase I permit area during the 2023-2024 reporting year. Of the 58 inspections conducted, 26 did not require additional follow-up actions, 32 required corrective actions by the construction site responsible person, and one Notice of Violation (NOV) was issued as a result of these inspections. Attachment I to this annual report provides a summary of ESC plan reviews and inspections by month and a map illustrating the locations of these activities.

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

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.

All new, rebuilt, and retrofitted ACHD stormwater basins are vegetated to mitigate stormwater pollutants and GSI opportunities are explored for all new roadway projects. In the Phase I Permit area, ACHD owns and actively manages stormwater tree cells, vegetated basins and bioretention swales. The inventory for Phase I ACHD-Owned Vegetated Basins and Bioretention Swales for 2023-2024 is available in Attachment J, Table 1. Additionally, 15 GIS projects were designed or constructed in 2023-2024 that are not yet added to ACHD’s actively maintained inventory (Attachment J, Table 3). ACHD works cooperatively through an agreement with the City of Boise to maintain stormwater tree cells located in the Greater Downtown Boise Area. ACHD maintains and cleans the stormwater tree cell inlets and distribution pipe, and the City of Boise maintains the soil and trees. ACHD continues development and implementation of the GSI Program through piloting and refining strategies and processes to improve the success of newly constructed GSI facilities and basin retrofits. GSI Program updates and project descriptions are provided in Attachment J of this annual report in the following tables:

- Table 1 – Phase I ACHD-Owned Vegetated Basins and Bioretention Swales 2016-2024
- Table 2 – Phase I ACHD Basin Improvement Projects 2023-2024
- Table 3 - GSI Projects Designed or Constructed 2023-2024
- Table 4 – Phase I ACHD GSI Program Updates 2023-2024

More information on activities ACHD conducts to address requirements for post-construction stormwater management for new development and redevelopment is described in the Phase I SWMP, Section 5.4.2.2.

#42 –ACHD has developed an inspection prioritization for all permanent stormwater controls (PSCs) in the ACHD inventory and will continue to develop this SWMP control measure to ensure proper installation, and long-term operation and maintenance of these controls as required in Permit Part 3.4.5. no later than April 3, 2026.

#43 – ACHD is currently developing a written enforcement response policy to ensure and maintain the functional integrity of PSCs within ACHD’s jurisdiction.

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.

A description of ACHD’s current compliance activities for plan review, inspections, and maintenance of PSCs are summarized in the Phase I SWMP, Section 5.4.2. Inspection of PSCs varies depending on several factors. These factors include stage of development (under construction or existing), if the PSC can be inspected from the surface or subsurface, and ownership of the PSC.

Inspection and Maintenance Activities

ACHD Subdivision Inspectors perform inspections of PSCs under construction in new subdivisions during three periods: construction/installation, post construction, and at the end of the two-year warranty period. ACHD will not accept roadways within a subdivision unless PSCs are functioning as designed. During reporting year 2023-2024, 132 PSC related inspections were conducted within the Phase I permit area by Subdivision Inspection staff. ACHD Project Inspectors also perform inspections on ACHD capital projects. The inspections focus on ensuring the PSC is installed/constructed according to the ACHD capital project design plans. In reporting year 2023-2024, ACHD Inspection staff modified the Subdivision Final Inspection Letter to clarify that all PSCs are inspected for compliance with ACHD standards and engineered plans. Additional functionality testing is conducted on PSCs as needed during the two-year warranty inspection.

Maintenance staff perform ongoing maintenance and inspection of existing PSCs in the ACHD right-of-way. Stormwater facilities such as storm drain inlets, pipes, sand and grease traps, and ACHD-owned basins are maintained according to ACHD designated maintenance areas (228 in Ada County). Privately-owned surface PSCs that accept right-of-way runoff, such as basins and swales, are inspected and maintained on a complaint basis and as needed. In reporting year 2023-2024, Maintenance staff inspected 25 traditional stormwater basins using a newly developed inspection and maintenance form. The Traditional Stormwater Basin and Inspection and Maintenance Form is available in this annual report, Attachment K. Drainage maintenance activities performed by ACHD crews during reporting year 2023-2024 are detailed in the Phase I SWMP, Table 16.

Environmental staff oversee a Basin and Swale Revegetation Maintenance Services contract annually, for revegetation inspection and maintenance services of select ACHD-owned vegetated basins and swales. In reporting year 2023-2024, 274 inspection/maintenance activities were performed on ACHD facilities under this contract. Additionally, 27 stormwater tree cell inspections were conducted by Environmental Staff.

Stormwater Infrastructure and Street Management (Permit Part 3.5)

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

#47 - Since May 2022, ACHD has worked with a consultant to evaluate the inlet cleaning and inspection program with the goal of increasing efficiency and effectiveness of the program through a maintenance prioritization and implementation schedule to meet Permit requirements. A technical memo documenting the findings of the evaluation was completed in December 2022 (step 1) and a final implementation plan for ACHD's Inlet Inspection and Cleaning Program was completed in March 2023 (step 2). The final Catch Basin and Inlet Inspection and Cleaning Prioritization and Implementation Plan is provided in the Phase I SWMP, Appendix J. The program evaluation resulted in three key outcomes: 1) inlet prioritization based on connection to the Phase I MS4 (more work concentrated in high priority areas), 2) development of a field app tailored for inspection and cleaning operations, and 3) dedicated inspection staff. Of the three outcomes, ACHD committed additional resources to the Phase I permit area, implemented the inlet and catch basin inspection and cleaning field app, and experimented with ways of prioritizing inspection using available staff.

In reporting year 2023-2024, a total of 7,960 MS4 connected catch basins and inlets were inspected or cleaned in the Phase I area. The 7,960 catch basins and inlets represent approximately 75% of all MS4 connected catch basins and inlets in the Phase I permit area. Due to maintenance prioritization and implementation efforts, ACHD is now on track to meet the biennial inspection and follow up cleaning requirements of this program in 2025. A summary of drainage maintenance activities conducted by ACHD crews during reporting year 2023-2024 are listed in Table 16, Phase I SWMP.

#49 and #53 – ACHD currently operates two maintenance yards and four equipment and material storage areas within the Phase I Permit area. A map of these facilities is available at <https://achd.maps.arcgis.com/home/item.html?id=934c340c2488436aa23b8124429d62bb> and maintenance yard Stormwater Pollution Prevention Plans (SWPPPs) are in the Phase I SWMP, Appendix I.

#50 – ACHD is committed to compliance and data collection necessary to optimize efficiency and effectiveness of the sweeping program. Since March 2023, ACHD has worked with a consultant to evaluate the current sweeping program implemented throughout Ada County with the goal of increasing efficiency and effectiveness of the program. A technical memo documenting the findings of the evaluation was completed in October 2023 (step 1). Data analyses performed during the evaluation was used to inform the development of a Street Sweeping Management Plan to meet NPDES permit requirements (step 2). The final Street Sweeping Management Plan is available in this report, Attachment L.

ACHD continues to optimize the collection and use of electronic sweeping data collected from automated vehicle locating (AVL) systems installed on all ACHD sweepers that operate in the Phase I permit area. The AVL data is obtained using global positioning system (GPS) satellites and enables staff to calculate the frequency of sweeping to meet Permit required schedules based on roadway type (Permit Part 3.5.5.1). Based on AVL data in reporting years 2023-2024, ACHD accomplished between 64%-89% of compliance sweeping goals depending on roadway type. Compliance sweeping percentages are biased low due to ACHD's three newest sweepers operating without AVL properly installed. The design of these three sweepers requires the manufacturer to develop an adapter to receive the AVL hardware. ACHD expects to receive the three adapters from the manufacturer by January 2025.

#51 and #52 - Section 5.5 of the Phase I SWMP describes activities ACHD implements to address pollution prevention and good housekeeping for MS4 operations. Winter maintenance materials and fertilizer, herbicide, and pesticide usage are presented in Table 17 and Table 18, respectively. ACHD will review, update, and develop planning and guidance documents and implement as needed to ensure ACHD's stormwater infrastructure and management program includes the required SWMP control measure components described in Permit Parts 3.5.2 through 3.5.10.

#53 – SWPPPs for ACHD maintenance yards in the Phase I permit area have been updated recently; the Cloverdale Maintenance Facility SWPPP was updated in November 2020 and the Adam's Street Maintenance Facility in March 2021. A SWPPP for the Federal Way Facility site was developed in December 2023. All ACHD maintenance yards SWPPPs in the Phase I permit area are available in the Phase I SWMP, Appendix I. Site-specific SWPPPs will be developed for material storage facilities in the Phase I permit area by April 3, 2026.

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.

ACHD's jurisdiction is limited to public right of way and does not include private property. To implement the commercial and industrial monitoring program, ACHD contracts with the City of Boise and City of Garden City to maintain an inventory of industrial and commercial facilities described in Permit Part 3.6.2. A narrative description of the inventories and additional information on ACHD's Industrial and Commercial Stormwater Discharge Management Program is provided in the Phase I SWMP, Section 5.6. An inspection summary table and facility inspection reports for reporting year 2023-2024 are in the Phase I SWMP, Appendix L.

Section V. Response to Excursions Above Idaho Water Quality Standards

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.

Not Applicable

Temperature Monitoring (Permit Part 4.1) and Stormwater Monitoring and Evaluation Program (Permit Part 6.2)

ACHD, on behalf of the Permittees, continued to conduct wet weather stormwater monitoring and subwatershed monitoring as required under the Stormwater Monitoring and Evaluation Program requirements in Permit Part 6.2. Additionally, temperature monitoring continued in WY 2024 to address Permit Part 4. 1. Annual monitoring summaries for activities conducted in reporting year 2023-2024 are provided in the following attachments to this annual report:

Attachment M - Stormwater Outfall Monitoring Summary WY 2024

Attachment N - Americana Subwatershed Monitoring Summary WY 2024

Attachment O - Temperature Monitoring Summary WY 2024

As required by Permit Part 6.2.1, an update to *Stormwater Outfall Monitoring Plan* was submitted in ACHD's Year 1 Annual Report (2021-2022). The *Stormwater Outfall Monitoring Plan*, *Americana Subwatershed Monitoring Plan* and the *NPDES Phase I Temperature Monitoring Approach* are available in the Phase I SWMP, Section 3. Two separate effectiveness evaluations, as required by Permit Part 6.4.5, will be submitted as attachments to the Permit Renewal Application required by Permit Part 8.2 no later than April 3, 2026.

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

Attachment A - Phase I Receiving Waters and Outfall Ownership
Attachment B - NPDES Budget Summary
Attachment C - Phase I MS4 Permit Annual Report Form Responses
Attachment D 2024 Partners for Clean Water Public Education, Outreach and Involvement Program
Attachment E - ACHD's Stormwater Public Outreach Efforts 2024
Attachment F - Stormwater Management Plan Survey Summary
Attachment G - Dry Weather Outfall Screening Plan, 2024 Update
Attachment H - Dry Weather Outfall Inspection Summary, Map, and Analytical Results WY 2024
Attachment I- Erosion and Sediment Control Reviews, Inspections, and Map
Attachment J - ACHD Vegetated Basins, Bioretention Swales, and GSI Program Activities
Attachment K - Traditional Stormwater Basin Inspection and Maintenance Form
Attachment L - Street Sweeping Management Plan, 2024 Update
Attachment M - Stormwater Outfall Monitoring Summary WY 2024
Attachment N - Americana Subwatershed Monitoring Summary WY 2024
Attachment O - Temperature Monitoring Summary WY 2024

Attachment D: 2024 Partners for Clean Water 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 3 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, public service announcements, and online ads. The media campaign reaches all target audiences with general messages on water quality with a focus on pet waste, fertilizer reduction, and illicit discharge reporting in 2024.

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. More information can be found in section 7 below.

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 resources 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 was closed during Permit Year 3. Limited programming was available through on-site K-12 lessons, homeschool

days, models and kits available for checking out, and other events. Stormwater education is included in this programming.

Social Media

The City of Boise and other Partners 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.

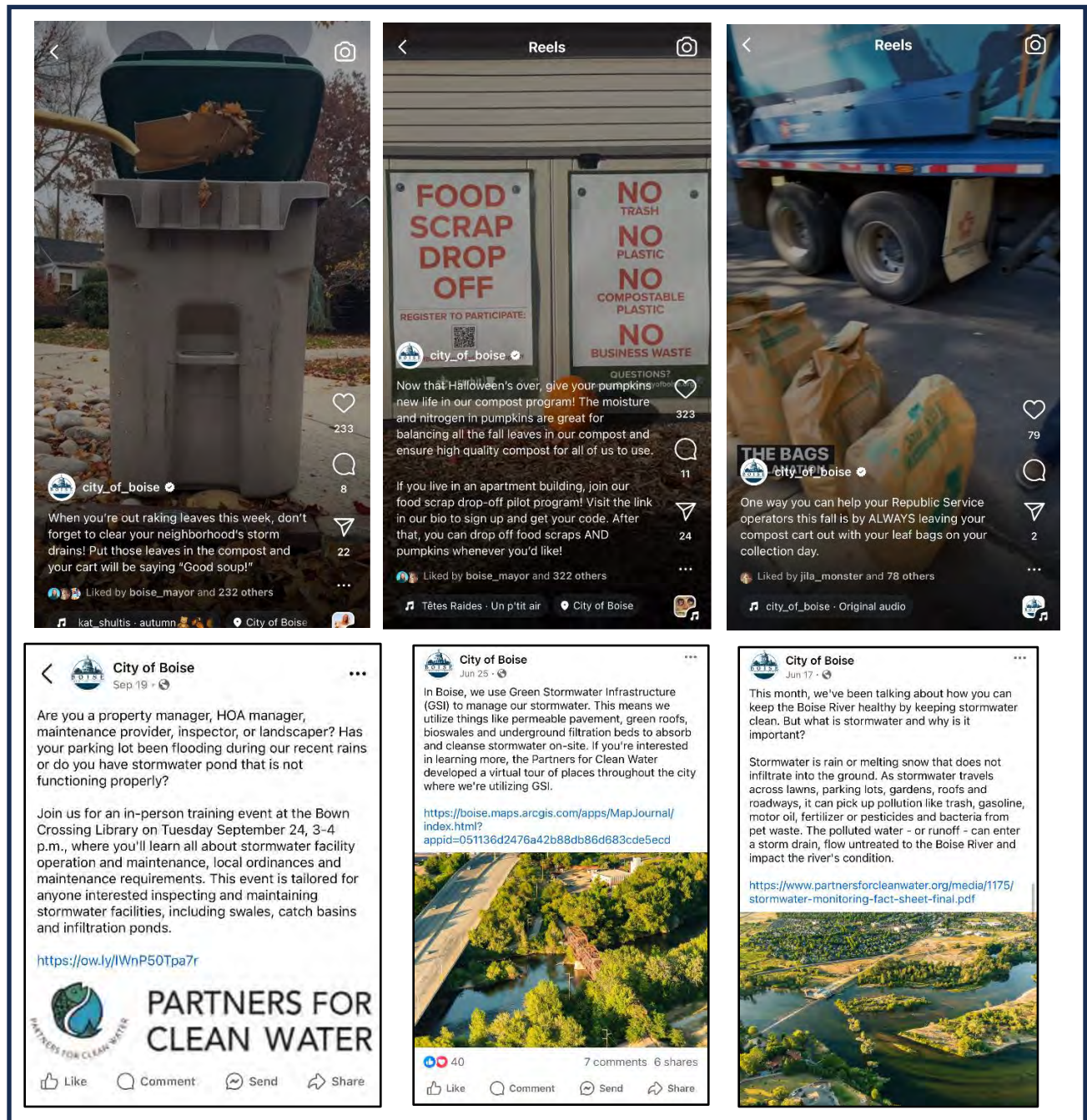


Figure 1. Examples of 2024 educational social media posts

3. 2024 Outreach Events and Activities:

Media Campaign

The media campaign for 2024 included radio ads, social media posts, and online ads on websites such as BoiseDev and KTVB.

Themes highlighted in 2024 include picking up pet waste, illicit discharge reporting, and proper fertilizer use, seen in Figure 2 below.



Figure 2. 2024 Stormwater Educational Graphics

Around 450 radio ads were aired on radio stations including KJOT, KRVB, KXLT, KKKO, KIZN, KKGL, LA GRAND, and LA PONDEROSA. 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 3. 2024 Bus Wrap

2024 Events

Several events were held during Permit Year 3 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. City of Boise Earth Day:



2. Neighborhood Concert Series:



3. National Night Out



4. 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. Signs were displayed in the yards of Central Rim Neighborhood residents.



Figure 4. Outreach postcard sent to Central Rim Neighborhood residents

Outreach continued in 2024 at the Central Rim's National Night Out. More signs were given to residents and stormwater educational messaging and post cards were provided at a Partners for Clean Water table. Many residents exhibited enthusiasm and interest in the program.

In 2025, we will send out another 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 2021-2024 to measure if more leaves were collected from this neighborhood after outreach was conducted. 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 4 Annual Report.

5. 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.

6. 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 2024, 853 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 2024. The goal of this training is to provide guidance to local audiences on the operation and maintenance activities required to be 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.



Figure 5. 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.

Appendix A

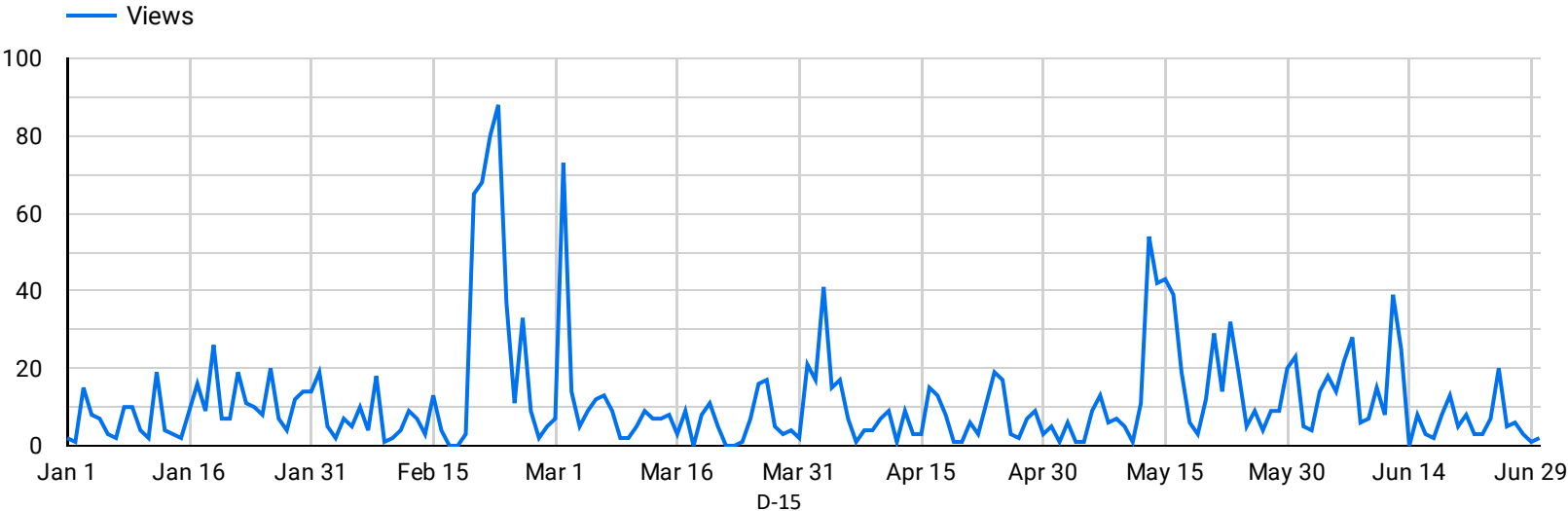
Website data

Partners for Clean Water - 2024 Report

January - June (Google Analytics 4)

Total users 2,146	Views 22,449	Average session duration 00:01:08	Bounce rate 73.77%	Views per session 12.45
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Session source / medium	Views ▾	Average session duration	Bounce rate
1. (direct) / (none)			
2. BoiseDev / Display			
3. google / organic			
4. news.grets.store / re...			
5. cityofboise.org / refe...			
6. rida.tokyo / referral			
7. bing / organic			
8. static.seders.websit...			
9. kar.razas.site / referr...			
10. info.seders.website / ...			
11. duckduckgo / organic			
12. In the Know Newslet...			
13. cityofcaldwell.org / r...			
14. trast.mantero.online...			
15. ofer.bartikus.site / re...			
16. game.fertuk.site / re...			
17. baidu / organic			
18. garold.dertus.site / r...			
19. app.asana.com / ref...			
20. Others			
Grand total	2,123	00:01:09	73.53%



Partners for Clean Water - 2024 Report

January - June (Google Analytics 4)

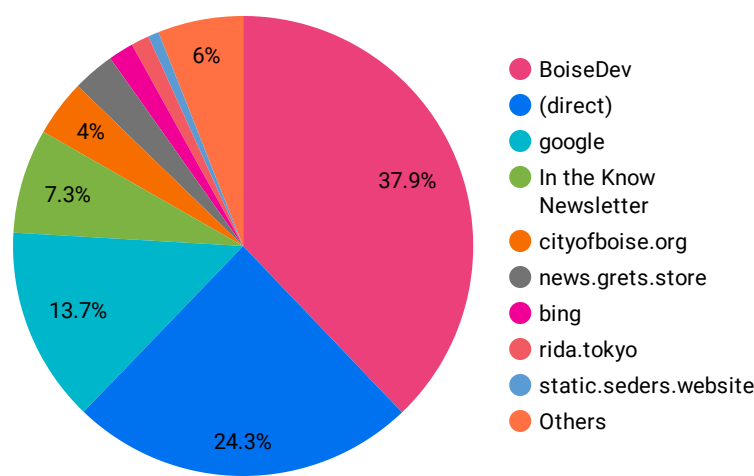
Views Per Page

	Page title	Views ▾
1.	Partners for Clean Water	895
2.	Partners for Clean Water	416
3.	Gophers Partners for Clean Water	155
4.	General Information Partners for Clean Wa...	97
5.	Report an Issue Partners for Clean Water	85
6.	City of Boise Partners for Clean Water	66
7.	Landscaping, Gardening and Home Mainten...	49
8.	Drainage District #3 Partners for Clean Wa...	48
9.	Annual Report Partners for Clean Water	41
1...	Partners for Clean Water Meetings Partner...	33
1...	Boise State Partners for Clean Water	29
1...	ACHD Partners for Clean Water	28
1...	Contact Partners Partners for Clean Water	23
1...	Pets Partners for Clean Water	23
1...	Permit Info Partners for Clean Water	22
1...	ITD DIST #3 Partners for Clean Water	20
1...	City of Caldwell Partners for Clean Water	20
1...	Garden City Partners for Clean Water	16
1...	Roses Partners for Clean Water	10
2...	Construction Partners for Clean Water	9

Total Users Per Landing Page

	Landing page	Total users ▾
1.	/	1.1K
2.	/residents/pest-control/gophers	143
3.	(not set)	63
4.	/report-an-issue	60
5.	/aboutpartners/city-of-boise	33
6.	/aboutpartners/drainage-district-3	28
7.	/residents/landscaping-gardening-and-ho...	24
8.	/aboutpartners/annual-report	18
9.	/aboutpartners/boise-state	15
10.	/residents/general-information	15
11.	/aboutpartners/city-of-caldwell	12
12.	/businesses/general-information	12
13.	/report-an-issue/contact-partners	12
14.	/aboutpartners/achd	11
15.	/meetings/partners-for-clean-water-meeti...	11
16.	/aboutpartners/garden-city	10
17.	/aboutpartners/permit-info	10
18.	/aboutpartners/itd-dist-3	9
19.	/residents/pets	9
20.	/residents/pest-control/roses	7
21.	/businesses/construction	6
22.	/2018-stormwater-conference-growing-ou...	3
23.	/aboutpartners/annual-report/2017-annu...	3
24.	/aboutpartners/annual-report/2020-annu...	3
25.	/aboutpartners/annual-report/2018-annu...	2
26.	/businesses/engineers-surveyors	2
27.	/residents/pest-control/aphids	2
28.	/residents/pest-control/ants	1
29.	/residents/pest-control/fleas	1
30.	/searchresults	1

Session Source



Partners for Clean Water - 2024 Report

July - December (Google Analytics 4)

Total users 2,900	Views 10,326	Average session duration 00:00:54	Bounce rate 72.84%	Views per session 3.5
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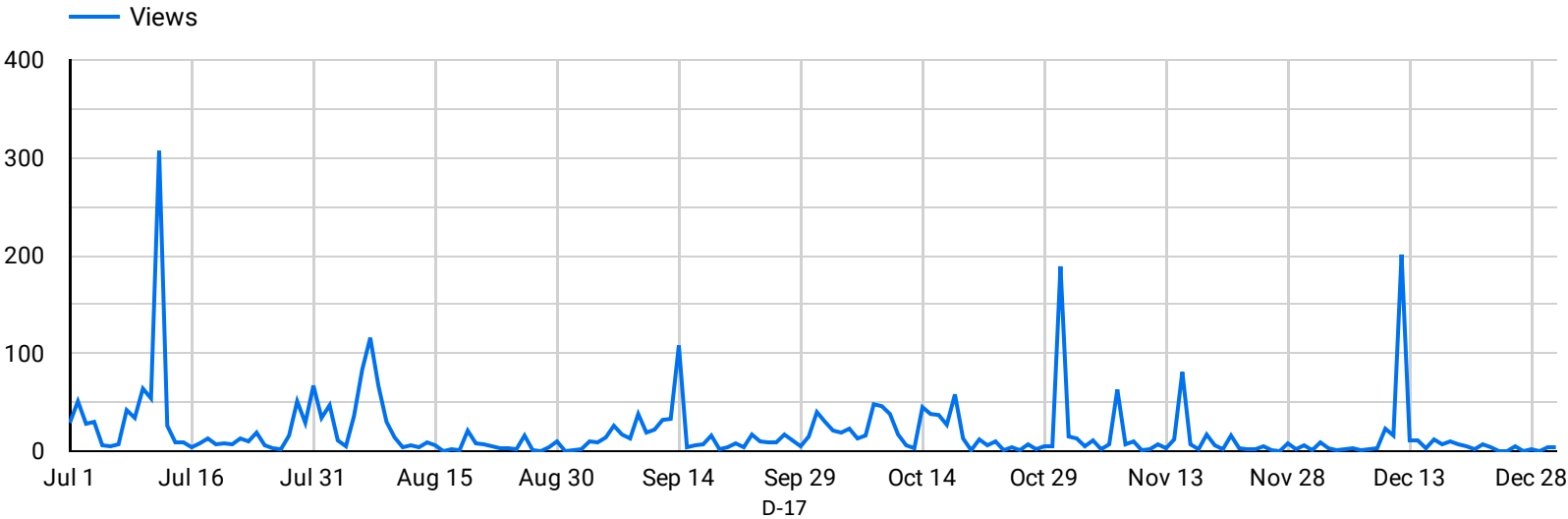
Session source / medium		Views ▾	Average session duration	Bounce rate
1.	BoiseDev / Display			
2.	(direct) / (none)			
3.	In the Know Newsletter / email			
4.	google / organic			
5.	cityofboise.org / referral			
6.	CbvffEfi / Evfcybl			
7.	bing / organic			
8.	Va guf Xabj Afjfyggfe / email			
9.	statics.teams.cdn.office.net / refe...			
10.	yahoo / organic			
11.	cityofcaldwell.org / referral			
12.	appsecadmin.cityofboise.org / re...			
13.	gbc-excel.officeapps.live.com / re...			
14.	facebook.com / referral			
15.	aimbnra.shop / referral			
16.	arcarticle.online / referral			
17.	feiacmr.shop / referral			
18.	mix106radio.com / referral			
19.	sestarblog.shop / referral			

Grand total

3,484

00:00:54

72.72%



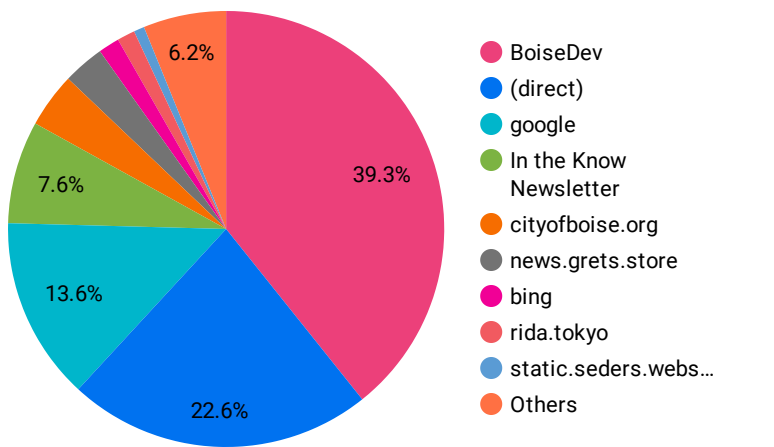
Partners for Clean Water - 2024 Report

July - December (Google Analytics 4)

Views Per Page

	Page title	Views ▾
1.	Partners for Clean Water	2,095
2.	General Information Partners for Clea...	309
3.	Landscaping, Gardening and Home Mai...	268
4.	Gophers Partners for Clean Water	236
5.	Report an Issue Partners for Clean Wa...	99
6.	City of Boise Partners for Clean Water	56
7.	ACHD Partners for Clean Water	38
8.	Boise State Partners for Clean Water	38
9.	Drainage District #3 Partners for Clean...	37
1...	Pets Partners for Clean Water	35
1...	Pest Control Partners for Clean Water	34
1...	Contact Partners Partners for Clean W...	30
1...	Partners for Clean Water Meetings Par...	27
1...	Annual Report Partners for Clean Water	26
1...	Permit Info Partners for Clean Water	25
1...	ITD DIST #3 Partners for Clean Water	17
1...	City of Caldwell Partners for Clean Wa...	17
1...	Automobile Maintenance Partners for ...	17
1...	Engineers Surveyors Partners for Clea...	16
2...	Garden City Partners for Clean Water	16

Session Source



Total Users Per Landing Page

	Landing page	Total users ▾
1.	/	1.9K
2.	/residents/pest-control/gophers	194
3.	/residents/general-information	166
4.	/residents/landscaping-gardening-and...	157
5.	(not set)	61
6.	/report-an-issue	57
7.	/aboutpartners/city-of-boise	40
8.	/aboutpartners/achd	25
9.	/aboutpartners/drainage-district-3	24
10.	/aboutpartners/boise-state	15
11.	/aboutpartners/city-of-caldwell	14
12.	/meetings/partners-for-clean-water-me...	14
13.	/aboutpartners/itd-dist-3	13
14.	/report-an-issue/contact-partners	13
15.	/businesses/general-information	12
16.	/aboutpartners/garden-city	11
17.	/aboutpartners/annual-report	10
18.	/aboutpartners/permit-info	10
19.	/residents/pets	10
20.	/residents/automobile-maintenance	5
21.	/residents/pest-control/aphids	4
22.	/businesses/construction	3
23.	/businesses/engineers-surveyors	3
24.	/residents/pest-control	3
25.	/residents/pest-control/fleas	3
26.	/2018-stormwater-conference-growing-...	1
27.	/aboutpartners/annual-report/2017-an...	1
28.	/aboutpartners/annual-report/2018-an...	1
29.	/residents/pest-control/ants	1
30.	/residents/pest-control/cockroaches	1
31.	/residents/pest-control/roses	1
32.	/residents/pest-control/weed-control	1

Attachment E: ACHD's Stormwater Public Outreach Efforts 2024

NPDES Annual Report

Stormwater Public Outreach

ILLCIT DUMPING

- ✓ Joint Education Video with Ada County Landfill
- ✓ Included in Valentines Social Media Campaign
- ✓ Earth Day No Dumping Post
- ✓ Pool Draining Reminder



OPTION 1: Discharge to Sanitary Sewer System with permission and guidance from your city's pretreatment department
Primary Option

OPTION 2: Discharge to Landscaped Areas

**STOP ADDING
CHEMICALS**



**ENSURE CHLORINE
LEVELS HAVE
DISSIPATED**



**DISCHARGE WATER
INTO LANDSCAPED
AREAS AWAY FROM
NEIGHBORS OR
STORM DRAINS**



Contact our Environmental Department
for further information 208-387-6250

**THANK YOU FOR DOING YOUR PART TO
PROTECT OUR LOCAL WATERWAYS**



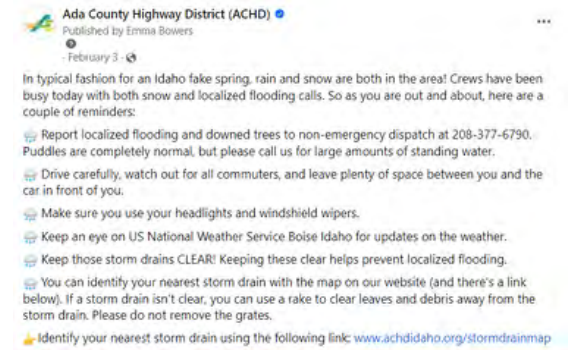
PET WASTE

- ✓ Social Media Reminders
- ✓ Physical Signs



STORM DRAINS

- ✓ Social Media Reminders for Every Major Weather Event
- ✓ Included in Valentines Social Media Campaign
- ✓ Earth Day No Dumping Post



BASINS & SWALES

- ✓ Education Videos for HOA's & Neighborhood Associations
- ✓ Neighborhoods in the Know Meeting
- ✓ Elf on the Shelf Campaign
- ✓ New Signage - Connecting you to Clean Stormwater - Veterans Memorial PKWY



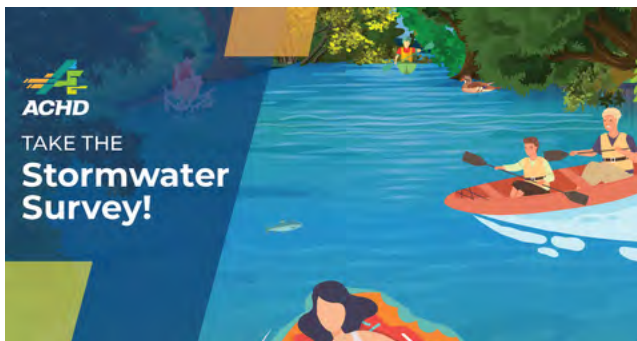
SWEEPING

- ✓ Landfill Collaboration
- ✓ Sweeper Art Contest
- ✓ Earth Day No Dumping Post



SURVEYS

- ✓ Video to Solicit Survey Replies
- ✓ Stormwater Survey



STORM WATER POLLUTION HOTLINE

Need to report stormwater pollution? Please call 208-395-8888

The storm drain system in Ada County is not connected to the municipal sewer system. Stormwater is conveyed directly to groundwater or surface waters such as the Boise River. **Pollutants that enter the storm drain system can negatively impact the quality of our waterways.**

One tool ACHD utilizes to combat stormwater pollution is the Stormwater Pollution Hotline. The Stormwater Pollution Hotline is a community response tool that is available 24/7 to direct your stormwater concerns to the appropriate entity for follow-up action. **You can help keep our waterways clean by reporting stormwater pollution to the Stormwater Pollution Hotline at 208-395-8888.**



Report Illegal Dumping!
208-395-8888

Thank you for your assistance in keeping Ada County waters clean. **REMEMBER:**

ONLY RAIN IN THE STORM DRAIN.

LEARN MORE

208-387-6100
achdidaho.org/
stormwater



EXAMPLES OF STORMWATER POLLUTION



Wash Water Discharge



Poor Landscaping Practices



Poor Construction Site Practices



Construction Site Sediment Discharge



Vehicles Fluid Spills

OTHER COMMON EXAMPLES:

- Debris and litter
- Paint, oil, or gas
- Sewage waste
- Food grease spills



NO LEAVES OR DEBRIS IN THE STREET!

It's everyone's job to prevent flooding and protect water quality. You can help by keeping your leaves and debris out of the street.



PREVENT FLOODING

Raking leaves into the street clogs storm drains and leads to flooding.

Reduce potential flooding by properly disposing of leaves and debris.



PROTECT WATER QUALITY

Leaves and debris left in the street can break down in the storm drain system and cause excessive algae growth in waterways like the Boise River. A health hazard for humans and animals!



PROPERLY DISPOSE OF LEAVES & DEBRIS!

**Compost • Recycle •
Trash**

LEARN MORE

208-387-6100
[achdidaho.org/
stormwater](http://achdidaho.org/stormwater)



**Report Illegal
Dumping!**
208-395-8888

CONCRETE WASTE MANAGEMENT

The storm drain system in Ada County is not connected to the municipal sewer system. Stormwater is conveyed directly to groundwater or surface waters like the Boise River. Pollutants that enter the storm drain system can negatively impact the quality of our waterways.

Liquid concrete waste from the concrete cutting process and washout of excess concrete from tools and vehicles can clog the storm drain system, contaminate soils, and negatively impact waterways.



Report Illegal Dumping!
208-395-8888

LEARN MORE

208-387-6100
achdidaho.org/
stormwater



BEST MANAGEMENT PRACTICES CONCRETE WASTE MANAGEMENT



Never attempt to dilute concrete waste for disposal.

Never allow concrete waste to enter the storm drain system or the environment. Liquid concrete waste must be contained and disposed of properly. Proper disposal may include drying the material before hauling to a recycle facility or sending the solid waste to the landfill.



CONCRETE WASTE

BEST MANAGEMENT PRACTICES

CONTAINMENT DISPOSAL OPTIONS



Concrete Cutting
Slurry Containment
and Collection



Construction Site
Concrete Washout

Concrete waste such as slurry or washout must be contained to eliminate impacts to soils, waterways, and the storm drain system. Liquid concrete waste requires proper disposal where as, solid concrete waste can be disposed of in the trash.

TRAINING

- **Train employees** and subcontractors in proper concrete waste management.
- The responsible person is required to oversee construction stormwater best management practices like concrete waste management to protect the storm drain system and the environment.

ACHD Ordinance 190-Section 3; Placing Debris on Public Right-of-Way:

It shall be unlawful for any person to place, sweep, throw or track dust, dirt, debris, refuse matter, or litter upon any public right-of-way. Failure to clean the slurry may result in the Ada County Highway District billing the responsible party for the costs of cleanup.

ACHD Policy 6007.12.5 Unacceptable Debris or Material on the Construction Site Within the Right-of Way: \$100 per instance not to exceed two instances per day



QUESTIONS?

**Ada County Highway District
Environmental Department**

1301 N. Orchard, Suite 200 • Boise • ID • 83706
208-387-6100 • TTY: 1-800-377-3529 • achdidaho.org



Attachment F: Stormwater Management Plan Survey Summary

Stormwater Management Plan Phase I & II

COMMENT SUMMARY MAY 23 - AUGUST 30, 2024



Most respondents had a **better understanding** of how stormwater works and ACHD's stormwater quality programs after reviewing the resources.

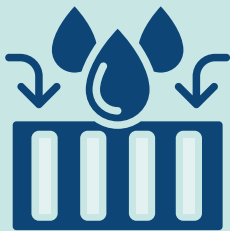


420
Web page views



38
Responses

Public comments were collected through an online survey for three months.



Top three programs respondents want to know more about:

Stormwater infrastructure & street management

Stormwater monitoring

Public education, outreach & involvement



Top suggestions to further reduce pollutant discharges to waterways:

More education & outreach

A street sweeping schedule

Replace aging storm drain markers

Update drainage facilities & techniques



Greatest threat to stormwater and downstream waterways:

Lawn chemicals

Illegal dumping

Construction site pollution



Most respondents thought the video was a **helpful summary**.

Those that thought the video could be better thought it was **too aspirational and slow**.



Most respondents **notice** the "No Dumping, Flows to Waterways" markers.

Stormwater Management Plan: Phase 1 & 2 Survey

SURVEY RESPONSE REPORT

23 May 2024 - 30 August 2024

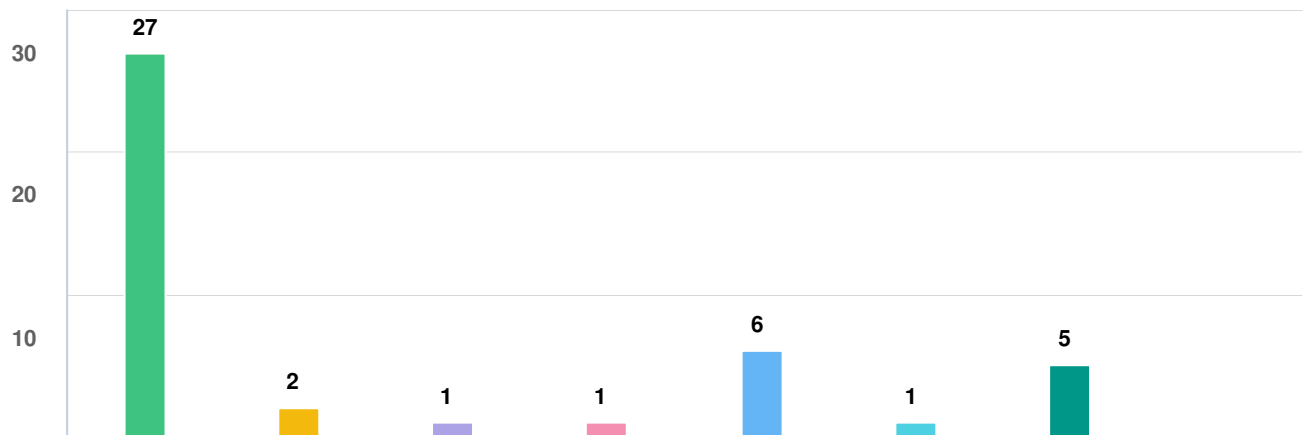
PROJECT NAME:

Stormwater Management Plan: Phase I & II



SURVEY QUESTIONS

Q1 Please tell us where you live and/or work.

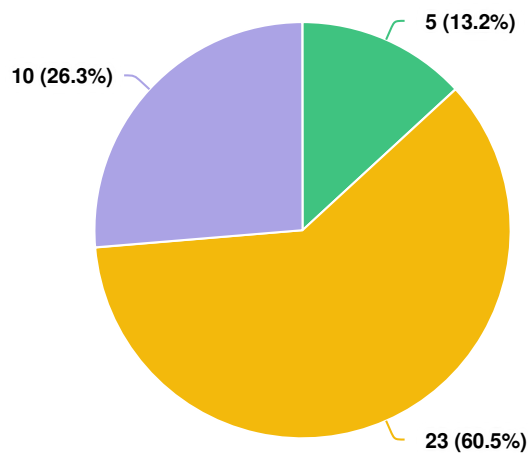


Question options

Boise Eagle Garden City Kuna Meridian Star Unincorporated Ada County
Other (please specify)

Optional question (38 response(s), 0 skipped)
Question type: Checkbox Question

Q2 How would you rate your knowledge about how stormwater works in Ada County and ACHD's stormwater quality programs PRIOR to ...

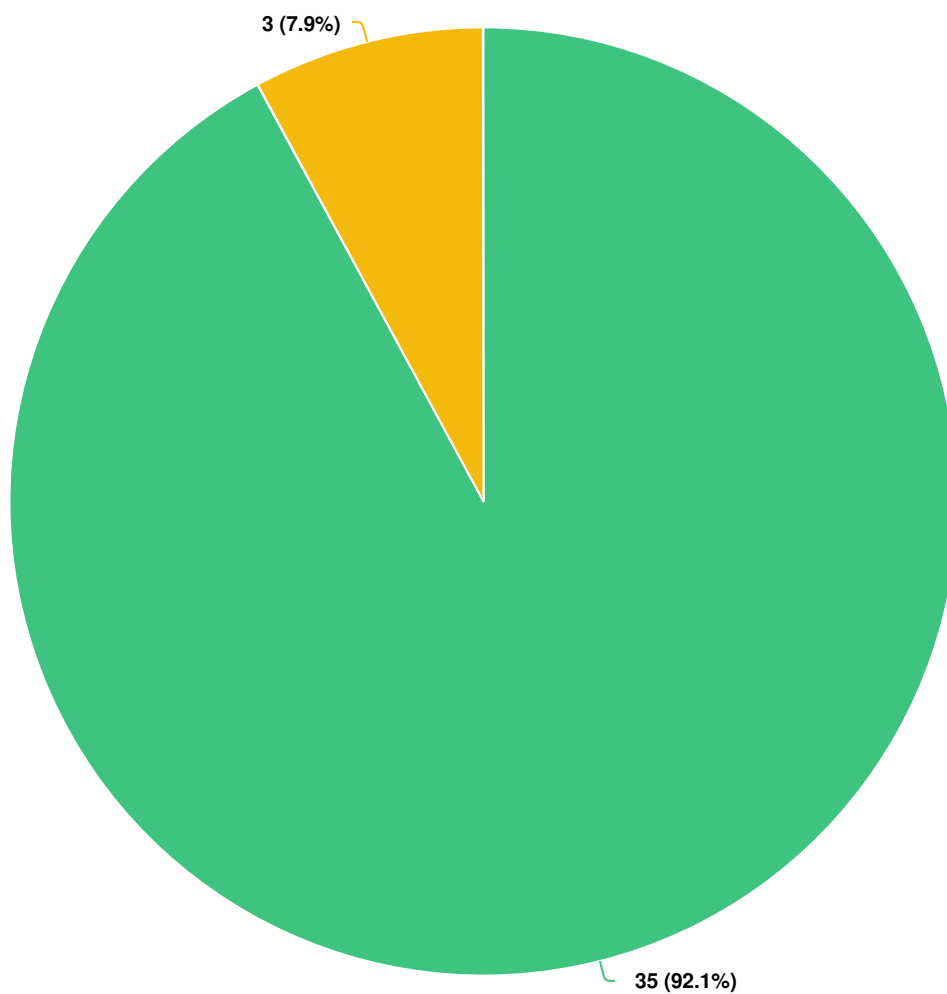


Question options

Knowledgeable Somewhat knowledgeable Not knowledgeable

Optional question (38 response(s), 0 skipped)
Question type: Radio Button Question

Q3 After reviewing the Stormwater Management Program resources would you say you have a better understanding of how stormwater works in Ada County and ACHD's stormwater quality programs?



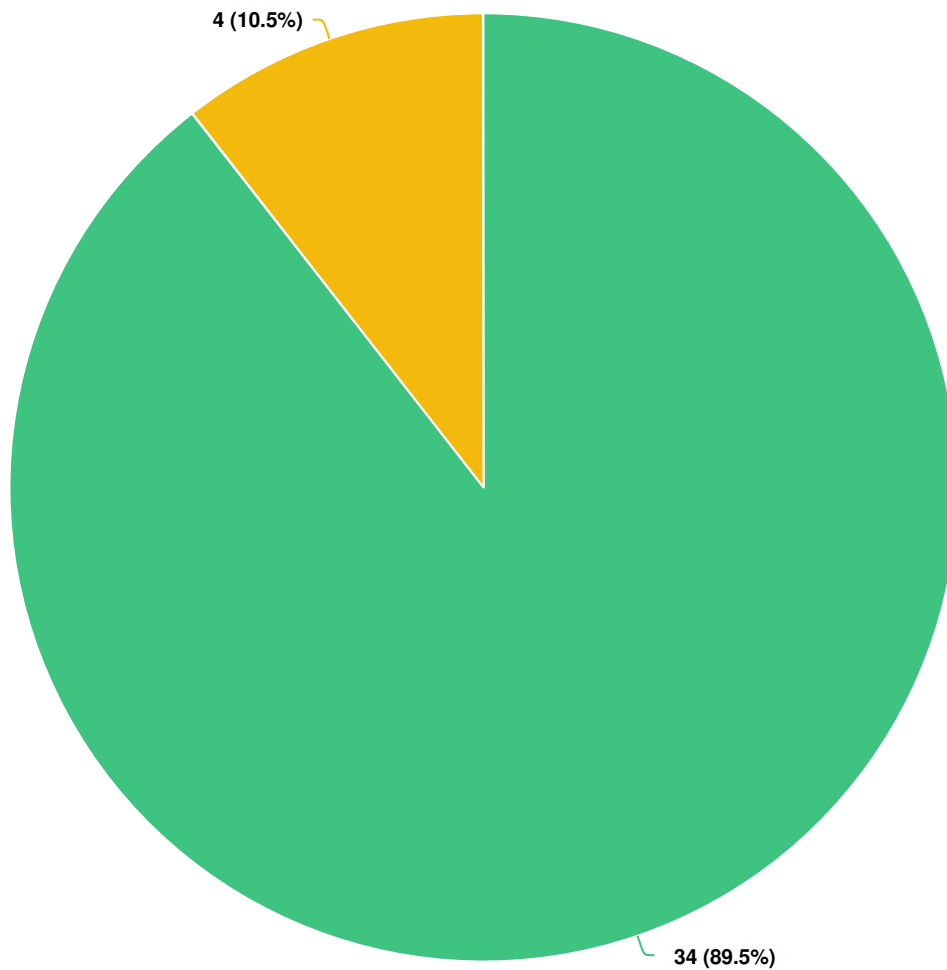
Question options

☒ Yes ☐ No

Optional question (38 response(s), 0 skipped)

Question type: Radio Button Question

Q4 | Was the Stormwater Management Plan video a helpful summary of the Stormwater Management Plan and how to use it?



Question options

☒ Yes ☐ No

Optional question (38 response(s), 0 skipped)

Question type: Radio Button Question

Q5 | If you answered no, how can we make the video better?

Screen Name Redacted
5/23/2024 11:57 AM

For the past 14 years that I have lived on 15th Street I have asked for a schedule of when the road will be swept and all I get are excuses. According to the plan it would seem 15th street would be swept up to 9 x year as an arterial. This plan and reality do not match. I spend a lot of time sweeping my own street which is really a bit much for a 66 year old!

Screen Name Redacted
5/23/2024 12:17 PM

The video is a great marketing piece, but actions speak louder than words. So far, I view the assertions in the video as aspirational rather than a clear depiction of reality. We would love to have cleaner runoff water, but facts speaker louder than assertions.

Screen Name Redacted
5/23/2024 12:33 PM

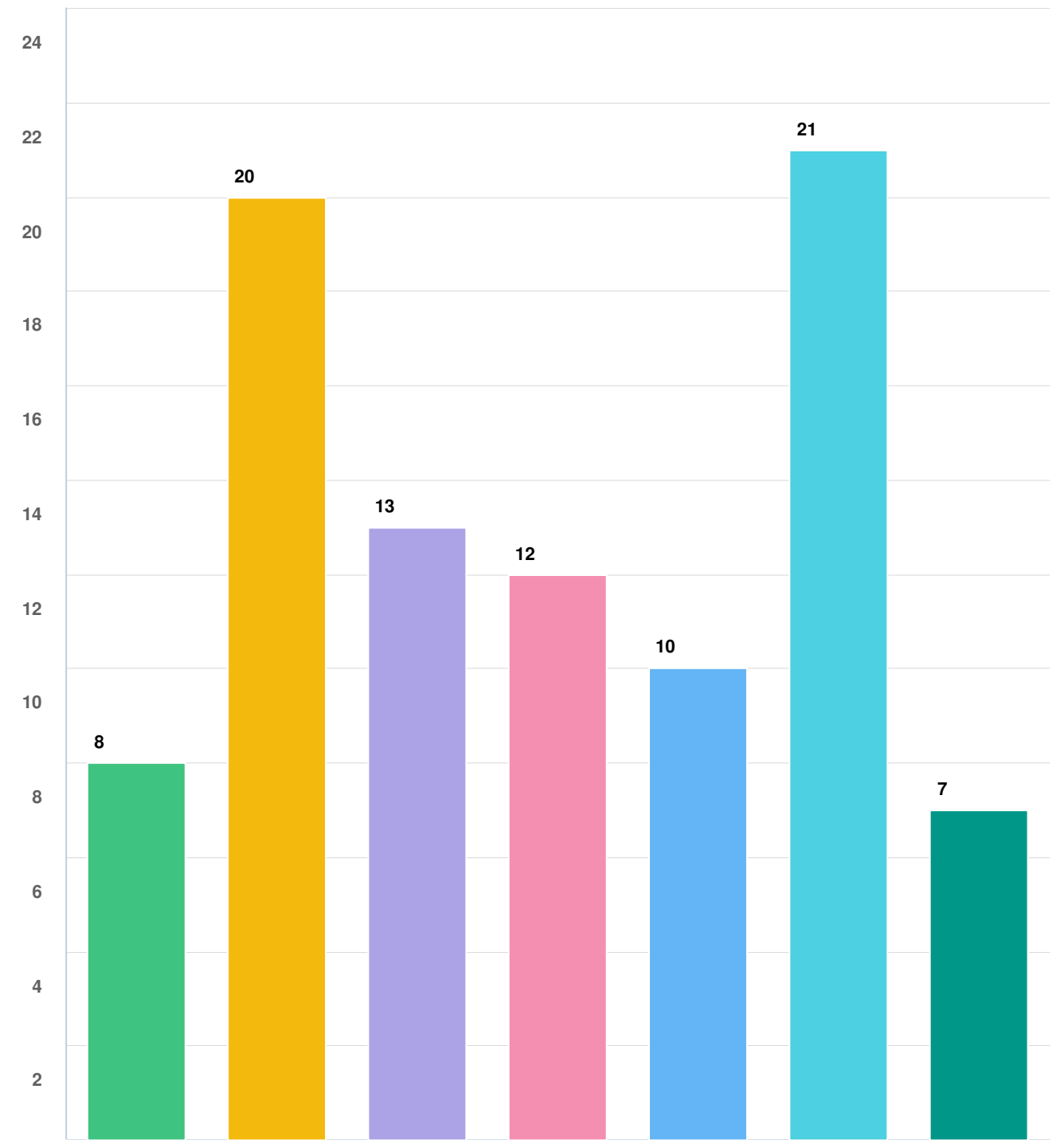
Video is Way too slow. The contents could've been summarized into a paragraph.

Screen Name Redacted
5/23/2024 05:49 PM

The video touches base on the Plan. However, the document is far too large and cumbersome for the average citizen.

Optional question (4 response(s), 34 skipped)
Question type: Essay Question

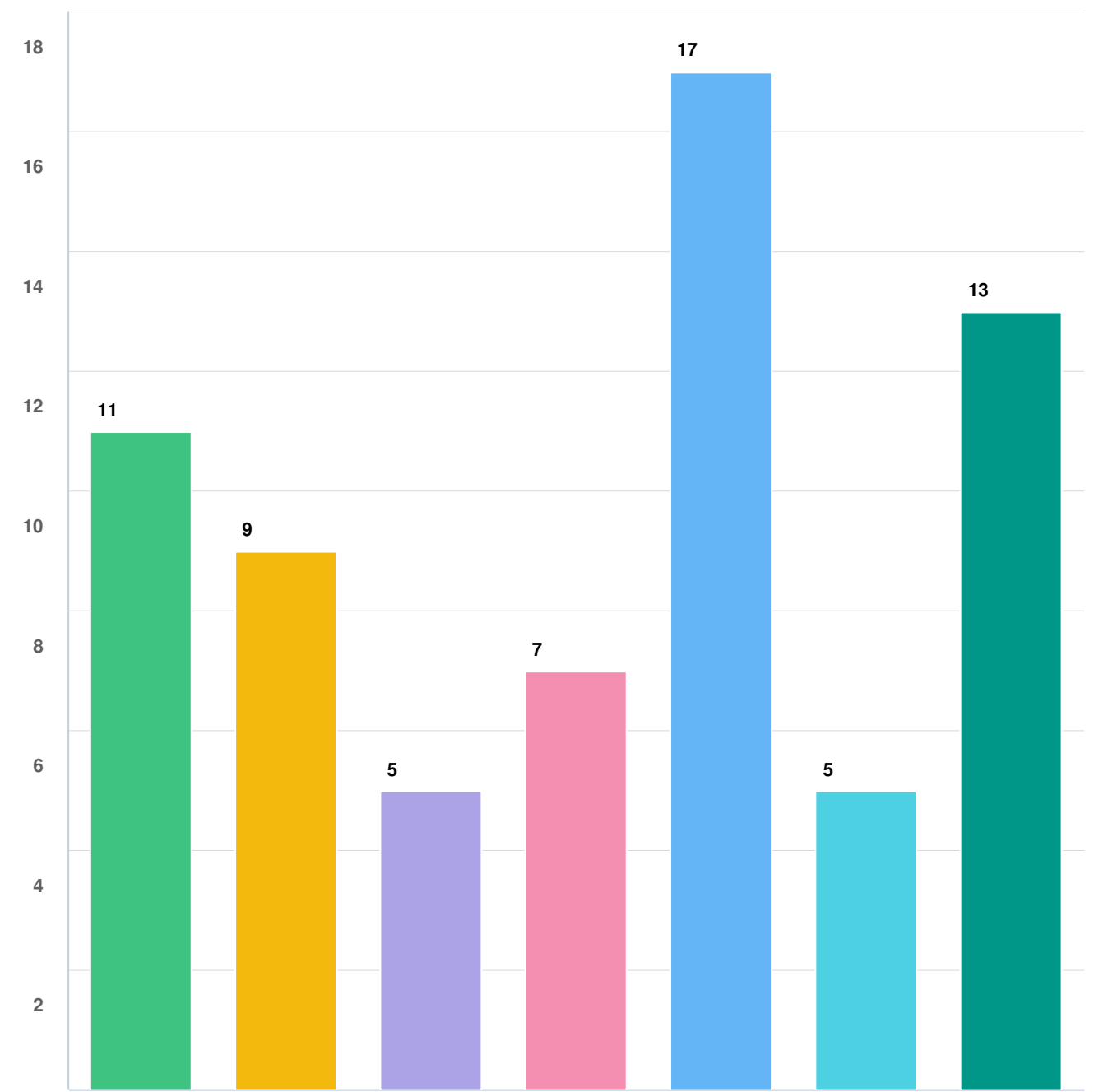
Q6 | What do you consider the greatest threat to stormwater and downstream waterways where you are located?



- Question options**
- Pet waste
 - Illegal dumping/improper disposal
 - Construction site pollution
 - Litter
 - Leaves
 - Lawn chemicals
 - Other (please specify)

Optional question (37 response(s), 1 skipped)
Question type: Checkbox Question

Q7 Which ACHD stormwater programs would you like to know more about?

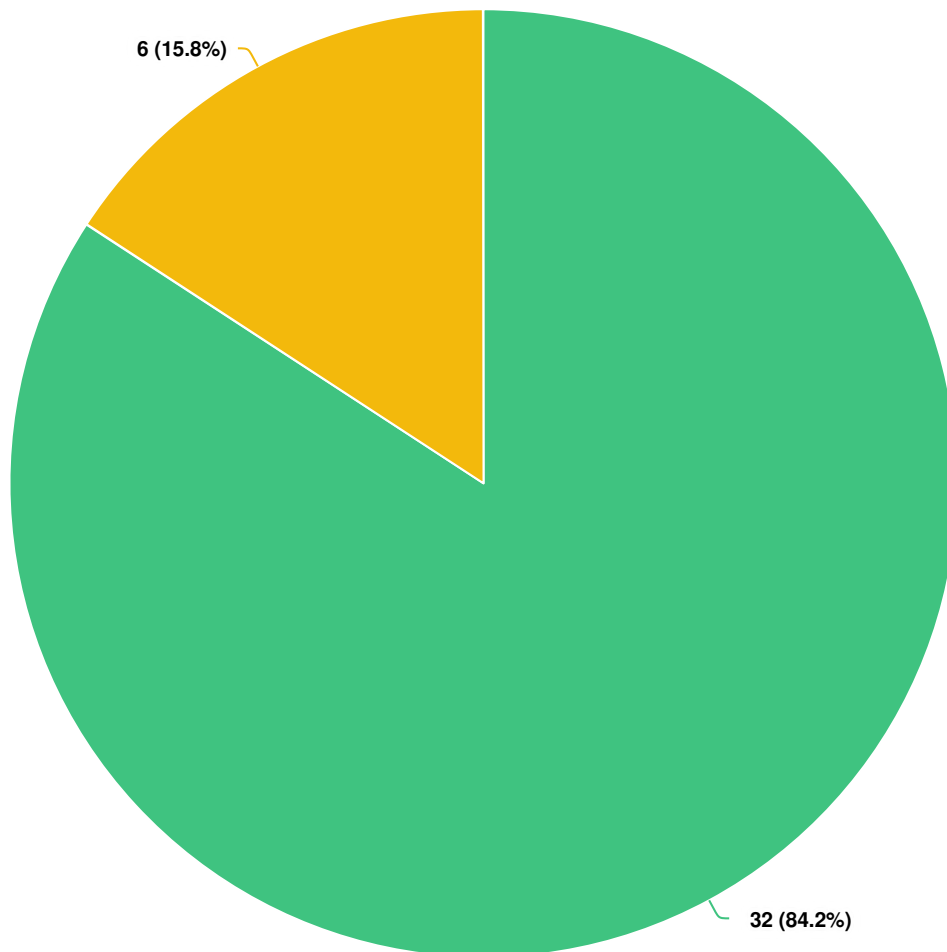


Question options

- Public Education, Outreach and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management for New Development and Redevelopment
- Stormwater Infrastructure and Street Management
- Industrial and Commercial Stormwater Discharge Management
- Stormwater Monitoring

Optional question (33 response(s), 5 skipped)
Question type: Checkbox Question

Q8 Have you noticed “No Dumping, Flows to Waterways” markers on storm drains?



Question options

☒ Yes ☐ No

Optional question (38 response(s), 0 skipped)

Question type: Radio Button Question

Q9 | Please share any suggestions on how ACHD and/or the public working with ACHD can further reduce pollutant discharges to waterways from the storm drain system.

Screen Name Redacted

5/23/2024 11:57 AM

I am an educated person, do not use chemicals on my lawn, do my best to keep leaves and letter cleaned from the street in front of my house. What I really want to know is when ACHD will be sweeping my street so that I can ensure my car is not blocking the path. Better communication and scheduling on this front would go a long way in meeting our respective objectives.

Screen Name Redacted

5/23/2024 12:17 PM

Sweep the streets and let people know exactly when the sweepers will be by. It's nonsensical with technology not to know exactly where the streetsweepers are at a given time. Warn the residents so they can move their cars and the streets can be properly swept. Also, many streetsweepers ignore you when you go outside to move the car. I guess they figure we had the chance and lost it.

Screen Name Redacted

5/23/2024 05:24 PM

I think some people who have moved here are use to their old city telling them to rake leaves into the gutter and they will be picked up. More publicity not to do this.

Screen Name Redacted

5/23/2024 05:56 PM

I have noticed some of those no dumping tags in my neighborhood have fallen off and need to be replaced.

Screen Name Redacted

5/23/2024 09:13 PM

Update storm water drainage system in my area. I used to call and give pictures for 30 + years, nothing has ever been taken seriously

Screen Name Redacted

5/25/2024 02:42 PM

More education- like this survey. Thanks

Screen Name Redacted

5/27/2024 09:00 PM

More street sweepers, especially on the freeway as well as more garbage pickup on the freeway

Screen Name Redacted

5/28/2024 09:23 AM

Stop placing reflective markers in the roadways. Each winter these are shaved off by snowplows and end up in the landfill, people's yards, or in the SW system. This is a huge waste to time and money.

Screen Name Redacted

5/28/2024 07:55 PM

I would love to see solutions like curb cutting, more swales, or other techniques to increase water infiltration and retention vs sending

water downstream - especially in new construction areas.

Screen Name Redacted

6/05/2024 06:58 AM

Reduce road salt usage. Consider environmental fate of recalcitrant vehicle dispersed chemicals (eg 6PPD) and micropolymers when designing storm system. Consider potential groundwater impact to local, traditional drinking water wells that complete in shallow aquifer when designing roadways and storm systems.

Screen Name Redacted

6/06/2024 03:46 PM

Some storm drains in the Central Rim area are missing the logo and new ones would help. Outreach to the homeowners to let them know they are responsible for keeping gutters clean. Not all homes are owner occupied and not all homeowners know their responsibilities. Yard signs are one way of reaching out and we did that. Multiple outreach efforts are needed.

Screen Name Redacted

6/15/2024 12:28 PM

County should better enforce leash laws and dog license registration and hold pet owners accountable for picking up pet waste.

Screen Name Redacted

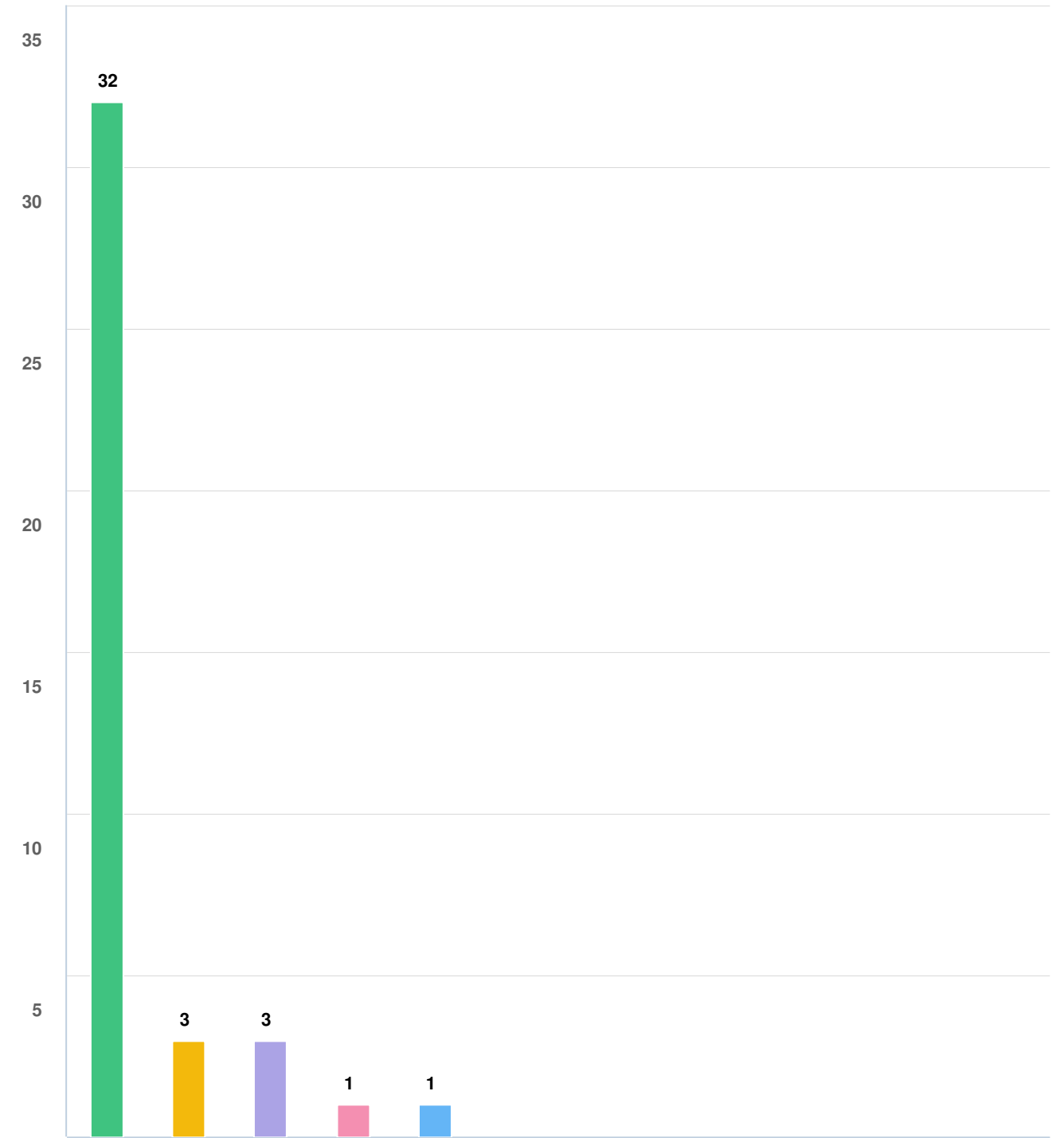
8/08/2024 03:00 PM

I think the demonstrating harm of what is happening/can happen when our waterways become polluted might make people think twice. For example, let people know that if our stormwater pollutes the river too much, they won't be able to fish or recreate there anymore (point to the Seine in Paris). Additionally, show pictures of what happens in the winter time in the treasure valley when stormwater drains become blocked and flood roadways. I think these examples would help compel folks to act. Further, having two documents equating to a total of 900+ pages for the general public to review is laughable. The video is a step in the right direction but doesn't go into any of the plan details which is needed for people to give educated and valuable feedback.

Optional question (13 response(s), 25 skipped)

Question type: Essay Question

Q10 Please let us know how you heard about this project! Check all that apply.

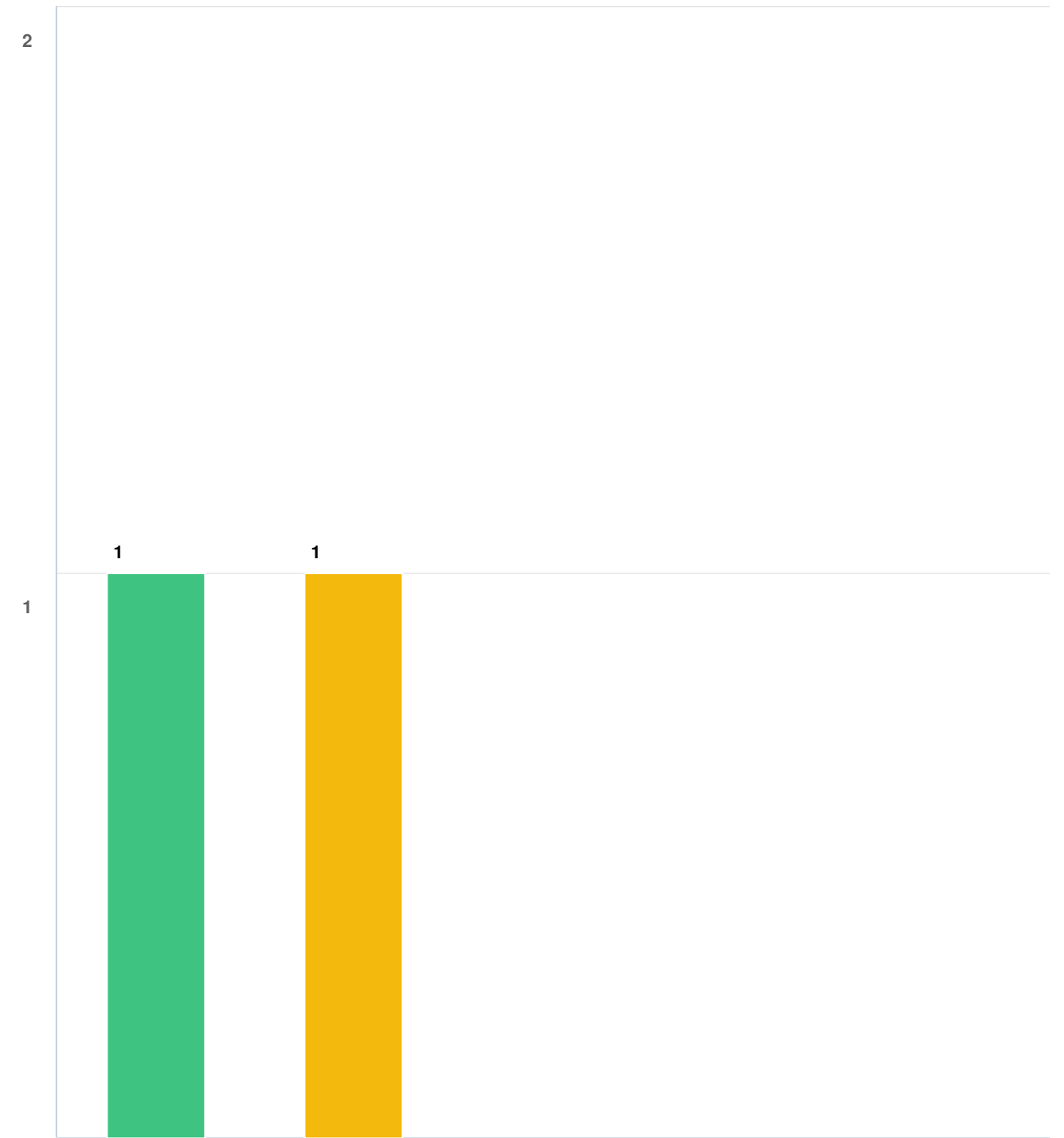


Question options

- Email
- Word of mouth (i.e. from you neighbor, friends, family)
- Facebook
- Twitter
- Other (please specify)
- Postcard
- Sign on the street
- Newspaper Ad
- TV/ Radio
- Instagram
- Nextdoor
- Text Alert

Optional question (38 response(s), 0 skipped)
Question type: Checkbox Question

Q11 Are you a member of one of ACHD's advisory Committees? If yes, please choose which one.

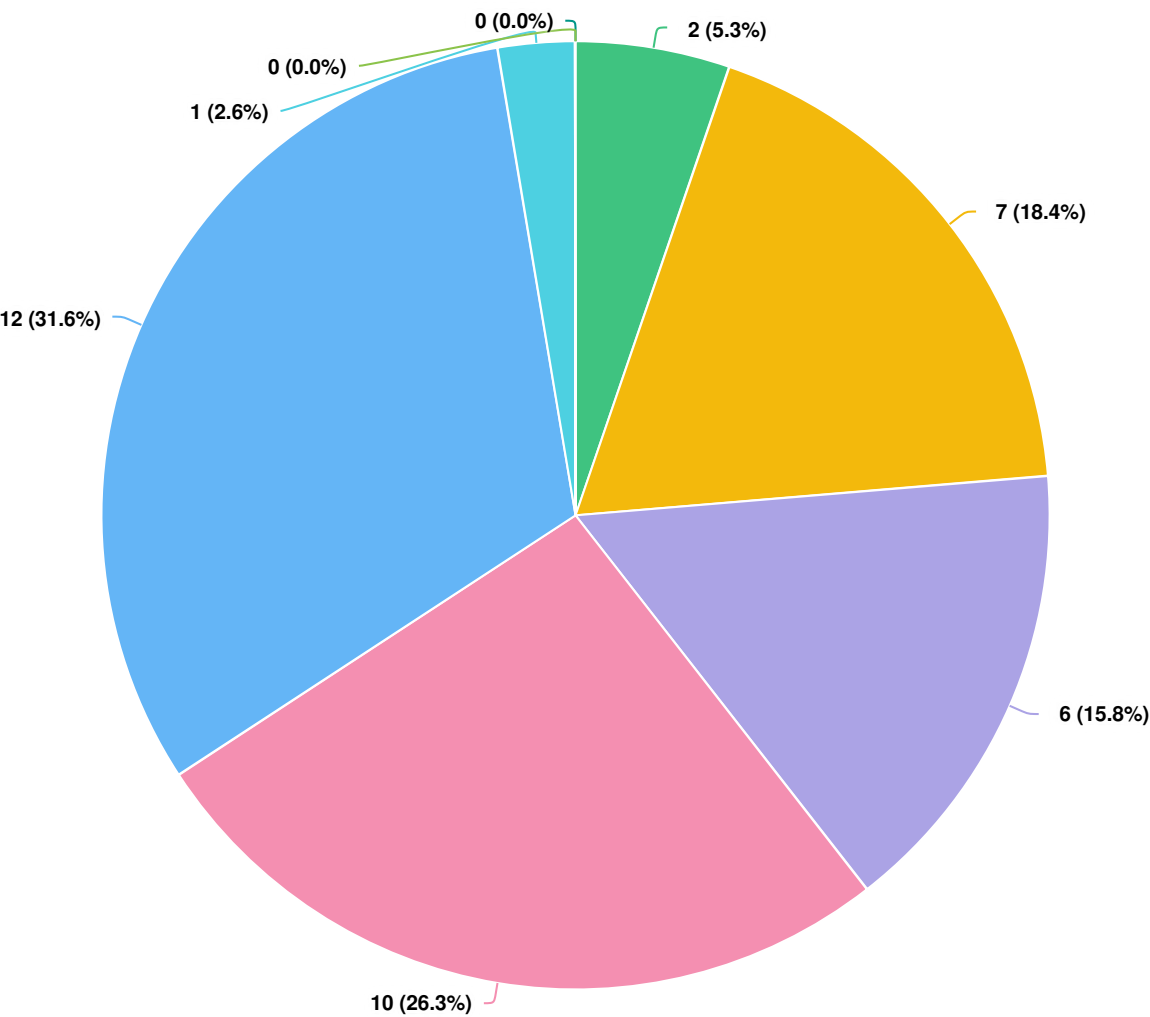


Question options

- Bicycle Advisory Committee
- Pedestrian Advisory Group
- ADA Advisory Committee
- Capital Investment Advisory Committee
- Commercial Developers Advisory Committee

Optional question (2 response(s), 36 skipped)
Question type: Checkbox Question

Q12 What is your age?



Question options

25-34 35-44 45-55 55-64 65 or over I prefer not to answer. 0-18 19-24

Optional question (38 response(s), 0 skipped)
Question type: Radio Button Question

Attachment G: Dry Weather Outfall Screening Plan, 2024 Update



Dry Weather Outfall Screening Plan

Dry Weather Outfall Screening Plan

Prepared for
Ada County Highway District Boise, Idaho
Version 2.0 (edited 2024)

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List of Abbreviations

ACHD	Ada County Highway District
BOD ₅	Biological Oxygen Demand – 5 day
CFR	Code of Federal Regulations
COC	Chain of Custody
DO	Dissolved Oxygen
DQI	Data Quality Indicator
DQO	Data Quality Objective
DWOSP	Dry Weather Outfall Screening Plan
EPA	Environmental Protection Agency
ERP	Enforcement Response Policy
IDDE	Illicit Discharge Detection and Elimination
MDL	Method Detection Limit
mL	Milliliter
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NWS	National Weather Service
PRDL	Project Required Detection Limit
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
SWMP	Stormwater Management Plan
WQL	Boise City Public Works Water Quality Laboratory

Executive Summary

The National Pollutant Discharge Elimination System (NPDES) Phase I Permit No. IDS027561 (third cycle) and Phase II Permit No. IDS028185 (second cycle) (Permits) were issued effective October 1, 2021, and February 1, 2021, respectively. The NPDES Phase I Permit authorizes discharges to the Municipal Separate Storm Sewer System (MS4) within City of Boise and Garden City, Idaho and was issued collectively to Ada County Highway District (ACHD), Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3, referred to as the “Permittees.” The NPDES Phase II Permit is issued solely to ACHD and authorizes discharge to the MS4 in the Boise Urbanized Area. Under these Permits, ACHD is required to implement and update as necessary, a dry weather analytical and field screening monitoring program consistent with the monitoring and evaluation program objectives as described in Permit Part 3.2.5., Dry Weather Outfall Screening Program. This Dry Weather Outfall Screening Plan (DWOSP) has been developed to fulfill NPDES Permit requirements for outfalls owned by ACHD and outfalls of unknown ownership. The outfall inventory includes all identified outfalls regardless of ownership within Ada County.

The DWOSP (Version 1.0) was developed in 2014 to document analytical and field screening procedures to detect and eliminate illicit discharges in the NPDES Phase I Permit Area. This updated DWOSP (Version 2.0) guides dry weather screening activities throughout Ada County (Phase I and Phase II Permit areas). Past screening strategies have been updated based on experience to prioritize efforts and identify outfalls with dry weather flows associated with irrigation return flows or groundwater and to gather appropriate documentation to support those determinations. This plan describes the overall approach to dry weather outfall screening and provides comprehensive guidance for outfall investigation efforts, including prioritization of outfalls, data collection efforts, recordkeeping, and reporting activities.

The DWOSP follows the general guidance of the Quality Assurance Project Plan for NPDES Stormwater Permit Monitoring (QAPP) (ACHD, 2023). Certain Quality Assurance/Quality Control (QA/QC) procedures that have been identified using United States Environmental Protection Agency (EPA) guidance for QAPPs are also included in this plan. The QA/QC procedures are designed to ensure data collected meet specific data quality objectives developed specifically for Permit-required monitoring activities. The plan documents QC sampling procedures, data acceptance criteria, and data management details specific to the Dry Weather Outfall Screening Program.

Section 1

Introduction

1.1 Basis for Dry Weather Outfall Screening Plan

The Permits require a dry weather analytical and field screening monitoring program that emphasizes frequent, geographically widespread monitoring to detect illicit discharges and illegal connections and to reinvestigate potentially problematic outfalls. Permit requirements specific to the Dry Weather Outfall Screening Program include the following:

- Outfall Identification and Screening Protocols (Part 3.2.5.1). Update the stormwater outfall identification and screening plan including reconnaissance activities, information used to prioritize outfalls for screening, ACHD's approach to conducting analyses of identified flows, and the trigger thresholds for follow-up action.
- Number of Outfalls to be Screened (Part 3.2.5.2). Conduct visual dry weather screening of at least 20% of total outfalls per year, with 30% of those to be screened between June 1st and September 30th.
- Monitoring of Illicit Discharges (Part 3.2.5.3). Identify the source of dry weather flows using indicator constituents listed in the permit.
- Maintain Records of Dry Weather Screening (Part 3.2.5.4). Keep detailed records of dry weather outfall screening activities and results and document follow-up activities.

1.2 Plan Objectives

This plan provides guidance for field reconnaissance activities, monitoring, and recordkeeping efforts performed by ACHD. To standardize ACHD's approach to addressing quality assurance recommendations by the EPA for all Permit required monitoring programs, each quality assurance element is addressed as either a program element or a screening plan element.

The DWOSP elements are described in full in this document, while elements applicable to all monitoring programs are addressed in the QAPP. Monitoring program elements consist of the standardized monitoring components that all individual monitoring or screening plans developed under the Permit reference. A list of program and screening plan elements is included in Table 1-1.

Table 1-1. QAPP Element Document Reference		
EPA-Recommended QAPP Elements	Monitoring Program Element (Addressed in the QAPP)	Dry Weather Outfall Screening Plan Element; Section
Group A: Project Management		
A1 – Title and Approval Sheet	X	
A2 – Table of Contents	X	
A3 – Distribution List	X	
A4a – Project Organization	X	
A4b – Task Organization		X; 1.3
A5 – Problem Definition/Background	X	
A6 – Project/Task Description		X; 1.2
A7a – Quality Objectives and Criteria for Measurement Data	X	
A7b – Method-Dependent Criteria for Measurement Data		X; 5.2
A8 – Special Training Needs/Certification	X	
A9 – Documents and Records	X	
Group B: Data Generation and Acquisition		
B1 – Sampling Process and Design		X; 2
B2 – Sampling Methods		X; 3, 4.3
B3 – Sample Handling and Custody		X; 4.3.2
B4 – Analytical Methods		X; 4.3.1
B5a – Quality Control	X	
B5b – QA/QC Sampling Schedule		X; 5.1
B6 – Instrument/Equipment Testing, Inspection, and Maintenance		X; 3
B7 – Instrument/Equipment Calibration and Frequency		X; 3
B8 – Inspection/Acceptance of Supplies and Consumables	X	
B9 – Non-direct Measurements	X	
B10 – Data Management	X	
Group C: Assessment and Oversight		
C1 – Assessments and Response Actions	X	
C2 – Reports to Management	X	
Group D: Data Validation and Usability		

Table 1-1. QAPP Element Document Reference		
EPA-Recommended QAPP Elements	Monitoring Program Element (Addressed in the QAPP)	Dry Weather Outfall Screening Plan Element; Section
D1 – Data Review, Verification, and Validation	X	
D2 – Verification and Validation Methods	X	
D3 – Reconciliation and User Requirements	X	

1.3 Task Organization

Key roles and job functions are described in the QAPP. The DWOS Program organization chart is presented in Figure 1-1.

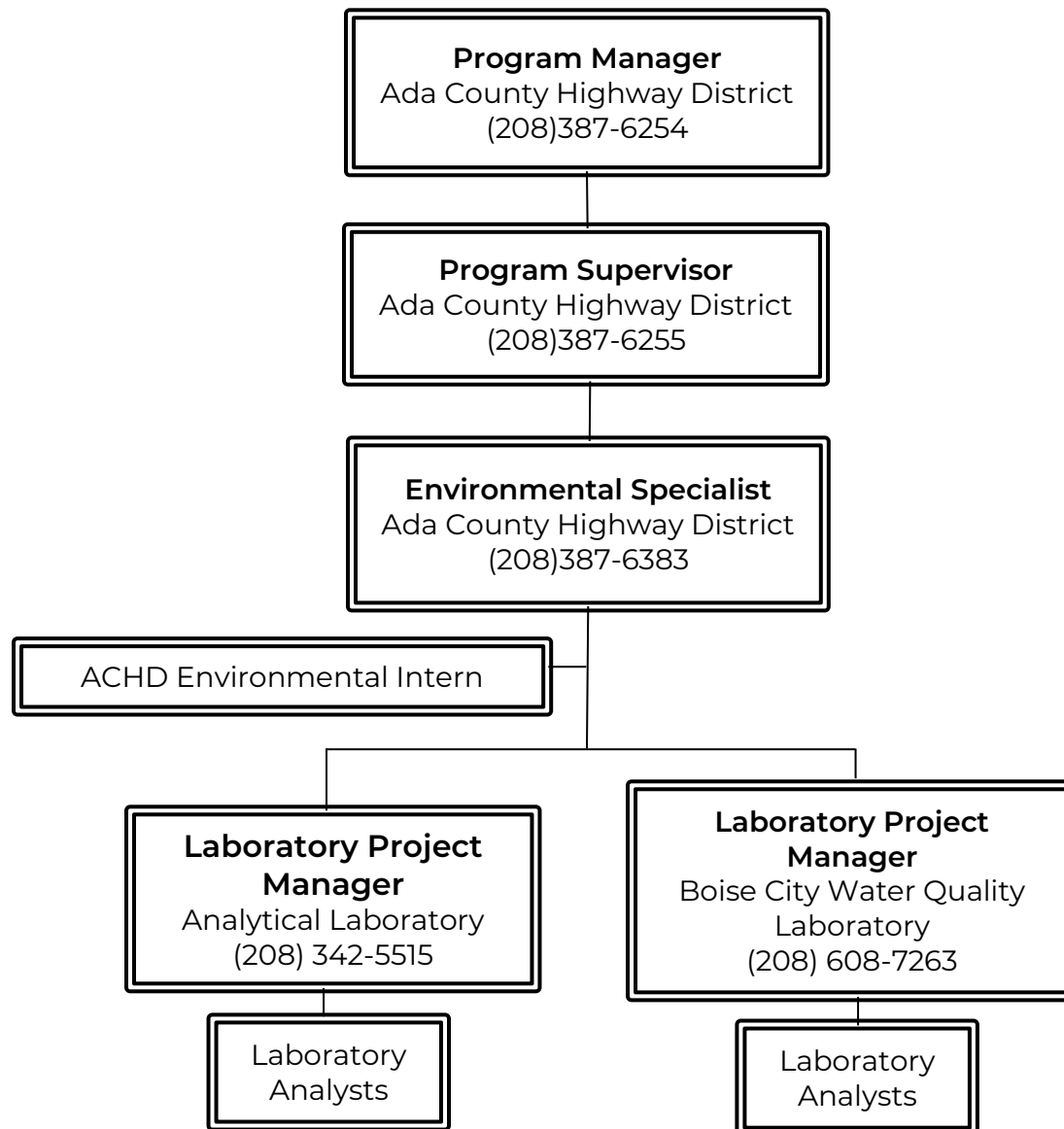


Figure 1-1. Dry weather outfall screening organization chart

Section 2

Screening Process Design

The screening process design consists of the planned and consistent approach to screening Municipal Separate Storm Sewer System (MS4) outfalls to detect illicit discharges and illegal connections. The screening process was developed to enable ACHD to inspect all outfalls owned by ACHD during a five-year period. The screening process includes provisions for prioritizing and sorting the outfalls to be screened such that investigations conducted each year are distributed across the Permit area and that all major land uses are represented.

Data collection includes qualitative characteristics of the outfalls, flow measurements, water quality data, and information useful in tracing flow to the source and eliminating illicit discharges and illegal connections. Section 2.1 provides a description of the information currently available for outfalls owned by ACHD. Section 2.2 describes ACHD's approach to prioritizing outfall screening in each year and across the five-year period during which all outfalls owned by ACHD will be screened. This approach allows ACHD to meet the Permit requirement of screening 20 percent or more of the total outfalls each year. Project details addressing data collection efforts including monitoring equipment used, outfall assessment procedures, and flow monitoring methods are included in sections 3 and 4.

2.1 Outfall Inventory and Receiving Waters

Outfalls drain all major land uses within the Permit areas and have the potential to convey illicit discharges to receiving waters. Currently, ACHD maintains over 1,540 outfalls throughout Ada County. In addition to ACHD owned outfalls and shared outfalls that ACHD screens, the inventory includes Permittee and privately owned outfalls and outfalls of unknown ownership. As outfalls are investigated, changes to the inventory are common due to identifying ownership, construction, and new information. Annually, the updated Phase I and Phase II Permit outfall inventories are included in the respective Stormwater Management Plan (SWMP) and posted to ACHD's website. ACHD outfalls discharge to over a hundred different waterways including Waters of the U.S. and numerous canals, laterals, and drains. All waterbodies that receive stormwater discharges from ACHD's MS4 outfalls and the number of outfalls discharging to each are listed in the Phase I and Phase II SWMPs. Additionally, specific reaches of receiving waters listed as impaired waters on the Idaho Department of Environmental Quality 303d list and pollutants of concern associated with impairment are available in ACHD's SWMPs.

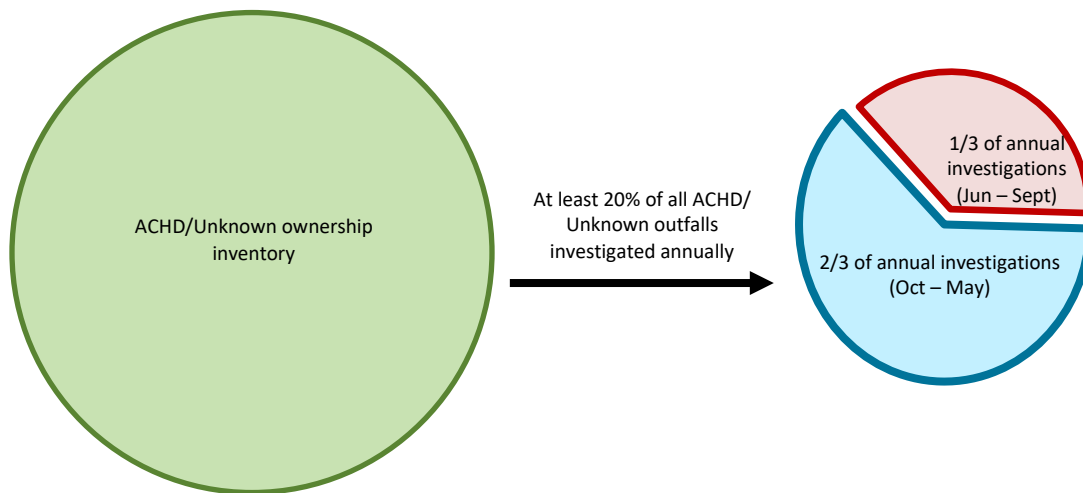
2.2 Outfall Prioritization and Screening Schedule

Planned prioritization of outfalls selected for screening helps to ensure that Permit requirements are met in the outfalls screened each year. The requirements described in Permit Parts 3.2.5.2 and 3.2.5.3 for the number of outfalls to be screened annually and monitoring illicit discharges have been compared with the information summarized in Section 2.1 to prioritize targeted outfalls. Five-year screening schedules for Phase I and

Phase II are created to screen 20 percent of ACHD and unknown ownership outfalls annually. The schedules are created by the Microsoft Excel RANDBETWEEN function that assigns an inspection year to each ACHD and unknown ownership outfall to ensure geographic distribution. The randomizer is then reviewed to confirm Permit Part 3.2.5.2 is being met.

Figure 2-2 represents a summary of the approach ACHD has developed to conduct screening in accordance with the requirements of Permit part 3.2.5.2 for the Phase I Permit Area. Of the outfalls selected for inspection each year, at least one third of the outfalls will be screened between June 1 and September 30. While the Phase II Permit requirements include a minimum screening of 50 outfalls, ACHD exceeds this minimum requirement by implementing the same screening schedule (20% of ACHD and unknown ownership outfalls) in the Phase II Permit Area to ensure each outfall is screened every permit cycle.

Figure 2-2 Outfall screening schedule organization



Prioritization

At the beginning of each Permit year, field and analytical data will be used to create a prioritization work plan that includes previously documented flows, without a confirmed source, and follow up actions in addition to the 20 percent of outfalls to be screened that year. Additionally, priority will be given to outfalls that are the subject of public complaints or that ACHD personnel believe may have an increased illicit discharge potential, regardless of if they were originally scheduled for the year. Examples of increased risk include identification of cross connections, problems with aging infrastructure, or activities and conditions in the drainage area likely to result in an illicit discharge. In these instances, all outfalls originally scheduled for investigation will remain on the schedule for that year, and outfalls at increased risk will undergo screening at that time in addition to their placement on the five-year schedule.

Previously Documented Flows

Previously documented flows without a confirmed source will continue to be monitored until a source has been determined to gain a better understanding of flow duration and pollutant loads. Newly discovered flowing outfalls will continue to be monitored and sampled annually until flow duration and pollutant load estimates are well documented.

ACHD has observed seasonal variation in flows typically attributable to irrigation and high groundwater. While inspections are not limited to certain times of the year, historical flow and analytical results may be used to further aid in decision making for future inspections.

Substantial flows that are believed to be continuous may be reinvestigated multiple times during the first year to collect additional flow measurements and document the approximate duration the flows are present. Outfalls with lower flows or intermittent flows may be reinvestigated as time allows at a lower priority. Previously documented flowing outfalls will only be counted as part of the 20 percent of total outfalls screened annually if there is an overlap between the flowing outfalls and the 20 percent selected for the year. Flowing outfalls confirmed to be discharging irrigation or groundwater seepage flows, with sufficient data and documentation, will be sampled when they are selected as part of the 20 percent of total outfalls screened each year.

Section 3

Monitoring Equipment

This section provides an overview of the types of monitoring equipment used in the Dry Weather Outfall Screening Program. Standard Operating Procedures (SOPs) and procedure guidance documents are included in Appendix B and provide greater detail describing how equipment is used to accomplish the goals of the Dry Weather Outfall Screening Program. Manufacturers' recommendations for proper use and maintenance are either included in the SOPs or the equipment manuals referenced in the SOPs.

3.1 Stormwater Test Kit

ACHD utilizes the Hach Stormwater Test Kit for field analysis of total chlorine, total copper, and total phenols. Chemical analyses are conducted according to the manufacturer's instructions (Appendix B) using colorimetric comparison of samples treated with reagents to estimate concentration of the constituents of concern. The test kit includes dissolvable, premeasured reagent packets specific to each chemical analysis, viewing tubes, and a color comparator, which holds the viewing tubes in line with a rotating color wheel. The kit also includes a long path viewing adaptor to accommodate the full range of targeted chemical analyses with an incremental accuracy of 0.1 mg/L.

Calibration and Maintenance

A check of reagent accuracy can be completed using a reagent specific standard solution. Accuracy will be tested for each packet of reagents used following the test procedures outlined in Appendix B. ACHD is responsible for calibration and maintenance and will keep a digital log for reference.

Color viewing tubes, containers, and utensils used for mixing samples will be rinsed with deionized water immediately after sample results are recorded for each analysis. The stormwater test kit will be kept dry and reagent packets will be kept in water-resistant containers between use.

3.2 Flow Probe

ACHD utilizes a Global Water FP211 Flow Probe for collecting velocity measurements to estimate discharge volume of flowing outfalls. The velocity meter uses a propeller attached to a telescoping handle. The propeller is protected by a plastic shield that extends around the outer diameter of the propeller to avoid bumping the propeller against the bottom of the pipe/channel or other obstacles.

A small computer with an LCD screen is attached to the handle opposite the propeller. The computer displays velocity as an instantaneous measurement as well as the minimum, maximum, and average velocity readings. The flow probe computer is zeroed out immediately prior to collecting new readings.

Discharge flow measurements using the Global Water Flow Probe are discussed in detail in Section 4.3.3. If another flow probe is substituted for the Global Water Flow Probe, the substitute will be verified to have the same or higher degree of sensitivity and accuracy.

Calibration and Maintenance

Per the manufacturer's recommendations, the flow probe will be allowed to dry between uses and washed with soap as needed to maintain proper operation. The flow probe does not require routine maintenance or calibration other than being kept clean.

3.3 Handheld Field Parameter Instruments

During discharge sample collection, specific parameters will be measured directly in the field using a variety of handheld instruments to collect readings including pH, conductivity, dissolved oxygen content, and temperature. Measurements of field parameters will be collected immediately after sample collection. If parameters are measured more than 15 minutes after sample collection, the data will be qualified. Field parameter instruments will be rinsed with distilled water between measurements.

Handheld field parameter instruments may include the following specific instruments. If any other instrument is substituted for an instrument listed below, the substitute will be verified to have the same or higher degree of sensitivity to maintain data quality and program safety objectives. The following is a list of program approved instruments.

- In-Situ Inc. Aqua TROLL 400 Multiparameter Handheld – pH/DO/conductivity/temperature meter
- Hach 2100Q turbidity meter

Calibration and Maintenance

The Aqua TROLL 400 Multiparameter meter will be calibrated according to manufacturer's recommendations. Prior to use each day, the DO sensor will be calibrated. Maintenance will be completed regularly and as needed by following the directions listed in Appendix B. A calibration and maintenance log will be kept in the ACHD Stormwater Lab.

The Hach 2100Q Turbidity meter will be calibrated regularly with specific StablCal Standards following the procedures in Appendix B. Calibration readings will be recorded digitally on the ACHD network.

Section 4

Screening and Sampling Procedures

4.1 Weather Information and Field Preparation

Permit requirements for dry weather outfall screening require an antecedent dry period of 72 hours or more of 0.10 inches or less of precipitation. To meet these criteria, staff will verify the antecedent dry period by accessing continuous weather observations published by the National Weather Service (NWS) for the weather monitoring station located at the Boise Airport. Observations may be obtained by visiting the NWS webpage.

During winter months, field staff will be cognizant of significant snowmelt events that could result in stormwater flows during antecedent dry periods. A conservative approach will be used and screening avoided during these periods.

Field equipment and supplies may vary based on the location and type of terrain expected to access outfall(s) planned for investigation. Prior to initiating investigation activities, field staff will perform a cursory check of all equipment to be used to verify proper function and safe operation. Necessary supplies, including field investigation forms and sampling and testing supplies, will be restocked, as necessary, and kept in a clean and secure location between investigations.

4.2 Outfall Investigation

The Dry Weather Outfall Screening Program is built around the information obtained during outfall investigation activities. Outfall screening and spill reporting are the main methods for discovery of illicit discharges to the MS4. A dry weather investigation consists of verification of the information ACHD has for the outfall and its conveyance as well as qualitative descriptions of the conditions present at the time of the investigation. Investigations also include a review of records from past visits to identify persistent or new conditions.

Upon arrival at the outfall, ACHD personnel will conduct physical observations in the order listed on the Outfall Inspection Form, available in Appendix C. ACHD records the field observations electronically using the Survey123 for ArcGIS® Application. Information collected for each outfall includes:

- The configuration, construction, dimensions, material, and condition of the outfall.
- Observations of the outfall and surrounding area including the staining, sedimentation, scour, and condition of vegetation.
- Clarity, odor, color, floatables, and intensity of flow, where present.
- Presence of trash in or from outfall.
- Photographs of the outfall, surrounding area, flows, if present, and any other features or conditions useful or pertinent to the outfall inventory, screening activities, or reporting.

If a discharge is present at the time of investigation, the flow volume will be measured as described in Section 4.3.3. Qualitative characteristics of the flow such as color, odor, and clarity will also be recorded. Sample collection will be scheduled for a later date due to advance notice requirements for the Boise City Public Works Water Quality Laboratory (WQL). Sample collection and flow measurement methods are described in the discharge monitoring section below.

4.3 Discharge Monitoring

To accommodate holding time requirements for E. coli, advance notice is typically required before delivering samples to the WQL. Therefore, discharges are not typically sampled during first discovery. New discharges will be sampled as soon as possible, but at least within 30 days.

4.3.1 Discharge Parameter Analysis

The analytical methods planned for use in discharge monitoring when flow is present are included in Table 4-1 below. The Permits require that “sample collection, preservation, and analysis must be conducted according to sufficiently sensitive methods/test procedures approved under 40 Code of Federal Regulations [CFR] Part 136, unless otherwise approved by EPA...Where an approved 40 CFR Part 136 method does not exist, and other test procedures have not been specified, any available method may be used after approval from EPA” (6.2.7). As such, the methods identified below are the selected and preferred options. However, sample, laboratory, or instrument conditions may require the substitution of an alternate Part 136 method.

The analytical requirements for dry weather discharge samples are listed in the Permits. Water quality data will be collected using a combination of field parameter measurements using handheld meters, field analysis conducted by field staff, and laboratory analysis. Table 4-1 identifies the constituents to be identified, analytical method, and type of analysis.

Table 4-1. Analytical Methods for Dry Weather Discharge Constituents

Constituent	Sample Container	Analytical Method	Holding Time	Sample Analysis Type
pH	500 mL amber glass Or 2 L clear glass	EPA 150.1, 150.2	15 minutes	Field Parameter
Temperature		EPA 170.1		
Turbidity		EPA 180.1		
Dissolved oxygen (DO)		SM 4500 G, EPA 1002-8-2009		
Conductivity		EPA 120.1		
Total chlorine	1 L sterilized plastic	DPD ¹	15 minutes	Field Analytical Test
Total copper		bicinchoninate hydrosulfite reduction	60 minutes	
Total phenols		4-aminoantipyrine	60 minutes	
E. coli	250 mL sterilized plastic	IDEXX Colilert	8 hours	Laboratory Analytical Test
Total suspended solids	4.3 L plastic	SM 2540 D	7 days	
Total phosphorus	500 mL plastic	EPA 200.7	28 days	
Dissolved orthophosphate	250 mL plastic	EPA 200.7	48 hours	
Surfactants (detergents)	1 L plastic	SM 5540 C	48 hours	

¹DPD = *N,N* Diethyl-1,4 Phenylenediamine Sulfate

4.3.2 Discharge Sample Collection

Samples of discharges documented during investigations will be collected using grab sampling methodologies. Sample collection at each outfall will be accomplished by filling the sample container for each analysis from a point near the center of the flow at the outfall. Depending on outfall configuration, access constraints, and flow volume, the grab samples will be collected using a swing sampler or by hand and safely positioning the sample bottle in the discharge stream. SOPs for grab sample collection are included in Appendix B. Immediately following sample collection, field staff will record the collection date and time for each sample using the digital Outfall Investigation Form in the Survey123 for ArcGIS® application.

Field Analytical Samples

Field analyses including total chlorine, total copper, and total phenols will be conducted using the Hach Stormwater Test Kit. Analysis will be completed within 15 minutes of sample collection. Each analysis will be conducted following the procedures outlined in the Hach Stormwater Test Kit manual. The specific test procedures from the manual are available in Appendix B.

Field Parameters

Field parameters including temperature, pH, conductivity, DO, and turbidity will be measured in the field using handheld instruments to avoid changes that may occur between the time when the sample is collected and the time of analysis at the laboratory.

Laboratory Analytical Samples

Samples will be collected according to the constituents and containers listed in Table 4-1. Preservation techniques in the field are limited to cooling samples to a target sample temperature of less than 6°C, but above freezing. After the samples are collected, sufficient ice will be placed in coolers with the samples to maintain the samples at a maximum temperature of 6°C during transport to WQL.

Chemical preservation measures required for EPA standard methods are accomplished by laboratory personnel after samples are submitted. The EPA standard method for measurement of dissolved orthophosphate requires samples to be filtered within 15 minutes of sample collection. Samples for dissolved orthophosphate will be filtered in the field using a peristaltic pump and laboratory-prepared tubing. Sample filtration will be performed following the procedures outlined in the field filtering SOP in Appendix B.

Chain of Custody Procedures

Standard chain of custody (COC) procedures will be followed for all analytical laboratory samples. COC forms, available in Appendix C, will be completed prior to submitting the samples to the laboratory. Information recorded on the COC includes the following:

- Name of sampler
- Sample identification (outfall identification number from which the sample was collected)
- Analyses requested
- Sample time
- Sample date

A sample is “in custody” if it is either in actual physical possession of authorized personnel or in a secured area that is restricted to authorized personnel. Such areas include laboratory refrigerators, the ACHD Stormwater Lab, ACHD office space, and ACHD vehicles. All transfers of custody will be recorded by signature, date, and time by both the individual relinquishing custody and the one receiving custody. This information is placed in the designated area at the bottom of standard COC forms.

Samples may be stored for short periods of time in coolers with ice at the ACHD Stormwater Lab or offices while awaiting submittal to WQL. In these instances, the COC forms will be reviewed and signed by the custody holder listed on the COC form. The COC forms will be kept with the samples at all times.

Sample collection times for QC samples will be recorded as 12:00 on the COC form to maintain duplicates as laboratory blind samples. The actual collection time will be recorded on the field form. The QAPP includes details on the approach to data validation as it pertains to holding times and laboratory qualifiers for QC samples.

4.3.3 Discharge Flow Measurement

Flow measurements will be collected when discharges are present to properly document flows and to aid in pollutant loading estimates. Anticipated flow measurement methodologies include use of a velocity probe in conjunction with pipe dimensions, bucket testing, and visual qualitative assessment. A full description of each flow measurement method is included in the flow measurement section of Appendix B.

For relatively small discharges, a bucket flow test may be used in which a bottle ranging from 4.3L to 500mL, depending on flow intensity, is placed under the outfall to capture all flow from the outfall for an appropriate duration. This information is then used to calculate flow in cubic feet per second.

For higher flows, the velocity probe is used to obtain an average velocity measurement for the flow. The average velocity is multiplied by the area of the flow profile to calculate discharge in cubic feet per second. The SOP includes the measurement and calculation approach for circular pipes, elliptical pipes, and natural or irregular channels.

In situations where flow is present and the outfall is not physically accessible, a qualitative assessment of flow will be recorded and accompanied by a comment stating that the outfall was inaccessible for flow measurement. Qualitative flow assessment will be described using three descriptive categories: trickle, moderate, or substantial. Guidance in the flow measurement section of Appendix B defines each of the qualitative flow measurement terms that will be used and provides guidance for selecting the most appropriate descriptive term.

4.4 Flow Source Tracing

After completing the outfall investigation, discharges from flowing outfalls will be traced to the source of the flow. Finding the source of the discharge often provides valuable information to help determine if the discharge is allowable under Permit Part 2.4.5.1.

Allowable non-stormwater discharges include the following:

- Discharges covered under a separate NPDES permit;
- Discharges originating from emergency firefighting activities;
- Discharges resulting from a spill or from unusual and severe weather events;
- Emergency discharges required to prevent imminent threat to human health or severe property damage; and
- Discharges that are not a source of pollution to waters of the United States.

Sources will be traced by following drop inlets and manholes upstream of the outfall using field maps showing the drainage system. Smoke testing, dye testing, photos, and video recording will be used as appropriate to determine the source of the discharge.

Discharge sampling results can often be used to assist in identifying potential sources of pollution. The source tracing flow chart in Appendix D will be used in conjunction with analytical results, field observations, and drainage area analysis to identify likely source(s) of illicit discharges or illegal connections.

4.4.1 Discharge Thresholds

Previously documented flowing outfalls, as described in this plan, Section 2.2, may be removed from the annual historical flows sampling list once there is sufficient

documentation supporting the determination that the flow is from irrigation, groundwater, or another allowable non-stormwater discharge. Thresholds based on analytical results and receiving waters have been developed to help make this determination. Appendix E includes a description of the thresholds for each monitored constituent and the decision points to be used in evaluating compliance with Permit Part 2.4.

4.5 Escalation and Elimination

The ACHD is required to take appropriate action to address and eliminate the source of an ongoing illicit discharge within 60 days of detection, to the extent allowable under Idaho state law (Permit Part 3.2.6). In 2024, ACHD drafted an Illicit Discharge Detection and Elimination (IDDE) Enforcement Response Policy (ERP) to provide guidance to ACHD staff responding to non-permitted, non-stormwater discharges such as illegal dumping. The IDDE ERP is available in Appendix F. Additionally, ACHD has established interagency agreements with the City of Boise and Garden City for enforcement of stormwater ordinances in City codes Title 8, Chapter 15 and Title 4, Chapter 14, respectively.

The agreements address enforcement of these ordinances to eliminate illicit discharges and illegal connections and contain escalation measures for application, as necessary. ACHD may at any time provide the appropriate jurisdictional authority with evidence of the discharge and the source of flow. Public or private discharges may require action by the city; other discharges may require involvement from the Ada County Sheriff's Office. If the source of the discharge cannot be determined, ACHD will provide available information to assist the jurisdictional authority in eliminating the discharge.

Section 5

Quality Assurance/Quality Control

5.1 QC Sampling Schedule

The QC sampling schedule developed for the Dry Weather Outfall Screening Program consists of a combination of field QC samples and laboratory QC samples. QC sampling for this program is designed to assess field and laboratory analytical test procedures. QC sample types are fully described in the QAPP. QC sampling intervals will follow the schedule detailed in Table 5-1. Laboratory QC sample results are included in each analytical report.

Table 5-1. Field QC Sample Collection Schedule		
QC Sample Method	Sampling Frequency ²	Percent of Total Data Represented
Field Duplicate	1 suite per 20 samples	5%
Field Blank	1 suite per 20 samples	5%

¹QC sample analysis will be performed on laboratory analytical samples only. Analyses conducted by ACHD in the field rely on calibration and accuracy check methods described in Section 3.

²Frequency is determined by the number of screening program samples collected, regardless of result.

ACHD may choose to conduct additional QA/QC to address data discrepancies, potential sample contamination, or other QA/QC issues. These events will be handled on an as-needed basis, depending on the issue(s) involved.

5.2 Data Quality Objectives (DQO)

Field screening efforts will provide data of sufficient quality and quantity, in accordance with Permit requirements, to detect and eliminate illicit discharges and illegal connections, estimate pollutant concentrations and loading associated with dry weather flows, including flows associated with groundwater infiltration and irrigation drainage in the MS4, and support mapping and outfall inventory efforts to maintain accurate records.

Data Quality Indicators (DQIs)

DQIs have been established to set measurable qualitative and quantitative goals for data acceptance that meet the program DQOs described above. Each DQI is described below. DQIs are the basis for addressing field and laboratory analytical instrument performance, as well as sample collection and handling procedures. QA/QC samples provide input for several of the DQIs. QA/QC sample collection procedures are included in Section 2.1 of the QAPP.

DQIs are fully described in Section 1.8.1 of the QAPP. A brief description of each DQI is included in the list below.

- **Project Required Detection Limits (PRDL).** Achieving appropriate reported constituent concentration results in values that allow for comparison to baseline data and water quality standards.
- **Accuracy.** The accuracy of the data is a measure of the extent to which a measured value represents the true value.
- **Precision.** Precision is a measurement of the reproducibility of the analytical data.
- **Bias.** Bias is minimized by using standard data collection and analytical methods and protocols, as well as standard sample preservation, transport, and storage procedures.
- **Representativeness.** Representativeness is a measure of the degree to which data accurately and precisely indicate environmental conditions.
- **Comparability.** The comparability of a data set is the extent to which data accurately and precisely indicates environmental conditions.
- **Completeness.** Completeness is a comparison between the amount of usable data collected versus the total amount of data collected.
- **Sufficiency.** Data set sufficiency is the amount of data required to perform the level or type of analysis necessary for each monitoring element.

Analysis-specific data quality indicators include PRDLs and precision evaluated as relative percent difference (RPD). The target values for these indicators are listed in Table 5-2 below.

Table 5-2. Data Quality Indicator Targets

Constituent	Analytical Method	PRDL ^{1,2}	Units	Precision ^{3,4} (RPD)
Temperature	EPA 170.1	0.01	°C	NA
pH	EPA 150.1	0.01	S.U.	NA
Dissolved oxygen	SM 4500 G	0.01	mg/L	NA
Conductivity	EPA 120.1	0.1	µS/cm	NA
Turbidity	EPA 180.1	0.1	NTU	20%
Total chlorine	DPD ⁵	0.1	mg/L	NA
Total copper	bicinchoninate hydrosulfite reduction	0.1	mg/L	NA
Total phenols	4-aminoantipyrine	0.1	mg/L	NA
Total phosphorus	EPA 200.7	0.04	mg/L	20%
Dissolved orthophosphate	EPA 365.1 or SM 4500-P E	0.084	mg/L	20%
E. coli ⁶	IDEXX Colilert	1.8	MPN/100 mL	20%
Total suspended solids	SM 2540 D	1.0	mg/L	20%
Surfactants (detergents)	SM 5540C	0.014	mg/L	20%

¹Field instrument resolution values are listed in lieu of a PRDL for field parameter measurements.

²PRDL is defined as the effective method detection limit (MDL) as reported by the analytical laboratory.

³Precision calculations based on field duplicate samples.

⁴In cases where one value is reported at the MDL and the other value is less than five times the MDL, the samples will be considered within acceptable precision limits.

⁵N,N Diethyl-1,4 Phenylenediamine Sulfate

⁶Assessment of precision for E. coli is evaluated using the RPD of logarithmic parent and duplicate values.

Section 6

Data Management and Reporting

6.1 Data Management System

Data associated with the Dry Weather Outfall Screening Program will be stored and backed up nightly in the ACHD Portal along with the secure ACHD network at S:\NPDES Permit Items\Outfall Inspection\DWOS. Data stored in the ACHD Portal and network include the following elements:

- Time since most recent precipitation event greater than 0.1 inches of rain
- Quantity of most recent rain event greater than 0.1 inches of rain
- Site description (conveyance type, dominant watershed land uses)
- Flow estimation (width of water surface, depth of water, approximate flow velocity, approximate flow rate)
- Visual qualitative observations (odor, color, clarity, floatables, deposits/staining, biology, condition of vegetation, structural condition of outfall, qualitative flow)
- Sample analytical results
- QA/QC results
- Narrative description of flow tracing, determination of discharge authorization (allowable or illicit), and documentation of any corrective measures including stopping the discharge, disconnecting illegal connections or other enforcement and escalation activities

6.2 Data Organization and Reporting

6.2.1 Investigation Results Organization

Upon returning to the office, data that has been collected in the field will be filed according to data type.

- Upon completion of investigations, digital data sheets and photographs will be submitted to the ACHD Portal through the Survey123 for ArcGIS® application. Data from laboratory analyses will be entered as they are received from the laboratories.
- Newly identified outfalls will be numbered according to the township, range, and section in which the outfall occurs. Outfalls located in the same section are numbered sequentially beginning with 001. Additionally, an individual point will be created in the ACHD1.GDBADMIN.Outfalls layer on ArcGIS.
- Coordinates of new outfalls encountered will be entered into the outfalls layer in GIS and subsequently researched to determine drainage area and included in the outfall inventory.
- If the outfall to be investigated no longer exists, the outfall will be removed from the outfall inventory. Records of the outfall will be retained for at least five years or the duration of the Permit. Records may be retained longer at the discretion of ACHD.

6.2.2 Annual Reporting

The annual report will include an updated map of ACHD-owned outfalls. The map will be made available as an electronic map file and a pdf.

The annual report will also contain an evaluation of compliance for the illicit discharge detection and elimination program. That evaluation will include a summary of the activities and progress of the Dry Weather Outfall Screening Program. The total number of outfalls screened, the number of flowing outfalls screened, and the number of outfalls screened between June 1 and September 30 (at least one third required).

Discharge Monitoring Results

Results of samples collected from monitored discharges will be summarized with each annual report. Discharge monitoring results will be used to evaluate flows associated with irrigation and groundwater seepage to determine whether the flows comply with Permit Part 2.4.5.1. Flows that are found to be in compliance with Permit Part 2.4.5.1 will be removed from the annual flow screening schedule. These outfalls will still be screened according to their respective Five-Year Outfall Screening Schedule.

Pollutant Loading Estimates

Discharge monitoring results will be used in conjunction with flow measurements to calculate pollutant loading estimates associated with the observed flows. Estimates of the duration of the year that flows were present at each outfall will be provided with the pollutant loading estimates when available. The duration of each flow during the year will be refined as more data is collected. Pollutant loading estimates will also be used to prioritize flows for evaluation of feasible actions necessary to eliminate flows that are not in compliance with Permit Part 2.4.5.1.

6.2.3 Evaluation and Assessment

For the Dry Weather Outfall Screening Program, data will be compiled with the objectives to detect and identify illicit discharges and illegal connections to the MS4 and to reinvestigate potentially problematic outfalls as stated in section 3.2.5 of the Permits.

Advancing illicit discharge detection and elimination is an iterative process. The Dry Weather Outfall Screening Program will be evaluated annually for compliance with Permit requirements. Changes and revisions to the program including updated methods or revised approaches will be integrated into the program as updates to this DWOSP and/or the SOPs referenced herein.

6.2.4 Follow Up

A follow-up action table will be created annually containing tracing efforts made throughout the year, the reasoning behind the investigations, and any further actions needed.

Flowing dry weather outfalls with confirmed sources will be documented to include photos, maps, and construction plans when available. Outfalls that have been investigated and are found to be flowing due to infiltration into the storm drain system will be sent to the appropriate ACHD departments for further assessment and repair.

Section 7

References

Ada County Highway District (ACHD), Quality Assurance Program Plan for NPDES Stormwater Permit Monitoring Boise and Garden City, Idaho, 2023.

Brown, Edward, Deb Caraco, and Robert Pitt. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Ellicott City, MD: Center of Watershed Protection. Ellicott City, MD, 2004.

U.S. Environmental Protection Agency (EPA). **Methods for Chemical Analysis of Water and Wastes**, EPA-600/4-79-020, March 1983. Cincinnati, Ohio: U.S. Environmental Protection Agency Environmental Monitoring and Support Laboratory, 1983.

EPA, Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8), EPA 240-R-02-004, Office of Environmental Information, 2002.

EPA, Guidance on Systematic Planning Using the Data Quality Objective Process, EPA Bulletin # EPA 240-B-06-001, 2006.

EPA, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, Analysis and Sampling Procedures; Final Rule, Federal Register Vol. 77 No. 97. 40 CFR Parts 136, 260, et al., 2012

Figures

Tables

Appendix A: Five-Year Outfall Screening Schedule

Appendix B: Standard Operating Procedures and Procedure Guidance for Dry Weather Outfall Screening

SOP110 – Discrete Grab Sample Collection
SOP111 – Low Flow Grab Sample Collection
SOP112 – Large Volume Grab Sample Collection
SOP114 – Field Filtering Procedures
SOP116 – Outfall Discharge Estimation – Bucket Method
SOP318 – Flow Probe Operation
PG116 – Visual Flow Qualification
PG323- In-Situ Multiparameter Sonde Operation
Hach Stormwater Test Kit User Manual
Hach 2100q Turbidity Meter User Manual
In-Situ Aqua Troll 400 User Manual

Appendix C: Field Data Collection and Chain of Custody Forms

Form DW1 – Survey123 for ArcGIS® Example Form

Chain-of-Custody Form – Boise City Water Quality Laboratory

Chain-of-Custody Form – Analytical Labs, Inc.

Appendix D: Source Tracing Flow Chart

Appendix E: Thresholds for Documented Flowing Outfalls

Appendix F: Illicit Discharge Detection and Elimination (IDDE) Enforcement Response Policy (pending)

Attachment H: Dry Weather Outfall Inspection Summary, Map, and Analytical Results WY2024

Table 1. Dry Weather Outfall Inspection Summary
October 1, 2023 - September 30, 2024

#	OUTFALL ID	RECEIVING WATER	PIPE DIAMETER	INSPECTION DATE	STRUCTURE CONDITION	FLOW	SAMPLES COLLECTED? ¹
1	2n3e06_001	Fivemile Creek	24	3/15/2024	Good	None	No
2	3n1e01_006	North Slough	12	5/16/2024	Good	None	No
3	3n1e01_010	North Slough	24	5/16/2024 7/22/2024	Good Good	None Yes	No Yes
4	3n1e01_015	Eggers Lateral	12	5/16/2024	Good	None	No
5	3n1e02_011	South Slough	10	7/29/2024	Good	None	No
6	3n1e02_013	North Slough	12	5/20/2024	Good	Yes	Yes
7	3n1e02_032	Sargent Drain	10	12/29/2023	Good	None	No
8	3n1e02_039	Sargent Drain	12	12/29/2023	Good	None	No
9	3n1e03_009	Milk Lateral	15	12/29/2023	Good	None	No
10	3n1e03_010	Settlers Canal	18	12/29/2023	Good	None	No
11	3n1e03_014	Settlers Canal	12	12/29/2023	Good	None	No
12	3n1e03_015	Settlers Canal	12	12/29/2023	Good	None	No
13	3n1e03_017	South Slough	36	8/5/2024	Good	None	No
14	3n1e10_009	Settlers Canal	24	12/29/2023	Good	None	No
15	3n1e11_015	Unnamed	12	9/4/2024	Good	None	No
16	3n1e12_001	South Slough	15	12/29/2023	Good	None	No
17	3n1e12_029	Ridenbaugh Canal	12	12/29/2023	Good	None	No
18	3n1e14_011	Unnamed	12	6/13/2024	Good	None	No
19	3n1e22_001	Fivemile Creek	24	6/20/2024	Good	None	No
20	3n1e22_006	Eightmile Creek	12	6/13/2024	Good	None	No
21	3n1e22_008	Eightmile Creek	12	6/13/2024	Good	None	No
22	3n1e22_013	Unnamed	24	6/13/2024	Good	None	No
23	3n1e23_004	Fivemile Creek	36	6/13/2024 8/6/2024	Good Good	None Yes	No Yes
24	3n1e23_014	Fivemile Creek	12	6/13/2024	Good	None	No
25	3n1e24_007	Fivemile Creek	24	5/13/2024	Good	Yes	No
26	3n2e02_002	Unnamed	12	7/19/2024	Good	None	No
27	3n2e03_015	Boise City Canal	8	7/19/2024	Good	None	No
28	3n2e04_015	Lowell Drain	15	10/16/2023	Good	None	No
29	3n2e04_019	Boise City Canal	12	10/16/2023	Good	None	No
30	3n2e04_020	Boise City Canal	6	10/16/2023	Good	None	No
31	3n2e04_022	Boise City Canal	6	10/16/2023	Good	None	No
32	3n2e04_028	Unnamed	12	10/16/2023	Good	None	No
33	3n2e04_029	Boise River	12	10/16/2023	Good	None	No
34	3n2e05_002	Settlers Canal	16	12/29/2023	Good	None	No
35	3n2e05_009	Davis Drain	12	10/6/2023	Good	None	No
36	3n2e05_010	Davis Drain	12	10/6/2023	Good	None	No
37	3n2e05_011	Boise River	18	7/9/2024	Good	None	No
38	3n2e05_014	Davis Drain	12	10/6/2023	Good	None	No
39	3n2e05_024	Boise River	18	10/6/2023	Good	None	No
40	3n2e05_027	Davis Drain	24	6/7/2024	Good	Yes	Yes
41	3n2e06_001	North Slough	12	7/12/2024	Good	None	No
42	3n2e06_011	Davis Drain	24	5/3/2024	Good	Yes	Yes
43	3n2e06_014	North Slough	0	12/29/2023	Good	None	No
44	3n2e06_015	North Slough	12	12/29/2023	Good	None	No
45	3n2e06_019	Davis Drain	24	5/1/2024	Good	Yes	Yes

#	OUTFALL ID	RECEIVING WATER	PIPE DIAMETER	INSPECTION DATE	STRUCTURE CONDITION	FLOW	SAMPLES COLLECTED? ¹
46	3n2e06_024	Ash Lateral	12	12/29/2023	Good	None	No
47	3n2e07_009	Ridenbaugh Canal	24	8/12/2024	Good	Yes	Yes
48	3n2e08_005	North Slough	12	11/15/2023 11/27/2023	Good Good	None None	No No
49	3n2e08_010	North Slough	4	12/19/2023	Good	None	No
50	3n2e08_012	North Slough	10	12/19/2023	Good	None	No
51	3n2e08_014	North Slough	15	8/5/2024	Good	None	No
52	3n2e08_019	Settlers Canal	24	5/13/2024 8/16/2024	Good Good	None Yes	No Yes
53	3n2e08_026	North Slough	10	11/15/2023	Good	None	No
54	3n2e08_028	North Slough	12	9/12/2024	Good	None	No
55	3n2e08_029	Tuttle Lateral	10	11/15/2023	Good	None	No
56	3n2e08_033	North Slough	12	8/5/2024	Good	None	No
57	3n2e08_035	Unnamed	18	11/15/2023 12/14/2023 5/13/2024	Good Good Good	None None Yes	No No Yes
59	3n2e09_022	Boise River	12	8/15/2024	Good	None	No
60	3n2e09_024	Boise River	48	11/15/2023 12/14/2023 8/1/2024	Good Good Good	None Yes Yes	No Yes Yes
61	3n2e09_025	Boise River	42	12/14/2023 8/1/2024	Good Good	None None	No No
62	3n2e09_038	Unnamed	12	12/19/2023	Good	None	No
63	3n2e10_012	Boise River	30	2/14/2024 8/5/2024	Good Good	Yes Yes	Yes Yes
64	3n2e10_019	Boise River	12	6/24/2024	Fair Fair	None None	No No
65	3n2e10_020	Boise River	15	8/6/2024	Good	None	No
66	3n2e10_022	Boise River	72	3/15/2024 7/9/2024	Good Good	Yes Yes	Yes Yes
67	3n2e10_024	Boise River	12	8/15/2024	Good	None	No
68	3n2e10_031	Boise River	36	6/24/2024 8/21/2024	Good Good	Yes Yes	Yes No
69	3n2e10_037	Boise City Canal	15	6/7/2024	Good	Yes	Yes
70	3n2e10_039	Boise City Canal	0	8/6/2024	Good	None	No
71	3n2e10_042	Boise City Canal	6	8/6/2024	Good	None	No
72	3n2e10_046	Boise River	10	6/24/2024	Good	None	No
73	3n2e11_008	Cottonwood Creek	12	1/31/2024	Good	None	No
74	3n2e13_008	Unnamed	0	6/27/2024	Good	Yes	No
75	3n2e14_003	Logger Creek	18	1/31/2024	Good	None	No
76	3n2e14_012	Boise River	42	1/31/2024 8/13/2024	Good Good	Yes Yes	Yes Yes
77	3n2e14_013	Boise River	30	1/31/2024 8/13/2024	Good Good	Yes Yes	Yes Yes
78	3n2e14_017	Boise River	24	12/14/2023 1/3/2024 5/3/2024	Good Good Good	Yes Yes Yes	Yes Yes No
79	3n2e14_037	Logger Creek	24	6/27/2024	Good	None	No
80	3n2e15_011	Ridenbaugh Canal	10	8/6/2024	Good	None	No
81	3n2e16_001	Electric Light Lateral	12	6/13/2024	Good	None	No
82	3n2e16_003	Electric Light Lateral	12	12/19/2023	Good	None	No
83	3n2e16_019	Ridenbaugh Canal	8	12/19/2023	Good	None	No

#	OUTFALL ID	RECEIVING WATER	PIPE DIAMETER	INSPECTION DATE	STRUCTURE CONDITION	FLOW	SAMPLES COLLECTED? ¹
84	3n2e16_031	Unnamed	12	12/19/2023	Good	None	No
85	3n2e17_005	Ridenbaugh Canal	12	6/13/2024 7/15/2024	Good Fair	None None	No No
86	3n2e17_008	Farmers Lateral	6	12/19/2023	Good	None	No
87	3n2e17_014	Rust Lateral	12	6/13/2024 7/15/2024	Good Good	None Yes	No Yes
88	3n2e17_015	Ridenbaugh Canal	10	12/19/2023	Good	None	No
89	3n2e17_016	Ridenbaugh Canal	12	6/13/2024 9/3/2024	Good Good	Yes None	No No
90	3n2e17_017	Farmers Lateral	18	9/3/2024	Good	Yes	No
91	3n2e17_021	Farmers Lateral	21	12/19/2023 9/3/2024	Good Good	None Yes	No Yes
92	3n2e17_022	Farmers Lateral	15	12/19/2023	Good	None	No
93	3n2e17_024	Farmers Lateral	8	12/19/2023	Good	None	No
94	3n2e17_052	Ridenbaugh Ditch	12	12/19/2023	Good	None	No
95	3n2e18_001	Ridenbaugh Canal	0	11/15/2023 6/12/2024	Good Good	None None	No No
96	3n2e18_016	Ridenbaugh Canal	12	11/15/2023 6/12/2024	Good Good	None Yes	No Yes
97	3n2e19_004	Threemile Creek	12	6/13/2024	Good	None	No
98	3n2e20_008	Threemile Lateral	10	6/13/2024	Good	None	No
99	3n2e20_013	Threemile Lateral	12	6/13/2024	Good	None	No
100	3n2e21_002	Unnamed	4	3/15/2024	Good	None	No
101	3n2e22_018	Unnamed	8	3/15/2024	Good	None	No
102	3n2e23_007	Bubb Canal	12	6/27/2024	Good	None	No
103	3n2e24_005	Boise River	12	8/7/2024	Good	Yes	No
104	3n2e24_007	Boise City Canal	18	7/19/2024	Good	None	No
105	3n2e24_025	Logger Creek	21	9/4/2024	Good	Yes	Yes
106	3n2e24_031	Unnamed	12	6/27/2024	Good	None	No
107	3n2e24_041	Boise River	12	8/7/2024	Good	None	No
108	3n2e26_004	Ridenbaugh Canal	12	3/15/2024	Good	None	No
109	3n2e27_004	New York Canal	15	3/15/2024	Good	None	No
110	3n2e27_006	Unnamed	6	3/15/2024	Good	None	No
111	3n2e32_001	Fivemile Creek	0	6/20/2024	Good	None	No
112	3n2e36_006	Fivemile Creek-Trib. to	48	3/15/2024	Good	None	No
113	3n3e19_002	Unnamed	12	1/3/2024 8/1/2024	Good Good	None Yes	No Yes
114	3n3e19_003	Unnamed	12	6/27/2024	Good	None	No
115	3n3e19_010	Unnamed	18	3/18/2024 8/7/2024	Good Good	None None	No No
116	3n3e21_001	Unnamed	18	3/18/2024 6/27/2024 7/3/2024	Good Good Good	None Yes Yes	No No Yes
117	3n3e31_002	Fivemile Creek - Intermittent	18	3/15/2024	Good	None	No
118	3n3e31_003	Fivemile Creek - Intermittent	18	6/27/2024	Good	None	No
119	3n3e32_007	Fivemile Creek - Intermittent	30	3/15/2024	Good	None	No
120	4n1e13_002	Eagle Drain	27	8/7/2024	Good	None	No

#	OUTFALL ID	RECEIVING WATER	PIPE DIAMETER	INSPECTION DATE	STRUCTURE CONDITION	FLOW	SAMPLES COLLECTED? ¹
121	4n1e13_009	Eagle Drain	12	1/2/2024 8/13/2024	Good Good	None Yes	No Yes
122	4n1e13_011	Eagle Drain	12	8/7/2024	Good	None	No
123	4n1e13_015	Eagle Drain	12	8/15/2024 8/16/2024 8/20/2024	Good Good Good	None Yes Yes	No No Yes
124	4n1e13_022	Seaman Gulch	12	6/10/2024	Good	None	No
125	4n1e13_023	Seaman Gulch	24	6/10/2024	Good	Yes	Yes
126	4n1e14_001	Eagle Drain	12	8/15/2024	Good	None	No
127	4n1e14_004	Eagle Drain	24	2/14/2024 6/10/2024	Good Good	Yes Yes	Yes Yes
128	4n1e14_006	Eagle Drain	30	2/14/2024 5/10/2024	Good Good	Yes Yes	Yes Yes
129	4n1e23_002	Elmore Drain	12	7/12/2024	Good	None	No
130	4n1e23_005	Elmore Drain	12	7/12/2024	Good	None	No
131	4n1e23_009	Dry Creek Canal	0	7/12/2024	Good	None	No
132	4n1e24_024	Elmore Drain	12	7/12/2024	Good	None	No
133	4n1e25_005	Warm Springs Canal	6	7/12/2024	Good	None	No
134	4n1e25_007	Warm Springs Canal	12	7/12/2024	Good	None	No
135	4n1e25_008	Warm Springs Canal	12	7/12/2024	Good	None	No
136	4n1e25_019	Thurman Mill Canal	12	7/12/2024	Good	None	No
137	4n1e26_012	Thurman Mill Canal-Lateral	12	7/12/2024	Good	None	No
138	4n1e26_013	Thurman Mill Canal-Lateral	12	8/20/2024	Good	None	No
139	4n1e26_021	Settlers Canal	18	5/20/2024	Good	None	No
140	4n1e26_034	Thurman Drain	42	8/20/2024	Good	None	No
141	4n1e27_002	Zinger Lateral	12	8/20/2024	Good	None	No
142	4n1e27_006	Zinger Lateral	12	8/20/2024	Good	None	No
143	4n1e27_008	Zinger Lateral	12	5/20/2024	Good	None	No
144	4n1e28_008	McMillan Lateral	6	8/20/2024	Good	Yes	No
145	4n1e33_003	North Slough	24	7/31/2024	Good	None	No
146	4n1e34_004	Karnes Lateral	15	7/16/2024 8/1/2024 8/5/2024 8/12/2024 8/20/2024 8/29/2024	Good Good Good Good Good Good	Yes Yes Yes Yes Yes Yes	No Yes Yes Yes Yes Yes
147	4n1e34_009	Karnes Lateral	8	5/20/2024	Good	None	No
148	4n1e34_011	Shavrer Lateral	0	7/31/2024	Good	None	No
149	4n1e34_015	North Slough	12	5/20/2024	Good	None	No
150	4n1e34_018	Karnes Lateral	12	5/20/2024	Good	None	No
151	4n1e34_019	Karnes Lateral	15	5/3/2024	Good	Yes	Yes
152	4n1e35_001	Zinger Lateral	12	7/16/024 7/22/2024 7/29/2024 8/5/2024 8/12/2024	Good Good Good Good Good	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes
153	4n1e35_004	Settlers Canal	12	5/20/2024	Good	None	No
154	4n1e35_012	Unnamed	12	12/29/2023	Good	None	No
155	4n1e36_002	Settlers Canal	12	7/12/2024	Good	None	No
156	4n1e36_006	Settlers Canal	24	9/3/2024	Good	Yes	Yes

#	OUTFALL ID	RECEIVING WATER	PIPE DIAMETER	INSPECTION DATE	STRUCTURE CONDITION	FLOW	SAMPLES COLLECTED? ¹
157	4n1e36_011	Settlers Canal	10	7/12/2024	Good	None	No
158	4n1e36_012	Settlers Canal	18	5/28/2024	Good	None	No
159	4n1e36_014	Settlers Canal	48	7/16/2024	Good	Yes	Yes
160	4n1e36_029	Settlers Canal	12	5/28/2024	Good	None	No
161	4n1e36_031	Thurman Mill Canal	12	8/20/2024	Good	None	No
162	4n2e17_003	Pierce Gulch	0	8/15/2024	Good	None	No
163	4n2e19_005	Eagle Drain	12	8/7/2024	Good	None	No
164	4n2e19_014	Eagle Drain	24	5/14/2024	Good	Yes	Yes
165	4n2e19_015	Eagle Drain	12	7/8/2024	Good	None	No
166	4n2e19_019	Eagle Drain	12	7/8/2024	Fair	None	No
167	4n2e19_026	Eagle Drain	0	7/8/2024	Good	None	No
168	4n2e19_032	Unnamed	30	7/8/2024	Good	Yes	No
169	4n2e19_034	Unnamed	10	7/8/2024	Good	None	No
170	4n2e20_010	Polecat Gulch	12	7/8/2024	Good	None	No
171	4n2e20_013	Polecat Gulch	12	11/13/2023	Good	None	No
172	4n2e20_014	Polecat Gulch	12	11/13/2023	Good	None	No
173	4n2e20_016	Polecat Gulch	0	11/13/2023	Good	None	No
174	4n2e20_018	Polecat Gulch	0	11/13/2023	Good	None	No
175	4n2e20_024	Polecat Gulch	0	11/13/2023	Good	None	No
176	4n2e20_028	Polecat Gulch	12	11/13/2024 5/14/2024	Good Good	None Yes	No Yes
177	4n2e20_032	Polecat Gulch	0	7/8/2024	Good	None	No
178	4n2e28_001	Boise City Canal	0	11/13/2023	Good	None	No
179	4n2e28_003	Boise City Canal	12	11/13/2023	Good	None	No
180	4n2e29_022	Lateral 41	12	7/8/2024	Good	None	No
181	4n2e29_026	Lateral 47	12	8/15/2024	Good	None	No
182	4n2e30_004	Dry Creek Canal	15	7/8/2024	Good	None	No
183	4n2e30_014	Boise River	12	8/20/2024	Good	None	No
184	4n2e31_004	Davis Drain	36	10/6/2023	Good	None	No
185	4n2e31_006	Davis Drain	18	11/15/2023 5/1/2024	Good Good	None None	No No
186	4n2e31_011	Davis Drain	15	11/15/2023 12/24/2023 5/1/2024	Good Good Good	Yes Yes Yes	No Yes Yes
187	4n2e31_012	Thurman Mill Canal	12	11/15/2023	Good	None	No
188	4n2e31_022	Davis Drain	12	10/6/2023	Good	None	No
189	4n2e31_030	Thurman Mill Canal	24	7/15/2024	Good	Yes	Yes
190	4n2e31_031	Davis Drain	12	10/6/2023	Good	None	No
191	4n2e32_015	Boise River	24	5/1/2024	Good	Yes	Yes
192	4n2e33_013	Unnamed	0	10/16/2023	Good	None	No
193	4n2e34_003	Crane Creek	36	11/13/2023	Good	None	No
194	4n2e34_007	Crane Creek	10	10/16/2023	Good	None	No
195	4n2e34_008	Crane Creek	12	11/13/2023 1/2/2024 5/28/2024	Good Good Good	Yes Yes Yes	No Yes Yes
196	4n2e34_015	Crane Creek	0	10/16/2023	Good	None	No
197	4n2e34_016	Crane Creek	0	10/16/2023	Good	None	No
198	4n2e34_017	Crane Creek	0	10/16/2023	Good	None	No
199	4n2e34_019	Crane Creek	15	11/13/2023 1/2/2024	Good Good	Yes Yes	No Yes

#	OUTFALL ID	RECEIVING WATER	PIPE DIAMETER	INSPECTION DATE	STRUCTURE CONDITION	FLOW	SAMPLES COLLECTED? ¹
200	4n2e34_020	Crane Creek	8	10/16/2023	Good	None	No
201	4n2e34_021	Hulls Gulch	36	9/10/2024	Good	None	No
202	4n2e34_022	Crane Creek	36	5/14/2024	Good	None	No
203	4n1e14_002	Eagle Drain	12	4/3/2024	Good	None	No
204	4n1e23_001	Dry Creek Canal	12	4/3/2024	Good	None	No

¹Results from sampled sites are found in the Analytical Results Table in Attachment H

-- No Data

Phase I Inspected and Sampled Outfalls
October 1, 2023 - September 30, 2024

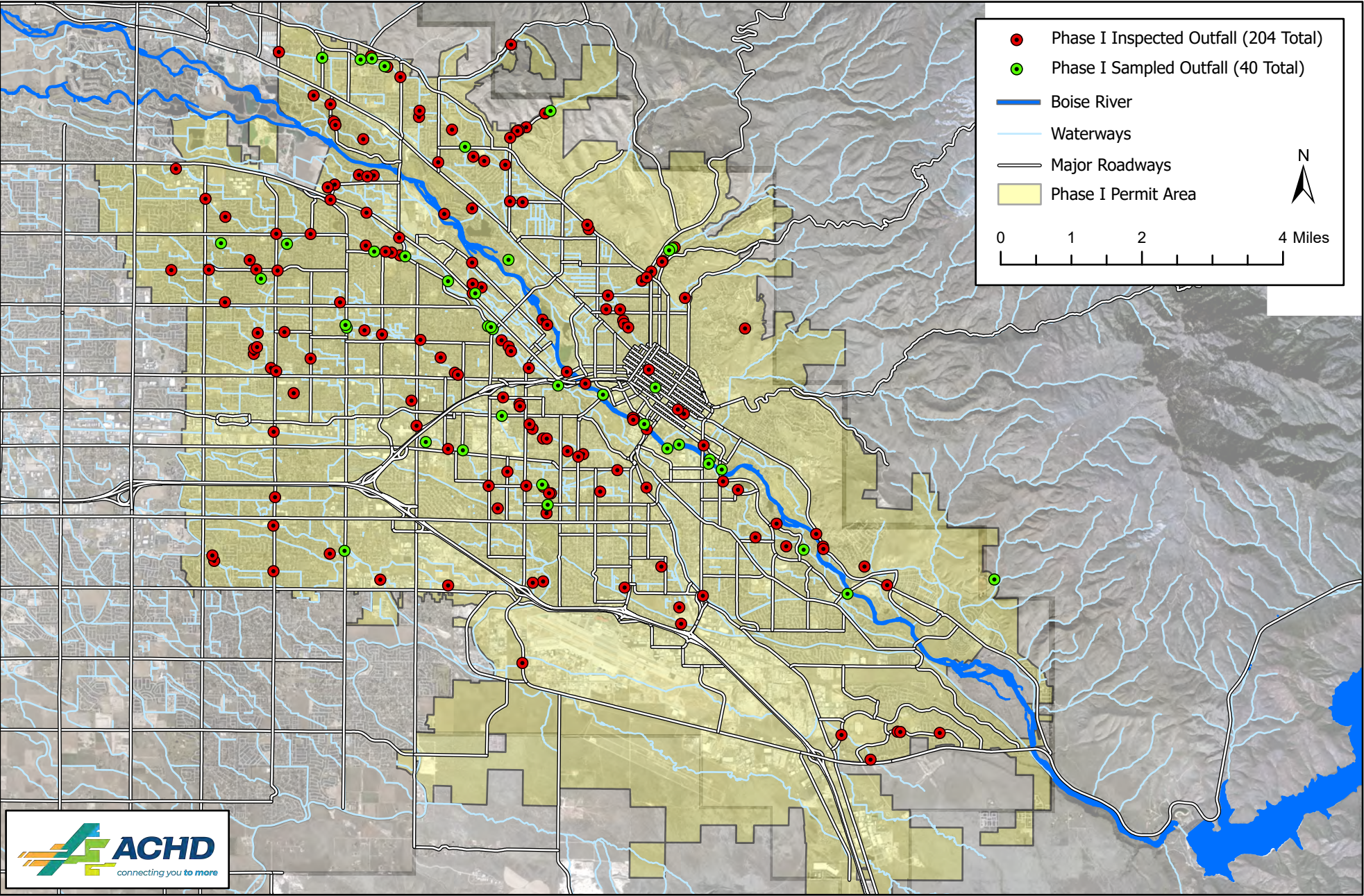


Table 2. Dry Weather Outfall Analytical Results

IR Period	Outfall ID	Receiving Water	Date	Land Use	Drainage Area	Field Parameters				Illicit Discharge Detection Parameters					Pollutant Loading Parameters			
						Temp	DO	pH	Cond.	Turbidity	Cl	Cu	Phenols	Surfactants	TSS	DOP	TP	Ecoli
					acre	°C	mg/L	SU	uS	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100mL
Non Irrigation Time Period 11/1/23 - 3/31/24	4n2e31_011	Davis Drain	12/14/2023	C/I	15.5	7.20	11.76	7.22	48.08	0.20	<0.10	<0.10	<0.10	0.01	<0.900	0.0573	0.0633	<1.0
	3n2e09_024	Boise River	12/14/2023	C/I	855.5	14.31	9.23	8.05	729.96	0.49	<0.10	<0.10	<0.10	<0.01	<0.900	0.0672	0.0808	11.0
	3n2e14_017	Boise River	12/14/2023	C/I, Res. - Old	291.5	15.33	7.37	7.60	400.25	--	--	--	--	--	--	--	--	--
	4n2e34_019	Crane Creek	1/2/2024	Res. - Old	11.37	12.79	9.83	7.76	634.26	--	--	--	--	--	--	--	--	--
	4n2e34_008	Crane Creek	1/2/2024	Res. - New	1.94	9.13	8.97	7.58	571.31	--	--	--	--	--	--	--	--	--
	3n2e14_017	Boise River	1/3/2024	C/I, Res. - Old	291.5	13.54	7.56	7.61	412.34	0.93	<0.10	<0.10	<0.10	0.02	1.73	0.0452	0.0547	1.00
	3n2e14_013	Boise River	1/31/2024	C/I	53.76	14.62	8.38	6.14	445.34	--	--	--	--	--	--	--	--	--
	3n2e14_012	Boise River	1/31/2024	C/I, Res. - Old	518	7.48	10.65	7.85	1210.95	--	--	--	--	--	--	--	--	--
	3n2e10_012	Boise River	2/14/2024	C/I	51	8.76	1.11	6.50	404.83	6.31	<0.10	<0.10	<0.10	0.03	5.07	0.00682	0.154	<1.0
	4n1e14_006	Eagle Drain	2/14/2024	Res. - New	25	10.30	8.40	7.08	449.14	--	--	--	--	--	--	--	--	--
	4n1e14_004	Eagle Drain	2/14/2024	Res. - New	17.7	10.68	7.54	7.03	281.17	12.50	--	--	--	0.02	RD	0.139	0.174	3.10
	3n2e10_022	Boise River	3/15/2024	C/I, Res. - Old	219	14.00	8.49	6.19	830.69	--	--	--	--	--	--	--	--	--
Irrigation Time Period 5/1/2024-9/30/2024	3n2e06_019	Davis Drain	5/1/2024	C/I, Res. - Old	7.73	8.16	11.49	6.75	67.50	3.19	<0.10	<0.10	<0.10	<0.01	<0.900	0.00432	0.0152	64.4
	4n2e31_011	Davis Drain	5/1/2024	C/I	15.5	13.79	6.82	7.10	405.42	0.48	<0.10	<0.10	<0.10	0.01	<0.900	0.0291	0.0319	6.3
	4n2e32_015	Boise River	5/1/2024	C/I, Res. - Old	421.31	9.80	10.91	7.87	129.38	7.42	<0.10	<0.10	<0.10	0.01	12.6	0.0124	0.0381	155.3
	3n2e06_011	Davis Drain	5/3/2024	Res. - New	81	9.87	10.97	8.35	63.72	--	--	--	--	--	--	--	--	--
	4n1e34_019	Karnes Lateral	5/3/2024	Res. - Old	75.8	9.02	11.11	8.12	63.93	--	--	--	--	--	--	--	--	--
	4n1e14_006	Eagle Drain	5/10/2024	Res. - New	25	13.27	9.12	7.07	218.98	--	--	--	--	--	--	--	--	--
	3n2e08_035	Unnamed	5/13/2024	Res. -old, Roadway	--	10.45	10.54	5.64	77.26	3.79	<0.10	<0.10	<0.10	0.01	4.23	0.00907	0.0192	36.9
	4n2e20_028	Polecat Gulch	5/14/2024	Res. - New	483.51	15.34	8.86	7.46	218.40	92.10	<0.10	<0.10	<0.10	<0.01	1.97	0.237	0.345	<1.0
	4n2e19_014	Eagle Drain	5/14/2024	Res. - Old	96.71	16.68	2.23	7.14	232.29	5.69	<0.10	<0.10	<0.10	0.03	6.10	0.106	0.265	37.9
	3n1e02_013	North Slough	5/20/2024	Res. - New	10.43	10.09	10.17	5.59	78.42	7.13	<0.10	<0.10	<0.10	0.01	14.4	0.00728	0.0358	235.9
	4n2e34_008	Crane Creek	5/28/2024	Res. - New	1.94	15.20	7.47	6.62	601.92	--	--	--	--	--	--	--	--	--
	3n2e05_027	Davis Drain	6/7/2024	C/I, Res. - New	66.64	12.04	9.70	5.33	78.11	--	--	--	--	--	--	--	--	--
	3n2e10_037	Boise City Canal	6/7/2024	C/I	856.73	25.37	1.29	6.38	499.26	--	--	--	--	--	--	--	--	--
	4n1e13_023	Seaman Gulch	6/10/2024	Res. - Old	--	11.56	10.12	6.31	77.77	3.63	<0.10	<0.10	<0.10	0.01	3.33	0.0113	0.0214	238.2
	4n1e14_004	Eagle Drain	6/10/2024	Res. - New	17.7	13.21	3.76	6.64	209.60	1.47	<0.10	<0.10	<0.10	0.01	<0.900	0.230	0.158	9.7
	3n2e18_016	Ridenbaugh Canal	6/12/2024	C/I	6	13.24	--	8.11	72.55	2.28	<0.10	<0.10	<0.10	0.01	2.43	0.00457	<0.0120	131.4
	3n2e10_031	Boise River	6/24/2024	Public	256.73	15.04	8.77	7.77	154.11	1.78	<0.10	<0.10	<0.10	0.01	2.00	0.0215	0.0216	160.7
	3n3e21_001	Unnamed	7/3/2024	Res.- New	--	16.70	7.50	8.06	422.17	3.84	--	--	--	0.10	2.53	1.34	1.53	7.4
	3n2e10_022	Boise River	7/9/2024	C/I, Res. - Old	219	18.36	8.31	7.48	179.39	--	--	--	--	--	--	--	--	--
	3n2e17_014	Rust Lateral	7/15/2024	Res.-Old	7.71	16.63	8.93	7.75	67.68	65.30	0.10	<0.10	<0.10	0.01	152.00	0.00828	0.0617	73.300
	4n2e31_030	Thurman Mill Canal	7/15/2024	Res.- Old	138.67	18.71	9.02	8.19	75.08	2.99	<0.10	<0.10	<0.10	0.01	4.23	0.0132	0.0228	115.3
	4n1e35_001	Zinger Lateral	7/16/2024	Res. - New	240	20.21	9.26	8.49	77.75	6.03	<0.10	<0.10	<0.10	<0.01	6.57	0.00759	0.0284	770.1
	4n1e35_001	Zinger Lateral	7/22/2024	Res. - New	240	--	--	--	--	--	--	--	--	--	--	--	--	387.3
	4n1e35_001	Zinger Lateral	7/29/2024	Res. - New	240	--	--	--	--	--	--	--	--	--	--	--	--	365.4
	4n1e35_001	Zinger Lateral	8/5/2024	Res. - New	240	--	--	--	--	--	--	--	--	--	--	--	--	648.8
	4n1e35_001	Zinger Lateral	8/12/2024	Res. - New	240	--	--	--	--	--	--	--	--	--	--	--	--	325.5
																	GEOMEAN:	470.33
	4n1e36_014	Settlers Canal	7/16/2024	Res. - Old	69.76	18.28	8.37	8.29	78.11	2.07	<0.10	<0.10	<0.10	<0.01	4.63	0.0157	0.0310	178.5
	3n1e01_010	North Slough	7/22/2024	Res. - New	261.64	19.70	7.68	7.89	76.81	1.87	<0.10	<0.10	<0.10	0.01	1.17	0.0156	0.0183	81.3
	3n2e09_024	Boise River	8/1/2024	C/I	855.5	20.82	7.73	8.12	--	1.15	<0.10	<0.10	<0.10	<0.01	<0.900	0.0955	0.0982	28.5
	3n3e19_002	Unnamed	8/1/2024	Res. - New	79.51	17.12	3.61	6.97	--	1.18	<0.10	<0.10	<0.10	<0.01	8.10	0.0236	0.0290	7.4
	4n1e34_004	Karnes Lateral	8/1/2024	Res. - Old	26.25	17.52	8.69	8.00	--	2.76	<0.10	<0.10	<0.10	<0.01	8.37	0.0100	0.0144	435.2
	4n1e34_004	Karnes Lateral	8/5/2024	Res. - Old	26.25	--	--	--	--	--	--	--	--	--	--	--	--	272.3
	4n1e34_004	Karnes Lateral	8/12/2024	Res. - Old	26.25	--	--	--	--	--	--	--	--	--	--	--	--	686.7

IR Period	Outfall ID	Receiving Water	Date	Land Use	Drainage Area	Field Parameters				Illicit Discharge Detection Parameters					Pollutant Loading Parameters			
						Temp	DO	pH	Cond.	Turbidity	Cl	Cu	Phenols	Surfactants	TSS	DOP	TP	Ecoli
					acre	°C	mg/L	SU	uS	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100mL
	4n1e34_004	Karnes Lateral	8/20/2024	Res. - Old	26.25	--	--	--	--	--	--	--	--	--	--	--	--	648.8
	4n1e34_004	Karnes Lateral	8/29/2024	Res. - Old	26.25	--	--	--	--	--	--	--	--	--	--	--	--	249.5
																	GEOMEAN:	420.67
	3n2e10_012	Boise River	8/5/2024	C/I	51	15.94	0.94	6.58	1168.90	2.56	<0.10	<0.10	<0.10	0.04	1.30	0.0330	0.115	72.3
	3n1e23_004	Fivemile Creek	8/6/2024	Res. - New	58	21.67	7.54	7.97	126.21	19.90	<0.10	<0.10	<0.10	0.04	73.1	0.0899	0.237	57.6
	3n2e07_009	Ridenbaugh Canal	8/12/2024	C/I, Recreation	64	19.20	7.90	6.92	76.37	--	--	--	--	--	--	--	--	--
	3n2e14_013	Boise River	8/13/2024	C/I	53.76	16.12	7.84	7.96	486.16	--	--	--	--	--	--	--	--	--
	3n2e14_012	Boise River	8/13/2024	C/I, Res. - Old	518	17.73	8.31	8.59	124.84	--	--	--	--	--	--	--	--	--
	4n1e13_009	Eagle Drain	8/13/2024	Res. - New	21.28	18.76	6.68	7.57	232.92	--	--	--	--	--	--	--	--	--
	3n2e08_019	Settlers Canal	8/16/2024	Res. - Old	66	17.86	8.51	6.65	69.20	--	--	--	--	--	--	--	--	--
	4n1e13_015	Eagle Drain	8/20/2024	Res.-Old	0.36	18.55	6.35	6.88	332.51	0.20	<0.10	<0.10	<0.10	0.01	<0.900	0.255	0.260	6.2
	3n2e17_021	Farmers Lateral	9/3/2024	Res. - Old	6.44	19.72	8.26	7.28	87.18	5.89	<0.10	<0.10	<0.10	0.01	4.57	0.0149	0.0346	1.0
	4n1e36_006	Settlers Canal	9/3/2024	Res. - Old	19	19.41	7.65	7.61	93.32	16.50	<0.10	<0.10	<0.10	0.01	25.1	0.0206	0.0392	67.0
	3n2e24_025	Logger Creek	9/4/2024	Res. -Old, Public	51.4	20.46	8.33	8.20	318.20	--	--	--	--	--	--	--	--	--
Benchmark						<19	>6	6.5 - 9	50-1500	<50	<0.01	<1	<3.80	0.00	<80	<0.07	<0.07	<410
Evaluation Point						--	--	--	< 55 / >1350	>45	0.0099	0.9	3.7	>0	72	0.063	0.063	365.40

Notes

-- No data available

Red values indicate a detection above the benchmark level.

RD Rejected datapoint

Attachment I: Erosion and Sediment Control Reviews, Inspections, and Map

**Table 1. ESC Inspections Performed & Notice of Violations Issued
October 1, 2023 – September 30, 2024**

ACTIVITY	TOTAL
ESC Inspections ¹	58
Capital Project SWPPP ² Inspections	54
Notice of Violations Issued	1

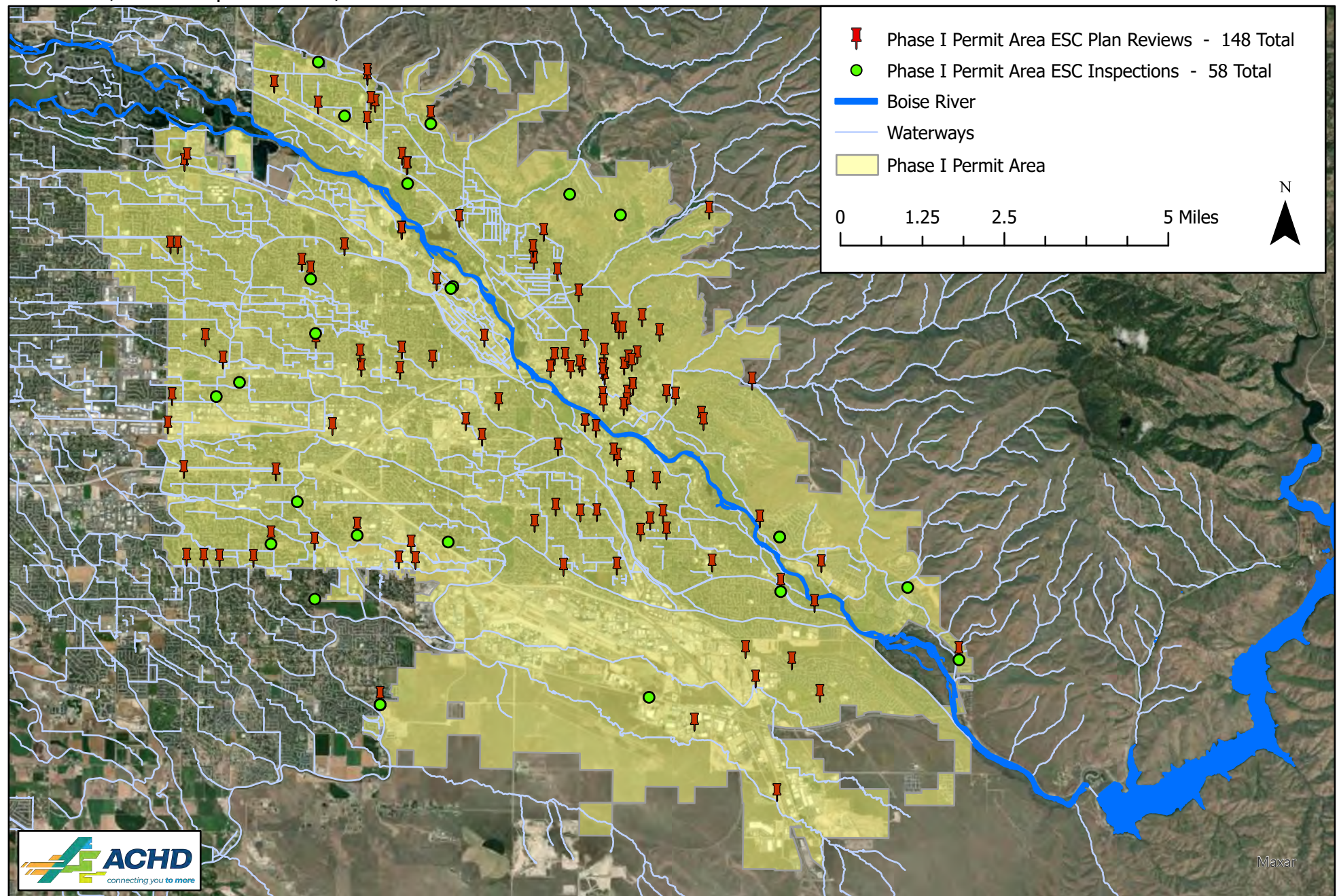
¹ESC Inspections Performed by ACHD Environmental staff and contracted inspection staff.

²Stormwater Pollution Prevention Plan

**Table 2. ESC Plan Review, Inspection, and Notice of Violation Summary by Month
October 1, 2023 – September 30, 2024**

MONTH	SITE SPECIFIC PLANS REVIEWED	SITE SPECIFIC PLANS WITH DEFICIENCIES	ESC INSPECTIONS COMPLETED	NOTICE OF VIOLATIONS ISSUED
October	14	1	4	0
November	3	0	6	0
December	9	2	3	0
January	7	1	8	0
February	14	2	6	0
March	11	1	1	0
April	14	3	9	1
May	17	4	0	0
June	14	1	3	0
July	17	2	13	0
August	13	1	3	0
September	15	2	2	0
Total	148	20	58	1

Erosion and Sediment Control (ESC) Plan Review and Site Inspections
October 1, 2023 - September 30, 2024



Attachment J: ACHD GSI Program Activities and Project Descriptions 2023-2024

Table 1. Phase I ACHD-Owned Vegetated Basins and Bioretention Swales 2023 – 2024

#	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 Wy	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 Blvd	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
31	Heron Park Swales	Bioretention Swales	E Heron Park & N Adams St	3,661	2023	-	-	2023	Boise

Table 2. Phase I ACHD Basin Improvement Projects 2023 - 2024

#	FACILITY NAME AND LOCATION	IMPROVEMENT	DESCRIPTION
1	Basin 327 (E Boise Ave & S Betsy Ross Wy)	Wood mulch along the fence line.	Mulch provides additional weed control along the fence line and improves aesthetics.
2	Basin 334 (W Ustick Rd & N Chatterton Wy)	Wood mulch along the fence line.	Mutch provides additional weed control along the fence line and improves aesthetics.
3	Basin 628 (N Five Mile Rd & W Milclay St)	Replaced damaged fence.	Replaced damaged vinyl coated chain-link fence with 4 ft wrought iron.
4	Basin 1321 (N VMP & W Glendale)	Wood mulch along the fence line. Landscape Boulders along northern fence line.	Mulch provides additional weed control along the fence line and improves aesthetics. Landscape boulders prevent unauthorized parking.
5	Basin 1373 (W Franklin Rd & Cole Rd)	Removal of earthen berm. Wood Mulch along the fence line.	Removal of the earthen berm connects the forebay to the primary basin improving the effectiveness of the basin to clean stormwater. Mulch provides additional weed control along the fence line and improves aesthetics.

Table 3. GSI Projects Designed or Constructed 2023 - 2024

#	PROJECT NAME	GSI TYPE	GSI COUNT	DESIGNED	CONSTRUCTED	AREA TREATED (ACRES)
1	State Street Improvement A	Bioretention Curb Extension	8	2020	2024	0.5
2	Reed Street Realignment	Bioretention Swales	5	2022	2023	0.19
3	12th & Idaho	Stormwater Tree Cell	2	2022	In Progress	0.34
4	28th St. Extension	Stormwater Tree Cell	4	2022	2024	0.66
5	Boise Fire Station NO 5	Stormwater Tree Cell	2	2023	2024	0.09
6	Capital Student Housing	Stormwater Tree Cell	4	2022	2024	1.04
7	Fulton Street Improvement	Stormwater Tree Cell	10	2022	2024	1.26
8	Linen Blocks	Stormwater Tree Cell	24	2022	In Progress	3.17
9	Lusk St. Apts.	Stormwater Tree Cell	1	2022	2024	0.12
10	Old Boise Blocks	Stormwater Tree Cell	7	2022	In Progress	0.63
11	Saratoga Apartments	Stormwater Tree Cell	4	2022	In Progress	1.80
12	St. Luke's	Stormwater Tree Cell	1	2018	2023	0.14
13	Garden St. Pedestrians Improvement and Bikeway Central Bench	Detention Basin	1	2023	In Progress	0.28
14	State Street Improvement B	Bioretention Curb Extension	9	2023	In Progress	1.01
15	State Street Improvement B	Bioretention Planters	7	2023	In Progress	0.34

Table 4. Phase I ACHD GSI Program Updates 2023 - 2024

GSI PROGRAM AREA	GSI PROGRAM ACTIVITY	DESCRIPTION
Facility Maintenance	Permeable Paver Maintenance Training	Developed a presentation to train ACHD Maintenance staff regarding permeable paver maintenance methods, equipment, frequencies, and record keeping.
	Stormwater Tree Cell Maintenance Training	Presentation to train ACHD Maintenance staff regarding stormwater tree cell maintenance methods, equipment, frequencies, and record keeping, currently being developed.
Inventory	Mapping	Update ArcGIS's GSI layers to improve readability, remove outdated and redundant information, add new GSI types, and complete information to enhance record keeping and maintenance efforts.

Attachment K: Traditional Stormwater Basin Inspection & Maintenance Form

Traditional Stormwater Basin Inspection and Maintenance Form

* For 500+ Acre Watershed. For 100-500 Acre Watershed, use the following form: [Traditional Stormwater Basin Inspection and Maintenance Form](#).

Basin #: _____ Date/Time: _____ Inspector/Maintainer Name: _____

Inspection Type: ☐ Routine ☐ Storm Event Follow-up ☐ Complaint Response

FEATURE		Condition When Maintenance is Needed	Maintenance Needed?	Notes (Describe observations and maintenance provided)	*FOLLOWUP ACTION
Structures	Inlet / Outlet Pipe and/or Grate	Pipe and/or Grate damaged - function is impaired	☐ YES* ☐ NO		☐ Notify the Cloverdale Utility Crew
		Pipe >1/4 full of sediment	☐ YES* ☐ NO		☐ Notify the Cloverdale Utility Crew
		Pipe/Grate obstructed by vegetation ¹	☐ YES* ☐ NO		☐ Thin out or remove vegetation as appropriate
	Berm / Embankment	Signs of erosion	☐ YES* ☐ NO		☐ Notify the Cloverdale Utility Crew
	Accessory Features	Fencing / Gates damaged	☐ YES* ☐ NO		☐ Notify the Cloverdale Utility Crew
		Locks damaged or missing	☐ YES* ☐ NO		☐ Notify Vegetation Crew Chief
		Signage damaged or missing	☐ YES* ☐ NO		☐ Notify the Sign Crew Chief
Landscaping	Noxious Weed Control ²	Signs of weed growth	☐ YES* ☐ NO		☐ Manually or mechanically remove weeds. Apply chemical as needed where appropriate - document amount applied.
Pollution	Litter / Dumping	Signs of trash or debris	☐ YES* ☐ NO		☐ Remove trash and debris
	Oil, Gas, Foam, Other	Signs of hazardous material	☐ YES* ☐ NO		☐ Notify Supervisor and Environmental Department
Misuse	Destruction / Vandalism	Basin is functionally impaired ²	☐ YES* ☐ NO		☐ Notify Supervisor and pursue repair/replacement as appropriate
Pests	Burrowing Animals	Signs of digging/debris or safety issues	☐ YES* ☐ NO		☐ Notify Supervisor and pursue repair/replacement as appropriate
Water	Dry Basin Drainage	Not draining as designed	☐ YES ☐ NO*		☐ Notify the Cloverdale Utility Crew

* Apply chemical applications sparingly to protect downstream waterways and groundwater. Pursue alternative practices to chemical application if possible.

Comments: _____

Attachment L: Street Sweeping Management Plan, 2024 Update



STREET SWEEPING MANAGEMENT PLAN

Prepared for ACHD

FINAL
May 22nd, 2024

Ecosystem Sciences, LLC

Science. Planning. Design

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LIST OF ABBREVIATIONS

ACHD – Ada County Highway District

AVL – Automatic Vehicle Location

GEO – General Equipment Operator

GIS – Geographic Information System

LOS – Level of Service

MS4 - Municipal Separate Storm Sewer System

NPDES - National Pollutant Discharge Elimination System

QA – Quality Assurance (AVL Data)

QC – Quality Control (AVL Data)

ROW – Rights of Way

EXECUTIVE SUMMARY

In 1972, the Ada County highway District (ACHD) was formed and assumed construction and maintenance responsibility for all roadways in Ada County. Maintenance responsibility includes street sweeping. ACHD's Street Sweeping Program prioritizes enhanced stormwater pollution control (NPDES Permit Compliance), as well as litter removal, dust control, public health and safety, road maintenance and general aesthetics. This document is ACHD's Street Sweeping Management Plan, and the implementation of this plan is a requirement of ACHD's two NPDES Permits (Permit #IDS027561 [Phase I], and Permit #IDS028185 [Phase II]).

The purpose of the Street Sweeping Management Plan, is to meet Permit objectives, provide an overview of ACHD's Sweeping Program and training for ACHD's Broom Crew, as well as memorialize sweeping activities and the importance for the Program to be efficient and effective. The Broom Crew must be efficient and effective as ACHD's Street Sweeping Level of Service (LOS) target is to sweep over 43,000 lane miles of roadway annually. The 43,000 lane miles target is the result of an extensive examination of what LOS is achievable, and realistic, given ACHD's equipment, personnel availability, while accounting for NPDES permit required sweeping frequency and other ACHD objectives. The LOS analysis examined ACHD's Broom Crew and the activities they support, such as sweeping Outside the Permit Areas of Ada County (non-compliance sweeping) and supporting ACHD's Chip Seal Operations. The analysis divided ACHD Street Sweeping into three classes (Name (description, [% of Lane Miles])); 1. Essential (Permit Compliance and Safety [93%]), 2. Important (Non-Permit Sweeping [6%]), and 3. Additional (Parade and event support [1%]). **A note regarding the LOS analysis. It is focused solely on the number of Sweepers and General Equipment Operators (GEOs) needed to drive them. It does not include support vehicles (dump-trucks) and the GEOs needed to drive them, or the Number of Crew Leads and Supervisors. These are greater Maintenance Division discussions and outside the scope of this plan.** Additionally, dump-trucks are generally not outfitted with Automatic Vehicle Location (AVL) and therefore could not be included in the LOS analysis.

The "Additional" Sweeping, also known as Event and Parade support, becomes very time consuming for the Broom Crew and takes them away from their scheduled routes. Although the LOS analysis puts a "Lane Mile" statistic to the "Additional Sweeping", that statistic may not account for the actual loss of sweeping time for the Broom Crew. Several events do not include sweeping, such as events at ACHD's Adams Yard (e.g., Biometric Screening in the Broom Shed), but does entail the Broom Crew doing something other than sweeping. **In short, every event that keeps the Broom Crew from sweeping Ada County streets impinges on ACHD's NPDES compliance efforts.** ACHD's Outreach Database should be reviewed frequently, and efforts made to keep the Broom Crew On-route and On-schedule.

ACHD prioritized their 228 "Maintenance Areas" to effectively distribute resources (e.g., sweepers and GEOs) to achieve Permit Compliance and LOS goals. The top 3 priority areas are in the Phase I Permit Area (Downtown Boise, Phase I, and Phase I – Partial). Priorities 4 and 5 include Maintenance Areas in the Phase II Permit Area. The Outside the Permit Area of Ada County is the lowest sweeping priority (6). ACHD prioritizes the Phase I Permit Area (Priorities 1,2,3) because 87% of the Essential Class Annual Lane Miles in need of sweeping are located there.

ACHD's Maintenance Division (e.g., Broom Crew) and Fleet Management rely on Automatic Vehicle Location (AVL) data to track all vehicles, including sweepers. AVL data is vital to Permit compliance monitoring and for planning and tracking sweeper routes. ACHD's Broom Crew, Environmental and GIS departments collaborate to optimize AVL data for reporting Permit compliance, and enhanced route planning and monitoring of sweeping progress.

ACHD employs Adaptive Management as a data-based evaluation of its Street Sweeping Operations. While AVL is the primary data analyzed, Adaptive Management is much more. Adaptive Management is a collaborative effort between the Maintenance Division, Environmental, Fleet Management, GIS and Communications to guide the Street Sweeping Program towards greater efficiency and effectiveness. The Group's collaboration led to this Sweeping Management Plan and will guide ACHD's Sweeping Program as it continues to grow in the foreseeable future.

1. INTRODUCTION

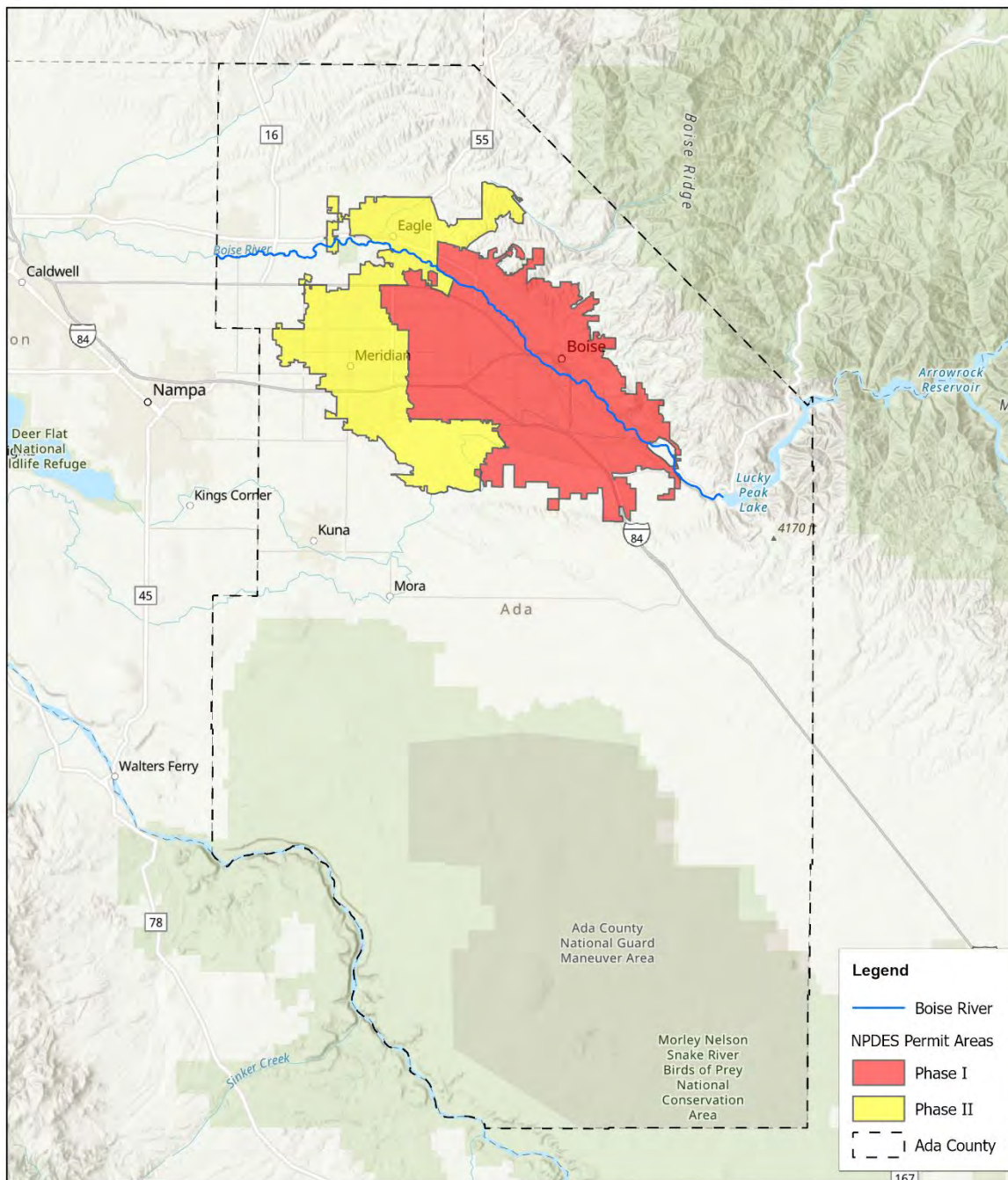
The Ada County Highway District (ACHD) was formed in 1972 and at that time assumed construction and maintenance responsibility for all public Rights-of-Way (ROW) in Ada County including street sweeping. Enhanced stormwater pollution control and receiving water quality are major concerns for ACHD's Street Sweeping Program, in addition to litter removal, dust control, public health and safety, road maintenance, and improved aesthetics.

ACHD holds two National Pollutant Discharge Elimination System (NPDES) permits (Permits); Permit #IDS027561 (Phase I Permit Area – Boise and Garden City), and Permit #IDS028185 (Phase II Permit Area – urbanized portions of Eagle, Meridian, and unincorporated Ada County). A map of ACHD's jurisdiction (County Boundary) and Permit Areas are included in Figure 1. The NPDES Permit program is a requirement of the federal Clean Water Act (CWA), which is intended to protect and restore waters for "fishable, swimmable" uses. The Permits authorize the discharge of all Municipal Separate Storm Sewer System (MS4) outfalls in the Permit Areas to waters of the United States in accordance with the conditions and requirements of the Permits. Specific Street Sweeping Management Plan requirements are stated in Section 3.5.5. of both Permits.

Street sweeping frequency requirements vary by Permit and are a major component of ACHD's Street Sweeping Management Plan. The Phase I Permit requirements include specific sweeping frequencies dependent on street type (arterial/collector or residential) and location (e.g., downtown) (Permit #IDS027561 section 3.5.5.1). The Phase II Permit requires all streets connected to the MS4 to be swept once annually (Permit #IDS028185 section 3.5.5).

Beyond street sweeping frequency, the Permits require ACHD to include, and maintain, an inventory, and/or map, of all their designated streets, roads, highways, and public parking lots in need of sweeping. Included in this inventory is an estimate of total lane miles in need of sweeping. The street sweeping frequency and density of roads (e.g., Phase I downtown) are significant determinants of the Street Sweeping Management Plan.

Other important components of ACHD's Street Sweeping Management Plan include an overall description of sweeping activities that minimize pollutant discharges into the MS4, a description of ACHD's sweeping fleet, a general schedule of sweeping by location and frequency category, metrics describing the volume of debris removed, and ACHD's estimate of the effectiveness of the Street Sweeping Program. ACHD is currently identifying areas that are infeasible to sweep and determining a means of addressing these areas, this information will be added later.



Ada County & NPDES Permit Areas

ACHD Sweeping Management Plan

0 2.5 5 7.5
Miles



Ecosystem Sciences, LLC
Science Design Planning

Disclaimers - This map (or data product) is for illustration purposes only. It is not intended to be used for description, conveyance, authoritative definition of legal boundary, or property title. This is not a survey product. Users are encouraged to examine the documentation or metadata associated with the data on which this map is based for information related to its accuracy, currentness, and limitations.

Figure 1. Ada County Permit Areas.

2.ACHD's STREET SWEEPING PROGRAM

ACHD's Street Sweeping Program is administered through a collaboration of the Maintenance Division (Administration and Broom Crew), Environmental Department, Information Technology (Geographic Information Services [GIS]), and Communications. Please see Appendix A for a description of the roles and responsibilities of the various entities that collaborate to perform, report, promote and document ACHD's Street Sweeping Program.

3. STREET SWEEPING PERMIT COMPLIANCE – PHASE I AND PHASE II

A detailed inventory of ACHD operated streets, named “Pavement Management,” is maintained using GIS. The Pavement Management layer is updated regularly as Ada County grows and more streets are added to ACHD’s workload. In total ACHD manages and maintains over 5,384 street lane miles in the County (2023). Statistics provided below regarding street sweeping “Lane Miles” are derived using ACHD’s Pavement Management GIS layer. ACHD’s GIS department has broken down the Pavement Management Layer into roadways connected to the MS4 and those that are not. Lane miles are calculated by multiplying the length of road (centerline) by the number of lanes (e.g., two lane street * one mile in length = two lane miles).

Per the Permits, sweeping streets that are connected to the MS4 are the priority. Additionally, the Phase I Permit establishes sweeping frequencies based on traffic volume. See the Phase I Permit Area sweeping schedule in Table 1 below. Compliance Lane Miles in Table 1 are derived by multiplying the MS4 Lane Miles by the Annual Events (e.g. Downtown Boise, 63 lane miles x 24 events = 1,512 lane miles). ACHD needs to sweep approximately 10,000 lane miles annually in the Phase I Permit Area to meet Permit compliance (Table 1).

The NPDES Phase II Permit states – “Where the Permittee is responsible for the O&M of streets, roads, highways, and/or parking lots, the Permittee must sweep those areas that discharge to the MS4 at **least once annually** (Permit #IDS028185 part 3.5.5).” There are over 1,700 total lane miles within the Phase II Permit Area, with 550 lane miles connected to the MS4 (Table 2).

Figure 2 displays the street sweeping frequency per roadway type for each Permit Area and Outside the Permit Areas of Ada County.

Table 1. Phase I Permit Area Street Sweeping Schedule (adapted from the Phase I NPDES Permit)

Roadway Type	Frequency	Annual Events	Total Lane Miles	MS4 Lane Miles	Compliance Lane Miles*
Downtown Areas of Boise and Garden City	Two Times Per Month	24	68	63	1,512
Arterial and Collector Roadways (non-Downtown)	Every Six Weeks	~8	946	708	5,664
Residential Roadways (non-downtown)	Four Times Per Year	4	1,412	688	2,352
Paved Alleys and Public Parking Lots	One Time Per Year	1	32**	0	0

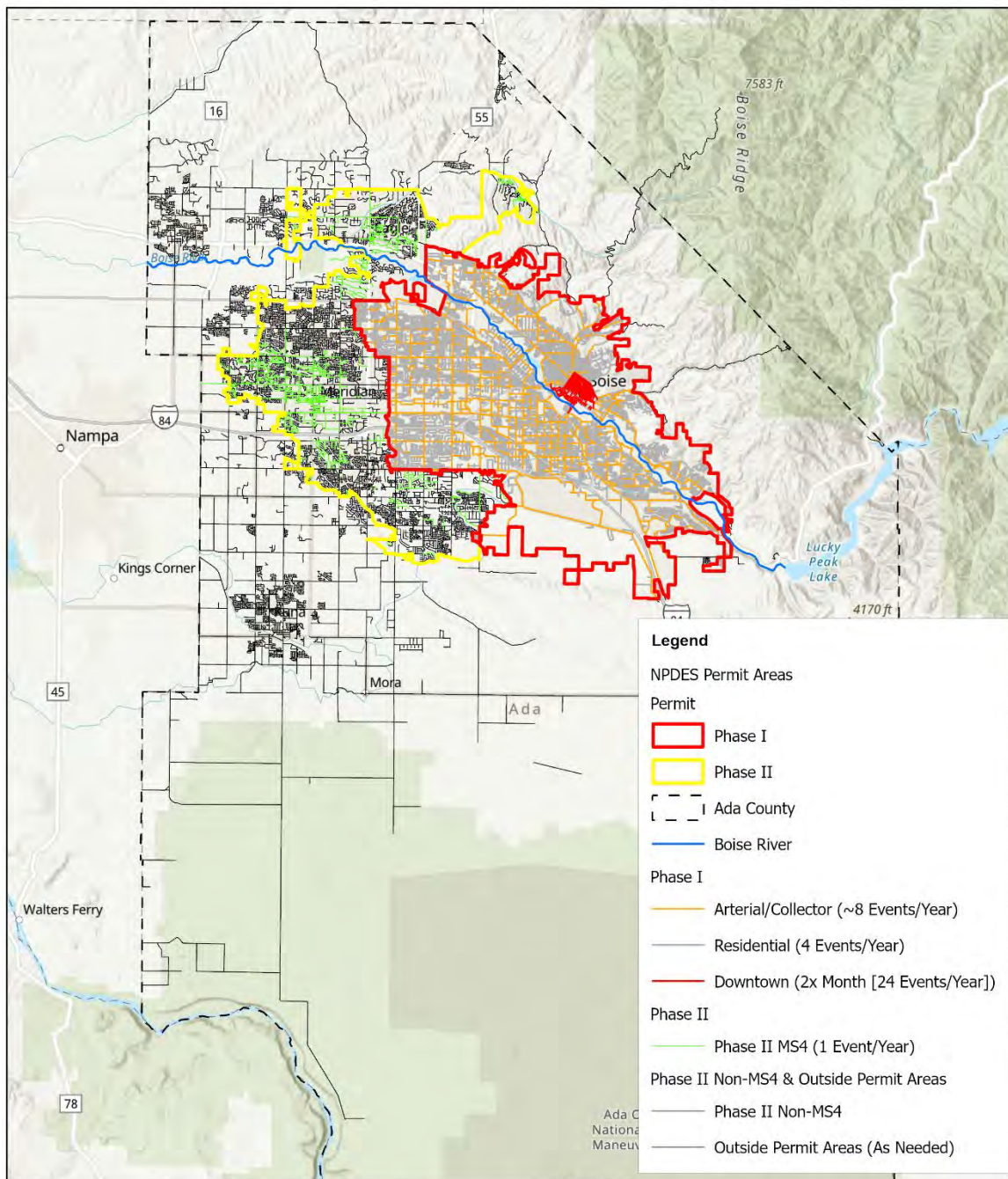
*MS4 Lane Miles multiplied by Annual Events

**Paved alleys only

Table 2. Phase II Permit Area NPDES Street Sweeping Compliance (total miles includes connected and not connected to the MS4), and Outside the Permit Area Lane Miles Needed to Be Swept.

Roadway Type	Frequency	Annual Events	Total Lane Miles	MS4 Lane Miles	*Compliance Lane Miles
Phase II Permit Area - All Roadways	MS4 Connected One Time Per Year	1	1,728	550	550
Outside Permit Areas of Ada County	As Needed	No Mandate	1,636	Not Applicable	Not Applicable

*MS4 Lane Miles multiplied by Annual Events



Roadway Type & Sweeping Frequency

ACHD Sweeping Management Plan

0 2 4 6
Miles



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Figure 2. Street Sweeping Frequency Per Permit Area.

4. STREET SWEEPING PROGRAM LEVEL OF SERVICE (LOS)

ACHD performed an extensive examination of what Street Sweeping Level of Service (LOS) is achievable, and realistic, given equipment (sweepers, trucks, etc.) and personnel availability (General Equipment Operators (GEOs), Supervisors etc.). The LOS analysis relied on ACHD Automatic Vehicle Location (AVL) data and Permit compliance reporting. ACHD's Street Sweeping Program uses AVL data to track sweeping progress. A flow chart illustrating the process to convert AVL data into reportable data for sweeping compliance is summarized in Figure 3. The AVL data is compiled in a GIS and analyzed per street segment. The number of times that street segment was swept is compared to the number of times that street segment needed to be swept to meet Permit compliance. This analysis determines **Permit Compliance %** per street segment:

$$\text{Permit Compliance \%} = \# \text{ of times swept} / \text{Permit required street sweeping frequency}$$

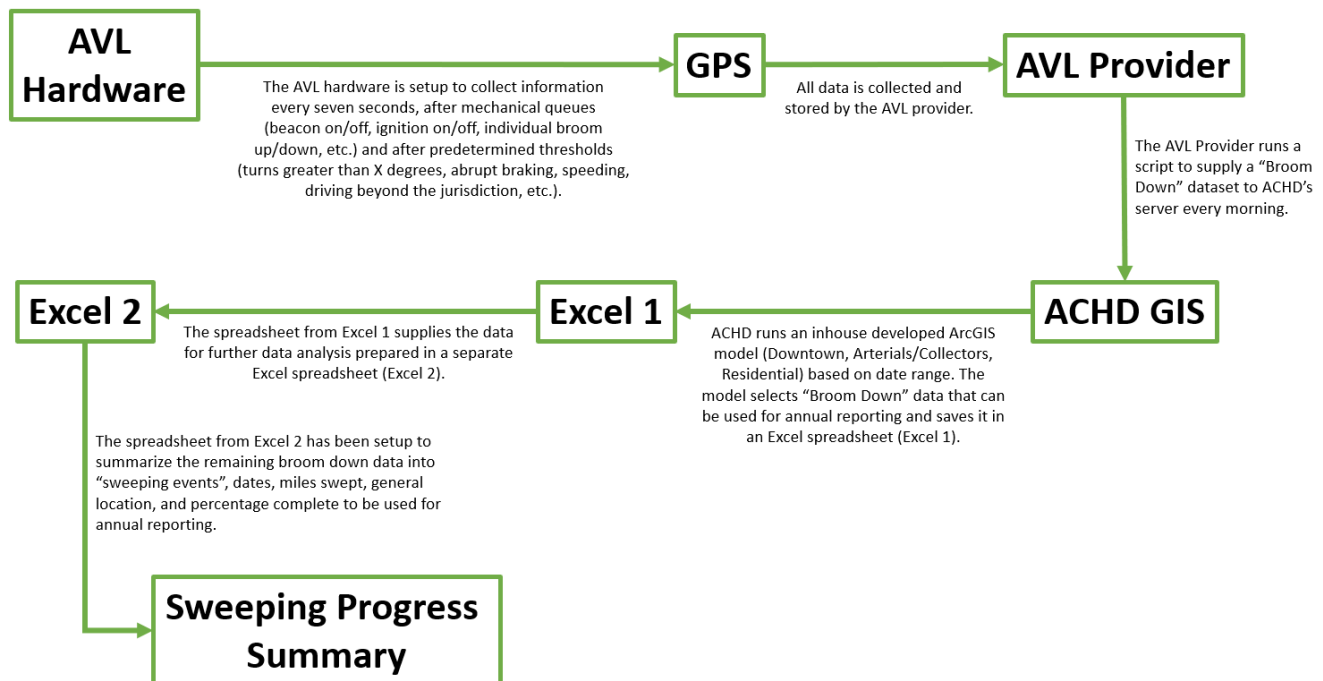


Figure 3. Workflow to Convert AVL Data to Derive Permit Compliance %.

ACHD's analyses of AVL data and Permit Compliance % revealed that areas of the Phase I Permit Area are under swept (e.g., not fully meeting Permit required street sweeping frequencies for all roadway types), while areas of the Phase II and Outside the Permit Areas of Ada County are swept more than required. ACHD also acknowledged that their sweeping program was vital to other maintenance needs, such as Chip Sealing. With this understanding, ACHD categorized their Street Sweeping Program into three classes: Essential Street Sweeping, Important Street Sweeping, and Additional Street Sweeping.

- **Essential Street Sweeping** – Highest Priority Street Sweeping
 - Phase I and Phase II Permit required sweeping
 - Chip Seal support
 - Safety and complaint response
- **Important Street Sweeping** – Street sweeping beyond Permit compliance associated with routine roadway maintenance
 - Routine maintenance street sweeping in the Phase II Permit Area
 - Routine maintenance street sweeping in the Outside the Permitted Areas
- **Additional Street Sweeping** – Involvement in special events and community outreach
 - Participation in education events
 - Community support and participation in events occupying the Right of Way such as parades

The next step in the LOS analysis was to assign lane miles to each class. The lane mile analysis was based on Fiscal Year (FY) 2022 (October 1st 2021 to September 31st 2022) AVL data to derive the following street sweeping metrics: Average Sweeper Speed, Average Daily Broom Down Time, Average Annual Miles Swept per Sweeper, Lane Mile Multiplier, and a Personnel (GEOs) to Sweeper Ratio (Table 3). The Lane Mile Multiplier is used to account for multiple passes a sweeper must perform to effectively sweep one lane mile. Heavy debris, on-street parking, bike lanes and wide streets (arterials/collectors) impact the effectiveness and efficiency of street sweepers. Based on AVL data analyses it was determined that on average, sweepers needed to conduct 2.5 passes to perform one lane mile of sweeping. For example, Phase I Permit Area lane miles must be multiplied by 2.5 to accurately estimate the actual number of miles needed to be swept to meet compliance (Table 4). These metrics are used to determine the lane miles associated with each LOS class. The LOS metrics are also employed for future planning and resource distribution (see Section 6 Street Sweeping Prioritization).

Table 3. Level of Service Metrics, FY 2022 Analysis.

Metric	Value	Description
Average Speed (Broom Down)	3.5	Miles per Hour (AVL, Maintenance Division)
Average Daily Broom Down Time	6.5	Hours Per Day (Maintenance Division)
Average Annual Lane Miles Swept Per Sweeper	1,426	Annual Miles (FY2022)
Lane Mile Multiplier	2.5	Miles Swept to = 1 Lane Mile (FY2022)
Personnel/Sweeper Ratio (2022) *	0.96	0.96 GEOs per Sweeper

*2022 Sweeper Fleet/GEOs (# of Sweeper Drivers)

The LOS analysis indicated that ACHD's Annual Street Sweeping obligation (total lane miles to be swept) to be roughly 43,540 lane miles. Approximately 93% of the total lane miles ACHD needs to sweep annually are associated with Essential Tasks (Phase I and Phase II compliance, supporting Chip Seal operations, and responding to complaints and safety street sweeping) (Table 4). The Chip Seal lane mile obligation was derived by determining the loss of sweeping productivity during chip seal operations. All day shift operators from the Broom Crew (21 operators in FY2022) redirect focus from compliance

sweeping to chip seal support for 3.5 months. Therefore, that loss of productivity must be considered when planning for street sweeping operations and meeting compliance objectives. A sweeper, on-average, sweeps 119 lane miles per month. Therefore, the equation to determine chip seal obligation is 21 sweepers * 3.5 months * 119 lane miles per month, which equals 8,747 lane miles. If ACHD was not chip sealing, the sweeper fleet would sweep 8,747 miles over that 3.5-month period. Therefore, to meet compliance ACHD must perform all their street sweeping in an 8.5-month period, rather than a 12-month period. To meet compliance ACHD would need more sweepers sweeping during the non-chip sealing 8.5 months, to make up for the loss of productivity.

Table 4. Level of Service Miles Per Category and Annual Street Sweeping.

Lane Mile	Essential			Important	Additional	Total Lane Miles
	Compliance	Chip Seal	Safety	Routine Maintenance	Special Events	
Lane Miles (Total Lane Miles * 2.5)	30,805	8,747	750	2,483	755	43,540
Percent of Total Lane Miles	92.6%			5.7%	1.7%	100%

The LOS analysis derived the number of sweepers and GEOs needed to complete ACHD's annual sweeping obligation. The number of sweepers needed was derived by dividing the LOS category Lane Miles by the Average Annual Lane Miles Swept Per Sweeper (Table 3). For example, to support Essential Street Sweeping tasks ACHD needs to have 29 sweepers with 28 GEOs to operate them. In total, to meet the expected LOS for Ada County ACHD needs to employ 31 GEOs and have 32 sweepers in their fleet. Figure 4 below succinctly presents the LOS. **The number of Sweepers and GEOs needed to perform the LOS does not include support vehicles and the GEOs needed to drive them. Nor does the LOS analysis include the number of Supervisors or Crew-Leads needed. In short, this analysis is focused solely on the number of sweepers and GEOs to drive them to perform ACHD's LOS.**

Table 5. LOS Category Sweepers and GEOS Estimates (Sweepers and GEOs only). *

LOS Class	Essential	Important	Additional	Total
Sweepers Needed (Lane Miles/1,426)	29	2	1	32
GEOs Needed (Sweepers x 0.96)	28	2	1	31

*Analysis does not include Supervisors, Leads or Support Vehicles & GEOs.

Please see Figure 4, for a graphic detailing the results of the LOS Analysis. The LOS must be considered as a point-in-time analysis. Ada County is one of the fastest growing regions in the United States adding more streets to ACHD's workload every year. Please see section "8.0 Future Planning" for more information on ACHD's expected growth and required resources in the next five years.

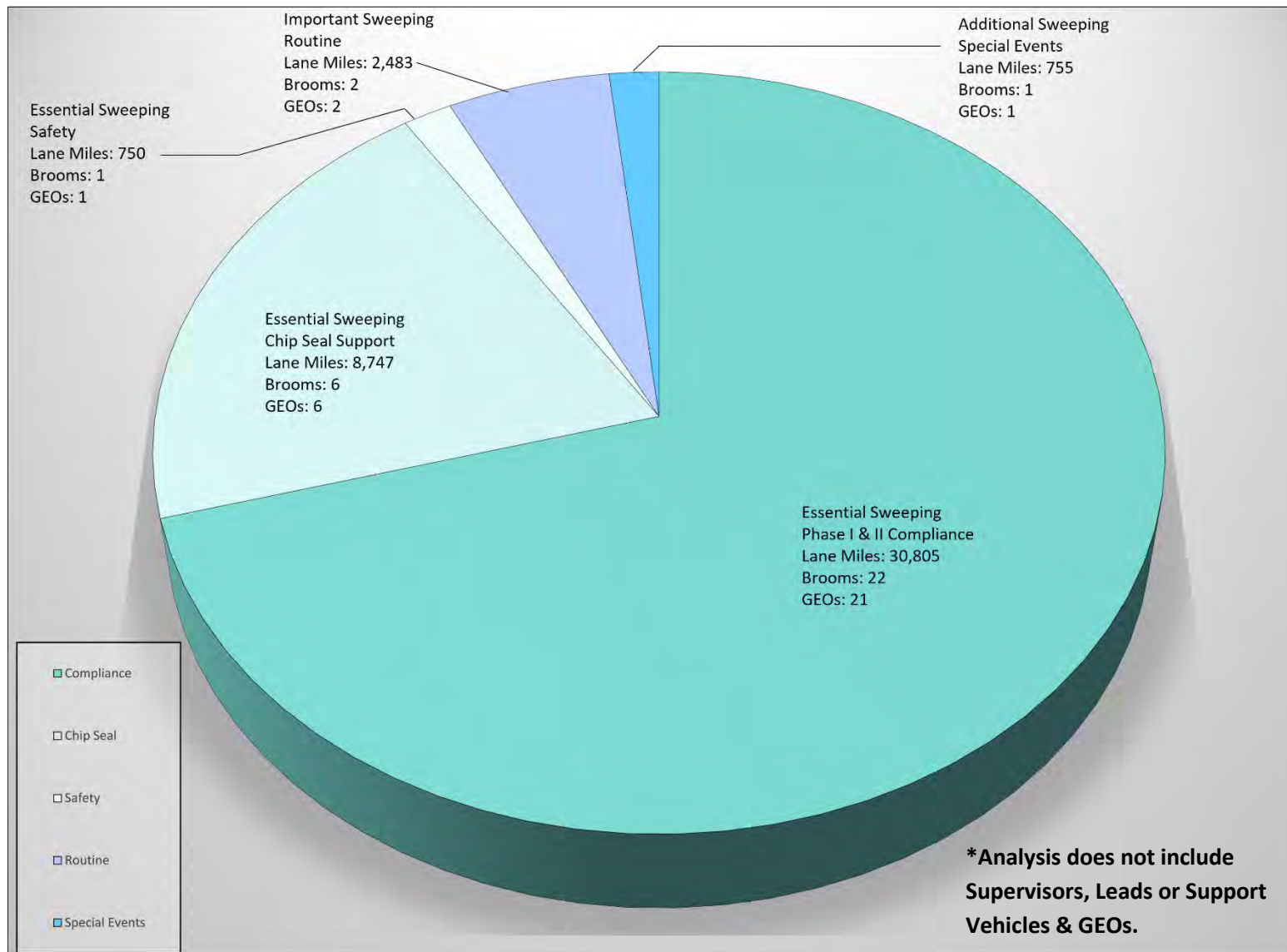


Figure 4. Level of Service Breakdown and Expected Sweepers and GEOS Needed (Sweepers and GEOS only).

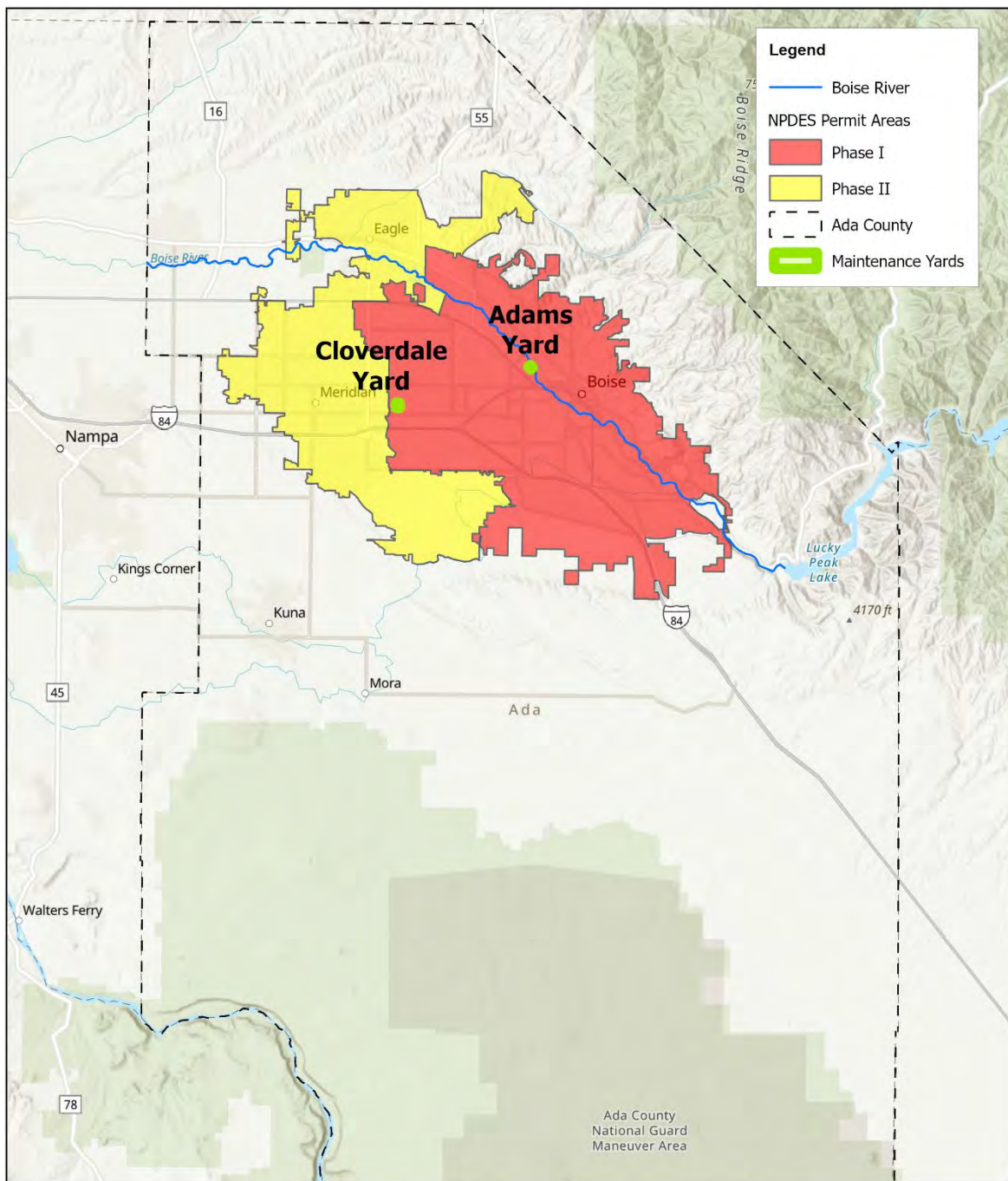
5. STREET SWEEPING OPERATIONS

The Broom Crew is part of ACHD's Maintenance Division. The Maintenance Division conducts operations from primarily two maintenance facilities, hereafter referred to as maintenance yards, specifically the Adams Yard and Cloverdale Yard. The Broom Crew is housed at the Adams Yard (Figure 5) in Garden City. The Cloverdale Yard is in Boise (Figure 5) and is currently unavailable for street sweeping waste collection. ACHD has a third maintenance yard under design, the Ustick Yard, which will be located on Ustick Road, in Meridian. ACHD also has plans to create a maintenance yard on Apple Street in Boise. More information on these maintenance yards is found in section 9.0.

The Broom Crew operates year-round, weather permitting, removing pollutants from roads in the form of leaves, dust, sand, and other debris to protect downstream waterways from stormwater runoff pollution. ACHD's sweeping program also contributes to roadway safety, dust abatement, and non-motorized travel support throughout the county (aka sweeping bike lanes and pathways). Some street sweepers (aka "brooms") are equipped with vacuum capabilities and can be utilized to assist Drainage Maintenance (Catch Basin and Inlet Inspection and Cleaning). The Broom Crew is vital to ACHD's annual chip sealing operations and supports special events (e.g., parades) throughout the County.

At the time of drafting this document, the Broom Crew workforce fluctuated around thirty full-time employees and often employs temporary hires. The numbers presented herein will change with time. At present, the Broom Crew Chief manages the Broom Crew, and operates two "shifts", the Daily Operations Crew, and the Early AM Crew. The Daily Operation Crew consists of two Lead workers (Leads) and 21 General Equipment Operators (GEOs) that operate M-F 7:00am – 5:30pm. The Early Am Crew has one Lead, and seven GEOs and operates from 10:30pm to 9:00am Monday – Friday morning. At the time of drafting this document, the ACHD's sweeper fleet consists of mechanical sweepers (e.g., Elgin, Eagle Full Size) and vacuum sweepers (e.g., A-8 Schwarze Twister High). Included in the fleet are three CV400 – Multihog sweeper designed for pathways and bike lanes and several dump trucks (Appendix A. Evaluation). ACHD's sweeper fleet is regularly updated with new and improved sweeping vehicles. At present, 90% of ACHD's sweeping fleet are outfitted with Automatic Vehicle Location (AVL) technology. ACHD's FY 2022 Sweeping Analysis based on AVL data, estimated that on average each "broom" would sweep approximately 1,427 Lane Miles annually (i.e., 119 Lane Mile per month). Brooms generally sweep at 3.5mph and sweep for roughly 6.5 hours a day. These metrics will change annually.

Broom Crew operations are organized via ACHD's 228 Maintenance Areas (see section 6.0 Steet Sweeping Prioritization for more information). Broom Operators are assigned routes (designated arterials, collectors, or residential streets) within each Maintenance Area. Mechanical sweepers are used primarily on residential streets, while vacuum sweepers are used on arterial/collector streets, residential streets, and downtown streets. Daily Operation Crew sweeps throughout the County (all maintenance areas) and focuses on the arterial/collector streets early in the morning and then moves to residential streets. All streets are swept before moving into the next Maintenance Area. The Early AM Crew primarily focuses on the Downtown Area of Boise, which requires the most frequent sweeping (i.e., Phase I Permit). Permit compliance in the Phase I & II Permit Areas is ACHD's top sweeping priority and considered "Essential" to the desired Level of Service (LOS).



ACHD Maintenance Yards

ACHD Sweeping Management Plan

0 2 4 6
Miles



Ecosystem Sciences, LLC
Science Design Planning

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Figure 5. Location of ACHD's Current Maintenance Yards (Broom Crew Housed at Adams Yard).

6. STREET SWEEPING PRIORITIZATION

The Permits require priority areas and frequency for ACHD's Street Sweeping Program. Figure 1 (page 6) displays the extent of the Phase I and Phase II Permit Areas. Within the Permit Areas, Phase I and Phase II sweeping frequency requirements further stratify priority areas for ACHD to focus its sweeping activities (e.g., Phase I downtown [24 events per year]). As mentioned above, ACHD organizes maintenance activities within defined Maintenance Areas (Figure 6). Each Maintenance Area encompasses a portion of the County, and the Maintenance Division uses these Maintenance Areas as the geographic extent in which to direct personnel to perform their work (e.g., drainage inspection and cleaning & street maintenance). The Broom Crew employs ACHD's Maintenance Areas to direct Broom Crew operators to their assigned routes.

Combining ACHD's Maintenance Areas with the Permit Areas (see Figure 6) provides the Street Sweeping Program with a basis for determining street sweeping frequency required per Maintenance Area. Please note the legend in Figure 6 has more classes than merely Phase I and Phase II, as the Permit Areas are stratified into subclasses. The Phase I Permit Area is subset into Phase I – Downtown, Phase I, and Phase I – Partial. Similarly, the Phase II Permit area is subset into Phase II and Phase II – Partial. The subsets are partially defined by street sweeping frequency. For example, Phase I – Downtown requires the highest street sweeping frequency, two times per month. The Phase I subclass includes Maintenance Areas that are completely within the Phase I Permit Area, and streets within these Maintenance Areas adhere to Phase I sweeping frequencies. Phase I – Partial includes Phase I streets but may also have Phase II streets. The Phase II subclass Maintenance Areas are completely within the Phase II Permit Area and are mandated to be swept once annually. Maintenance Areas in the Phase II – Partial subclass includes Phase II streets, but also includes streets that are Outside the Permit Areas of Ada County. The Outside the Permit Areas subclass denotes streets not covered under a Permit and have no mandated street sweeping frequency.

These subsets provide a Maintenance Area Prioritization for sweeping operations (Table 6). The highest priority is the "Phase I – Downtown subclass" (Table 6, Figure 6). There are two Maintenance Areas (132 and 133) in this subclass, and combined they account for roughly 0.1% of Ada County (Table 6). However, this area amounts to 12% of ACHD's Essential Compliance lane miles (Essential LOS) (Table 6). The large percentage of compliance lane miles in a small area is due to the Phase I Permit street sweeping frequency; 2 times per month (24 times a year). Phase I – Downtown is primarily swept by the Early AM Broom Crew. The nighttime sweeping is advantageous for this densely populated area of the City of Boise. Night Operations alleviate many of the challenges associated with daytime sweeping (e.g., traffic, on-street parking, pedestrians etc.).

The second highest street sweeping priority includes the Phase I subclass (Table 6). This subclass is primarily swept by Daytime Operations, although there is some overlap by the Early AM Crew. The Phase I subclass includes 47 maintenance areas that are completely within the Phase I Permit Area.

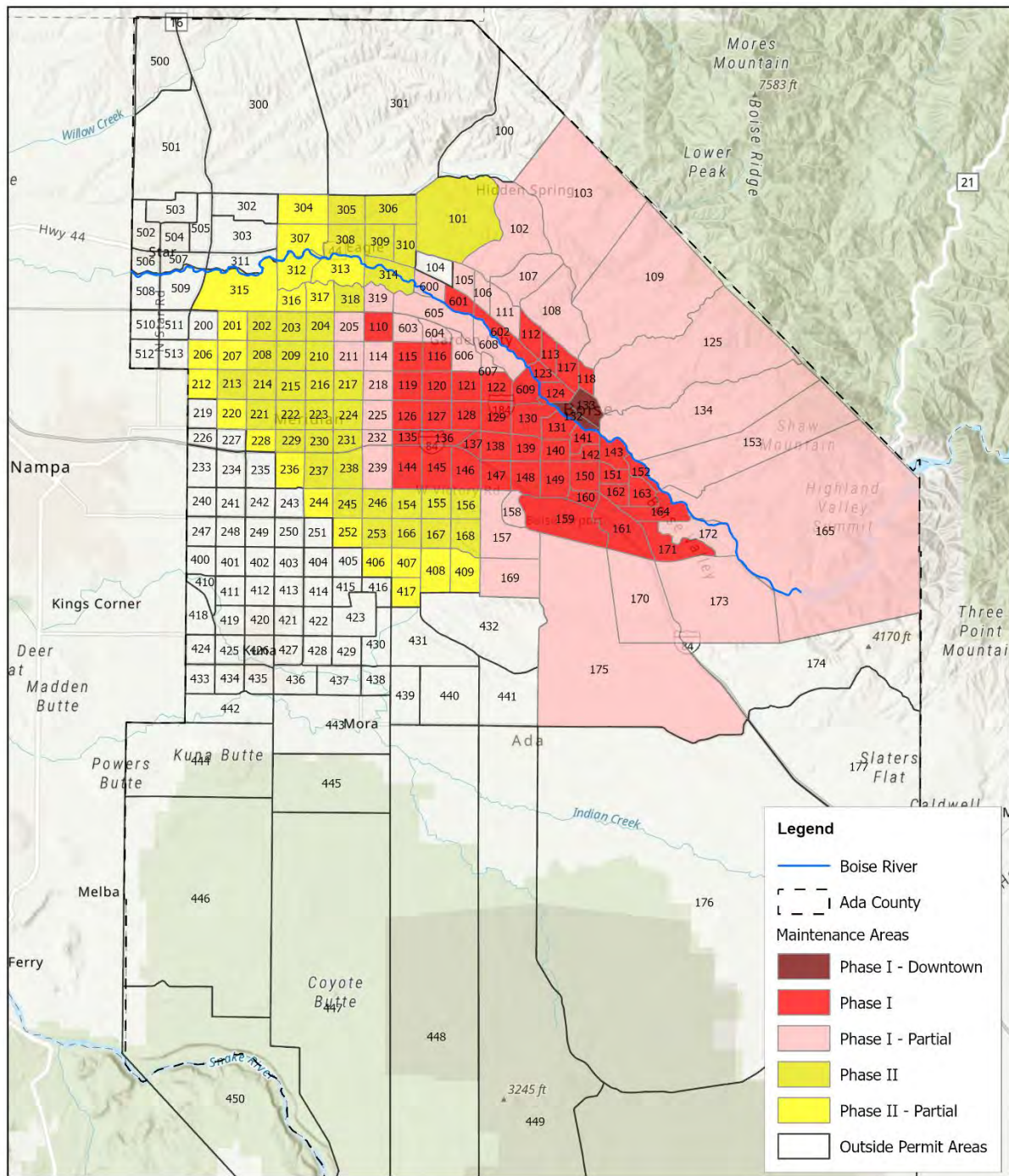


Figure 6. ACHD's Maintenance Areas Organized by NPDES Permit.

Like the Phase I – Downtown subclass, the Phase I subclass includes a large percentage of Essential Compliance Lane Miles (51%), in a small area (4.4% of Ada County) (Table 6). Daily Sweeping Operations in these densely populated areas of Boise and Garden City are challenging. These Maintenance Areas include dense tree canopy along residential and arterial streets often complicated by on-street parking and heavy traffic. Not only do the Phase I subclass Maintenance Areas include a significant amount of lane miles in need sweeping, but effective sweeping is challenging requiring the Broom Crew to spend more time and devote more resources to ensure compliance with Permit sweeping requirements.

Table 6. Maintenance Area and NPDES Permit Compliance Prioritization.

Maintenance Area Subclass	# of Maintenance Areas	% Essential Compliance Lane Miles	% Ada County	Street Sweeping Priority
Phase I – Downtown	2	12%	0.1%	1
Phase I	47	51%	4.4%	2
Phase I – Partial	35	24%	17.3%	3
Phase II	37	10%	4.3%	4
Phase II – Partial	23	4%	2.7%	5
Outside Permit Areas	84	NA*	71.1%	6

*Included in the “Important” Category of the Level of Service (LOS).

The third highest priority subclass of Maintenance Areas is Phase I – Partial (Table 6). These 35 Maintenance Areas are serviced by the Daily Operations Crew and include both Phase I Permit Area and Phase II Permit Area and sweeping frequencies (Figure 6). Although, the Phase II sweeping frequencies are less than those of Phase I, this subclass includes 24% of ACHD’s Essential Compliance Lane Miles (Table 6). The large percentage of Ada County included in the Phase 1 – Partial is primarily due to the size of the Maintenance Areas north of Boise (Table 6, Figure 6). Streets are primarily located in the southern portions of these Maintenance Areas, as the northern portions include large tracts of Public Land (e.g., BLM) and Open Space (e.g., City of Boise).

The Maintenance Areas in the subclasses that include solely Phase II streets (Phase II) or some Phase II streets and Outside the Permit Areas of Ada County streets (Phase II – Partial), are the 4th and 5th highest priority for sweeping operations. These areas are swept by the Daily Operations Crew and most importantly, all arterials, collectors, and residential streets in the sixty maintenance (Table 6) areas only need to be swept once annually.

The 84 Maintenance Areas in the Outside the Permit Areas subclass are the lowest priority (Table 6). The Lane Miles within these Maintenance Areas are not part of either Permit, and therefore ACHD has no required street sweeping frequency for these arterials, collectors, and residential streets. Rather ACHD has deemed these Maintenance Areas as “Important” (LOS Category) and will continue to sweep them at least annually, and as needed to respond to complaints or other needs to keep them safe and clear.

The Broom Crew was surveyed during the drafting of the Street Sweeping Management Plan. The Supervisor and Leads provided several challenges to street sweeping that either cause a slowdown in overall sweeping or ineffective sweeping (e.g., not being able to access heavy debris). The Broom Crew Supervisor and Leads initially organized the challenges by sweeping zone. Challenges have been

reorganized by Maintenance Area Subclass in (Table 7). The Supervisor and Leads grouped the Challenges into 5 classes: Inaccessible Curb, Heavy Debris and Trees, Dump Travel Times, Construction and Growth, and Truck or Yard Issue. An inaccessible curb primarily relates to on-street parking that hinders a sweeper's ability to access the curb, where much of the debris resides. This challenge is a cause of ineffective sweeping and is an annual issue. Heavy Debris and Trees is generally considered a seasonal issue (leaf-season), although heavy debris can build up due to traffic, weather events or infrequent sweeping (e.g., Outside the Permit Areas of Ada County). Dump Travel Times are generally associated with areas that are further from the Maintenance Yards (Cloverdale and Adams) but can also relate to heavy debris and multiple return trips to the Maintenance Yard to dump. Seasonal actions such as providing dump-truck support or other options for dumping can alleviate this issue. Construction and Growth issues include reduced sweeper access to defined routes, slowed progress due to traffic around a construction site, and increased workload due to additional lane miles added to the Pavement Management layer. Growth also includes the challenges associated with increased traffic.

Table 7. Challenges to Street Sweeping Organized by Maintenance Area Subclass (A = Annual, S = Seasonal).

Maintenance Area Subclass	Sweeping Priority	Challenges				
		Inaccessible Curb	Heavy Debris & Trees	Dump Travel Time	Construction & Growth	Truck or Yard Issue
Phase I – Downtown	1		A	A	A	A
Phase I	2	A	S	S	A	A
Phase I – Partial	3	A	S	A		A
Phase II	4	A	S	A	A	A
Phase II – Partial	5		S	A	A	A
Outside Permit Areas	6		A	A	A	A

Viewing these challenges in the context of sweeping prioritization enables the identification of solutions tailored to specific Sweeping Priority areas. For example, the Broom Crew employs the Early AM Crew in Downtown Boise (Phase I – Downtown), which alleviates some of the Inaccessible Curb issues, as this area is primarily metered parking and cars do not stay overnight. Such actions lead to effective sweeping in the Phase I – Downtown area. Similarly, the Daily Operations Leads noted that Phase I Maintenance Areas experience only seasonal Dump Travel Time issues because ACHD often provides dump-truck support during Leaf Season. Having dump-truck support allows sweepers to offload their hopper locally rather than commuting to and from the Maintenance Yard. These actions were implemented by the Maintenance Division (Broom Crew) prior to the drafting of this plan. Further recommended actions consistent with Sweeping Prioritization are explored in section 7.0 Recommendations for Street Sweeping Implementation.

ACHD also coordinates with local trash pickup services to ensure street sweeping activities do not hinder their operations.

7. STREET SWEEPING PROGRAM EFFECTIVENESS

ACHD's Street Sweeping Program is effective throughout Ada County. The Broom Crew focuses on the Phase I and Phase II Permit Areas keeping pollutants out of the MS4, while also sweeping the arterial, collector, and residential streets located Outside the Permit Areas of Ada County. A 2022 sweeping analysis (AVL data) indicated that on average one ACHD Broom sweeps approximately 1,426 lane miles annually (Table 3). This equates to roughly 119 lane miles swept per month. Based on 2023 Permit reporting data, between October 1, 2022, and September 30, 2023, ACHD's Broom Crew collected an estimated 26,521 cubic yards of debris. ACHD's 2023 Permit reporting also indicated that Brooms collect 2.6 cubic yards of debris for every one mile swept (ACHD 2023). Over a year timeframe, one broom has the potential to remove over 3,707 cubic yards of debris from Ada County roadways. Over a similar timeframe, in the Phase II Permit area, ACHD removed 5,104 cubic yards of debris (ACHD 2024).

The Broom Crew needs sufficient resources to meet ACHD's Level of Service and perform effective street sweeping that meets water quality objectives. The metrics described above are important to ACHD forecasting LOS annual sweeping resource needs (e.g., Brooms and GEOs). ACHD must forecast its annual sweeping resource needs to ensure Permit requirements are met and street sweeping is effective, while also being cognizant of the time and resources needed to support chip sealing, responding to complaints and safety concerns.

Further information regarding the sweeping program's effectiveness, including public outreach efforts, can be found in ACHD's NPDES Annual Report and updates to the Phase I and Phase II Stormwater Management Plans. Current Stormwater Management Plans are available on ACHD's website: <https://www.achdidaho.org/>.

Areas in the ACHD right of way that are technically infeasible for street sweeping include 103 miles of alleys and gravel/dirt roads (analysis 2024). ACHD's current sweeper technology is unable to safely or effectively accommodate sweeping the narrow alleys. Litter control and debris removal is conducted in the alleys utilizing the Sheriff Labor Detail program. A map illustrating the location of infeasible sweeping areas is located in Figure 7.

Infeasible Sweeping Areas

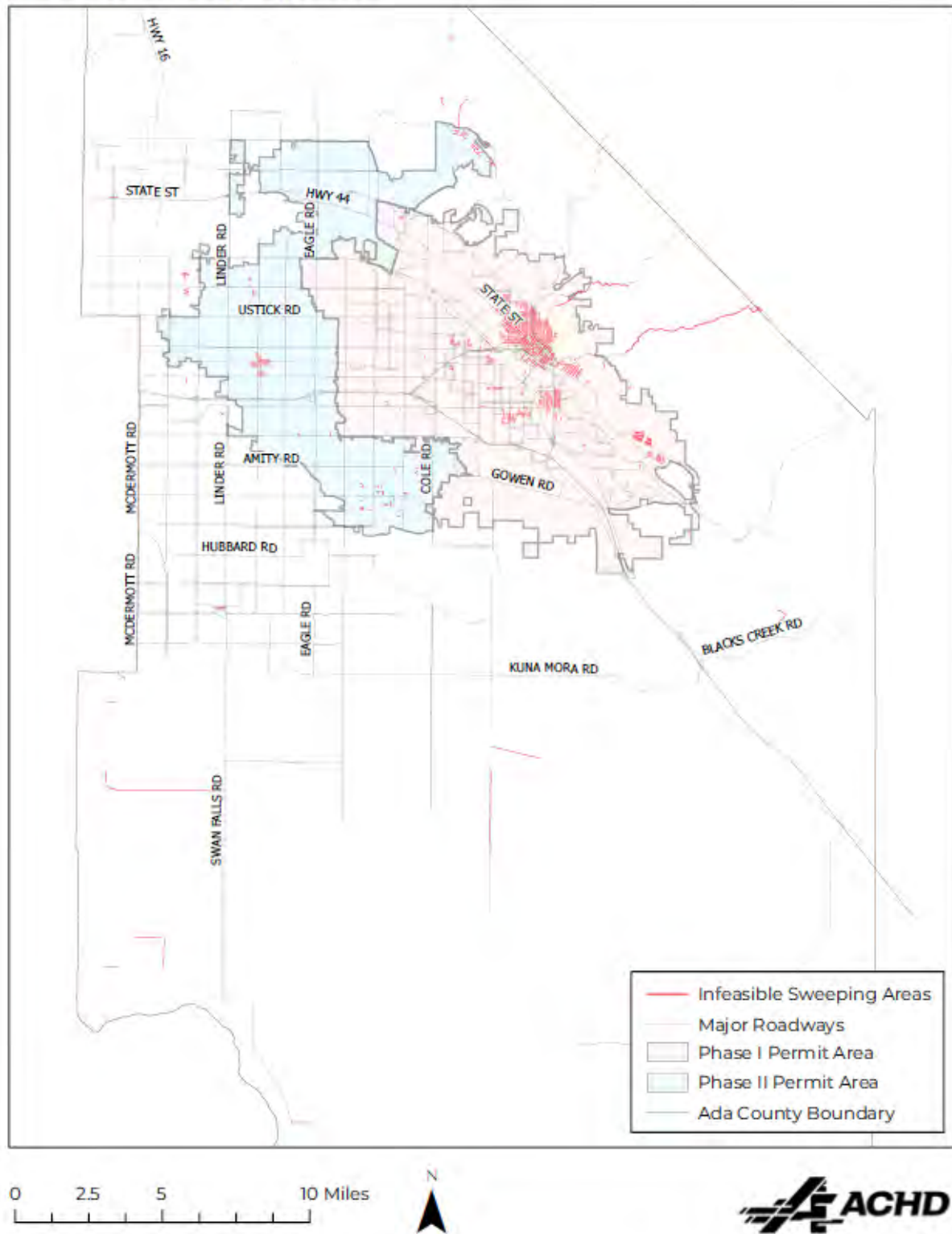


Figure 7. Infeasible Sweeping Areas (2024).

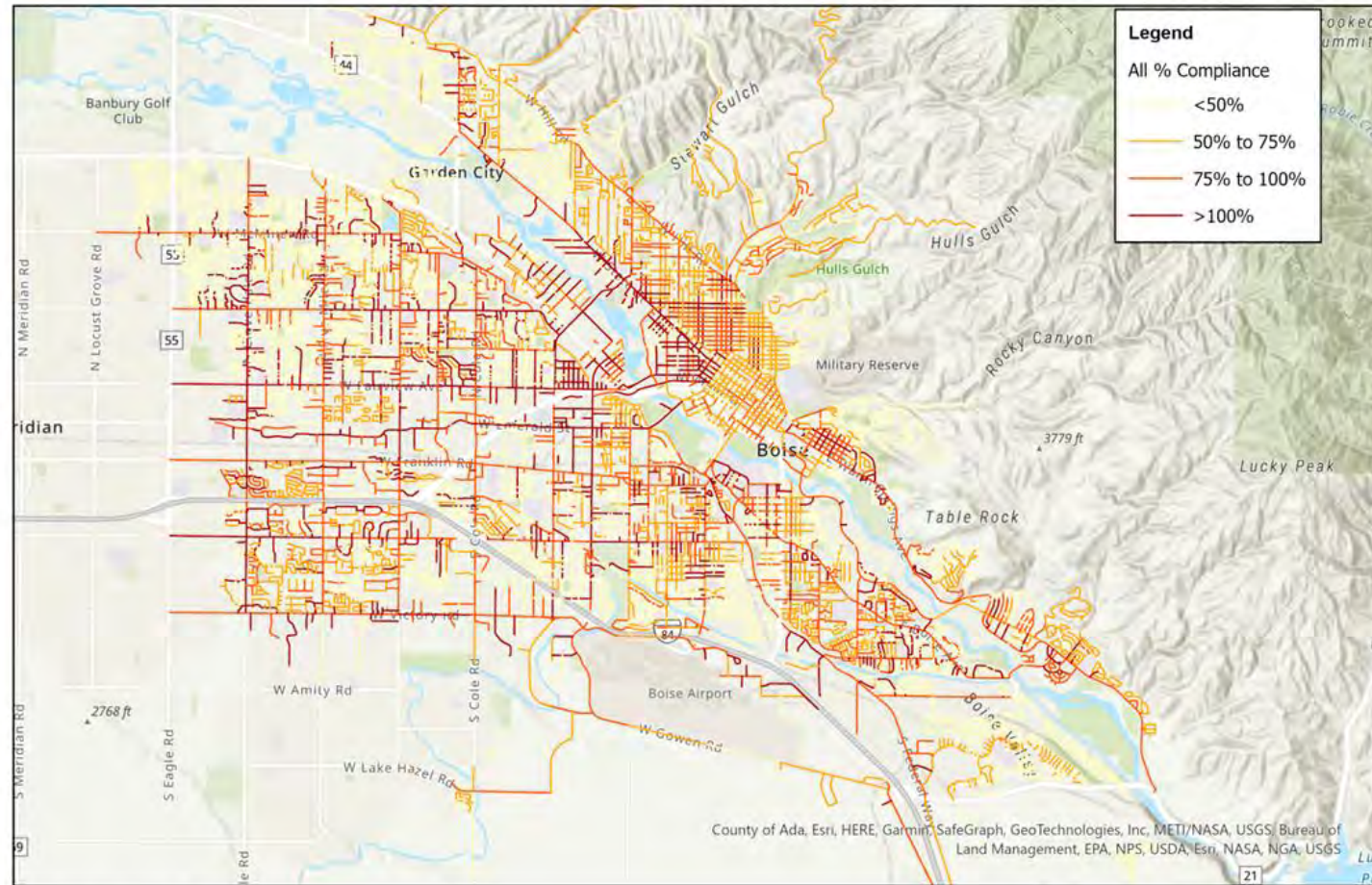
8. RECOMMENDATIONS FOR STREET SWEEPING IMPLEMENTATION

ACHD's Broom Crew must prepare for and respond to a constantly changing environment. Weather, construction, traffic, pedestrians, road maintenance, vehicle maintenance (e.g., servicing brooms) and even coordinating with trash pick-up service all impact Broom Crew Operators ability to stay on-route and on-schedule. For many operators no two days are similar, and plans can change the moment they leave the Maintenance Yard. For these reasons, ACHD's implementation plan focuses on proper resource allocation coupled with enhanced monitoring and quicker feedback.

Proper resource allocation devotes the greatest number of resources (Brooms and GEOs) to the areas that require the most frequent sweeping or contain the most Lane Miles in need of sweeping. The Sweeping Prioritization (Section 5) provides a first step in proper resource allocation. And, as mentioned in section 5, ACHD has already devoted the proper resources to the Phase I – Downtown subclass (e.g., the highest Priority) by ensuring the Early AM Crew focuses on this area exclusively.

Non-compliance in the Phase I – Downtown area is related to missed areas (e.g., no AVL, or not-swept) or over-sweeping areas (Arterials in Downtown - FY 2022 AVL Analysis, Figure 8). Non-compliance is why ACHD's Street Sweeping Management Plan focuses on enhanced monitoring and quicker feedback. Enhanced monitoring means all Brooms in ACHD's Sweeping Fleet are outfitted with Automatic Vehicle Location (AVL). AVL data, when displayed in a GIS or Mobile Application (e.g., ArcGIS Field Maps), depicts the path of sweeper as a line file. At a minimum ACHD's Maintenance Division (Broom Crew), GIS, and Environmental Department should review all sweeping related AVL data monthly in the Phase I Area, and quarterly in the Phase II and Outside Permit Areas of Ada County. ACHD recently (March 2024) instituted actions to help enhance their monitoring and quicker feedback for the sweeping program. The GIS department implemented a script that checks for the daily broom down data upload from the AVL provider and sends a summary email to GIS, Fleet, Environmental, and Maintenance. This enables all Street Sweeping Program participants to see a broom down data and vehicle summary.

Table 8 below offers an overview of the Implementation Plan, which is designed to provide a daily resource allocation per sweeping priority while also providing enhanced monitoring and quicker feedback. The Early Am crew is 100% allocated to the Phase I – Downtown Area (Table 8). If the Early AM crew gets ahead of schedule, they could sweep as necessary the Phase I Maintenance Areas (Sweeping Priority 2, Figure 6). Phase I – Downtown subclass progress, AVL data, should be reviewed internally monthly. Areas that were missing or under swept should be reported to the Broom Crew Supervisor, and such areas can be prioritized the following month. Similarly, routes (arterials, collectors, residential) that have been over swept should be noted as well and handled accordingly. A quarterly review of Permit compliance sweeping progress should be conducted. Through ACHD's Sweeping Adaptive Management Program, Permit compliance should be understood prior to the fourth quarter (July, August, September), and resource allocations should shift to meet Street Sweeping Program priorities. Fourth quarter resource allocation shifts should focus on sweeping MS4 connected Lane Miles.



Phase I All % Compliance

ACHD Street Sweeping Prioritization/Implementation Plan



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Figure 8. Fiscal Year 2022 Phase I Compliance % (note arterials > 100% = over sweeping).

Table 8. Recommended Implementation Resource Allocation for ACHD's Street Sweeping Program

Maintenance Area Subclass	Sweeping Priority	Resources				
		Crew	% Sweeper	% GEOs	AVL Monthly Review*	AVL Quarterly Review**
Phase I - Downtown	1	Early AM	100	100	Progress	Compliance
Phase I	2	Daily	50	50	Progress	Compliance
Phase I - Partial	3	Daily	25	25	Progress	Compliance
Phase II	4	Daily	10	10		Compliance
Phase II - Partial	5	Daily	5	5		Compliance
Outside Permit Areas	6	Daily	5	5		Progress

*Progress = AVL broom down data review; **Compliance = compared to Permit required street sweeping frequency

The Daily Operations Crew's resource allocation is more complicated as brooms and operators could feasibly be sweeping in any Maintenance Area from Sweeping Priority 2 – 6 (Table 8). Table 9 provides a hypothetical resource allocation for the Daily Operations Crew consisting of 20 GEOs and 20 Brooms being available. The numbers (#) in Table 9 are derived using the percentages (%) from Table 8. For example, fifty percent of the Daily Operations Crew are allocated to sweeping Phase I Maintenance Areas (Table 8). If the Daily Operations Crew had twenty available Brooms, 10 would sweep the Phase I Maintenance Areas (Table 9, Figure 6). Additionally, another six brooms would be allocated to the Phase I – Partial Maintenance areas, two brooms to the Phase II Maintenance Areas, and one broom each allocated to the Phase II – Partial, and Outside the Permit Areas of Ada County (Table 9, Figure 6). The latter two are the lowest sweeping priorities, and contain limited, if any, "Essential" LOS Lane Miles. In these Maintenance Areas, sweepers are primarily sweeping "Important" LOS Lane Miles. Therefore, Daily Operations Crew resources dedicated to the two lowest sweeping priorities could be shifted to respond to complaints, or for special events. Doing so, would focus the Broom Crew on "Essential" Lane Miles daily, and hopefully keep the majority of Phase I Permit Area (Sweeping Priorities 1,2,3) street sweepers on-route and on-schedule.

Table 9. Hypothetical Resource Allocation Per Sweeping Priority; 20 Brooms and 20 GEOs. *

Maintenance Area Subclass	Sweeping Priority	Crew	# of Sweepers	# of GEOs
Phase I - Downtown	1	Early AM	ALL	ALL
Phase I	2	Daily	10	10
Phase I - Partial	3	Daily	6	6
Phase II	4	Daily	2	2
Phase II - Partial	5	Daily	1	1
Outside Permit Areas	6	Daily	1	1

*Analysis does not include Supervisors, Leads or Support Vehicles & GEOs.

Distributing street sweepers throughout Ada County (aka sweeping in different Sweeping Priority Areas) allows for rapid response to emergency situations (e.g., safety related complaints). If the situation is “Time Critical” then the nearest local broom could respond, which may cause a broom sweeping “Essential” LOS lane Miles to go off-route and off-schedule.

As mentioned above regarding the Phase I – Downtown subclass, all Phase I Street Sweeping Priorities (1,2,3) should review AVL data monthly and compare AVL data to Permit compliance street sweeping frequencies quarterly. The quarterly summaries should be presented at the Sweeping Program Adaptive Management meeting. Permit compliance should be understood prior to the fourth quarter and any resource allocations shifts should focus on sweeping MS4 connected Lane Miles.

Phase II (Sweeping Priorities 4 and 5) Permit compliance progress should be reviewed via AVL data quarterly. Similar to Phase I area, any fourth quarter resource allocation shifts should focus on sweeping MS4 connected Lane Miles. AVL data for the Outside the Permit Areas of Ada County should be reviewed to ensure maintenance objectives are being met. In short, frequent review of AVL data in all Sweeping Priority Areas provides Quality Assurance (QA) and Quality Control (QC) of the data in which ACHD is basing its informed decisions. Frequent AVL data review coupled with Adaptive Management Meetings to review compliance progress will help ACHD meet Level of Service and Permit compliance objectives.

The implementation recommendations provide a basic framework to prioritize and implement ACHD’s Sweeping Program. The true success of ACHD’s sweeping program (e.g., meet LOS & Permit compliance objectives) is through the collaboration of the Broom Crew and Maintenance Administration (Maintenance Division), Environmental Department, GIS, and Communications (Appendix A). Collaboration led to “implementation actions” being instituted during the drafting of this management plan. Instituted actions include more frequent AVL data review, and a planned ArcGIS online dashboard for real time Broom tracking and metrics towards compliance. The ArcGIS Online Dashboard is tailored for non-GIS users, allowing for all Sweeping Program entities to share the same data to make informed decisions. Additionally, more recommended implementation actions can be found in Appendix B: Additional Resources (e.g., Adaptive Management Notes, Evaluation etc.). Most of these recommendations are based on collaboration between Maintenance, Environmental and GIS.

8.1 SEASONAL RESOURCE ALLOCATION

The prioritization and implementation plan presented above is a broad framework of how to divide resources amongst ACHD's Sweeping Priority Areas (e.g., Phase I – Downtown, Priority #1). In concept this seems easy, but throughout the year the Broom Crew must consider seasonal changes and how they impact sweeping program operations and the allocation of resources. These seasonal changes are considered daily by the Broom Crew Supervisor and Leads, and they adjust resources with the goal of brooms staying on-route and on-schedule. Thus, these seasonal resource allocation needs must be considered during the implementation of the Sweeping Program (Table 10).

Table 10. Seasonal Resource Allocation - Broom Crew.

Season	Months	Broom Crew Resource Allocation
Fall	September - February	Additional resources are allocated to areas of Ada County that experience dense leaf fall. Removing the leaves from the surface in a timely manner protects downstream water quality and reduces the likelihood of flooding due to clogged storm drains. To do this, all broom operators are moved to Phase I and Phase I – Partial as tree canopy density is highest.
Winter	November - February	Street sweeping operations are regularly interrupted by the weather. All broom activity may be put on hold when conditions are too wet, too snowy, or too cold (32 degrees or below). When snow or ice conditions are forecasted, all maintenance equipment operators, including the broom operators, are expected to halt routine sweeping and implement winter maintenance operations.
Spring	March - May	Street sweeping operations are largely focused on routine sweeping and removing sand applied to the roadway for traction assistance during winter maintenance operations.
Summer	May - September	Depending on the level of assistance from seasonal hires, 17 to 21 Broom Crew operators from the day crew halt routine sweeping to provide chip seal support. Broom Crew operators play a significant role in the chip seal operation preparing the surface ahead of chip seal application, removing excess rock chips from the surface after application, and preparing the surface for paint. The Broom Crew commits approximately three and a half months to chip seal support. Night crew operators from the Broom Crew are typically unaffected by chip seal operations and are expected to continue routine sweeping.

9. FUTURE PLANNING

Ada County has experienced rapid growth in recent years. A byproduct of the County's growth is ACHD becoming responsible for approximately 76 additional Lane Miles of roadway on average each year (Personnel Communication Adam Van Patten 2024). To ensure Street Sweeping operations have sufficient resources to address the annual addition, ACHD examined their street sweeping resources over a five-year time horizon. The analysis focused on adding the annual Lane Mile addition to ACHD's existing Level of Service (LOS), and then determining how to allocate resources to existing Maintenance Yards and Future Maintenance Yards. The analysis assumed that the annual additional lane miles are either "Essential" or "Important" (e.g., Lane Miles swept once annually, minimum). For the Analysis 152 Lane Miles (76 lane miles x 2.5 [lane mile multiplier]) were added each year (1 – 5) to ACHD's existing Level of Service (Table 11). Based on a GIS Analysis (e.g., Near Analysis) maintenance areas were grouped based on their proximity to each Maintenance Yard. This analysis is solely based on a Maintenance Areas proximity to the closest Yard (Existing = Adams and Cloverdale, Future = Apple, Cloverdale, Ustick), and focuses on limiting travel times. Essentially, this analysis distributes Sweeping Resources (Brooms and GEOs) based on the percentage of Level of Service Lane Miles in need of sweeping within the Maintenance Areas closest to each Maintenance Yard.

Currently, ACHD houses all Sweeping Program resources at the Adams Yard. For this reason, the information presented in Table 11 and Figure 9 is hypothetical. If ACHD were to distribute its sweeping resources between Adams and Cloverdale, Table 11 provides that allocation. It must be noted that the Cloverdale Yard is currently not accepting debris from ACHD's Brooms, as the decant station is under renovation. Therefore, ACHD will continue to house all Sweeping Program Resources (Brooms GEOs) at the Adams Yard for the near future.

Table 11. Suggested Resource Location Current Maintenance Yards. *

Yard	Year 1	Year 2	Year 3	Year 4	Year 5
	Sweepers				
Adams	20	21	21	21	21
Cloverdale	12	12	12	12	12
Total Sweepers	32	33	33	33	33
Yard	GEOS				
Adams	20	20	20	20	20
Cloverdale	11	12	12	12	12
Total GEOS	31	32	32	32	32

***Analysis does not include Supervisors, Leads or Support Vehicles GEOs.**

ACHD has plans to add two new Maintenance Yards, Ustick and Apple, and decommission the Adams Yard. The Cloverdale Yard will continue to be an important Yard for ACHD's Maintenance Department. In short, ACHD will soon have three functioning Maintenance Yards in which to distribute their Street Sweeping Program resources: Apple, Cloverdale, and Ustick. Table 12 details the sweeping resource allocation per Maintenance Yard, while Figure 10 depicts the suggested Maintenance Areas that each Maintenance Yard will service (aka sweep). The five-year timeframe indicates that ACHD may need to

increase its sweeping fleet by one broom and one GEO in Year 2. Again, the resource allocation per Maintenance Yard is based on the Level of Service Lane Miles per Maintenance Area that are proximal to each Maintenance Yard (Figure 10). In Table 12, readers will note that the Apple Yard will require the most sweeping resources initially and over time. This is because the Apple Yard is within the Phase I Permit Area and proximal to streets that require frequent sweeping to meet Permit compliance. Therefore, it makes sense to house the majority of ACHD's sweeping resources close to the areas that require the most frequent sweeping (i.e., Phase I – Downtown, Phase I, Phase I – Partial [Sweeping Priorities 1, 2, and 3]). GEO allocation is based on sweeper availability and therefore no Maintenance Yard has more GEOs than Sweepers.

Table 12. Suggested Resource Location Future Yards.

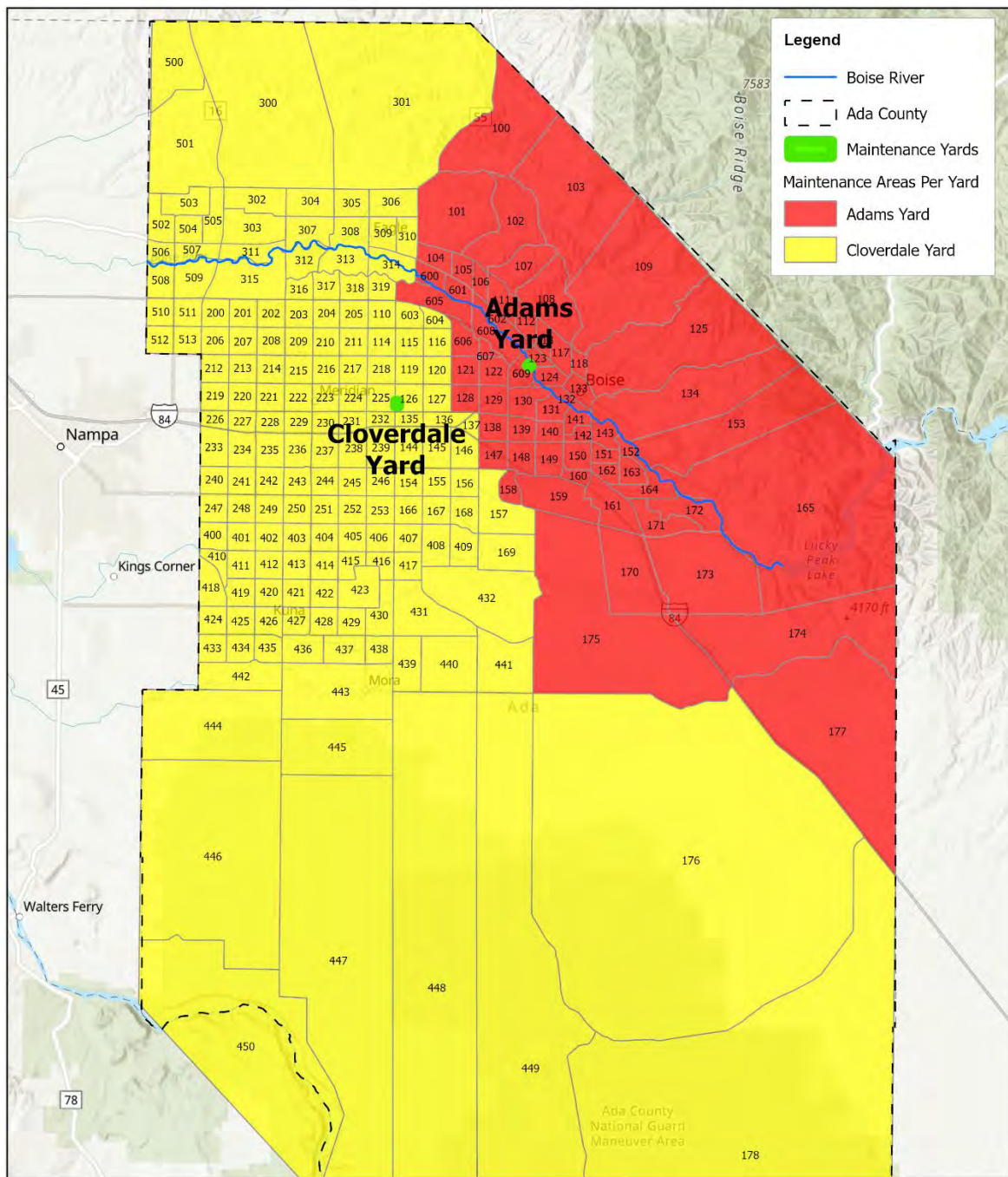
Yard	Year 1	Year 2	Year 3	Year 4	Year 5
	Sweepers				
Apple	19	20	20	20	20
Cloverdale	7	7	7	7	7
Ustick	6	6	6	6	6
Total Sweepers	32	33	33	33	33
Yard	GEOs				
Apple	18	19	19	19	19
Cloverdale	7	7	7	7	7
Ustick	6	6	6	6	6
Total GEOs	31	32	32	32	32

9.1 ADAPTIVE MANAGEMENT

ACHD instituted Adaptive Management evaluations for their Inlet and Catch Basin Inspection and Cleaning Program in 2023. In late 2023 ACHD implemented Adaptive Management evaluations for the Street Sweeping Program. Continuing to implement Adaptive Management evaluations going forward is imperative to the Street Sweeping Programs ability to make data-based decisions to meet ACHD's LOS, Permit compliance and protecting downstream waterways.

This Steet Sweeping Management Plan provides a framework in which to meet Permit required street sweeping frequencies. With that said, an effective Street Sweeping Program must be able to adapt to changes in the street inventory (aka project area), new information, and/or lessons learned. Even with the best designed plan, there are uncertainties to overcome in conducting the plan. The goal of Adaptive Management is to reduce uncertainty over time with monitoring and evaluation. Adaptive Management is an intentional approach to making decisions and adjustments in response to new information and changes in conditions. Adaptive management is not about changing goals during implementation, it is about changing the path being used to achieve the goals in response to changes and new data.

ACHD's plans to implement quarterly Adaptive Management meetings to review AVL data and collaborate on progress toward Permit compliance. Adaptive Management meetings include Maintenace, Environmental, GIS and Communications Personnel. At these meetings AVL data will be reviewed and decisions made to alter the Street Sweeping Program. Notes are provided at each meeting to codify changes to the Street Sweeping Program.



Maintenance Area Distribution (Yards)

ACHD Sweeping Management Plan

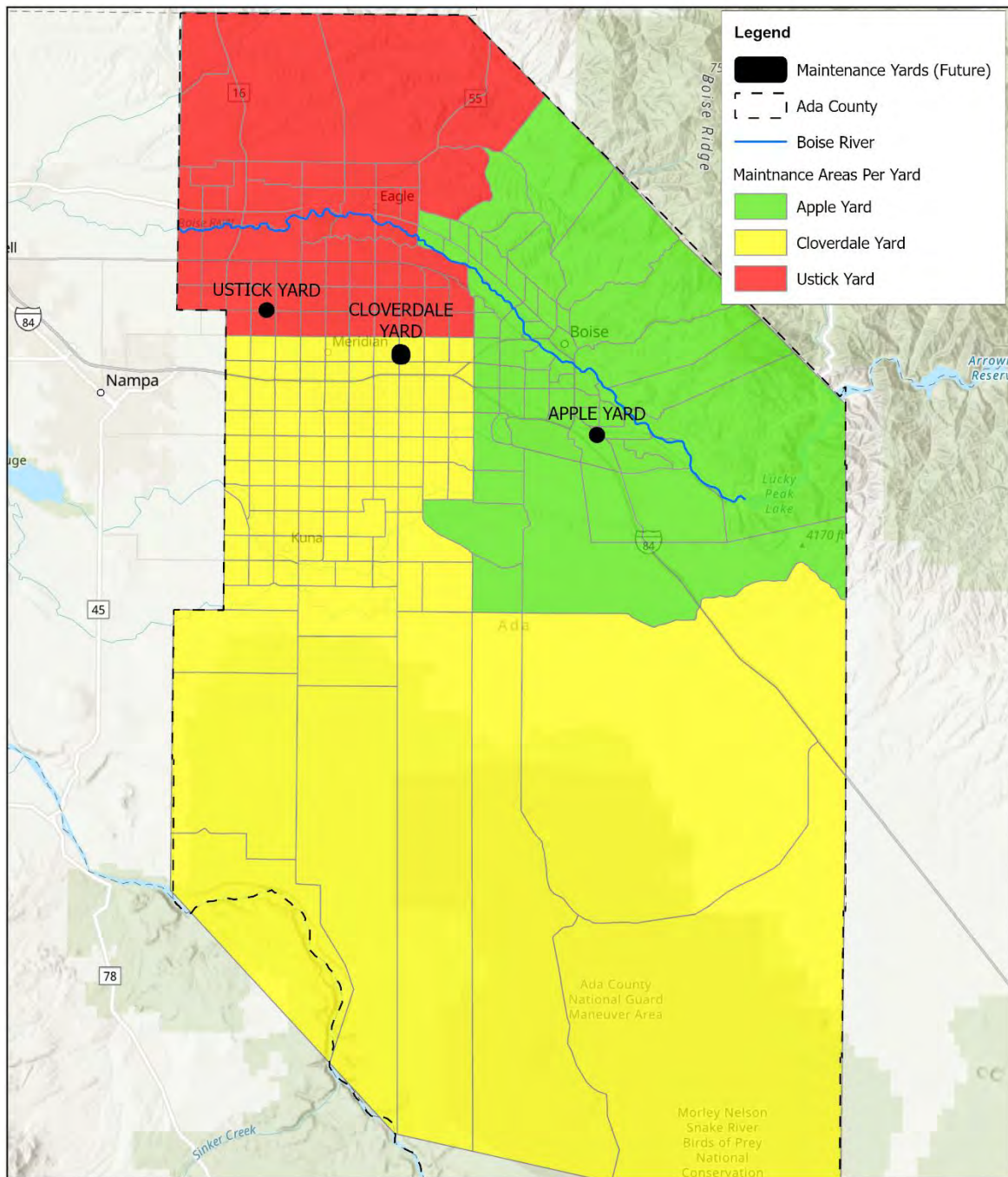
0 2 4 6
Miles



Ecosystem Sciences, LLC
Science Design Planning

Disclaimers - This map (or data product) is for illustration purposes only. It is not intended to be used for description, conveyance, authoritative definition of legal boundary, or property title. This is not a survey product. Users are encouraged to examine the documentation or metadata associated with the data on which this map is based for information related to its accuracy, currentness, and limitations.

Figure 9. Current Suggested Maintenance Area Distribution Per Yard.



Maintenance Area Distribution (Yards)

ACHD Sweeping Management Plan

Ecosystem Sciences, LLC

Science Design Planning

Disclaimers - This map (or data product) is for illustration purposes only. It is not intended to be used for description, conveyance, authoritative definition of legal boundary, or property title. This is not a survey product. Users are encouraged to examine the documentation or metadata associated with the data on which this map is based for information related to its accuracy, currentness, and limitations.

Figure 10. Future Yards Suggested Maintenance Area Distribution.

10. CONCLUSION

Presented herein is ACHD's Street Sweeping Management Plan. The Street Sweeping Management Plan meets Permit requirements while providing a framework for ACHD to implement their Street Sweeping Program. The Street Sweeping Management Plan presents ACHD's desired Level of Service (LOS), which focuses on three classes of Lane Miles: Essential, Important, and Additional. Essential Lane Miles equate to Permit compliance, while Important Lane Miles are primarily routine maintenance sweeping (e.g., not Permit required). Additional Lane Miles are an estimate of Lane Miles ACHD would sweep to support special events (e.g., parades) throughout Ada County in a year.

Also included in the Street Sweeping Management Plan is a prioritization of Maintenance Areas based on Permit requirements (e.g., Street Sweeping Frequency). The prioritization divides the Maintenance Areas into six sweeping priority subclasses, with Priority 1 (Phase I – Downtown) being the highest and Priority 6 the lowest (Outside the Permit Areas of Ada County). Implementation recommendations are consistent with prioritization and focused on proper resource allocation and increased monitoring. AVL data is the primary data used to track, monitor, and report on street sweeping progress. AVL data will be downloaded, reviewed, and analyzed multiple times annually. This increased monitoring and quicker feedback will provide ACHD with data driven decisions in which to alter the Street Sweeping Program or allocate resources differently. ACHD should be aware of their Permit compliance progress by the end of the third quarter annually. Therefore, ACHD can allocate sweeping resources in the fourth quarter to ensure Permit compliance.

The Street Sweeping Management Plan identifies a sweeping resource allocation for existing Maintenance Yards (Adams and Cloverdale) and future Maintenance Yards (Apple, Cloverdale, and Ustick). The Street Sweeping Management Plan includes an Adaptive Management Section. Adaptive Management enables the Street Sweeping Program (e.g., Broom Crew, Environmental, GIS etc.) to collaborate and review data collectively. Then based on that data review and collective discussion actions can be enacted that increase efficiency and effectiveness of ACHD's Street Sweeping Program.

11. LITERATURE CITED

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12. APPENDIX A: ROLES AND RESPONSIBILITIES

Street Sweeping Program Roles and Responsibilities

ACHD is responsible for ROW street sweeping across Ada County. ACHD also sweeps select state highways through an intergovernmental agreement with Idaho Transportation Department District 3 (see Appendix B Additional Resources for more information).

The Street Sweeping Program is a complex blend of operations, technology, public communications, public involvement, and environmental compliance. A successful sweeping operation requires numerous ACHD staff primarily from Maintenance Operations but also includes the Information Technology, Communications, and Environmental Departments.

Overview

Roles and responsibilities for street sweeping vary based on staff expertise and position duties within the ACHD organization.

Broom Crew

The Broom Crew includes General Equipment Operators (GEO), Lead workers, and the Crew Chief. The Broom Crew is responsible for implementation of the Street Sweeping Management Plan to include:

Responsibility	GEO	Lead worker	Crew Chief
Coordinating with the Environmental Department to maintain the Street Sweeping Management Plan			X
Arrange for proper training to ensure safe and effective operation of Broom Crew equipment and tools	X	X	X
Street Sweeping Program planning to include staffing, procurement, scheduling, route adjustments, resource allocation, and debris management.		X	X
Tracking sweeping progress using manual methods as needed and Automatic Vehicle Location (AVL) to include sweeping location and date, number of lane miles swept, volume of debris collected, and any other metric deemed necessary by Maintenance Leadership and the Broom Crew Chief	X	X	
Utilize AVL Daily Summary from GIS to verify all brooms in operation are reporting as expected		X	X
Utilize AVL software to identify irregular tracks and report concerns to the appropriate ACHD staff	X	X	X
Coordinate with Fleet Administration and Mechanics to procure and maintain Broom Crew resources needed to implement the Street Sweeping Management Plan			X
Coordinate with the Fleet Superintendent when the AVL provider is needed to correct data collection issues and to backfill data gaps			X
Manually track sweeping progress as needed to account for gap in AVL data due to brooms operating without AVL			X
Work with the Environmental Department to regularly review sweeping compliance status throughout the reporting year			X
Coordinate with the Environmental Department, Maintenance Superintendent, and Lead workers to ensure proper management of debris			X

Maintenance Administration

Maintenance Administration includes the Maintenance Deputy Director, Maintenance Manager, Maintenance Superintendent, and Maintenance Administrative Assistants. Maintenance Administration is responsible for administrative support of the Broom Crew's implementation of the Street Sweeping Management Plan:

Responsibility	Deputy Director	Manager	Superintendent	Admin. Assistant
Long-range planning of Broom Crew facilities and resources	X	X	X	
Planning of Chip Seal operations	X	X	X	
Assisting with debris management			X	
Assisting with data management and reporting				X

Maintenance Administration – Mechanics

Maintenance Administration – Mechanics (Fleet Operations) includes the Fleet Manager, Fleet Superintendent, and Mechanics Crew Chief. Fleet Operations is responsible for Mechanical support of the Broom Crew's implementation of the Street Sweeping Management Plan to include:

Responsibility	Mechanic	Fleet Superintendent	Fleet Manager
Assisting with procurement of Broom Crew vehicles and equipment		X	X
Ensuring brooms are properly outfitted with AVL and data tracking is reliable prior to field operation	X	X	
Ensure long-term operation of Broom Crew vehicles	X	X	
Communicate weekly or as necessary with the AVL Provider to continue to optimize use of AVL products	X	X	X

Operations – Information Technology

Operations – Information Technology (IT) includes Information Technology and GIS. IT is responsible for technical support of the Broom Crew's implementation of the Street Sweeping Management Plan and the Environmental Department's compliance reporting to include:

Responsibility	IT	GIS
Assisting the Broom Crew, Fleet Operations, and Environmental Department with procurement and/or development of technology-based solutions needed to implement the Street Sweeping Management Plan	X	X
As needed, provide GIS maps, spatial analysis, and solutions for data collection, management, and reporting		X

Environmental Department

The Environmental Department is responsible for overseeing ACHD's stormwater Permits and developing and implementing ACHD's Stormwater Management Plans to include:

- Interpreting Permit language
- Assisting the Broom Crew with Street Sweeping Program development and implementation
- Regular Street Sweeping Program compliance status review with the Broom Crew
- Working with IT and the Broom Crew on Street Sweeping Program data analysis and reporting
- Working with Communications and the Broom Crew on the development and implementation of Street Sweeping Program public education, outreach, and participation
- Communication and compliance reporting to Permitting authorities.
- Annual review and update of the stormwater Permit area boundaries

Communications

The Communications Department assists the Broom Crew with implementation of the Street Sweeping Management Plan by assisting with the development and implementation of Street Sweeping public education, outreach, and participation tools and opportunities to include:

- Utilizing ACHD's website, social media, and mailers as appropriate to distribute general awareness of the storm drain system and Street Sweeping Program and seasonal awareness regarding proper leaf and debris disposal.
- Coordination with residents in areas with on-street parking

Automatic Vehicle Location (AVL) Provider

Through contract, the AVL Provider offers ACHD with AVL hardware and software solutions and support to track Street Sweeping Program progress which includes:

- Providing a daily broom down data deliverable to ACHD's server,
- Providing AVL hardware installation training and support,
- Providing AVL software training, support, and custom report development,
- Participating in regular meetings with ACHD staff to optimize use of AVL tools.

13. APPENDIX B: ADDITIONAL RESOURCES

13.1.1 STREET SWEEPING EVALUATION REPORT – TECH MEMO

13.1.2 PHASE SPECIFIC STORMWATER MANAGEMENT PLAN

13.1.3 PROGRAM RELATED SOPs AND GUIDANCE MANUALS

13.1.4 EDUCATION AND OUTREACH MATERIALS

Attachment M: Stormwater Outfall Monitoring Summary WY 2024

Stormwater Outfall Monitoring Summary

Water Year 2024

Prepared by
Brown and Caldwell

Prepared for
Ada County Highway District
December 19, 2024



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 September 12, 2024. 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.

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1 Introduction

Ada County Highway District (ACHD), Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a third-cycle National Pollutant Discharge Elimination System (NPDES) Phase 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 6.2.1, Wet Weather Stormwater Outfall Monitoring, Permittees are required to monitor wet weather stormwater discharges according to the [NPDES Phase I Stormwater Outfall Monitoring Plan](#) (ACHD, 2022). The following summary covers wet weather outfall monitoring activities during water year (WY) 2024 (October 1, 2023–September 30, 2024). WY 2024 represents the third year of monitoring under the new Permit cycle.

The Stormwater Outfall Monitoring Plan (SWOMP) was developed in line with the Quality Assurance Project Plan for NPDES Stormwater Permit Monitoring (QAPP) (ACHD, 2023) and describes the overall approach to stormwater outfall monitoring. Details about specific site characteristics, equipment, data collection and sample handling procedures, analytical methods, and quality assurance/quality control methodology are found in the SWOMP.

In WY 2024, data collection for the Stormwater Outfall Monitoring Program included precipitation, flow, and water quality samples. Four outfall monitoring sites within the Permit area (Lucky, Whitewater, Main, and Americana) were monitored for flow and water quality. The water quality samples were collected from wet weather discharges and included grab samples with corresponding field parameters and composite samples, which were collected throughout the duration of a storm. Additionally, four rain gauge sites (East, Front, Cynthia Mann, and Whitewater) were maintained to provide localized precipitation data. Each rain gauge location represents at least one of the monitored subwatersheds and was used to verify that storm criteria were met.

2 Monitoring Sites, Equipment, and Sample Type

The Stormwater Outfall Monitoring Program consists of four monitored subwatersheds: Lucky, Whitewater, Main, and Americana. Monitoring stations for each subwatershed are located near the outfalls with dedicated equipment installed at each location. Table 2-1 depicts the equipment types and referenced rain gauge site for each subwatershed. A vicinity map illustrating the location of each subwatershed, monitoring station, and rain gauge site is found in Figure 1 (Appendix A).

Table 2-1. Monitoring Station Equipment

Monitoring Site	Lucky	Whitewater	Main	Americana
Sampler type	Hach AS950	ISCO 6712	Hach AS950	ISCO 6712
Flowmeter type	Hach AV9000	ISCO Signature	Hach AV9000	ISCO Signature
Referenced rain gauge	Cynthia Mann	Whitewater	Front	Front and East
Rain gauge equipment types	Global Water tipping bucket/HOBO event logger	Hach tipping bucket/ISCO Signature	Global Water tipping bucket/HOBO event logger	Global Water tipping bucket/HOBO event logger

2.1 Sample Types

The sample types collected during WY 2024 included 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 using a swing sampler. The grab samples were submitted to the Boise City Public Works Water Quality Laboratory (WQL) and analyzed for *E. coli*. At the time that the grab samples were collected, field parameters (temperature, pH, dissolved oxygen [DO], and conductivity) were measured using In-Situ smarTROLL or In-Situ AquaTROLL 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 samplers 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 the WQL, where they were split for analysis. The following constituents were analyzed during WY 2024: biological oxygen demand, 5-day (BOD₅); chemical oxygen demand (COD); hardness as calcium carbonate (CaCO₃); turbidity; total suspended solids (TSS); total dissolved solids (TDS); total phosphorus as P(TP); orthophosphate, as P (ortho-P); ammonia, as N; nitrate + nitrite, as N; total Kjeldahl nitrogen (TKN); total arsenic; dissolved and total cadmium; dissolved copper; dissolved and total lead; total mercury; and dissolved zinc.

3 Stormwater Outfall Monitoring Results

Wet weather stormwater samples were collected according to the procedures listed in the SWOMP. One of the goals in the SWOMP is to collect three accepted (unqualified) grab and composite samples from each monitoring station during each water year. In WY 2024, samples were attempted during five storms to meet this goal. A summary of the storm dates and sample types collected is shown in Table 3-1. Storm setup and sampling information are included in Table 1 (Appendix B). Storm Event Reports were created after each stormwater sampling event to monitor the status of the SWOMP and discuss the hydrological and analytical data from the grab and composite samples. These Storm Event Reports include details about the storm and weather monitoring, hydrographs, sample collection times, and water quality results. Individual Storm Event Reports for the five sampling events during WY 2024 are included in Appendix C.

Table 3-1. Storm Events and Sample Types

Date	Lucky	Whitewater	Main	Americana
October 10, 2023	G, C ^{1, 2}	G	–	G, C ³
November 19, 2023	G, C	G, C	G, C	G ⁴ , FD, FB, C
February 1, 2024	G ⁵ , FD, FB, C	G ⁵ , C ⁶ , CD	G ⁵ , C	G ⁵ , C
February 26, 2024	G, C	G, C	G, FD, FB, C ⁷	G, C
March 28, 2024	–	C	G, FD, FB, C	G, CB

Sample types: G = grab, C = composite

QC Sample types: FD = field duplicate, FB = field blank, CD = lab duplicate/composite split, CB = field blank composite

¹ Composite sample qualified due to lack of representativeness (50%–75%).

² Incomplete water quality analysis due to low composite sample volume.

³ Composite sample qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

⁴ Incomplete field parameter collection on the grab sample data form due to field error.

⁵ *E. coli* sample qualified due to exceeded hold time.

⁶ Composite sample rejected due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented more than 10% of the composite volume.

⁷ Composite sample qualified due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented less than 10% of the composite volume.

3.1 Wet Weather Analytical Results

Field parameter results are presented in Table 2 and analytical results are presented in Table 3 (Appendix B). Graphical representation of the analytical results is provided in Figures 2–5 (Appendix A). The following assessment provides minimum and maximum measured values for WY 2024. Qualified data are included in the range of measured/reported values as well as the data analysis. Rejected data are not included in the analysis or data discussion below; however, they are presented in the tables. All measurements were recorded in accordance with QAPP and SWOMP procedures.

DO and oxygen demand

- DO ranged from 4.920 to 10.88 milligrams per liter (mg/L).
- Biological oxygen demand, 5-day (BOD₅) concentrations ranged from 5.03 to 61.9 mg/L.
- Chemical oxygen demand (COD) concentrations ranged from 39.0 to 167 mg/L.

pH, temperature, conductivity, and hardness

- pH values ranged from 5.66 to 8.27 standard units.
- Temperature ranged from 4.75 to 17.17 degrees Celsius.
- Conductivity ranged from 81.35 to 749.2 micro-siemens per centimeter.
- Hardness ranged from below the method detection limit (MDL) (< 0.100) to 102 mg/L as calcium carbonate.

Bacteria

- *E. coli* ranged from below the MDL (< 1.0) to 2,720 most probable number per 100 milliliters.

Sediment

- Turbidity ranged from 8.60 to 103 nephelometric turbidity units.
- TSS ranged from 8.63 to 131 mg/L.
- TDS ranged from 44.2 to 236 mg/L.

Nutrients

- Ammonia, as N ranged from 0.173 to 0.829 mg/L.
- Chloride ranged from 5.19 to 64.1 mg/L
- Nitrate + nitrite, as N ranged from 0.145 to 0.969 mg/L.
- TKN ranged from 0.894 to 2.43 mg/L.

Phosphorus

- TP ranged from 0.143 to 0.958 mg/L.
- Ortho-P ranged from 0.0494 to 0.768 mg/L as P.

Metals

- Total arsenic ranged from 0.66 to 5.5 micrograms per liter (µg/L).
- Dissolved cadmium ranged from below the MDL (< 0.0100) to 0.032 µg/L.
- Total cadmium ranged from 0.024 to 0.13 µg/L.
- Dissolved copper ranged from 1.9 to 8.2 µg/L.

- Dissolved lead ranged from 0.028 to 0.21 µg/L.
- Total lead ranged from 0.33 to 6.1 µg/L.
- Total mercury ranged from below the MDL (< 0.0100) to 0.0191 µg/L.
- Dissolved zinc ranged from 9.80 to 51.7 µg/L.

3.2 Monitored Event Pollutant Loading Results

Pollutant loading estimates in pounds per acre (lbs/ac) were calculated for the following constituents of concern: TSS; TP; ammonia, as N; nitrate + nitrite, as N; and TKN. The reported concentrations were combined with runoff volumes measured during the storm event at each monitoring station. Formulas that were used, including conversion factors to estimate the loading in lbs/ac, are described in the SWOMP. Table 4 (Appendix B) presents the estimated pollutant loading of the constituents for each monitored storm. The pollutant loading contributions for each site are shown graphically in Figure 6 (Appendix A). Table 5 (Appendix B) is a summary of event loading estimates in pounds per acre for comparison between monitored drainage areas. Rejected data are not included in the analysis or data discussion below; however, they are presented in the tables. A summary of the estimated ranges of pollutant loading for the storm events monitored during WY 2024 is presented below.

- TSS loading estimates ranged from 0.0400 to 3.52 lbs/ac.
- TP loading estimates ranged from 0.000617 to 0.0114 lbs/ac.
- Ammonia, as N loading estimates ranged from 0.000771 to 0.0170 lbs/ac.
- Nitrate + nitrite, as N loading estimates ranged from 0.00162 to 0.0168 lbs/ac.
- TKN loading estimates ranged from 0.00367 to 0.0453 lbs/ac.

3.3 Precipitation Results

Precipitation data from the Front, East, Cynthia Mann, and Whitewater rain gauges were used to validate all targeted storms during WY 2024. Each monitoring station is associated with a rain gauge. Precipitation data recorded for each of the targeted storms can be found in Table 1 (Appendix B). Monthly totals for WY 2024 are shown in Figure 7 (Appendix A).

4 Quality Assurance/Quality Control

Quality assurance (QA) and quality control (QC) measures for the Stormwater Outfall Monitoring Program are presented in detail in the QAPP and SWOMP. No deviations from the QAPP and SWOMP occurred during WY 2024. QA and QC measures conducted during the water year are discussed below.

4.1 Data Quality Discussion

A data validation review process was used to evaluate the analytical and field parameter results. These checklists were used to compare monitoring methods and monitoring data collected against performance criteria established to meet the data quality objectives described in the QAPP. Field parameter results and analytical results that were qualified are identified in Tables 2 and 3 (Appendix B), respectively. Further information regarding qualified samples is included in the Storm Event Reports located in Appendix C.

The following program criteria are used to identify storm events and representative composite samples.

- Storm criteria are met when the precipitation amount is greater than 0.10 inch, and the storm was preceded by a minimum 72 hours of dry weather from the previous measurable storm event (rainfall greater than 0.10 inch).

- Composite samples are considered representative of stormwater runoff when aliquots represent greater than 75 percent of total runoff volume from the storm or greater than 6 hours of the storm, including the first hour of runoff.

For WY 2024, samples collected during the following storm events were qualified for reasons discussed below:

October 10, 2023

- The composite sample collected from the Lucky monitoring station on October 10, 2023, was qualified due to lack of representativeness (50%–75%) during the storm event, as well as an incomplete water quality analysis due to low composite sample volume.
- The composite samples collected from Americana monitoring station were qualified due to lack of representativeness (50%–75%) of the calculated flow.

November 19, 2023

- The grab sample collected from the Americana monitoring station on November 19, 2023, was qualified due to incomplete field parameters, resulting from a field error.

February 1, 2024

- The grab samples collected for each monitoring station on February 1, 2024, were qualified due to *E. coli* samples exceeding hold time.

February 26, 2024

- The composite sample collected from the Main monitoring station on February 26, 2024, was qualified due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented less than 10% of the composite volume.

4.2 QC Sample Results

QC sampling during WY 2024 consisted of a combination of field QC samples, laboratory QC samples, and equipment QC samples. Field QC sampling intervals followed a predetermined schedule, included in the SWOMP. Equipment QC samples were collected during fall maintenance. Sample results for all field QC samples are included in Table 6 (Appendix B).

4.2.1 Field QC Samples

Field QC samples include field duplicates, field blanks, and composite blanks.

Field duplicates are field grab samples that were taken alongside a parent grab sample to compare the accuracy of the data. For *E. coli*, allowable logarithmic relative percent difference (RPD) between the duplicate sample and the parent sample is 40 percent, for values where the parent and duplicates are greater than 10 MPN/100mL. Due to the variability associated with extremely low numbers indicating little to no association between MPN results with a concentration of less than 10 MPN/100 mL, all sample pairs that are both less than 10 MPN/100mL will be automatically included in the database without qualifier flags. All field duplicate samples collected during WY 2024 met the RPD standard or had values below 10 MPN/100mLs.

Analytical results from field blanks and composite blanks are expected to be less than the MDL. If a water quality parameter is detected in a field blank or composite blank, all analytical results associated with the blank that exhibit a concentration of less than five times the concentration detected in the blank, are qualified. All field blank and composite blank samples collected had results less than the MDLs for the analyzed constituents.

4.2.2 Laboratory QC Samples

Laboratory QC samples are composite duplicate samples that are split at WQL. This type of sample serves as a check on the laboratory's ability to representatively split a composite sample and is a test of analytical precision. The allowable RPD for all parameters is 20 percent. All parameters from the composite duplicate sample collected during WY 2024 met the RPD standard.

4.2.3 Equipment QC Samples

Equipment QC samples include an equipment blank and a rinsate blank, both serving as a check on equipment decontamination procedures.

The equipment blank is collected before sampling for the water year begins and when new equipment is installed. For WY 2024, the equipment blanks were collected on October 2, 4, and 5, 2023, at the Main, Whitewater, Americana, and Lucky monitoring stations. Dissolved copper and dissolved zinc were detected in all blank samples. Dissolved copper results throughout the WY that are less than five times the value detected in the blank, have been qualified and are considered estimates. Dissolved zinc samples throughout the WY are unqualified for all sites. Ammonia and COD were detected in the Main blank sample. Total lead was detected in the blank at Lucky while total and dissolved lead was detected in the blank at Whitewater. However, no ammonia, COD, or total and dissolved lead samples collected throughout the WY were less than five times the value detected in the blank and are therefore unqualified. All other results were greater than five times the detected value in the equipment blank and are unqualified.

The rinsate blank is collected after sampling for the water year has been completed. The rinsate blanks for WY 2024 were collected on September 10 and 17, 2024, at the Main, Whitewater, and Americana monitoring stations. Dissolved copper was detected in all blank samples. Dissolved copper results that were collected throughout WY 2024 are less than five times the value detected in the blank have been qualified and considered estimates. Orthophosphate, as P and TSS were detected in the Whitewater and Americana blank samples, respectively, and total lead was detected in both samples. Dissolved zinc was detected in the Main and Americana blank samples. However, no orthophosphate, as P; TSS; total lead; or dissolved zinc results collected during WY 2024 were less than five times the concentration detected in the respective rinsate blanks and are therefore unqualified. All other results were greater than five times the detected value in the rinsate blank and are unqualified.

Appendix A: Figures

Figure 1. Vicinity Map

Figure 2. WY 2024 *E. coli* Results

Figure 3. WY 2024 TSS, TDS, and Turbidity Results

Figure 4. WY 2024 Ammonia, Nitrate + Nitrite, and TKN Results

Figure 5. WY 2024 Total Phosphorus and Orthophosphate Results

Figure 6. WY 2024 Pollutant Loadings

Figure 7. WY 2024 Monthly Precipitation

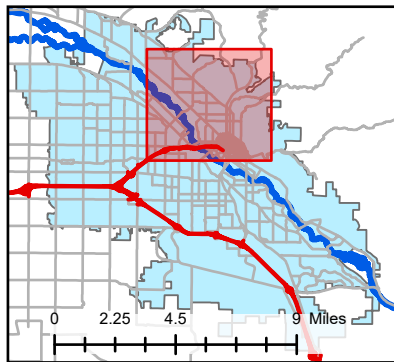
Figure 1: Vicinity Map
Phase I NPDES Outfall Sampling Stations

-  Monitoring Station
-  Rain Gauge
-  Monitoring Station and Rain Gauge

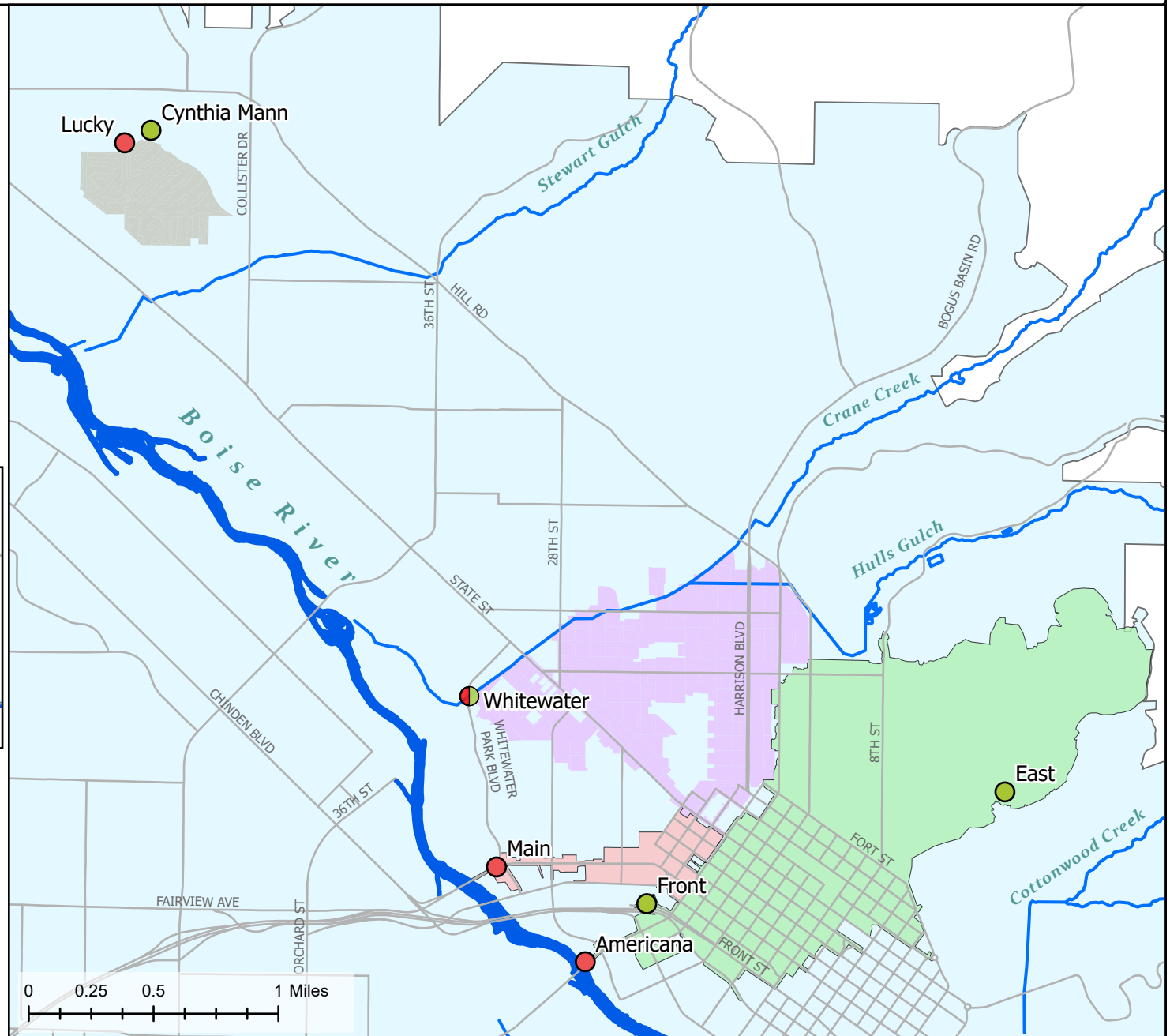
-  Interstate
-  Arterials
-  Phase I Permit Area

Subwatershed

-  Main - 79 Acres
-  Lucky - 105 Acres
-  Americana - 875 Acres
-  Whitewater - 498 Acres



Created 11/14/24



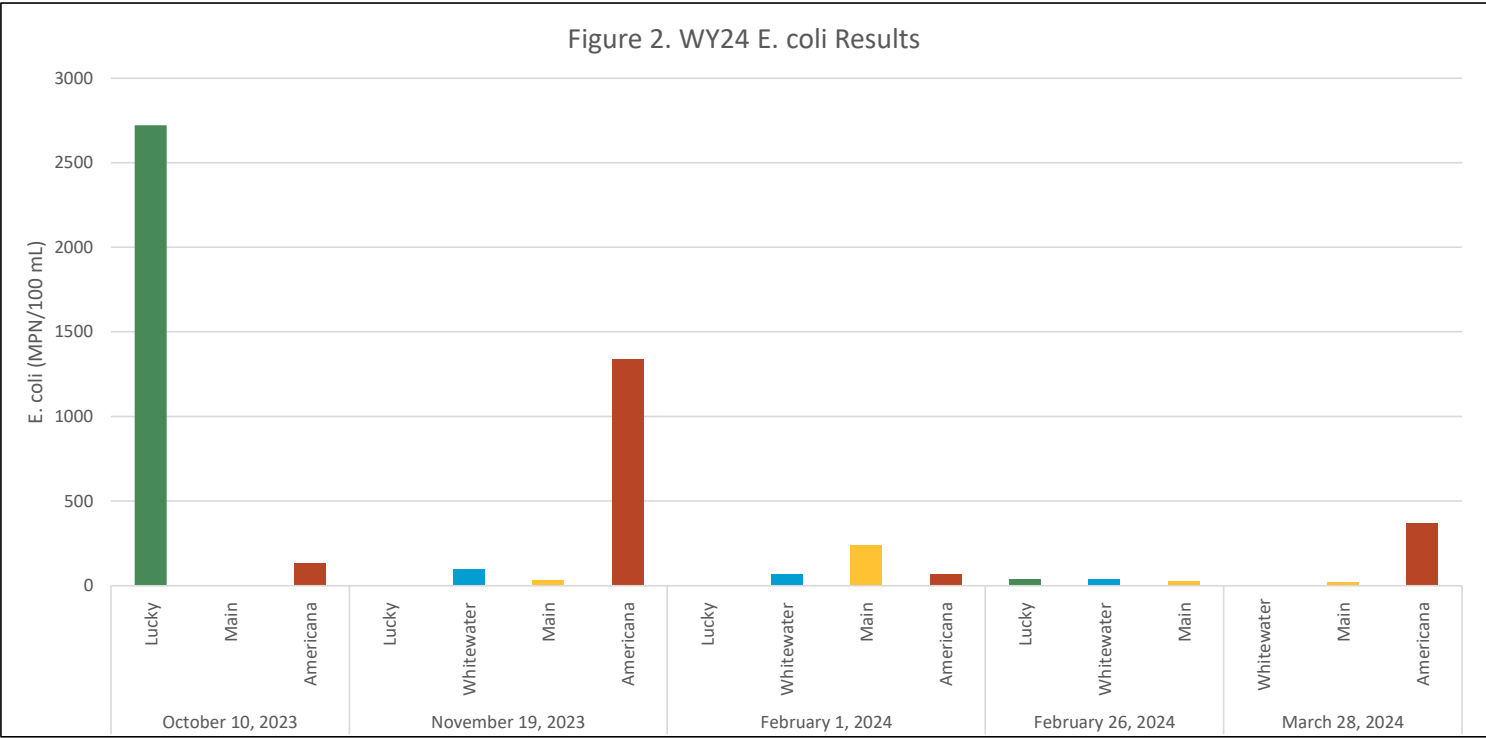


Figure 3. WY24 TSS, TDS, and Turbidity Results

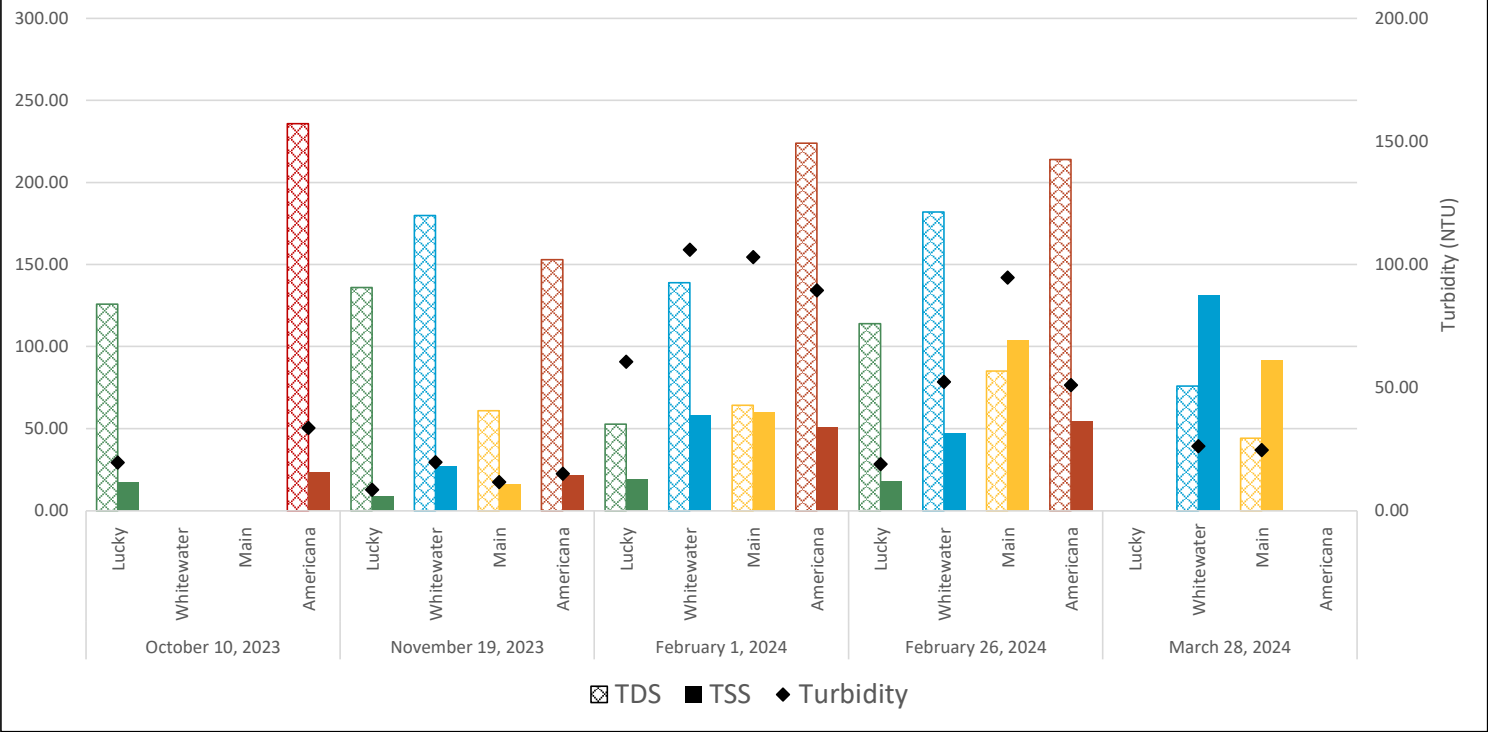


Figure 4. WY24 Nitrate + Nitrite as N, Ammonia as N, and TKN Results

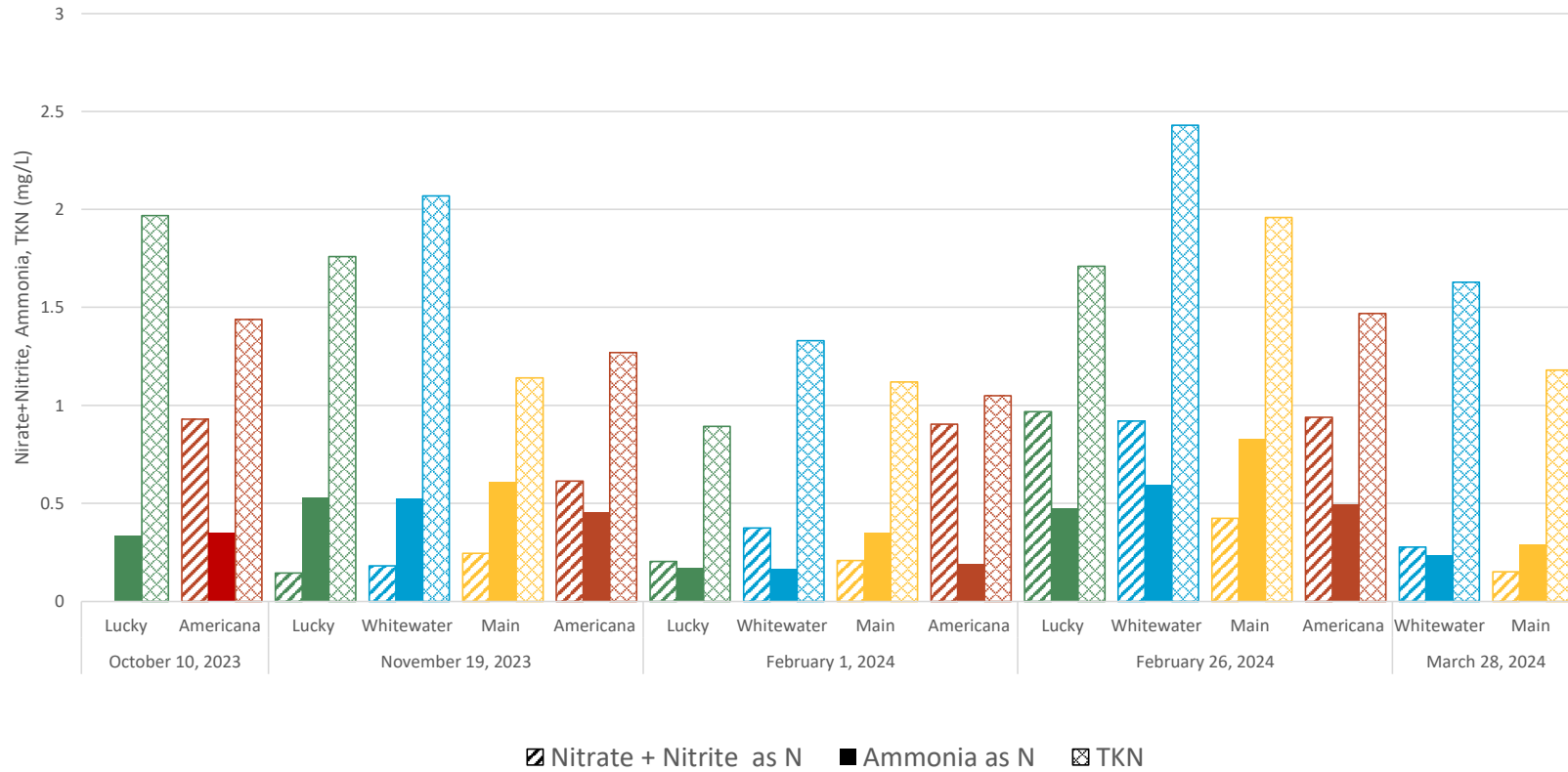


Figure 5. WY24 Total Phosphorus and Orthophosphate as P

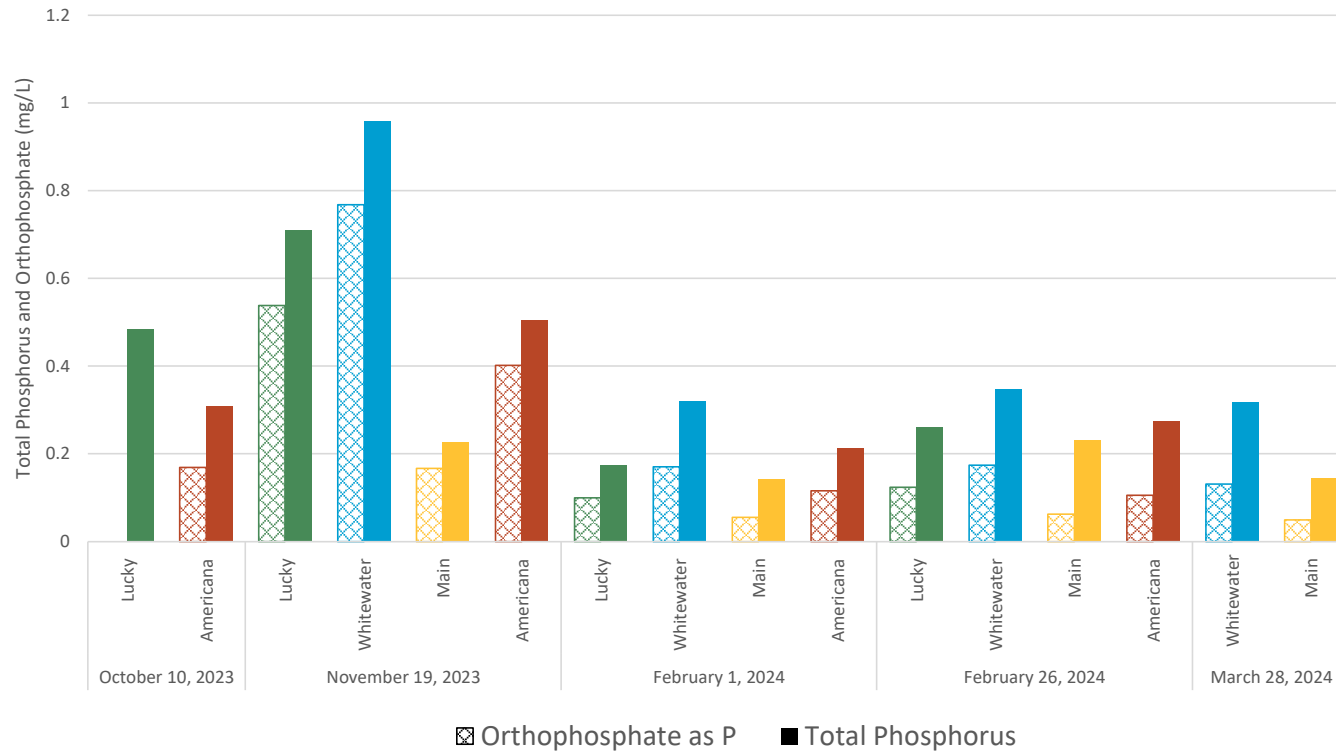


Figure 6. WY24 Pollutant Loadings

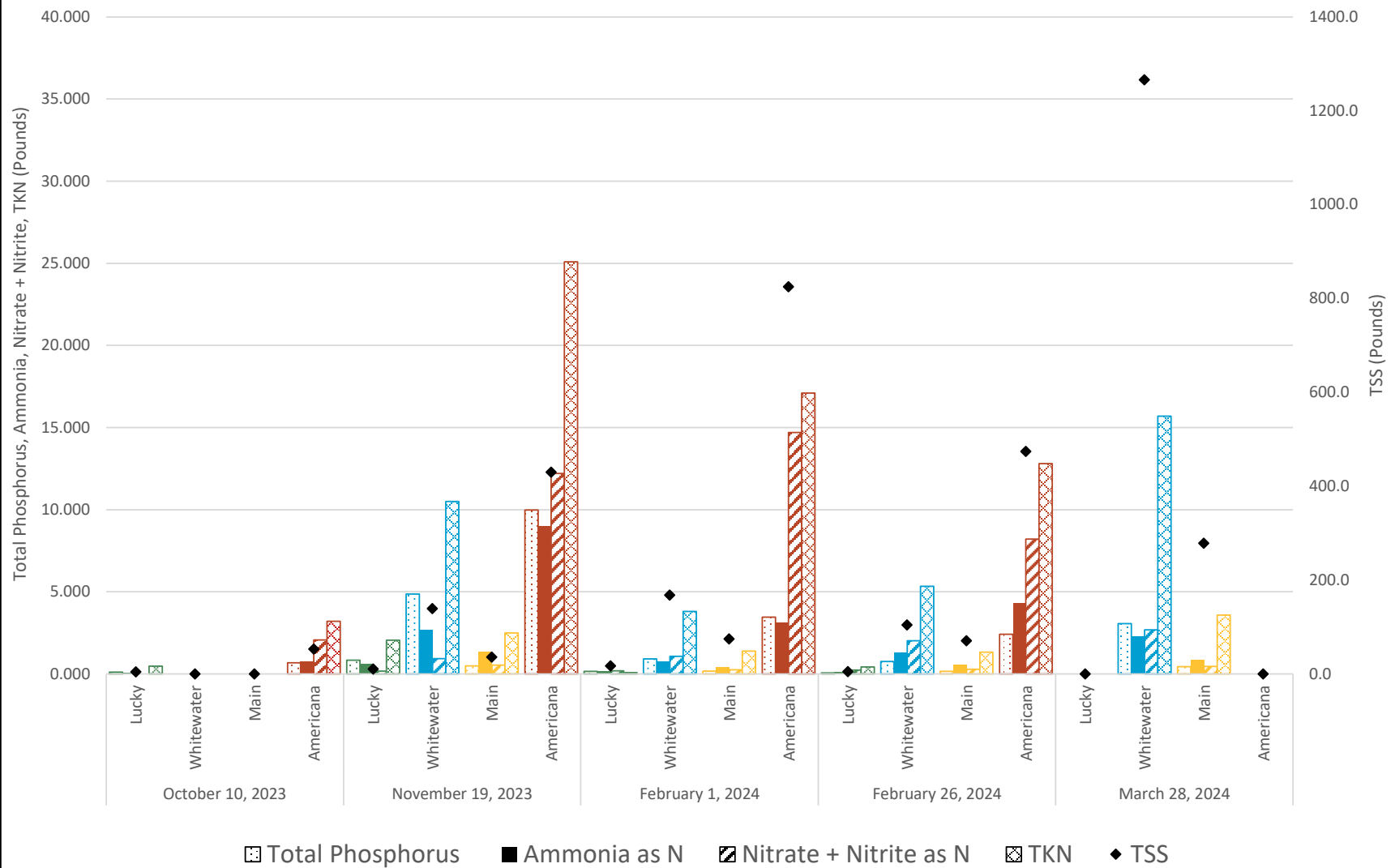
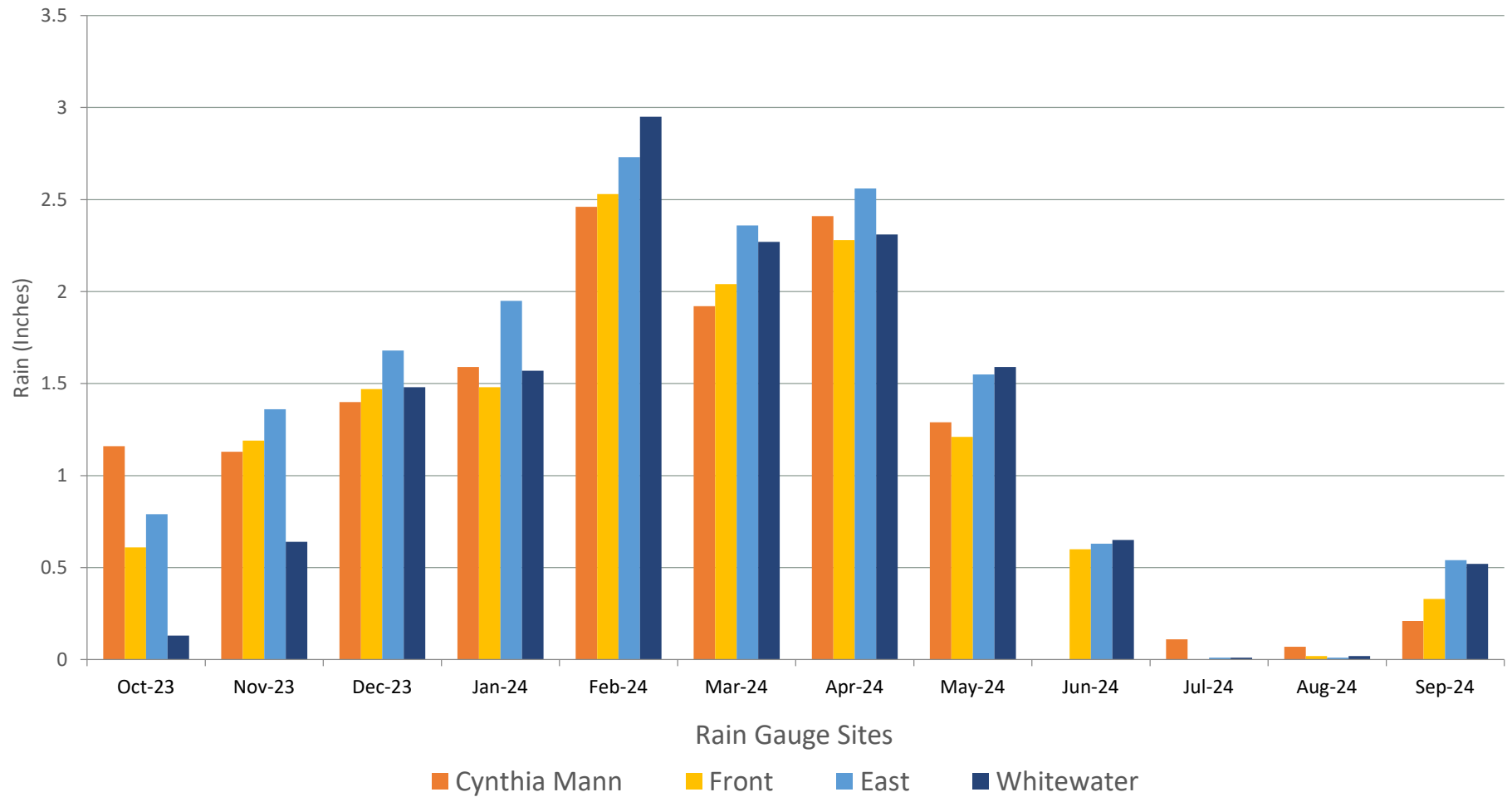


Figure 7. WY24 Monthly Precipitation



Appendix B: Tables

Table 1. Monitored Storms and Samples Collected

Table 2. Field Parameter Summary

Table 3. Analytical Results Summary

Table 4. Event Loading for Monitored Drainages in Pounds

Table 5. Event Loading in Pounds per Acre

Table 6. QC Sample Summary

Table 1. Monitored Storms and Samples Collected					
Event Date	Sampling Information	Lucky	Whitewater	Main	Americana
October 10, 2023	Grab samples collected and submitted?	YES	YES	NO	YES
	Composite samples collected and submitted?	YES	NO	NO	YES
	Trigger volume	2,895 gal	800 ft ³	-	2,960 ft ³
	Sampler enable condition (in)	Level > 3.02	Level > 2.60	-	Level > 5.1
	Percent of storm flow sampled	63%	-	-	71% ^a
	Composite sample duration (hrs.)	2	-	-	5
	Storm precipitation (in)	0.18	0.13	0.10	0.10/0.18
November 19, 2023	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	YES	YES	YES	YES
	Trigger volume	2,895 gal	800 ft ³	3,411 gal	2,960 ft ³
	Sampler enable condition (in)	-	Level > 1.9	-	Level > 6.96
	Percent of storm flow sampled	94%	91%	80%	79%
	Composite sample duration (hrs.)	11	13	13.5	12.5
	Storm precipitation (in)	0.42	0.61	0.50	0.50/0.58
February 1, 2024	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	YES	YES	YES	YES
	Trigger volume	7,899 gal	2,185 ft ³	9,313 gal	8,071 ft ³
	Sampler enable condition (in)	Level > 2.68	Level > 2.55 ^b	Level > 2.06	Level > 6.46
	Percent of storm flow sampled	90%	104% ^c	89%	83%
	Composite sample duration (hrs.)	14.5	40 ^b	13	13.5
	Storm precipitation (in)	0.31	0.33	0.31	0.31/0.37
February 26, 2024	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	YES	YES	YES	YES
	Trigger volume	2,895 gal	800 ft ³	3,411 gal	2,960 ft ³
	Sampler enable condition (in)	Level > 2.72	Level > 3.05	Level > 1.87	Level > 7.59
	Percent of storm flow sampled	90%	87%	103% ^c	83%
	Composite sample duration (hrs.)	6.5	9.5	17 ^b	7
	Storm precipitation (in)	0.13	0.21	0.18	0.18/0.18
March 28, 2024	Grab samples collected and submitted?	NO	NO	YES	YES
	Composite samples collected and submitted?	NO	YES	YES	NO
	Trigger volume	-	800 ft ³	3,411 gal	-
	Sampler enable condition (in)	-	Level > 3.3	Level > 1.84	-
	Percent of storm flow sampled	-	82%	77%	-
	Composite sample duration (hrs.)	-	13	11	-
	Storm precipitation (in)	0.53	0.59	0.53	0.53/0.56

Notes:

-- = No data.

^a Flow data rejected due to area-velocity sensor errors. The EPA runoff calculation was used to estimate the total and sampled event runoff.

^b Programming error occurred at setup.

^c Non-stormwater samples were collected prior to the start of storm precipitation or runoff.

Table 2. Field Parameter Results					
Event Date	Monitoring Station	Field Parameters			
		Dissolved Oxygen	pH	Conductivity	Temperature
		mg/L	S.U.	µS/cm	C
October 10, 2023	Lucky	7.38	5.66	81.35	16.47
	Whitewater	7.65	6.28	95.09	17.17
	Main	-	-	-	-
	Americana	8.4	6.53	247.08	16.78
November 19, 2023	Lucky	5.09	7.27	506.44	15.70
	Whitewater	5.82	7.34	460.32	12.96
	Main	9.48	7.64	174.43	10.54
	Americana	- ^{3J}	- ^{3J}	- ^{3J}	14.16
February 1, 2024	Lucky	4.92	7.15	593.29	14.62
	Whitewater	8.42	7.60	287.02	11.10
	Main	10.11	8.03	353.6	6.30
	Americana	10.05	7.73	552.2	8.34
February 26, 2024	Lucky	9.89	8.27	125.9	4.75
	Whitewater	10.88	7.74	749.2	5.97
	Main	9.79	7.94	165.88	9.53
	Americana	10.54	7.53	470.55	8.74
March 28, 2024	Lucky	-	-	-	-
	Whitewater	-	-	-	-
	Main	10.02	7.82	116.08	10.91
	Americana	10.57	7.28	255.40	9.79

Notes:

-- = No data.

^{3J} Incomplete field parameter collection on the grab sample data form due to field error.

Table 3. Analytical Results Summary																							
Event Date	Monitoring Station	Sample ID	Analytical Parameters																				
			E. coli	BOD ₅	COD	Chloride	Hardness as CaCO3	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			MPN/100 mL	mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
October 10, 2023	Lucky	231010-03-WG/WC	2720.0	17.5 ^{1J}	83.0 ^{1J}	-	47.2 ^{1J}	19.6 ^{1J}	17.4 ^{1J}	126 ^{1J}	0.485 ^{1J}	-	0.336 ^{1J}	-	1.97 ^{1J}	2.6 ^{1J}	-	0.035 ^{1J}	-	-	0.65 ^{1J}	0.0118 ^{1J}	-
	Whitewater	231010-11-WG	1990.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Main	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Americana	231010-14-WG/WC	129.6	19.7 ^{2J}	77.0 ^{2J}	-	< 0.100 ^{2J}	33.6 ^{2J}	23.6 ^{2J}	236 ^{2J}	0.308 ^{2J}	0.169 ^{2J}	0.353 ^{2J}	0.930 ^{2J}	1.44 ^{2J}	5.5 ^{2J}	0.021 ^{2J}	0.072 ^{2J}	8.2 ^{2J}	0.095 ^{2J}	2.4 ^{2J}	< 0.0100 ^{2J}	22.0 ^{2J}
November 19, 2023	Lucky	231119-03-WG/WC	2.0	59.5	137	-	35.8	8.6	8.63	136	0.710	0.538	0.530	0.145	1.76	0.93	0.012	0.030	3.5	0.085	0.33	< 0.0100	32.7
	Whitewater	231119-11-WG/WC	99.0	61.9	167	-	45.0	19.7	27.3	180	0.958	0.768	0.527	0.182	2.07	1.7	< 0.0100	0.041	5 ²	0.21	2.2	< 0.0100	32.3
	Main	231119-12-WG/WC	30.9	19.9	61.0	-	19.3	11.7	16.2	61.0	0.226	0.167	0.610	0.246	1.14	0.66	0.015	0.045	2.7	0.12	1.7	< 0.0100	25.9
	Americana	231119-14-WG/WC	1340.0	36.5	94.0	-	57.8	15.0	21.7	153	0.504	0.402	0.454	0.614	1.27	2.1	0.022	0.061	4.0 ¹	0.11	1.9	< 0.0100	27.2
February 1, 2024	Lucky	240201-03-WG/WC	< 1.0 ^{4J}	7.27	39.0	6.25	16.0	60.5	18.8	52.8	0.174	0.100	0.173	0.204	0.894	0.85	< 0.0100	0.024	2 ²	0.056	0.82	< 0.0100	17.5
	Whitewater	240201-11-WG/WC	68.9 ^{4J}	9.34 ^{1R}	82.0 ^{1R}	14.5 ^{1R}	43.0 ^{1R}	106 ^{1R}	58.4 ^{1R}	139 ^{1R}	0.321 ^{1R}	0.171 ^{1R}	0.169 ^{1R}	0.375 ^{1R}	1.33 ^{1R}	2.4 ^{1R}	< 0.0100 ^{1R}	0.058 ^{1R}	3.9 ^{2, 1R}	0.18 ^{1R}	4.8 ^{1R}	0.0148 ^{1R}	25.7 ^{1R}
	Main	240201-12-WG/WC	238.2 ^{4J}	5.74	77.0	12.7	18.3	103	59.8	64.2	0.143	0.0557	0.351	0.209	1.12	1.4	0.012	0.066	3.6	0.084	4.1	0.0112	18.4
	Americana	240201-14-WG/WC	65.0 ^{4J}	6.98	55.0	64.1	93.3	89.6	50.7	224	0.213	0.116	0.193	0.905	1.05	3.4	0.016	0.063	3.4 ¹	0.090	4.2	< 0.0100	17.3
February 26, 2024	Lucky	240226-03-WG/WC	37.9	13.5	60.0	8.92	53.2	18.9	18.1	114	0.262	0.124	0.476	0.969	1.71	2.6	0.011	0.031	4.5	0.028	0.72	0.0150	13.5
	Whitewater	240226-11-WG/WC	38.3	12.6	84.0	44.4	77.8	52.3	47.3	182	0.347	0.174	0.596	0.921	2.43	2.6	0.014	0.062	4.4 ²	0.093	3.8	0.0151	24.5
	Main	240226-12-WG/WC	24.3	13.9 ^{5J}	119 ^{5J}	17.0 ^{5J}	29.8 ^{5J}	94.7 ^{5J}	104 ^{5J}	85.2 ^{5J}	0.231 ^{5J}	0.0631 ^{5J}	0.829 ^{5J}	0.424 ^{5J}	1.96 ^{5J}	1.5 ^{5J}	0.032 ^{5J}	0.13 ^{5J}	5.6 ^{5J}	0.12 ^{5J}	6.1 ^{5J}	0.0191 ^{5J}	51.7 ^{5J}
	Americana	240226-14-WG/WC	125.9	12.6	85.0	56.1	102	51.1	54.3	214	0.276	0.106	0.496	0.940	1.47	3.3	0.021	0.097	4.0 ¹	0.063	3.9	0.0148	24.3
March 28, 2024	Lucky	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Whitewater	240328-11-WC	-	8.20	84.0	14.9	31.9	26.2	131	76.0	0.318	0.131	0.236	0.277	1.63	2.0	< 0.0100	0.074	1.9 ²	0.097	5.8	0.0151	9.8
	Main	240328-12-WG/WC	21.6	5.03	104	5.19	12.6	24.6	91.7	44.2	0.145	0.0494	0.293	0.151	1.18	1.1	< 0.0100	0.071	2.3	0.068	5.9	0.0171	14.7
	Americana	240328-14-WG	365.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- = No data.

¹ Analytical parameter is qualified due to being less than five times the value detected in the rinsate blank. See Table 6 for rinsate blank results.

² Analytical parameter is qualified due to being less than five times the value detected in the equipment blank. See Table 6 for equipment blank results.

^{1J} Data qualified due to lack of representativeness (50%–75%).

^{2J} Data qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

^{4J} *E. coli* sample qualified due to exceeded hold time.

^{5J} Composite sample qualified due to non-stormwater sample volume comprising less than 10% of the total composite sample volume.

^{1R} Composite sample rejected due to non-stormwater sample volume comprising 10% or more of the total composite sample volume.

WG = Wet grab sample.

WC = Wet composite sample.

Table 4. Event Loading for Monitored Drainages in Pounds						
Event Date	Monitoring Station	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
October 10, 2023	Lucky	4.20 ^{1J}	0.118 ^{1J}	0.0810 ^{1J}	-	0.477 ^{1J}
	Whitewater	-	-	-	-	-
	Main	-	-	-	-	-
	Americana	52.6 ^{2J}	0.686 ^{2J}	0.786 ^{2J}	2.07 ^{2J}	3.21 ^{2J}
November 19, 2023	Lucky	10.1	0.832	0.621	0.170	2.06
	Whitewater	139	4.87	2.68	0.926	10.5
	Main	35.5	0.496	1.34	0.540	2.50
	Americana	430	9.98	8.99	12.2	25.1
February 1, 2024	Lucky	16.9	0.157	0.156	0.184	0.805
	Whitewater	168 ^{1R}	0.92 ^{1R}	0.750 ^{1R}	1.08 ^{1R}	3.81 ^{1R}
	Main	74.4	0.178	0.437	0.260	1.39
	Americana	825	3.46	3.140	14.7	17.1
February 26, 2024	Lucky	4.48	0.0648	0.118	0.240	0.423
	Whitewater	104	0.762	1.31	2.02	5.34
	Main	70.6 ^{5J}	0.157 ^{5J}	0.563 ^{5J}	0.288 ^{5J}	1.33 ^{5J}
	Americana	474	2.41	4.33	8.21	12.8
March 28, 2024	Lucky	-	-	-	-	-
	Whitewater	1266	3.07	2.28	2.68	15.7
	Main	278.2	0.440	0.889	0.458	3.58
	Americana	-	-	-	-	-

Notes:

-- = No data

^{1J} Data qualified due to lack of representativeness (50%–75%).

^{2J} Data qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

^{5J} Composite sample qualified due to non stormwater sample volume comprising less than 10% of the total composite sample volume.

^{1R} Composite sample rejected due to non stormwater sample volume comprising 10% or more of the total composite sample volume.

Table 5. Event Loading in Pounds/Acre						
Event Date	Monitoring Station	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
October 10, 2023	Lucky	0.0400 ^{1J}	0.00112 ^{1J}	0.000771 ^{1J}	-	0.00454 ^{1J}
	Whitewater	-	-	-	-	-
	Main	-	-	-	-	-
	Americana	0.0601 ^{2J}	0.000784 ^{2J}	0.000898 ^{2J}	0.00237 ^{2J}	0.00367 ^{2J}
November 19, 2023	Lucky	0.0962	0.00792	0.00591	0.00162	0.0196
	Whitewater	0.279	0.00978	0.00538	0.00186	0.0211
	Main	0.449	0.00628	0.0170	0.00684	0.0316
	Americana	0.491	0.0114	0.0103	0.0139	0.0287
February 1, 2024	Lucky	0.161	0.00150	0.00149	0.00175	0.00767
	Whitewater	0.337 ^{1R}	0.00185 ^{1R}	0.00151 ^{1R}	0.00217 ^{1R}	0.00765 ^{1R}
	Main	0.942	0.00225	0.00553	0.00329	0.0176
	Americana	0.943	0.00395	0.00359	0.0168	0.0195
February 26, 2024	Lucky	0.043	0.000617	0.00112	0.00229	0.00403
	Whitewater	0.209	0.00153	0.00263	0.00406	0.0107
	Main	0.894 ^{5J}	0.00199 ^{5J}	0.00713 ^{5J}	0.00365 ^{5J}	0.0168 ^{5J}
	Americana	0.542	0.00275	0.00495	0.00938	0.0146
March 28, 2024	Lucky	-	-	-	-	-
	Whitewater	2.54	0.00616	0.00458	0.00538	0.0315
	Main	3.52	0.00557	0.0113	0.00580	0.0453
	Americana	-	-	-	-	-

Notes:

-- = No data.

^{1J} Data qualified due to lack of representativeness (50%–75%).

^{2J} Data qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

^{5J} Composite sample qualified due to non stormwater sample volume comprising less than 10% of the total composite sample volume.

^{1R} Composite sample rejected due to non stormwater sample volume comprising 10% or more of the total composite sample volume.

Table 6. QC Sample Summary																							
Event Date	Parent Sample	Sample ID	QC Sample Type	Analytical Parameters																			
				E. coli	BOD ₅	COD	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate (Ortho-P)	Ammonia	Nitrate + Nitrite	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
				MPN/100 mL	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
October 2, 2023	-	231002-12-003	Equipment blank	-	<2.00	7.00	<0.100	<0.3	<0.900	<20.0	<0.0120	<0.003	0.0560	<0.0250	<0.200	<0.0700	<0.0100	<0.100	0.18	<0.009	<0.0100	<0.0100	0.80
October 4, 2023	-	231004-11-003	Equipment blank	-	<2.00	<7.00	<0.100	<0.3	<0.900	<20.0	<0.0120	<0.003	<0.0350	<0.0250	<0.200	<0.0700	<0.0100	<0.0100	2.2	0.018	0.0250	<0.0100	1.4
October 5, 2023	-	231005-03-003	Equipment blank	-	<2.00	<7.00	<0.100	<0.3	<0.900	<20.0	<0.0120	<0.003	<0.0350	<0.0250	<0.200	<0.0700	<0.0100	<0.0100	0.41	<0.009	0.0210	<0.0100	1.4
	-	231005-14-003	Equipment blank	-	<2.00	<7.00	<0.100	<0.3	<0.900	<20.0	<0.0120	<0.003	<0.0350	<0.0250	<0.200	<0.0700	<0.0100	<0.0100	0.50	<0.009	0.0140	<0.0100	0.55
November 19, 2023	Americana grab	231119-14-001	Field blank	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Americana grab	231119-14-101	Field duplicate	866.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Calculated parent/duplicate RPD			4%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February 1, 2024	Lucky grab	240201-03-001	Field blank	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Lucky grab	240201-03-101	Field duplicate	2 ^{4J}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Calculated parent/duplicate RPD			100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Whitewater Composite	240201-11-103	Lab duplicate/composite split	—	8.9	83.0	42.4	113	53.8	140	0.312	0.172	0.170	0.378	1.35	2.4	0.011	0.052	3.7	0.19	4.9	0.0127	26.6
February 26, 2024	Main grab	240226-12-001	Field blank	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Main grab	240226-12-101	Field duplicate	26.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Calculated parent/duplicate RPD			2%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March 28, 2024	Main grab	240328-12-001	Field blank	< 1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Main grab	240328-12-101	Field duplicate	17.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Calculated parent/duplicate RPD			5%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	240328-14-002	Field blank composite	-	< 2.00	< 7.00	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.003	< 0.0450	< 0.0250	< 0.100	< 0.0700	< 0.0100	< 0.0100	< 0.150	<0.009	< 0.0100	< 0.0100	< 0.500
September 10, 2024	-	240910-11-004	Rinsate blank	-	< 2.00	< 7.00	< 0.100	< 0.3	< 0.900	< 25.0	< 0.0120	0.00795	< 0.0450	< 0.0250	< 0.100	< 0.0500	< 0.0100	< 0.0200	0.38	< 0.0100	0.017	< 0.0100	< 0.500
	-	240910-14-004	Rinsate blank	-	< 2.00	< 7.00	< 0.100	< 0.3	1.00	< 25.0	< 0.0120	< 0.003	< 0.0450	< 0.0250	< 0.100	< 0.0500	< 0.0100	< 0.0200	0.91	< 0.0100	0.026	< 0.0100	1.3
September 17, 2024	-	240917-12-004	Rinsate blank	-	< 2.00	< 7.00	< 0.100	< 0.3	< 0.900	< 25.0	< 0.0120	< 0.003	< 0.0450	< 0.0250	< 0.100	< 0.0500	< 0.0100	< 0.0200	0.20	< 0.0100	< 0.0100	< 0.0100	1.1
Allowable RPD				40%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%

- = No data.

^{4J} *E. coli* sample qualified due to exceeded hold time.

Cells highlighted in gray are flagged for discussion.

Appendix C: Storm Event Reports

Storm Event Report No. 1: October 10, 2023

Storm Event Report No. 2: November 19, 2023

Storm Event Report No. 3: February 1, 2024

Storm Event Report No. 4: February 26, 2024

Storm Event Report No. 5: March 28, 2024



Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 801.316.9859

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2024

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for October 10, 2023

Date: February 14, 2024

To: Monica Lowe

Cc: Steven Turner

Kristen Chisholm

From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

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 10, 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.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2024 (October 1, 2023, through September 30, 2024). The following storm event report summarizes stormwater sampling results from the October 10, 2023, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2024 Phase I Stormwater Outfall Monitoring. When samples are qualified, additional samples will be attempted from subsequent storms to collect unqualified samples.

Table 2-1. WY 2024 Samples Collected					
Date	Lucky	Whitewater	Main	Americana	AS_6
October 10, 2023	G, C ^{1,2}	G	--	G, C ³	--
Unqualified Samples:	1G	1G	--	1G	--
Samples Remaining:	2G, 3C	2G, 3C	3G, 3C	2G, 3C	3G, 3C

Notes:

-- = no samples taken

C = composite sample

G = grab sample

¹ Composite samples qualified due to lack of representativeness (50% – 75%).

² Incomplete water quality analysis due to low composite sample volume.

³ Composite samples qualified due to lack of representativeness (50% – 75%) of the calculated flow volume.

Section 3: Storm Event Summary

The October 10, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from October 10, 2023, is included in Attachment A for reference.

Tuesday, October 10, 2023 – Wednesday, October 11, 2023

- On the morning of October 10, the National Weather Service issued a forecast for widespread rain in the Boise area, starting October 10 at 1800 and ending on October 11 at 0600. The chance of precipitation was 80%, with 0.10 to 0.20 inches of precipitation forecasted.
- Setup was accomplished early morning of October 10. An expected precipitation depth of 0.11 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.
- The runoff started approximately on October 10 at 1216 and ended on October 11 at 2300. There was a runoff break in between October 10 at 0936 and October 11 at 0738.
- Precipitation totals ranged between 0.10 and 0.18 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrograph for the Lucky, Whitewater, and Americana site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Americana and AS_6 monitoring stations were set up on October 10, 2023, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programmed into the Lucky, Whitewater, and Americana flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

Two, two-member team mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on October 10 at 1823. Grab samples for Lucky, Whitewater and Americana were submitted to the West Boise Water Quality Lab (WQL) at 2003 on October 10. Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at the Lucky and Americana monitoring station and submitted to the West Boise WQL at 1242 on October 11. Whitewater collected two composite samples and was not submitted to the WQL. A partial water quality analysis was conducted on the Lucky composite samples due to low composite sample volume. The volume of the Americana composite sample was sufficient for analysis of all parameters. Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. Laboratory analytical reports are included in Attachment D.

Section 4: Quality Assurance/Quality Control

No quality control samples were collected during the October 10, 2023, storm event.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. An accepted composite sample represents at least 75 percent of the total discharge or at least 6 hours of the storm duration. The composite sample collected at Lucky was qualified because it represented 63% of the storm runoff and lasted approximately 2 hours. The composite sample collected at Americana was calculated using the EPA runoff calculation. After thorough flow and precipitation data review, it was determined that the area-velocity sensor showed inaccurate flow level readings and did not align with the precipitation data. The EPA runoff calculation estimates the total event runoff and sampled

runoff values based on impervious surface of the drainage basin (see Figure 4-1 for EPA's runoff calculation equation). Based on the estimated values, approximately 71% of the total storm runoff was sampled therefore the Americana composite samples were qualified. See Table 4-1 for total and sampled runoff calculations and Attachment B.

Runoff Calculation

$$R = P * Pj * Rv$$

Where:

R = Event Runoff (inches)

P = Event Rainfall (inches)

Pj = Fraction of annual rainfall events that produce runoff (0.9)

Rv = Runoff Coefficient

Figure 4-1: EPA Runoff Calculation

Table 4-1. Total and Sample Runoff Calculations

From Table 2-1 of the Stormwater Outfall Monitoring Plan:

Americana Subwatershed Area = 875 acres

Percent Impervious Groundcover = 39 %

Impervious Groundcover = 481 acres

Total Runoff from the Americana Watershed:

P = 0.14 inches

Pj = 0.9

Rv = 0.39

R = 0.049 inches

Sampled Runoff from the Americana Site:

P = 0.1 inches

Pj = 0.9

Rv = 0.39

R = 0.035 inches

Calculated Sampled Runoff Precipitation

Sampled/ Total Sampled Runoff x 100 = 71%

The acceptance and performance criteria for analytical and non-analytical criteria, except for Lucky and Americana composite samples, were met for this storm event.

Section 5: Notes and Recommendations

Americana

During set-up, a "Replace pump tubing" warning message was encountered when the sampler program was started. The ISCO Operating Manual was used to reset the program settings and reset the pump count. The message did not appear again when the sampler program was restarted.

Main

During set-up, the Main flow meter was providing positive flow readings, but no flow was observed in the storm drain pipe. The flow module was replaced, but this did not resolve the issue. Therefore, the Main site was not targeted at this event.

Data Tables



TAB-1

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	NO	YES	NO
Composite samples collected and submitted?	YES	NO	NO	YES	NO
Trigger volume (gal or ft ³)	2,895 gal	800 ft ³	--	2960 ft ³	221 ft ³
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	Level > 3.02 "	Level > 2.60 "	--	Level > 5.1 "	--
Runoff start time	1216 ¹	1407 ¹	--	1602 ²	--
Grab sample collection time	1829	1904	--	1823	--
Composite sample stop time	0906	--	--	1150	--
Runoff stop time	1110 ²	2300 ²	--	1630 ²	--
Volume of Discharge Sampled (ft ³)	2,439	--	--	111,486 ^{2,3}	--
Total runoff volume (ft ³)	3,882	5,838	--	156,081 ^{2,3}	--
Percent of storm flow sampled (%)	63%	--	--	71% ³	--
Composite sample duration (hrs)	2	--	--	5	--
Storm Precipitation (in)	0.18	0.13	0.10	0.10/0.18	0.10/0.18
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/ East
Sampler messages (counts): Success	8	2	--	11	--
Number of composite bottles filled	1	--	--	1	--
Composite sample volume (Approx.; ml)	5,000	--	--	5,750	--

Notes:

¹ Runoff started on 10/10/23.

² Runoff ended on 10/11/23.

³ Flow data rejected due to area-velocity sensor errors . The EPA runoff calculation was used to estimate the total and sampled event runoff.

Table 2. Field and Analytical Data Summary																											
Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				E. coli	Sample ID Composite	Analytical Parameters																		
			Dissolved Oxygen	pH	Conductivity	Temperature			BOD ₅	COD	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C			mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	10/10/2023	231010-03-WG	7.38	5.66	81.35	16.47	2720.0	231010-03-WC	17.5 ¹⁾	83 ¹⁾	47.2 ¹⁾	19.6 ¹⁾	17.4 ¹⁾	126 ¹⁾	0.485 ¹⁾	--	0.336 ¹⁾	--	1.97 ¹⁾	2.6 ¹⁾	--	0.035 ¹⁾	--	--	0.65 ¹⁾	0.0118 ¹⁾	--
Whitewater	10/10/2023	231010-11-WG	7.65	6.28	95.09	17.17	1990.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Main	10/10/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Americana	10/10/2023	231010-14-WG	8.4	6.53	247.08	16.78	129.6	231010-14-WC	19.7 ²⁾	77 ²⁾	<0.100 ²⁾	33.6 ²⁾	23.6 ²⁾	236 ²⁾	0.308 ²⁾	0.169 ²⁾	0.353 ²⁾	0.930 ²⁾	1.44 ²⁾	5.5 ²⁾	0.021 ²⁾	0.072 ²⁾	8.2 ²⁾	0.095 ²⁾	2.4 ²⁾	<0.0100 ²⁾	22.0 ²⁾
AS_6	10/10/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
 -- = No data.
¹⁾ Data qualified due to lack of representativeness (50% - 75%).
²⁾ Data qualified due to lack of representativeness (50% - 75%) of the calculated flow volume.

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	10/10/2023	4.20 ^{1J}	0.118 ^{1J}	0.0810 ^{1J}	--	0.477 ^{1J}
Whitewater	10/10/2023	--	--	--	--	--
Main	10/10/2023	--	--	--	--	--
Americana	10/10/2023	52.6 ^{2J}	0.686 ^{2J}	0.786 ^{2J}	2.07 ^{2J}	3.21 ^{2J}
AS_6	10/10/2023	--	--	--	--	--

Notes:

-- = No data.

^{1J} Data qualified due to lack of representativeness (50% - 75%).

^{2J} Data qualified due to lack of representativeness (50% - 75%) of the calculated flow volume.

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 10/10/2023	Time: 4:10 PM	Initials: ML
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.02"
Date and time of expected event	10/10/2023 6 PM – 10/11/2023 6 AM
Expected amount of precipitation	0.10" – 0.20"
Percent chance of precipitation	80%
Percent chance of >0.10" over 12 hours	71%

NWS Update

<u>Targeted Station & Samples</u>					
Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☐ Grab	☒ Grab	☒ Grab	☐ Grab
☒ Composite	☒ Composite	☐ Composite	☒ Composite	☒ Composite	☐ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☒ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations
☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☒ Equipment Concerns: Problems with Main measuring flow when none present. Suspect AV sensor.
☐ Other:

Text Forecast
 NWS Forecast for: Garden City ID
 Issued by: National Weather Service Boise, ID
 Last Update: 2:53 pm MDT Oct 10, 2023

This Afternoon: Showers likely and possibly a thunderstorm. Mostly cloudy, with a high near 68. West southwest wind around 6 mph. Chance of precipitation is 60%.

Tonight: Showers and possibly a thunderstorm. Low around 47. West southwest wind around 6 mph becoming calm. Chance of precipitation is 90%. New rainfall amounts between a tenth and quarter of an inch, except higher amounts possible in thunderstorms.

Wednesday: Showers and possibly a thunderstorm before 1pm, then a chance of showers. High near 58. West northwest wind 5 to 14 mph, with gusts as high as 23 mph. Chance of precipitation is 90%.

Wednesday Night: A 30 percent chance of showers before 1am. Patchy fog after 4am. Otherwise, cloudy, then gradually becoming partly cloudy, with a low around 42. Northwest wind 5 to 14 mph, with gusts as high as 23 mph.

Thursday: Patchy fog before 1pm. Otherwise, sunny, with a high near 63. Northwest wind 5 to 10 mph.

Thursday Night: Mostly clear, with a low around 42.

Friday: Sunny, with a high near 68.

Friday Night: Partly cloudy, with a low around 48.

Saturday: Mostly cloudy, with a high near 67.
Saturday Night: A 20 percent chance of showers after 1am. Mostly cloudy, with a low around 49.
Sunday: A 20 percent chance of showers. Partly sunny, with a high near 70.
Sunday Night: Mostly cloudy, with a low around 50.
Monday: Partly sunny, with a high near 74.
Monday Night: A 30 percent chance of showers. Mostly cloudy, with a low around 52.
Tuesday: A chance of showers. Mostly cloudy, with a high near 66.

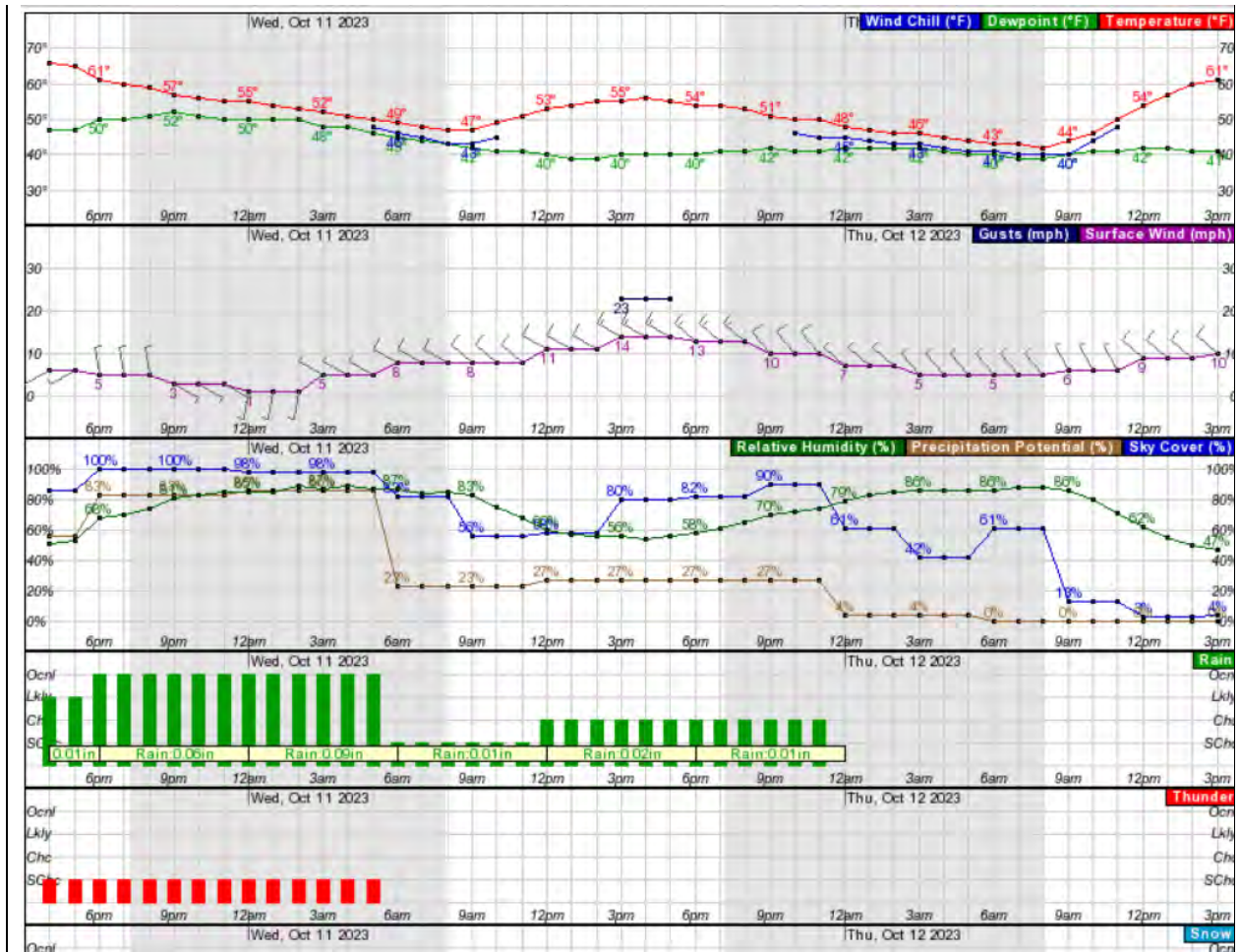
Forecast Discussion

Area Forecast Discussion
National Weather Service Boise ID
233 PM MDT Tue Oct 10 2023

.SHORT TERM...Tonight through Thursday night...Showers have steadily increased through the day in eastern Oregon, and as of 2 PM MDT showers were also getting into the Treasure Valley and Weiser River Valley. No [lightning](#) has been observed yet, but the incoming upper [trough](#) is expected to provide enough [instability](#) later this afternoon and evening for [isolated](#) thunderstorms within about 50 miles either side of the OR/ID border. Showers will become widespread tonight in western Idaho, then decrease Wednesday morning except along the ID/NV border and the Boise Mountains and eastern Valley County. Total precipitation tonight through Wednesday should be .10 to .20 inch in the valleys and .25 to .50 inch in the mountains, including 1-2 inches of snow above 6500 feet [MSL](#). Later Wednesday the main upper low off the northwest coast will move rapidly inland and bring another chance of showers to eastern Oregon, then into western Idaho early Wednesday evening. Late Wednesday night the low will be in eastern Wyoming and clouds will decrease in our [CWA](#). Clearing skies will allow [radiational cooling](#) resulting in patchy [fog](#) in the valleys Thursday morning. Thursday afternoon and night look [mostly clear](#). Winds will be light to moderate westerly tonight and Wednesday morning, then increase almost to advisory speeds Wednesday afternoon in south-central Idaho. Winds will die down rapidly Wednesday night.

.LONG TERM...Friday through Tuesday...A warming and drying trend is forecast Friday through Monday, possibly Tuesday, as another upper [ridge](#) builds inland from the Pacific. High temps will reach at least the mid 70s in the valleys by Monday, with a 10 percent chance of 80 degrees again. Low temps will moderate more slowly. Unfortunately, latest models bring a lot of [high clouds](#) in from the Pacific on Saturday which may spoil the view of the annular solar eclipse Saturday morning.

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE <u>231010</u>										
A. Event and Data Completeness		Yes	No	N/A	Notes					
1. Field data sheets filled out completely and clearly		X								
2. Field parameters reviewed, and any problems/issues addressed		X			WW field parameters difficult to read: verified					
3. All samples collected as specified		X			DO is 7.65 mg/L + sp cond. is 95.09 w/ Chad Shuwend					
4. All samples delivered to lab promptly (review chain of custody rpts)		X								
5. Inconsistencies/clarifications discussed with sampling team member		X								
6. All analytical reports from lab received		X								
B. Validation and Verification Methods		Yes	No	N/A	Notes					
1. Outliers and unexpected values discussed with lab				X						
2. Appropriate analytical methods used		X								
3. All lab QA samples were within method acceptance criteria		X								
4. All samples reviewed and data qualifiers assigned if needed		X								
5. Data quality objective achieved		X								
C. Specific Storm and Sample QA/QC Criteria		Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)		0.03	0.00	—	0.01	0.01	< 0.11" in 72 hrs	X		
2. Precipitation (inches)		0.18	0.13	—	0.10/0.18	0.10/0.18	> 0.10"	X		
3. Sampled amount (% of total run-off)		63%	—	—	71%	—	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify		X	
4. Composite sample duration (hours)		2.0	—	—	5.0	—	< 50%: reject			
4. Ecoli sample holding time (hours)		2.0	1.5	2.0	2	—	<= 8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)		—	—	—	1.5	—	<= 24 hrs: no qualifier > 24 hrs.: reject	X		
D. Notes										
<u>Lucky</u> – No diss. parameters due to low volume and qualified due to lack of representativeness <u>WW</u> – Composite discarded due to low sample volume (2 subsamples) <u>Main</u> – Not setup for storm due to flow sensor error. Flow readings when no flow present <u>Americana</u> – Composites qualified for represent lack of representativeness and *Americana flow rejected. Runoff coefficients used to calculate total event runoff + sampled runoff values. <u>AS-6</u> – No grabs or composites collected due to low flow.										

Reviewed by Steven Turner

Date 2/12/24

Approved by Monica Lowe

Date 2/12/24

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.

Step 2. Enter expected precipitation depth (in) in blue cell.

Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.11

Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft ³)	Trigger Vol (ft ³)
Lucky	105	0.157	6582.5	387
Whitewater	498	0.069	13621.3	801
Main	79	0.246	7760.0	456
Main Alt	60	0.200	4791.6	282
Americana	875	0.144	50311.8	2960
AS_6	204	0.046	3747.0	220
State	34	0.160	2172.2	128

Notes:

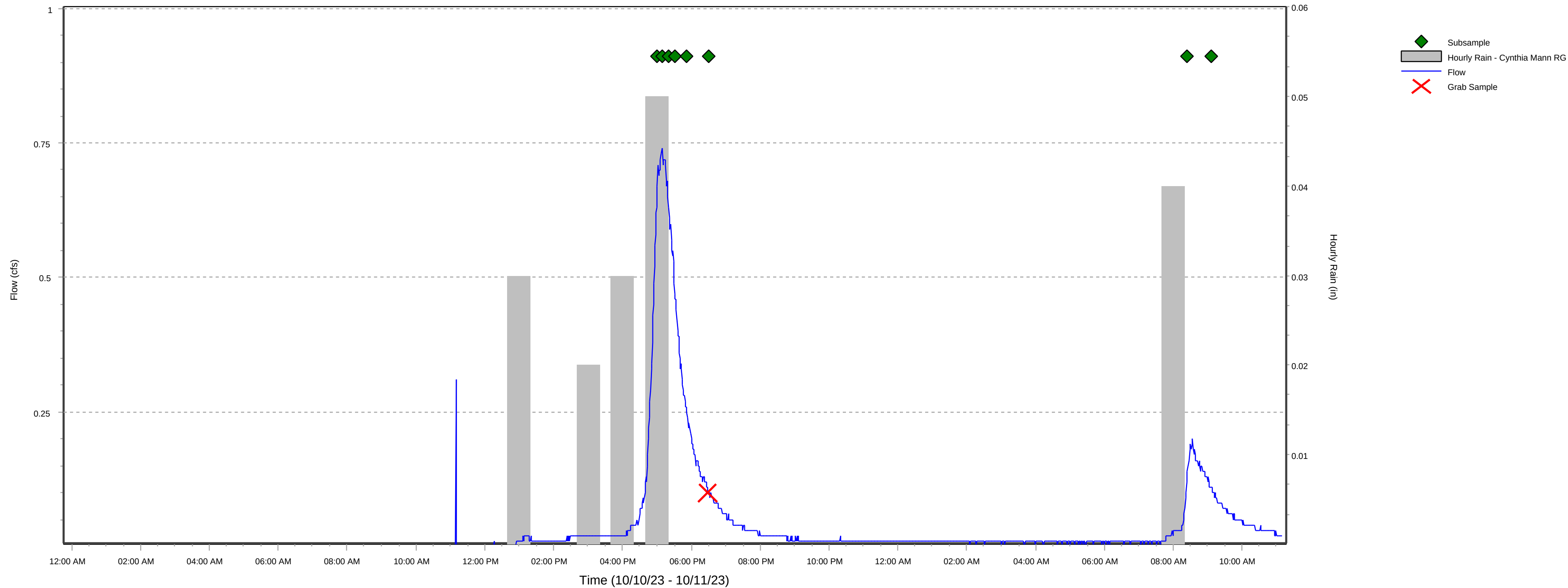
Calculated RC = Average ($\text{precip (ft)} / [\text{volume (ft}^3\text{)} \times \text{area (ft}^2\text{)}]$)

Where precip (ft) is the measured amount from local rain guage, and $\text{volume (ft}^3\text{)}$ is the measured discharge, and $\text{area (ft}^2\text{)}$ is the watershed area

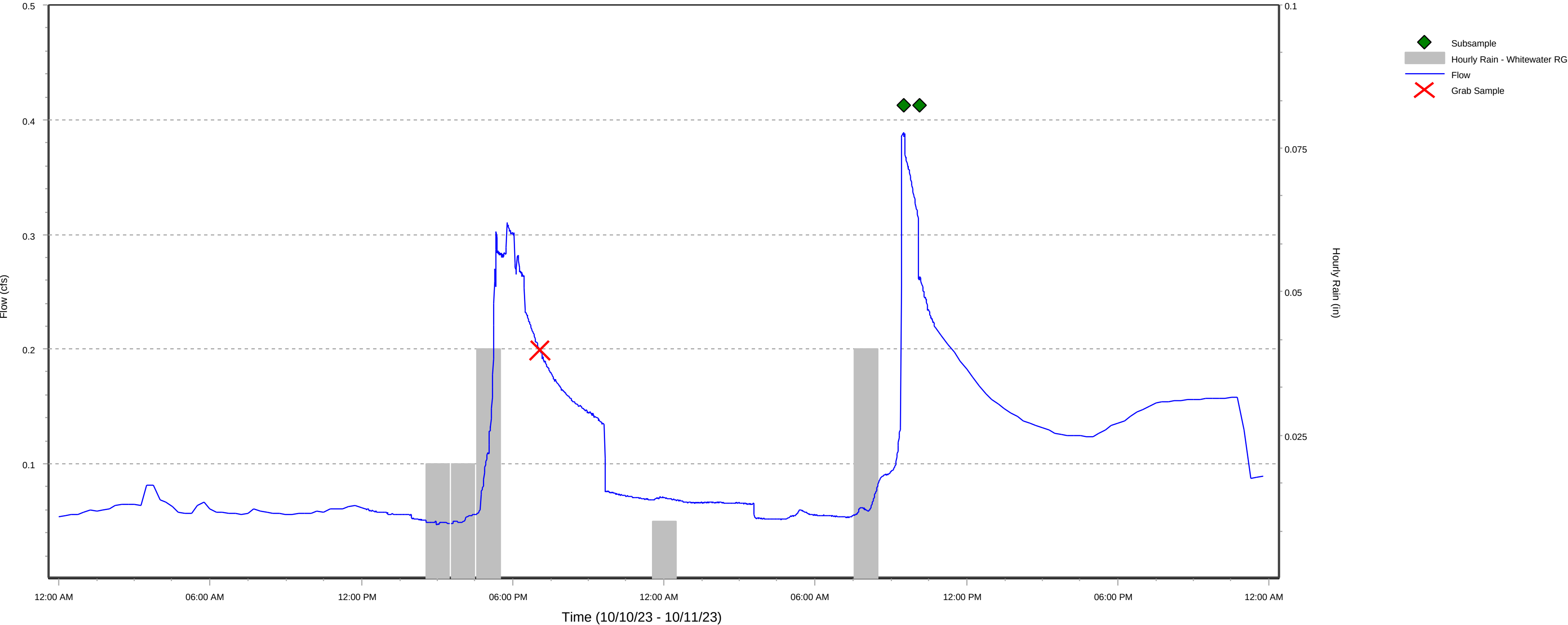
Expected volume (ft³) = RC x expected precip (ft) x area (ft²)

Attachment B: Storm Event Hydrographs

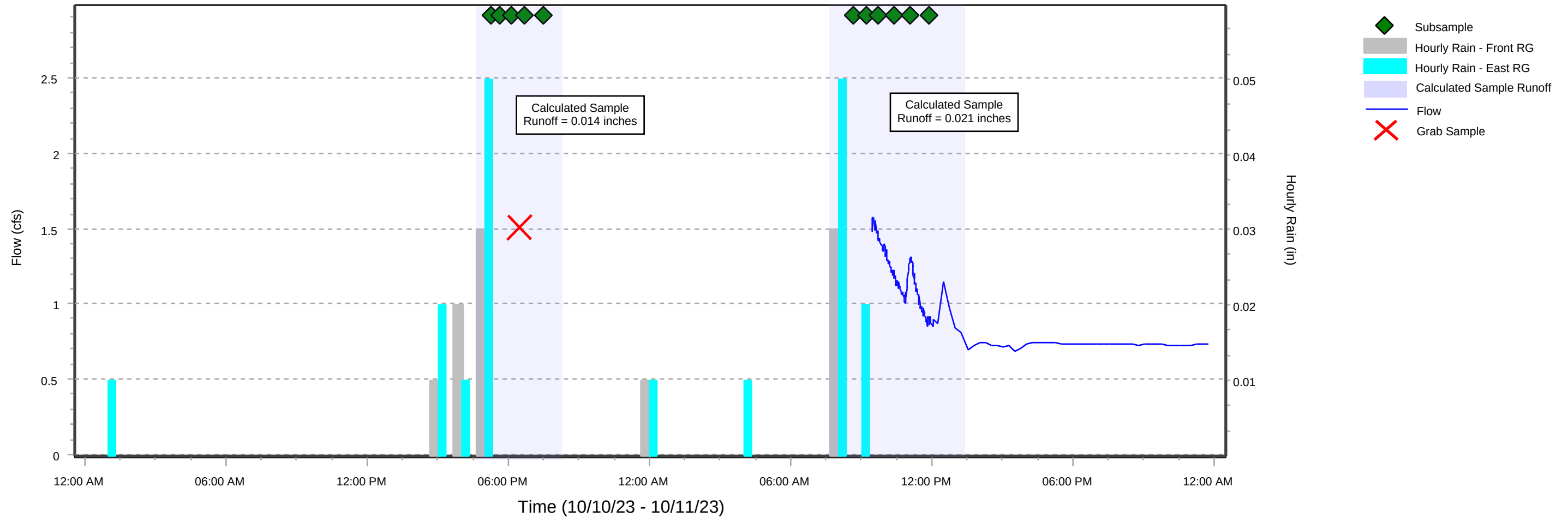
Lucky Hydrograph



Whitewater Hydrograph



Americana Hydrograph



Attachment C: Field Forms

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: Lucky

SET UP

Personnel: KC, ST

Date/Time: 10/10/23 1042

On-Site: 10/10/23 1042

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
10:51	2.02	0.0	0.0	13.41 V
Enable Condition or Velocity Cutoff:			3.02	
Deadband:			1.0	
Trigger Volume:			2895 gal	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: KC, ST

Date/Time: 10/10/23 0902 KC

On-Site: 10/10/23 0902 KC

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1108	2.15	10.72	0.15		
0917	2.34	0.11	0.37		12.7
Downloaded to: <u>Uploaded to KC</u>					

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky
 Personnel: KC, ST

Bottle 1 of 1
 Date/Time On-Site: 10/11/23 0830

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>231010 - #1 #03</u> -WC
Approx Sample Volume (mL): <u>5000 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>clear</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>brown</u>
QA/QC Sample ID: <u>-103</u> (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	10/10/23 1700	Successful ↓	13		
2	10/10/23 1710		14		
3	10/10/23 1720		15		
4	10/10/23 1732		16		
5	10/10/23 1751		17		
6	10/10/23 1831		18		
7	10/11/23 0823		19		
8	10/11/23 0906		20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle, add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Lucy

Personnel: 2LCS

Date/Time On-Site: 10/10/23 1815pm

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1819	2.23	7.35	0.09	12.9	10/10/23 17:00	

Grab Information				
	Sample ID	Date	Time	Labeled?
Site E.Coli	231010-03 -WG	10/10/23	1829	☒
Field Duplicate E.Coli	231010-03 -101	10/10/23		☐
Field Blank E.Coli	231010-03 -001	10/10/23		☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1830	16.47	7.38	5.66	81.35

Sampler Current Status	
First Subsample Date/Time	10/10/23 1700
Last Subsample Date/Time	10/10/23 1832
# of Subsamples taken	6

Comments:

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

STATION: Whitewater

SET UP

Personnel: KC, ST

Date/Time
On-Site: 10/10/2023 1146

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1146	1.47	0.04	0.41	—
Enable Condition: <u>2.6</u>				
Hysteresis: <u>10"</u>				
Flow Pulse Interval: <u>800 cf</u>				

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 10/10/23 1150
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: KC, ST

Date/Time
On-Site: 10/10/23 0902
1040

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0917	2.34	0.11	0.37	—
Downloaded to: <u>Rugged 6 / USB</u>				
1040	2.06	0.22	0.90	—

On-Site

- ☐ Replace flowmeter battery ball Always connect to power. Not on battery.
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 0905
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Whitewater
 Personnel: K.C. ST

Bottle 1 of
 Date/Time On-Site: 10/11/23 1040

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	10/11/23 0910	Successful	13		
2	↓ 0958		14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

Sample discarded not

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
---	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: whitewater

Personnel: ZL, CS Date/Time On-Site: 10/10/23 1851

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1851	2.09	0.81 0.90	0.81	-	10/10/23 1600	0.08 in

Grab Information				
	Sample ID	Date	Time	Labeled?
Site E. Coli	231010-11 -WG	10/10/23	1904	☒
Field Duplicate E. Coli	-101			☐
Field Blank E. Coli	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
M809	1904	17.17	7.55	6.28	195.09

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

@1900 no composite samples taken yet. only grabs.

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: Main

SET UP

Personnel: KC, ST

Date/Time
On-Site: 10/10/23 1228

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1230				13.5
Enable Condition or Velocity Cutoff:				
Deadband:				
Trigger Volume:				

- ☒ Install batteries on flowmeter and sampler
- ☐ Perform decon. cycle
- ☐ Install 15L sample bottle, with ice
- ☐ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☐ Verify all cable and tubing connections
- ☐ Check date and time on flowmeter and sampler
- ☐ Set flowmeter program and sampler program parameters
- ☐ Set logging interval to 1 minute
- ☐ Start flowmeter program and sampler program
- ☐ Verify running

Comments:

flow meter giving readings even though no flow in pipe. Tried swapping flow meter out for a new one. Same readings given. Not targetting Main for this event. Sensor appears to be reading incorrectly.

SHUT DOWN

Personnel: _____

Date/Time
On-Site: _____

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
Downloaded to:					

If flow monitoring is complete:

- ☐ Halt program on flowmeter
- ☐ Download flowmeter data
- ☐ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: _____
 Personnel: _____

Bottle _____ of _____

Date/Time On-Site: _____

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle, add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

TATION: Americana

SET UP

Personnel: KC ST

Date/Time

On-Site: 10/10/23 1247

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
<u>0916</u>	<u>3.81</u>	<u>0.72</u>	<u>1.544</u>	<u>11.59</u>
Enable Condition:		<u>5.1"</u>		
Hysteresis:		<u>1.0"</u>		
Flow Pulse Interval:		<u>29100 cf</u>		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 10/10/23 0920
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

"Replace pump tubing" warning when program started. Followed manual directions to select pump alarm & reset pump count. Error message went away. tube

SHUT DOWN

Personnel: KC ST

Date/Time

On-Site: 10/11/23 1151

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
<u>1151</u>	<u>4.34</u>	<u>0.9</u>	<u>1.593</u>	<u>12.13</u>
Downloaded to:		<u>USB</u>		

On-Site

- ☐ Replace flowmeter battery
- ☐ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☐ Direct or Remote; Date/time 10/11/23 1205
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

STATION: Americana
 Personnel: KC, ST

Composite Sample Collection

Bottle 1 of 1
 Date/Time On-Site: 10/10/23 1815

☐ Halt sampler program		
☐ Put lid on sample bottle; label sample bottle		
Sample ID:	<u>231011-14</u>	-WC
Approx Sample Volume (mL):	<u>5750 mL</u>	
Clarity (ex. Clear, Cloudy, Silty):	<u>Silty</u>	
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>10/10/23 17:13</u>	<u>Success</u> ↓	13		
2	<u>1736</u>		14		
3	<u>1804</u>		15		
4	<u>1839</u>		16		
5	<u>1926</u>		17		
6	<u>10/11 839</u>		18		
7	<u>908</u>		19		
8	<u>942</u>		20		
9	<u>1020</u>		21		
10	<u>1103</u>		22		
11	<u>1150</u>		23		
12			24		

Comments:

If sampling is complete: ☒ Power off sampler, if separate from flowmeter ☒ Keep flowmeter running ☒ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Americana

Personnel: KC ST Date/Time On-Site: 10/10/23 18:15

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1817	55	1.41	1.768	12.04		

Grab Information					
	Sample ID		Date	Time	Labeled?
Site E.Coli	23/010-14	-WG	10/10/23	1823	☒
Field Duplicate E.Coli		-101			☐
Field Blank E.Coli		-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	1826	16.78	8.40	6.53	247.08

Sampler Current Status	
First Subsample Date/Time	10/10/23 1713
Last Subsample Date/Time	10/10/23 1804
# of Subsamples taken	3

Comments:

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: AS-6

SET UP

Personnel: KC, ST

Date/Time
On-Site: 10/10/23 1352

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1352	0.0	0.0	0.0	12.5
Enable Condition or Velocity Cutoff:			0.02	
Deadband:				
Trigger Volume:			221 CF	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

Using ⁴⁹⁰~~480~~ mL for sample volume

SHUT DOWN

Personnel: KC, ST

Date/Time
On-Site: 10/10/23 0956

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1008	0.922	0.01	0.37	198	12.3
Downloaded to:			Rugged 6		

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☐ Download flowmeter data
- ☐ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments: No composite or grab samples submitted due to low flow levels.

Composite Sample Collection

STATION: _____

Bottle _____ of _____

Personnel: _____

Date/Time On-Site: _____

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

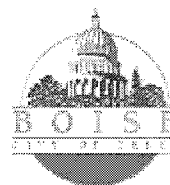
Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle, add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Attachment D: Storm Event Analytical Reports

Report Date: 10/25/2023 11:20



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00321-01	ACST1B	231010-03-WG	Water		10/10/2023	10/10/2023
AC00321-02	ACST1B	231010-11-WG	Water		10/10/2023	10/10/2023
AC00321-03	ACST1B	231010-14-WG	Water		10/10/2023	10/10/2023

Report Date: 10/25/2023 11:20



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 10/10/2023 18:29
Lab Number: AC00321-01
Sample Type: Grab

Location Description: 231010-03-WG
Sample Collector: C.S
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B234049	2720.0 MPN/100 mL		100.0	1.0	IDEXX - Colilert	10/10/23 20:25	10/11/23 20:25	LRF	D
Wet Chemistry										
Chlorine Screen	B234050	Absent				SM 4500-CL G-2000 mod	10/10/23	10/10/23 20:11	JAL	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 10/25/2023 11:20



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 10/10/2023 19:04
Lab Number: AC00321-02
Sample Type: Grab

Location Description: 231010-11-WG
Sample Collector: C.S
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst		
				MDL *	MDL				Initials	Qualifier	
Microbiology											
E. Coli	B234049	1990.0 MPN/100 mL		100.0	1.0	IDEXX - Colilert	10/10/23 20:25	10/11/23 20:25	LRF		D
Wet Chemistry											
Chlorine Screen	B234050	Absent				SM 4500-CL G-2000 mod	10/10/23	10/10/23 20:11	JAL		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 10/25/2023 11:20



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

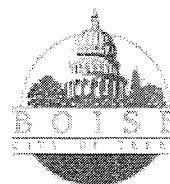
Location: ACST1B
Date/Time Collected: 10/10/2023 18:23
Lab Number: AC00321-03
Sample Type: Grab

Location Description: 231010-14-WG
Sample Collector: K.C
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL					Initials	Qualifier
Microbiology											
E. Coli	B234049	129.6 MPN/100 mL		1.0	1.0	IDEXX - Colilert		10/10/23 20:25	10/11/23 20:25	LRF	
Wet Chemistry											
Chlorine Screen	B234050	Absent				SM 4500-CL G-2000 mod		10/10/23	10/10/23 20:11	JAL	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 10/25/2023 11:20



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B234049									
Blank (B234049-BLK1)									
E. Coli	Absent						10/11/2023	LRF	
LCS (B234049-BS1)									
E. Coli				Present			10/11/2023	LRF	
Duplicate (B234049-DUP2) Source ID: AC00321-01RE1									
E. Coli					Pass	128	10/11/2023	LRF	



Notes and Definitions

Item	Definition
D	Data reported from a dilution

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Ada County Highway District

Attn: Steven Turner
 3775 Adams Street
 Garden City, Idaho 83714-6418
 Tel. (208) 387-6269
 Fax (208) 387-6391
 Purchase Order:
 Project:
 Sampler(s):

63065628

Stormwater-PI

Kristen Chisholm

Steven Turner

Chad Schwend

Elizabeth Lapa

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix		Type		BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
							Water		Grab	Composite																
AC00321																										
-01	10/10/23		1829		231010-03-WG	CS	X		X												X					1
-02	↓		1904		231010-11-WG	CS	X		X												X					1
-03	↓		1823		231010-14-WG	KC	X		X												X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristen Chisholm	10/10/23 2003	Jat 10.10.23	2003

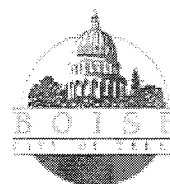
Report Date: 12/04/2023 12:04



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00322-01	ACST1C	231010-03-WC	Water		10/11/2023	10/11/2023
Comments:						
Low volume. No dissolved parameters were collected.						
AC00322-02	ACST1C	231010-14-WC	Water		10/11/2023	10/11/2023



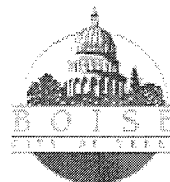
Analysis Report

Location: ACST1C
Date/Time Collected: 10/10/2023 17:00 - 10/11/2023 09:06
Lab Number: AC00322-01
Sample Type: Composite

Location Description: 231010-03-WC
Sample Collector: K.C
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234335	0.336	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/28/23	10/28/23 12:02	MEC	
BOD5	B234067	17.5	mg/L	2.00	2.00	SM 5210 B-2016	10/12/23	10/17/23 9:13	RKT	
COD	B234066	83.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	10/12/23	10/12/23 9:31	JAL	
TKN	B234085	1.97	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	10/13/23	10/13/23 18:35	EDM	
Total Dissolved Solids	B234048	126	mg/L	20.0	20.0	SM 2540 C-2015	10/12/23	10/13/23 11:02	RKT	
Total Suspended Solids	B234076	17.4	mg/L	0.900	0.900	SM 2540 D-2015	10/12/23	10/12/23 9:41	RKT	
Turbidity	B234051	19.6	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	10/11/23	10/11/23 13:52	KMR	
Total Metals										
Mercury	B234059	0.0118	ug/L	0.0100	0.0100	EPA 245.1	10/12/23	10/13/23 8:03	SAS	
Arsenic	B234105	2.6	ug/L	0.070	0.070	EPA 200.8	10/18/23	10/19/23 15:37	DMW	
Cadmium	B234105	0.035	ug/L	0.010	0.010	EPA 200.8	10/18/23	10/19/23 15:37	DMW	
Calcium	B234177	15.8	mg/L	0.0400	0.0400	EPA 200.7	10/19/23	10/20/23 10:04	AMO	
Lead	B234105	0.65	ug/L	0.010	0.010	EPA 200.8	10/18/23	10/19/23 15:37	DMW	
Magnesium	B234177	1850	ug/L	80.0	80.0	EPA 200.7	10/19/23	10/20/23 10:04	AMO	
Phosphorus as P	B234177	0.485	mg/L	0.0120	0.0120	EPA 200.7	10/19/23	10/20/23 10:04	AMO	
Hardness	B234177	47.2	mg/L	0.100	0.100	SM 2340 B-2011	10/19/23	10/20/23 10:04	AMO	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.



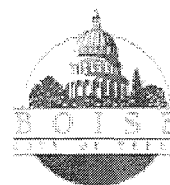
Analysis Report

Location: ACST1C
Date/Time Collected: 10/10/2023 17:13 - 10/11/2023 11:50
Lab Number: AC00322-02
Sample Type: Composite

Location Description: 231010-14-WC
Sample Collector: K.C
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234335	0.353	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/28/23	10/28/23 11:59	MEC	
BOD5	B234067	19.7	mg/L	2.00	2.00	SM 5210 B-2016	10/12/23	10/17/23 9:06	RKT	
COD	B234066	77.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	10/12/23	10/12/23 9:31	JAL	
Nitrate-Nitrite, as N	B234143	0.930	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	10/17/23	10/17/23 15:14	BAK	
TKN	B234085	1.44	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	10/13/23	10/13/23 18:36	EDM	
Total Dissolved Solids	B234048	236	mg/L	20.0	20.0	SM 2540 C-2015	10/12/23	10/13/23 11:03	RKT	
Total Suspended Solids	B234076	23.6	mg/L	0.900	0.900	SM 2540 D-2015	10/12/23	10/12/23 9:42	RKT	
Turbidity	B234051	33.6	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	10/11/23	10/11/23 14:00	KMR	
Dissolved Wet Chemistry										
Orthophosphate, as P	B234046	0.169	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	10/11/23	10/11/23 14:01	JAL	
Total Metals										
Mercury	B234059	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	10/12/23	10/13/23 7:14	SAS	U
Arsenic	B234105	5.5	ug/L	0.070	0.070	EPA 200.8	10/18/23	10/19/23 15:46	DMW	
Cadmium	B234105	0.072	ug/L	0.010	0.010	EPA 200.8	10/18/23	10/19/23 15:46	DMW	
Calcium	B234177	<0.0400	mg/L	0.0400	0.0400	EPA 200.7	10/19/23	10/20/23 10:09	AMO	U
Lead	B234105	2.4	ug/L	0.010	0.010	EPA 200.8	10/18/23	10/19/23 15:46	DMW	
Magnesium	B234177	<80.0	ug/L	80.0	80.0	EPA 200.7	10/19/23	10/20/23 10:09	AMO	U
Phosphorus as P	B234799	0.308	mg/L	0.0120	0.0120	EPA 200.7	11/30/23	12/1/23 10:09	AMO	
Hardness	B234177	<0.100	mg/L	0.100	0.100	SM 2340 B-2011	10/19/23	10/20/23 10:09	AMO	U
Dissolved Metals										
Cadmium	B233966	0.021	ug/L	0.010	0.010	EPA 200.8	10/13/23	10/13/23 17:50	DMW	
Copper	B233966	8.2	ug/L	0.15	0.15	EPA 200.8	10/13/23	10/13/23 17:50	DMW	
Lead	B233966	0.095	ug/L	9.00E-3	9.00E-3	EPA 200.8	10/13/23	10/13/23 17:50	DMW	
Zinc	B233966	22.0	ug/L	0.50	0.50	EPA 200.8	10/13/23	10/13/23 17:50	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.



Quality Control Report

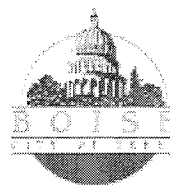
Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B234048									
Blank (B234048-BLK1)									
Total Dissolved Solids	<20	mg/L					10/13/2023	RKT	U
LCS (B234048-BS1)									
Total Dissolved Solids			95.4	90-110			10/13/2023	RKT	
Duplicate (B234048-DUP1) Source ID: RW00036-02									
Total Dissolved Solids					0.322	10	10/13/2023	RKT	
Batch: B234051									
Blank (B234051-BLK1)									
Turbidity	<0.3	NTU					10/11/2023	KMR	U
LCS (B234051-BS1)									
Turbidity			102	90-110			10/11/2023	KMR	
Duplicate (B234051-DUP1) Source ID: AC00322-01									
Turbidity					0.340	25	10/11/2023	KMR	
Batch: B234066									
Blank (B234066-BLK1)									
COD	<7	mg/L					10/12/2023	JAL	U
LCS (B234066-BS1)									
COD			99.3	90-110			10/12/2023	JAL	
Duplicate (B234066-DUP1) Source ID: RW00036-05									
COD					2.44	10	10/12/2023	JAL	
Duplicate (B234066-DUP2) Source ID: AC00322-01									
COD					1.20	10	10/12/2023	JAL	
Batch: B234067									
Blank (B234067-BLK1)									
BOD5	<2	mg/L					10/17/2023	RKT	U
LCS (B234067-BS1)									
BOD5			102	84.6-115.4			10/17/2023	RKT	
LCS (B234067-BS2)									
BOD5			107	84.6-115.4			10/17/2023	RKT	
Duplicate (B234067-DUP1) Source ID: BB03290-02									
BOD5					1.56	30	10/17/2023	RKT	D



Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B234076									
Blank (B234076-BLK1)									
Total Suspended Solids	<0.9	mg/L					10/12/2023	RKT	U
LCS (B234076-BS1)									
Total Suspended Solids			97.2	90-110			10/12/2023	RKT	
Duplicate (B234076-DUP1) Source ID: BB03292-01									
Total Suspended Solids					1.65	20	10/12/2023	RKT	
Duplicate (B234076-DUP2) Source ID: ST00053-02									
Total Suspended Solids					1.26	20	10/12/2023	RKT	
Batch: B234085									
Blank (B234085-BLK1)									
TKN	<0.2	mg/L					10/13/2023	EDM	U
LCS (B234085-BS1)									
TKN			97.9	80-120			10/13/2023	EDM	
Duplicate (B234085-DUP1) Source ID: WB02755-06									
TKN					1.60	20	10/13/2023	EDM	D
Matrix Spike (B234085-MS1) Source ID: WB02755-06									
TKN			89.1	80-120			10/13/2023	EDM	D
Matrix Spike Dup (B234085-MSD1) Source ID: WB02755-06									
TKN			89.8	80-120	0.285	20	10/13/2023	EDM	D
Batch: B234143									
Blank (B234143-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					10/17/2023	BAK	U
Blank (B234143-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					10/17/2023	BAK	U
LCS (B234143-BS1)									
Nitrate-Nitrite, as N			97.8	90-110			10/17/2023	BAK	
LCS (B234143-BS2)									
Nitrate-Nitrite, as N			96.0	90-110			10/17/2023	BAK	
Duplicate (B234143-DUP1) Source ID: BB03281-02									
Nitrate-Nitrite, as N					0.457	10	10/17/2023	BAK	
Duplicate (B234143-DUP2) Source ID: RW00037-01									
Nitrate-Nitrite, as N					0.344	10	10/17/2023	BAK	
Duplicate (B234143-DUP3) Source ID: WB02749-07									
Nitrate-Nitrite, as N					0.195	10	10/17/2023	BAK	D
Matrix Spike (B234143-MS1) Source ID: BB03281-02									
Nitrate-Nitrite, as N			97.7	90-110			10/17/2023	BAK	
Matrix Spike (B234143-MS2) Source ID: RW00037-01									
Nitrate-Nitrite, as N			91.7	90-110			10/17/2023	BAK	
Matrix Spike (B234143-MS3) Source ID: WB02749-07									
Nitrate-Nitrite, as N			92.9	90-110			10/17/2023	BAK	D



Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
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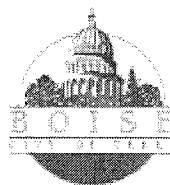
Wet Chemistry (Continued)

Batch: B234143 (Continued)

Matrix Spike Dup (B234143-MSD1)	Source ID: BB03281-02								
Nitrate-Nitrite, as N			95.1	90-110	1.49	10	10/17/2023	BAK	
Matrix Spike Dup (B234143-MSD2)	Source ID: RW00037-01								
Nitrate-Nitrite, as N			91.9	90-110	0.117	10	10/17/2023	BAK	
Matrix Spike Dup (B234143-MSD3)	Source ID: WB02749-07								
Nitrate-Nitrite, as N			91.6	90-110	0.567	10	10/17/2023	BAK	D

Batch: B234335

Blank (B234335-BLK1)									
Ammonia, as N	<0.035	mg/L					10/28/2023	MEC	U
LCS (B234335-BS1)									
Ammonia, as N			104	90-110			10/28/2023	MEC	
Duplicate (B234335-DUP1)	Source ID: BB03292-01								
Ammonia, as N					0.0151	10	10/28/2023	MEC	
Duplicate (B234335-DUP2)	Source ID: WB02765-06								
Ammonia, as N					1.26	10	10/28/2023	MEC	
Matrix Spike (B234335-MS1)	Source ID: BB03292-01								
Ammonia, as N			103	80-120			10/28/2023	MEC	
Matrix Spike (B234335-MS2)	Source ID: WB02765-06								
Ammonia, as N			108	80-120			10/28/2023	MEC	
Matrix Spike Dup (B234335-MSD1)	Source ID: BB03292-01								
Ammonia, as N			102	80-120	0.611	10	10/28/2023	MEC	
Matrix Spike Dup (B234335-MSD2)	Source ID: WB02765-06								
Ammonia, as N			109	80-120	0.658	10	10/28/2023	MEC	

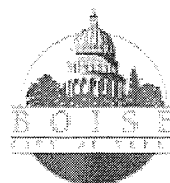


Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Wet Chemistry									
Batch: B234046									
Blank (B234046-BLK1)									
Orthophosphate, as P	<0.003	mg/L					10/11/2023	JAL	U
LCS (B234046-BS1)									
Orthophosphate, as P			98.8	90-110			10/11/2023	JAL	
Duplicate (B234046-DUP1) Source ID: LS01715-02									
Orthophosphate, as P					2.17	10	10/11/2023	JAL	D
Duplicate (B234046-DUP2) Source ID: WB02755-08									
Orthophosphate, as P					0.279	10	10/11/2023	JAL	D
Matrix Spike (B234046-MS1) Source ID: LS01715-02									
Orthophosphate, as P			98.4	90-110			10/11/2023	JAL	D
Matrix Spike (B234046-MS2) Source ID: WB02755-08									
Orthophosphate, as P			100	90-110			10/11/2023	JAL	D
Matrix Spike Dup (B234046-MSD1) Source ID: LS01715-02									
Orthophosphate, as P			97.1	90-110	0.659	10	10/11/2023	JAL	D
Matrix Spike Dup (B234046-MSD2) Source ID: WB02755-08									
Orthophosphate, as P			100	90-110	0.0201	10	10/11/2023	JAL	D

Report Date: 12/04/2023 12:04

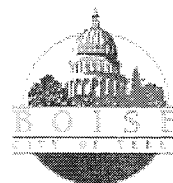


Boise City Public Works
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11818 Joplin Road
Boise, Idaho 83714-1076
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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B234059									
Blank (B234059-BLK1)									
Mercury	<0.01	ug/L					10/13/2023	SAS	U
LCS (B234059-BS1)									
Mercury			99.0	85-115			10/13/2023	SAS	
Duplicate (B234059-DUP1) Source ID: AC00322-02									
Mercury					NR	20	10/13/2023	SAS	U
Duplicate (B234059-DUP2) Source ID: RW00036-06									
Mercury					NR	20	10/13/2023	SAS	U
Matrix Spike (B234059-MS1) Source ID: AC00322-02									
Mercury			108	70-130			10/13/2023	SAS	
Matrix Spike (B234059-MS2) Source ID: RW00036-06									
Mercury			111	70-130			10/13/2023	SAS	
Matrix Spike Dup (B234059-MSD1) Source ID: AC00322-02									
Mercury			107	70-130	0.688	20	10/13/2023	SAS	
Matrix Spike Dup (B234059-MSD2) Source ID: RW00036-06									
Mercury			110	70-130	0.399	20	10/13/2023	SAS	
Batch: B234105									
Blank (B234105-BLK1)									
Arsenic	<0.070	ug/L					10/19/2023	DMW	U
Cadmium	<0.010	ug/L					10/19/2023	DMW	U
Lead	<0.010	ug/L					10/19/2023	DMW	U
LCS (B234105-BS1)									
Arsenic			96.6	85-115			10/19/2023	DMW	
Cadmium			98.7	85-115			10/19/2023	DMW	
Lead			101	85-115			10/19/2023	DMW	
Duplicate (B234105-DUP1) Source ID: AC00322-01									
Arsenic					0.428	20	10/19/2023	DMW	
Cadmium					5.71	20	10/19/2023	DMW	
Lead					1.07	20	10/19/2023	DMW	
Matrix Spike (B234105-MS1) Source ID: AC00322-01									
Arsenic			96.8	70-130			10/19/2023	DMW	
Cadmium			99.6	70-130			10/19/2023	DMW	
Lead			99.3	70-130			10/19/2023	DMW	
Matrix Spike Dup (B234105-MSD1) Source ID: AC00322-01									
Arsenic			94.6	70-130	1.86	20	10/19/2023	DMW	
Cadmium			98.6	70-130	0.985	20	10/19/2023	DMW	
Lead			98.6	70-130	0.635	20	10/19/2023	DMW	



Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B234177									
Blank (B234177-BLK1)									
Calcium	<0.04	mg/L					10/20/2023	AMO	U
Magnesium	<80	ug/L					10/20/2023	AMO	U
Phosphorus as P	<0.012	mg/L					10/20/2023	AMO	U
LCS (B234177-BS1)									
Calcium			98.9	85-115			10/20/2023	AMO	
Magnesium			102	85-115			10/20/2023	AMO	
Phosphorus as P			105	85-115			10/20/2023	AMO	
Duplicate (B234177-DUP1) Source ID: LS01721-06									
Calcium					0.292	20	10/20/2023	AMO	
Magnesium					2.76	20	10/20/2023	AMO	
Phosphorus as P					5.61	20	10/20/2023	AMO	
Matrix Spike (B234177-MS1) Source ID: LS01721-06									
Calcium			77.5	70-130			10/20/2023	AMO	
Magnesium			91.3	70-130			10/20/2023	AMO	
Phosphorus as P			97.6	70-130			10/20/2023	AMO	
Matrix Spike Dup (B234177-MSD1) Source ID: LS01721-06									
Calcium			98.3	70-130	9.81	20	10/20/2023	AMO	
Magnesium			103	70-130	10.2	20	10/20/2023	AMO	
Phosphorus as P			112	70-130	11.9	20	10/20/2023	AMO	
Batch: B234661									
Blank (B234661-BLK1)									
Phosphorus as P	<0.012	mg/L					11/22/2023	AMO	U
LCS (B234661-BS1)									
Phosphorus as P			100	85-115			11/22/2023	AMO	
Duplicate (B234661-DUP1) Source ID: BB03382-01									
Phosphorus as P					2.18	20	11/22/2023	AMO	
Matrix Spike (B234661-MS1) Source ID: BB03382-01									
Phosphorus as P			94.0	70-130			11/22/2023	AMO	
Matrix Spike Dup (B234661-MSD1) Source ID: BB03382-01									
Phosphorus as P			93.7	70-130	0.164	20	11/22/2023	AMO	



Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
--------------	-----------------	-------	---------------	--------------------	-----	--------------	----------	---------------------	-----------

Total Metals (Continued)

Batch: B234799

Blank (B234799-BLK1)

Phosphorus as P	<0.012	mg/L					12/01/2023	AMO	U
-----------------	--------	------	--	--	--	--	------------	-----	---

LCS (B234799-BS1)

Phosphorus as P			104	85-115			12/01/2023	AMO	
-----------------	--	--	-----	--------	--	--	------------	-----	--

Duplicate (B234799-DUP1) Source ID: EP00294-01

Phosphorus as P					0.399	20	12/01/2023	AMO	
-----------------	--	--	--	--	-------	----	------------	-----	--

Matrix Spike (B234799-MS1) Source ID: EP00294-01

Phosphorus as P			101	70-130			12/01/2023	AMO	
-----------------	--	--	-----	--------	--	--	------------	-----	--

Matrix Spike Dup (B234799-MSD1) Source ID: EP00294-01

Phosphorus as P			101	70-130	0.280	20	12/01/2023	AMO	
-----------------	--	--	-----	--------	-------	----	------------	-----	--

Dissolved Metals

Batch: B233966

Blank (B233966-BLK1)

Cadmium	<0.010	ug/L					10/13/2023	DMW	U
Copper	<0.15	ug/L					10/13/2023	DMW	U
Lead	<0.0090	ug/L					10/13/2023	DMW	U
Zinc	<0.50	ug/L					10/13/2023	DMW	U

LCS (B233966-BS1)

Cadmium			91.2	85-115			10/13/2023	DMW	
Copper			92.8	85-115			10/13/2023	DMW	
Lead			93.2	85-115			10/13/2023	DMW	
Zinc			95.4	85-115			10/13/2023	DMW	

Duplicate (B233966-DUP1) Source ID: NP00059-05

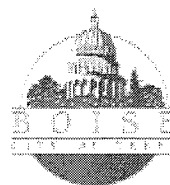
Cadmium					NR	10	10/13/2023	DMW	U
Copper					0.902	10	10/13/2023	DMW	
Lead					9.73	10	10/13/2023	DMW	
Zinc					1.54	10	10/13/2023	DMW	

Matrix Spike (B233966-MS1) Source ID: NP00059-05

Cadmium			94.2	70-130			10/13/2023	DMW	
Copper			87.9	70-130			10/13/2023	DMW	
Lead			90.5	70-130			10/13/2023	DMW	
Zinc			91.6	70-130			10/13/2023	DMW	

Matrix Spike Dup (B233966-MSD1) Source ID: NP00059-05

Cadmium			93.3	70-130	0.903	10	10/13/2023	DMW	
Copper			88.5	70-130	0.546	10	10/13/2023	DMW	
Lead			90.2	70-130	0.360	10	10/13/2023	DMW	
Zinc			92.5	70-130	0.902	10	10/13/2023	DMW	



Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order:
Project:
Sampler(s):

63065628

Stormwater-PI

Kristen Cluisholm
Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix		Type		BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
							Water		Grab	Composite																
AC00322																										
-01	10/10/23	10/10/23	1700	0900	231010-03-WC	KE	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1
-02	10/10/23	10/10/23	1713	1150	231010-14-WC	KE	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristen Cluisholm	10/11/23 1242	Sandra We	Low volume samples. Please try to split for optimum number of analysis listed above.
			AC00322-01: no dissolved parameters collected.
			Sample AC00322-02 correct name is 231010-14-WC.

See attached email - All on back

AC00322

WY24

April Griffith

From: Kristen Chisholm <Kchisholm@achdidaho.org>
Sent: Wednesday, October 11, 2023 1:33 PM
To: April Griffith
Cc: Steven Turner; Monica Lowe
Subject: [External] Re: Site ID

Hi April,

Sorry, the correct ID is 14.

Thank you!

On Oct 11, 2023, at 1:30 PM, April Griffith <agriffith@cityofboise.org> wrote:

Caution: This is an external email and has a suspicious subject or content. Please take care when clicking links or opening attachments. When in doubt, contact your IT Department

Hi Steven,

Sorry, I forgot to include you in this email.

Thanks,
April

From: April Griffith
Sent: Wednesday, October 11, 2023 1:30 PM
To: Kristen Chisholm <Kchisholm@achdidaho.org>
Cc: Monica Lowe <mlowe@achdidaho.org>
Subject: Site ID

Hi Kristen,

One of the sites on the COC says -12, but the container says -14. Which is correct?

Thanks,
April

ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 1 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
#1 Lims#: <u>AC00322-01</u> Location: <u>ACSTIC</u> Sample Date: <u>10-11-23</u> Sample ID: <u>-03</u>	Split Date: <u>10-11-23</u> Start Split: <u>1300</u> Start Filter: <u>N/A</u> Comp Time: <u>N/A</u> Analyst: <u>EDM/DKT</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>CC00047-20</u> Comp Jug: <u>N/A</u> SS Tubing: <u>CC00047-39</u> SS Helper: <u>SSA2</u> Stir Bar: <u>SSX047-22</u> Connector: <u>CC00046-06</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☐ TDS ☐ ☒ COD ☐	High capacity 0.45µm No DISS. Parameters
#2 Lims#: <u>AC00322-02</u> Location: <u>ACSTIC</u> Sample Date: <u>10-11-23</u> Sample ID: <u>-14</u>	Split Date: <u>10-11-23</u> Start Split: <u>1311</u> Start Filter: <u>1315</u> Comp Time: <u>N/A</u> Analyst: <u>EDM/DKT/SAS</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>CC00047-26</u> Comp Jug: <u>N/A</u> SS Tubing: <u>CC00047-26</u> SS Helper: <u>SSA4</u> Stir Bar: <u>CC00047-22</u> Connector: <u>CC00041-31</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☐ TDS ☐ ☒ COD ☐	High capacity 0.45µm
#3 Lims#: <u>No</u> Location: <u>Other</u> Sample Date: <u>Other</u> Sample ID: <u>Samples</u>	Split Date: <u> </u> Start Split: <u> </u> Start Filter: <u> </u> Comp Time: <u> </u> Analyst: <u> </u>	Filter: ☒ Voss ☐ 0.45µm ☐ 1.0µm ☐ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u> </u> Comp Jug: <u> </u> SS Tubing: <u>CC00044-92</u> SS Helper: <u>SSA5</u> ↓ Stir Bar: <u>CC00047-25</u> Connector: <u>CC00039-71</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☐ TDS ☐ ☒ COD ☐	High capacity 0.45µm
#4 Lims#: <u> </u> Location: <u> </u> Sample Date: <u> </u> Sample ID: <u> </u>	Split Date: <u> </u> Start Split: <u> </u> Start Filter: <u> </u> Comp Time: <u> </u> Analyst: <u> </u>	Filter: ☒ Voss ☐ 0.45µm ☐ 1.0µm ☐ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u> </u> Comp Jug: <u> </u> SS Tubing: <u>CC00047-18</u> SS Helper: <u>SSA7</u> ↓ Stir Bar: <u>CC00041-AC</u> Connector: <u>CC00040-06</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☐ TDS ☐ ☒ COD ☐	High capacity 0.45µm
#5 Lims#: <u> </u> Location: <u> </u> Sample Date: <u> </u> Sample ID: <u> </u>	Split Date: <u> </u> Start Split: <u> </u> Start Filter: <u> </u> Comp Time: <u> </u> Analyst: <u> </u>	Filter: ☒ Voss ☐ 0.45µm ☐ 1.0µm ☐ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u> </u> Comp Jug: <u> </u> SS Tubing: <u>CC00047-39</u> SS Helper: <u>SS9</u> ↓ Stir Bar: <u>CC00044-AD</u> Connector: <u>CC00039-71</u>	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☐ TDS ☐ ☒ COD ☐	High capacity 0.45µm

CC00040-06

ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 2 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
Lims#: _____ Location: <u>NO</u> Sample Date: <u>other</u> Sample ID: <u>samples</u>	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: _____ Comp Jug: _____ SS Tubing: <u>CC00039-99</u> SS Helper: <u>SS17</u> ↓ Stir Bar: <u>CC00044-AD</u> Connector: <u>CC00041-26</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	<u>High capacity 0.45µm</u>
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	

#6



Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 801.316.9859

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2024

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for November 19, 2023

Date: February 14, 2023

To: Monica Lowe

Cc: Steven Turner

Kristen Chisholm

From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

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 10, 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.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2024 (October 1, 2023, through September 30, 2024). The following storm event report summarizes stormwater sampling results from the November 19, 2023, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2024 Phase I Stormwater Outfall Monitoring. When samples are qualified, additional samples will be attempted from subsequent storms to collect unqualified samples.

Table 2-1. WY 2024 Samples Collected					
Date	Lucky	Whitewater	Main	Americana	AS_6
October 10, 2023	G, C ^{1,2}	G	--	G, C ³	--
November 19, 2023	G, C	G, C	G, C	G ⁴ , C	G, C
Unqualified Samples:	2G, 1C	2G, 1C	1G, 1C	2G, 1C	1G, 1C
Samples Remaining:	1G, 2C	1G, 2C	2G, 2C	1G, 2C	2G, 2C

Notes:

-- = no samples taken

C = composite sample

G = grab sample

¹ Composite samples qualified due to lack of representativeness (50% – 75%).

² Incomplete water quality analysis due to low composite sample volume.

³ Composite samples qualified due to lack of representativeness (50% – 75%) of the calculated flow volume.

⁴ Grab sample qualified due to incomplete field parameter collection.

Section 3: Storm Event Summary

The November 19, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from November 19, 2023, is included in Attachment A for reference.

Saturday, November 18, 2023 (Sampling Event Communication and Set Up)

- On the afternoon of November 18, the National Weather Service issued a forecast for widespread rain in the Boise area, starting November 18 at 2100 and ending on November 19 at 0000. The chance of precipitation was greater than 80%, with 0.20 to 0.30 inches of precipitation forecasted.
- Setup was accomplished in the afternoon of November 18. An expected precipitation depth of 0.11 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Sunday, November 19, 2023 (Storm Event)

- Moderate rain first started at approximately November 19 at 0000 and ended at 1642.
- Precipitation totals ranged between 0.42 and 0.61 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrograph for the Lucky, Whitewater, Main, Americana and AS_6 site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana and AS_6 monitoring stations were set up on November 18, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programmed into the Whitewater and Americana flowmeters. A site-specific velocity cutoff value was programmed into Lucky, Main, and AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

Two, two-member team mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on November 19 at 0110. Grab samples for Lucky, Whitewater, Main, and Americana were submitted to the West Boise Water Quality Lab (WQL) at 0758 on November 19. The AS_6 grab sample was submitted at 1342 on November 19 to the WQL.

Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at the Whitewater, Main, and Americana monitoring station and submitted to the WQL at 1716 on November 19. The composite samples at the AS_6 monitoring station was submitted at 1342 and the Lucky monitoring station at 1603 on November 19 to the WQL.

Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. Laboratory analytical reports are included in Attachment D.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the November 19, 2023, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Americana monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples			
Sample ID	Sample Type	Parent Sample	Conclusions
231119-14-001	Field blank	Americana grab	No <i>E. coli</i> detection was reported in the field blank.
231119-14-101	Field duplicate	Americana grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A.

An acceptable composite sample represents at least 75 percent of the total discharge or at least 6 hours of the storm duration. All composite samples met the criteria.

The acceptance and performance criteria for analytical and non-analytical criteria were met for this storm event.

Section 5: Notes and Recommendations

Whitewater

The small sampler battery died at approximately 0537 on Bottle No. 2. The battery was replaced, and the sampler program was then restarted at 0800 and continued until the end of the storm event. The battery issue resulted due to setting up the sampler program earlier in the week. It is advised to check on the small battery prior to the storm event if set-up is completed a day earlier.

AS_6

The AS_6 composite samples had two distribution errors at 0650 and 0740 on Bottle No. 2. The AS_6 sampler battery later died after taking the last composite sample but was then replaced. The sample program was restarted at 0826. There was also a No-Liquid-Error at 0953, but no succeeding errors occurred until the end of the event. It is advised to check on the small battery prior to the storm event if set-up is complete a day earlier.

Data Tables



TAB-1

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	YES	YES	YES	YES	YES
Trigger volume (gal or ft ³)	2895 gal	800 ft ³	3411 gal	2960 ft ³	221 ft ³
Velocity cutoff (fps)	0.02	--	0.02	--	0.02
Sampler enable condition (in)	--	Level > 1.9 "	--	Level > 6.96 "	--
Runoff start time	0038	0102	0029	0000	0251
Grab sample collection time	0156	0247	0122	0151	0620
Composite sample stop time	1328	1528	1442	1407	1221
Runoff stop time	1500	1552	1446	1642	1615
Volume of Discharge Sampled (ft ³)	17,699	73,819	28,140	251,136	19,247
Total runoff volume (ft ³)	18,782	81,522	35,160	317,217	21,217
Percent of storm flow sampled (%)	94%	91%	80%	79%	91%
Composite sample duration (hrs)	11	13	13.5	12.5	9
Storm Precipitation (in)	0.42	0.61	0.50	0.50/0.58	0.50/0.58
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	46	82	60	88	81
Number of composite bottles filled	2	3	3	4	4
Composite sample volume (Approx.; ml)	27,250	36,750	36,000	50,000	54,500

Notes:

-- = No data.

Table 2. Field and Analytical Data Summary																											
Monitoring Station	Sample Date	Sample ID Grab	Field Parameters					E. coli	Sample ID Composite	Analytical Parameters																	
			Dissolved Oxygen	pH	Conductivity	Temperature				BOD ₅	COD	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total
			mg/L	S.U.	uS/cm	C	mpn/100 mL		mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Lucky	11/19/2023	231119-03-WG	5.09	7.27	506.44	15.7	2.0	231119-03-WC	59.5	137	35.8	8.6	8.63	136	0.710	0.538	0.530	0.145	1.76	0.93	0.012	0.030	3.5	0.085	0.33	<0.0100	32.7
Whitewater	11/19/2023	231119-11-WG	5.82	7.34	460.32	12.96	99.0	231119-11-WC	61.9	167	45.0	19.7	27.3	180	0.958	0.768	0.527	0.182	2.07	1.7	<0.0100	0.041	5.0	0.21	2.2	<0.0100	32.3
Main	11/19/2023	231119-12-WG	9.48	7.64	174.43	10.54	30.9	231119-12-WC	19.9	61.0	19.3	11.7	16.2	61.0	0.226	0.167	0.610	0.246	1.14	0.66	0.015	0.045	2.7	0.12	1.7	<0.0100	25.9
Americana	11/19/2023	231119-14-WG	-- ^{3f}	-- ^{3f}	-- ^{3f}	14.16	1340.0	231119-14-WC	36.5	94.0	57.8	15.0	21.7	153	0.504	0.402	0.454	0.614	1.27	2.1	0.022	0.061	4.0	0.11	1.9	<0.0100	27.2
AS_6	11/19/2023	231119-206-WG	9.44	7.18	184.28	9.04	1732.9	231119-206-WC	162	329	43.3	21.1	28.7	263	2.06	1.71	0.563	0.136	3.17	1.7	0.029	0.059	8.5	0.93	3.3	<0.0100	61.8

Notes:
-- = No data.
^{3f} Grab sample qualified due to incomplete field parameter collection.

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	11/19/2023	10.1	0.832	0.621	0.170	2.06
Whitewater	11/19/2023	139	4.87	2.68	0.926	10.5
Main	11/19/2023	35.5	0.496	1.34	0.540	2.50
Americana	11/19/2023	430	9.98	8.99	12.2	25.1
AS_6	11/19/2023	38.0	2.73	0.746	0.180	4.20

Table 4. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/100 mL
11/19/2023	231119-14-WG	231119-14-001	Field Blank	<1.0
11/19/2023	231119-14-WG	231119-14-101	Field Duplicate	866.4
Calculated parent/duplicate RPD				4%
Allowable RPD				40%

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 11/18/2023	Time: 2:30 PM	Initials: ST
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.00"
Date and time of expected event	11/18/2023
Expected amount of precipitation	0.2 – 0.3"
Percent chance of precipitation	90%
Percent chance of >0.10" over 12 hours	Upper 80%

<u>NWS Update</u> Steven from the NWS said that the rain will be moving in between 9:00 PM and midnight. It will taper off around 6:00 – 7:00 AM on Sunday morning. Between those times, their models are predicting .16 - .42". I asked if he could narrow the amount down and he said 0.26" is the average. The heavier rain will start later around 11:00 PM to 1:00 AM.

<u>Targeted Station & Samples</u>					
Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

<u>Type of Forecasted Precipitation</u>		
☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

<u>Reasons for Not Targeting a Forecasted Storm and/or Stations</u>
☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

<u>Text Forecast</u>

<u>Forecast Discussion</u>

<u>Hourly Forecast</u>

Storm Event QA/QC Checklist – Phase I

STORM DATE 11/19/23

A. Event and Data Completeness

	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed	X			Noted missed parameters in sample status
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member	X			Americana field parameters were incomplete
6. All analytical reports from lab received	X			

B. Validation and Verification Methods

	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria

	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.00"	0.00"	0.00"	0.00"	0.00"	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.42	0.61	0.50	0.50 0.58	0.50 0.58	> 0.10"	X		
3. Sampled amount (% of total run-off)	94%	91%	80%	79%	91%	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	X		
4. Composite sample duration (hours)	11	13	13.5	12.5	9				
4. Ecoli sample holding time (hours)	7.5	6.5	7.5	7.0	7.5	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)	3.0	2.5	3.5	3.5	1.5	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

Americana - Field parameters (DO, pH, cond) not recorded during grab sample collection.

Reviewed by

Steven Turner

Date

2/12/24

Approved by

Monica Lowe

Date

2/12/24

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.

Step 2. Enter expected precipitation depth (in) in blue cell.

Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.11

Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft ³)	Trigger Vol (ft ³)
Lucky	105	0.157	6582.5	387
Whitewater	498	0.069	13621.3	801
Main	79	0.246	7760.0	456
Main Alt	60	0.200	4791.6	282
Americana	875	0.144	50311.8	2960
AS_6	204	0.046	3747.0	220
State	34	0.160	2172.2	128

Notes:

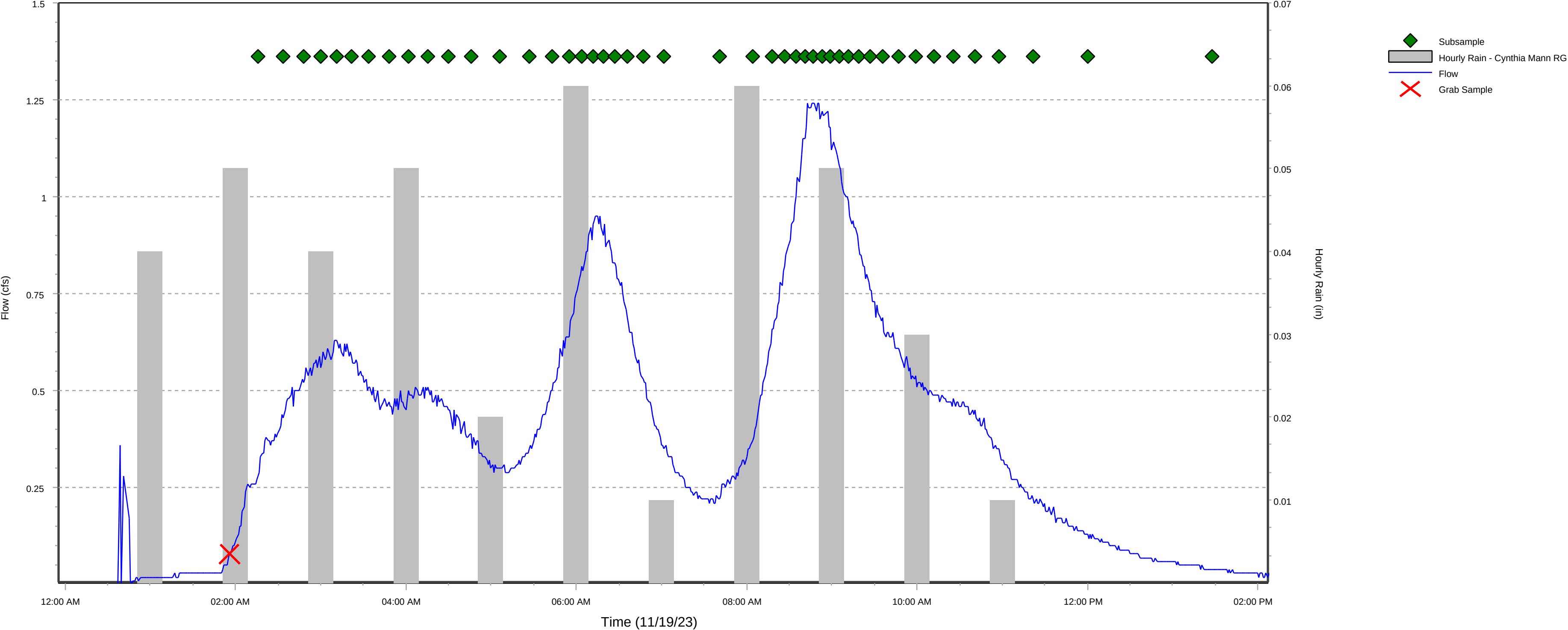
Calculated RC = Average ($\text{precip (ft)} / [\text{volume (ft}^3\text{)} \times \text{area (ft}^2\text{)}]$)

Where precip (ft) is the measured amount from local rain guage, and $\text{volume (ft}^3\text{)}$ is the measured discharge, and $\text{area (ft}^2\text{)}$ is the watershed area

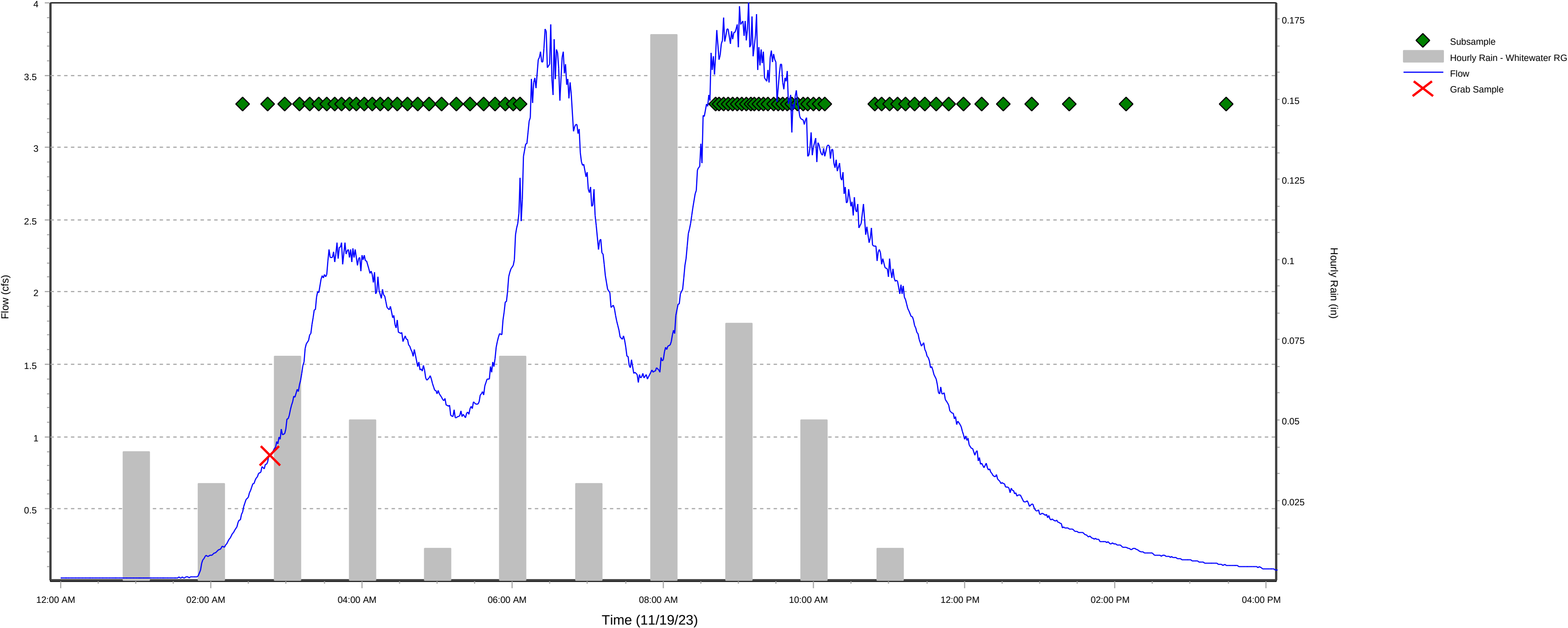
Expected volume (ft³) = RC x expected precip (ft) x area (ft²)

Attachment B: Storm Event Hydrographs

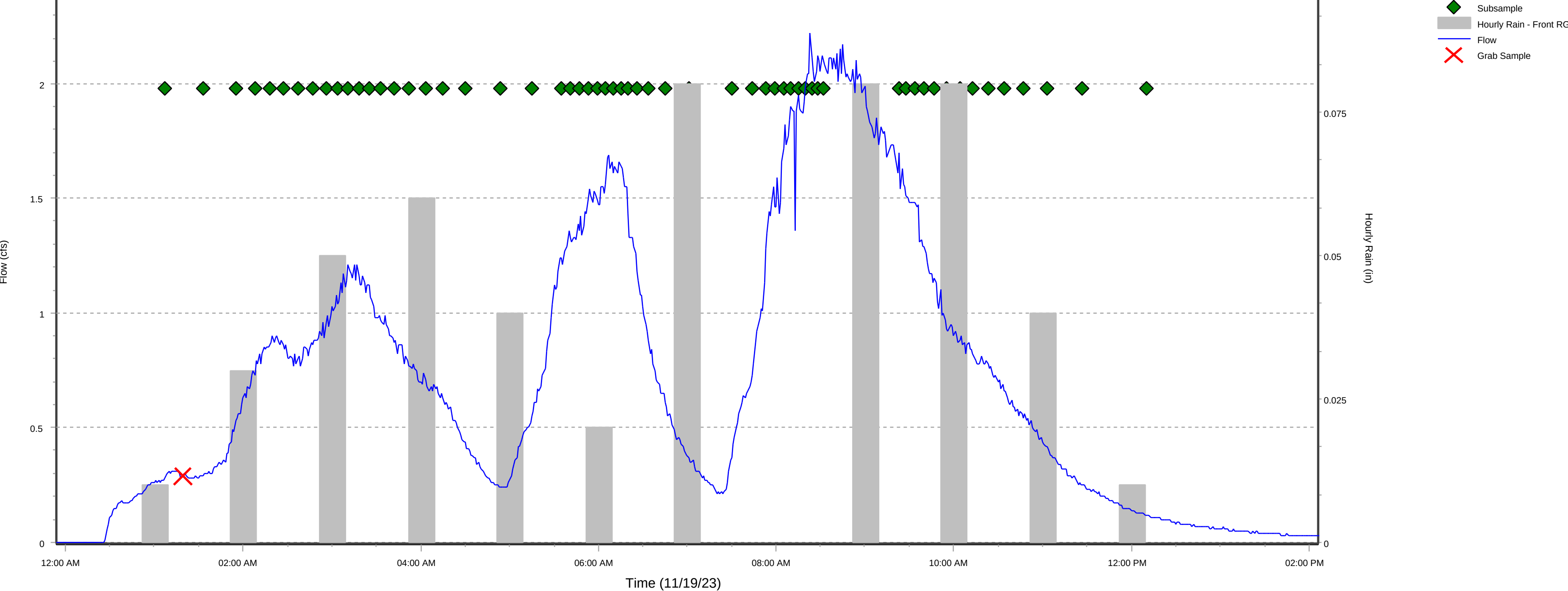
Lucky Hydrograph



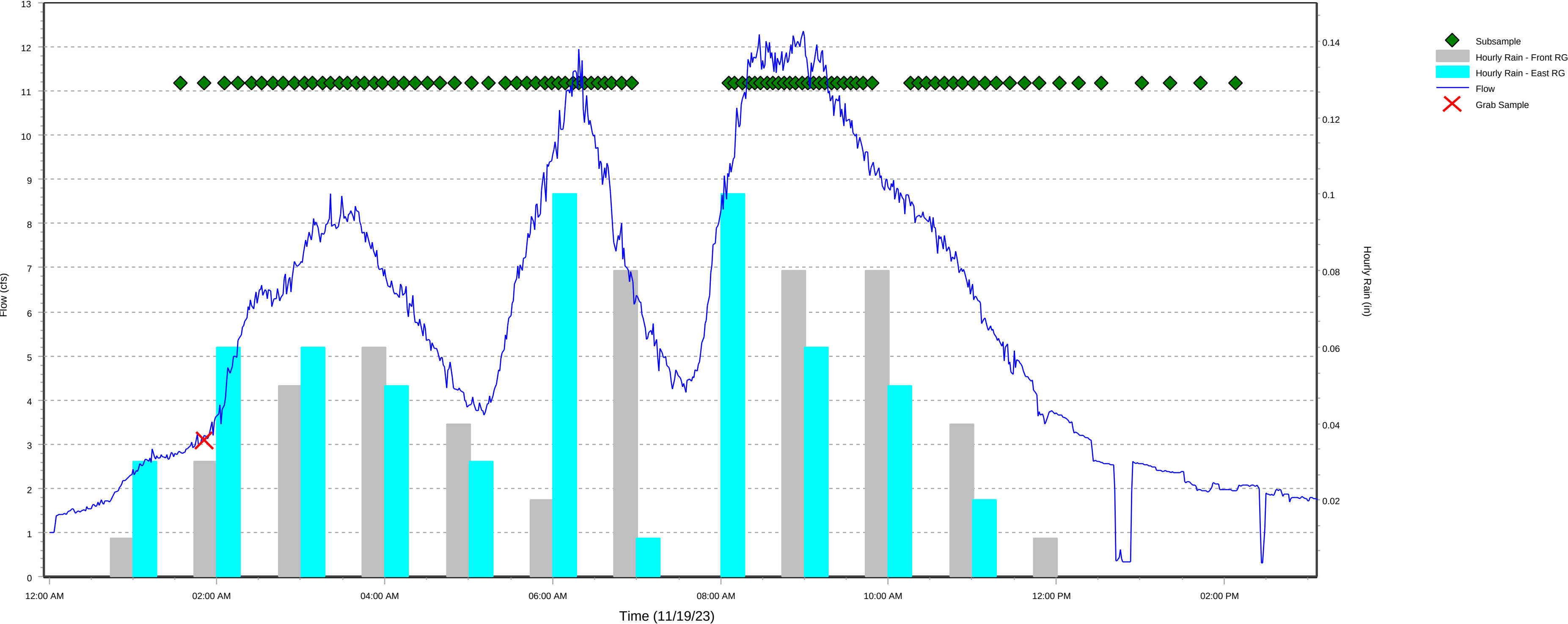
Whitewater Hydrograph



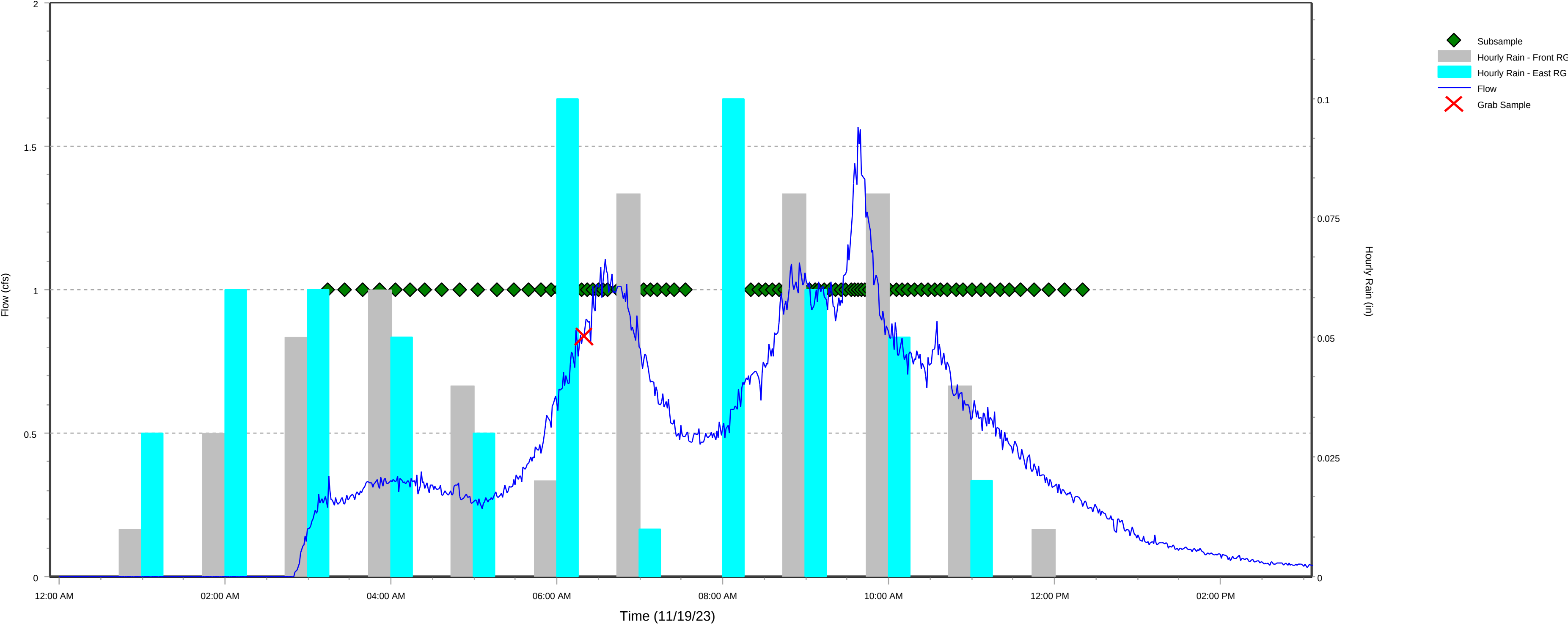
Main Hydrograph



Americana Hydrograph



AS_6 Hydrograph



Attachment C: Field Forms

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

LOCATION: Lucky

SET UP

Personnel: ST. KC

Date/Time

On-Site: 11/17/23 13:34

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
13:47	1.8	73.34	1.36	13.1
13:52	1.7	0.00	0	
Enable Condition or Velocity Cutoff:			vc 2895 gal 0.02	
Deadband:			1.0	
Trigger Volume:			2895 gal	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☐ Start flowmeter program and sampler program
- ☐ Verify running

Comments: Readings when first turned on, now reading 0's after updating
No flow in pipe.

SHUT DOWN

Personnel: ST. KC

Date/Time

On-Site: 11/19/23 15:18

Time	Level (in)	Flow (cfs) GPM	Velocity (fps)	Total (cf)	Battery (V)
15:22	1.91	5.76	0.1		12.8
Downloaded to:		USB-3 @ 5:22			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Ludwig
 Personnel: ST, KC

Bottle 1 of 2
 Date/Time On-Site: 11/19/23 710

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>231119-63</u> -WC
Approx Sample Volume (mL): <u>14000mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>11/19/23 216</u>	<u>Success</u>	13	<u>506</u>	
2	<u>234</u>		14	<u>527</u>	
3	<u>248</u>		15	<u>543</u>	
4	<u>300</u>		16	<u>555</u>	
5	<u>311</u>		17	<u>604</u>	
6	<u>322</u>		18	<u>612</u>	
7	<u>334</u>		19	<u>619</u>	
8	<u>348</u>		20	<u>627</u>	
9	<u>402</u>		21	<u>6336</u>	
10	<u>416</u>		22	<u>647</u>	
11	<u>426</u>		23	<u>702</u>	
12	<u>446</u>		24		

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle, add ice ☒ Restart program from beginning - Date/Time Restarted: <u>11/19/23 7:12</u> ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Lucy
 onnel: ST. KC

Bottle 2 of 2

Date/Time On-Site: _____

☒ Halt Sampler program

☒ Put lid on sample bottle; label sample bottle

Sample ID:	23119-03	-WC
Approx Sample Volume (mL):	13250	
Clarity (ex. Clear, Cloudy, Silty):	Cloudy	
Color (ex. Clear, Gray, Tan, Brown, Black):	Tan	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	7/19/23 741	Success	13	987	
2	804		14	936	
3	815		15	947	
4	827		16	959	
5	839		17	1012	
6	841		18	1026	
7	847		19	1041	
8	853		20	1058	
9	859		21	1122	
10	905		22	1200	
11	912		23	1328	✓
12	919		24		

Comments:

If sampling is complete:

- ☒ Power off sampler
- ☒ Verify flowmeter is running
- ☒ Add ice to sample transport cooler
- ☐ Complete COC form; arrange transport to lab

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Lucky

Personnel: Hannah Johnson + Gabi Karoa

Date/Time On-Site: 11/19/2023 1:30 AM

Flow Meter Current Status

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
2:06 ^{am}	2.11	9.46 ^{am}	0.15	12.8		

Grab Information

	Sample ID	Date	Time	Labeled?
Site <i>E. Coli</i>	231119-03 -WG	11/19/23	01:38 am	☒
Field Duplicate <i>E. Coli</i>	-101			☐
Field Blank <i>E. Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters

Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	0156 am	15.70	5.09	7.27	506.74

Sampler Current Status

First Subsample Date/Time	N/A @ 206 am
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

TATION: Whitewater

SET UP

Personnel: KC ST

Date/Time
On-Site: 11/17/23 1418

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1418	0.88	0.02	0.28	12.8
Enable Condition:		1.9		
Hysteresis:		1		
Flow Pulse Interval:		800 cfs		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☐ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☐ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time Set w/ keypad
- ☐ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: ST

Date/Time
On-Site: 11/20 1248

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1259	3.08	0.495	1.083	12.6
Downloaded to:		Steven's USB		

On-Site

- ☐ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 1248
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Whitewater
 Personnel: ST, KC

Bottle 1 of 3
 Date/Time On-Site: 11/14/2023 505Z

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>231119-11</u> -WC
Approx Sample Volume (mL):	<u>11750 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>11/14/23 224</u>	<u>Success</u>	13	<u>408</u>	
2	<u>244</u>		14	<u>414</u>	
3	<u>258</u>		15	<u>421</u>	
4	<u>309</u>		16	<u>428</u>	
5	<u>318</u>		17	<u>436</u>	
6	<u>325</u>		18	<u>444</u>	
7	<u>332</u>		19	<u>453</u>	
8	<u>338</u>		20	<u>503</u>	
9	<u>344</u>		21		
10	<u>350</u>		22		
11	<u>355</u>		23		
12	<u>401</u>		24		

Comments:

If sampling is complete:

- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☒ Keep flowmeter running
- ☒ Install new 15L bottle; add ice
- ☒ Restart program from beginning

Date/Time Restarted: 11/14/23 505

☒ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: KC, ST

Bottle 2 of 3
 Date/Time On-Site: 11/19/23 ~800

☐ Halt Sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>23119-11</u> -WC
Approx Sample Volume (mL):	<u>15500 ml</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 514</u>	<u>Success</u>	13		
2	<u>526</u>	<u>↓</u>	14		
3	<u>537</u>	<u>Power Failed</u>	15		
4	<u>546</u>	<u>↓</u>	16		
5	<u>554</u>	<u>↓</u>	17		
6	<u>600</u>	<u>↓</u>	18		
7	<u>606</u>	<u>↓</u>	19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments: Used same bottle with 24 samples on next Page.

If sampling is complete:

- ☐ Power off sampler
- ☐ Verify Flowmeter is running
- ☐ Add ice to sample transport cooler
- ☐ Complete COC form; arrange transport to lab

If continuing sampling (sample bottle change-out):

- ☒ Keep flowmeter running
- ☒ KC ~~Install new 15L bottle; add ice~~ Used same bottle w/ two samples.
- ☒ Restart program from beginning
- Date/Time Restarted: 11/19/23 ~800
- ☒ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater

Personnel: KC, ST

Bottle 2 of 3

Date/Time On-Site: 11/19/23 1045

☒ Halt Sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>231119-11</u> -WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 821 KC 821</u>	<u>Success</u>	13	<u>923</u>	
2	<u>844</u>		14	<u>927</u>	
3	<u>848</u>		15	<u>931</u>	
4	<u>851</u>		16	<u>935</u>	
5	<u>855</u>		17	<u>938</u>	
6	<u>858</u>		18	<u>942</u>	
7	<u>902</u>		19	<u>946</u>	
8	<u>905</u>		20	<u>951</u>	
9	<u>909</u>		21	<u>955</u>	
10	<u>912</u>		22	<u>959</u>	
11	<u>916</u>		23	<u>1004</u>	
12	<u>920</u>		24	<u>1008</u>	

Comments: Used same bottle with 2 samples on previous page.

If sampling is complete: ☐ Power off sampler ☐ Verify flowmeter is running ☐ Add ice to sample transport cooler ☐ Complete COC form; arrange transport to lab	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>11/19/23 1047</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: KC, ST

Bottle 3 of 3

Date/Time On-Site: 11/19/23 1425

☒ Halt Sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>231119-11</u> -WC
Approx Sample Volume (mL): <u>9500</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Murky / cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 1048</u>	<u>Success</u> 1048 <u>KC</u>	13	<u>1253</u>	<u>Success</u>
2	<u>1054</u>	<u>↓</u> <u>1052</u>	14	<u>1323</u>	<u>↓</u>
3	<u>1100</u>	<u>↓</u>	15	<u>1408</u>	<u>↓</u>
4	<u>1106</u>	<u>↓</u>	16	<u>1528</u>	<u>↓</u>
5	<u>1113</u>	<u>↓</u>	17		
6	<u>1120</u>	<u>↓</u>	18		
7	<u>1128</u>	<u>↓</u>	19		
8	<u>1137</u>	<u>↓</u>	20		
9	<u>1147</u>	<u>↓</u>	21		
10	<u>1159</u>	<u>↓</u>	22		
11	<u>1213</u>	<u>↓</u>	23		
12	<u>1231</u>	<u>↓</u>	24		

Comments:

231119-11 9500 mL 1048-1231

If sampling is complete: ☒ Power off sampler ☒ Verify flowmeter is running ☒ Add ice to sample transport cooler ☒ Complete COC form; arrange transport to lab	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: White Water

Personnel: HRJ GTK

Date/Time On-Site: 11/19/23 2:35 am

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
02:51 am	3.91	0.94	1.44			

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E. Coli</i>	231119-11 -WG	11/19/23	02:39 am	☒
Field Duplicate <i>E. Coli</i>	-101			☐
Field Blank <i>E. Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	02:47 am	12.96	5.82	7.34	460.32

Sampler Current Status	
First Subsample Date/Time	2:24 am 11/19/23
Last Subsample Date/Time	2:44 11/19
# of Subsamples taken	32

Comments:

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

ATION: Main

SET UP

Personnel: KC, ST

Date/Time

On-Site: 11/17/23 1507

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1511	0.85	0.00	0.00	12.8
Enable Condition or Velocity Cutoff:			0.02	
Deadband:			1	
Trigger Volume:			3411	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 11/20 12:13

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1232	1.37	0	0		12.4
Downloaded to:		Frontier USB			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Main
 Personnel: ST. KC

Bottle 1 of 3
 Date/Time On-Site: 11/19/23 0524

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>231119-12</u> -WC
Approx Sample Volume (mL): <u>12500 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>clear/silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>11/19/2023 107</u>	<u>Success</u>	13	<u>325</u>	
2	<u>133</u>		14	<u>333</u>	
3	<u>155</u>		15	<u>342</u>	
4	<u>208</u>		16	<u>352</u>	
5	<u>218</u>		17	<u>403</u>	
6	<u>227</u>		18	<u>415</u>	
7	<u>237</u>		19	<u>430</u>	
8	<u>247</u>		20	<u>454</u>	
9	<u>256</u>		21	<u>515</u>	
10	<u>304</u>		22		
11	<u>311</u>		23		
12	<u>318</u>		24		

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle, add ice ☒ Restart program from beginning - Date/Time Restarted: <u>11/19/23 0525</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Main
 Personnel: VC, ST

Bottle 2 of 3
 Date/Time On-Site: 11/14/23 751

☐ Halt Sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>23119-12</u> -WC
Approx Sample Volume (mL):	<u>14750</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 535</u>	<u>Success</u>	13	<u>701</u>	
2	<u>541</u>		14	<u>730</u>	
3	<u>547</u>		15	<u>744</u>	
4	<u>553</u>		16	<u>753</u>	
5	<u>559</u>		17	<u>759</u>	
6	<u>605</u>		18	<u>805</u>	
7	<u>610</u>		19	<u>810</u>	
8	<u>615</u>		20	<u>815</u>	
9	<u>620</u>		21	<u>820</u>	
10	<u>626</u>		22	<u>824</u>	
11	<u>634</u>		23	<u>828</u>	
12	<u>645</u>		24	<u>832</u>	

Comments:

If sampling is complete:

- ☐ Power off sampler
- ☐ Verify Flowmeter is running
- ☐ Add ice to sample transport cooler
- ☐ Complete COC form; arrange transport to lab

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning
- Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Main
 Personnel: KCIST

Bottle 3 of 3
 Date/Time On-Site: 11/19/23 1020

☒ Halt Sampler program			
☒ Put lid on sample bottle; label sample bottle			
Sample ID:	<u>231119-12</u>	-WC	
Approx Sample Volume (mL):	<u>8750 mL</u>		
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>		
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Tan</u>		
QA/QC Sample ID:		-103	(Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 923</u>	<u>Success</u>	13	<u>1127</u>	<u>Success</u>
2	<u>928</u>		14	<u>1210</u>	
3	<u>934</u>		15	<u>1442</u>	
4	<u>940</u>		16		
5	<u>947</u>		17		
6	<u>955</u>		18		
7	<u>1004</u>		19		
8	<u>1013</u>		20		
9	<u>1023</u>		21		
10	<u>1034</u>		22		
11	<u>1047</u>		23		
12	<u>1103</u>		24		

Comments:

If sampling is complete: ☒ Power off sampler ☒ Verify flowmeter is running ☒ Add ice to sample transport cooler ☒ Complete COC form; arrange transport to lab	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Main

Personnel: ST, KC Date/Time On-Site: 11/19/2023 01:11

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1:11	3.67	140.41	0.91	12.6		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E. Coli</i>	231119-12-WG	11/19 11/19/23	1:19	☒
Field Duplicate <i>E. Coli</i>	-101			☐
Field Blank <i>E. Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	1:22	10.54	9.48	7.64	174.43

Sampler Current Status	
First Subsample Date/Time	11/19/2023 1:07
Last Subsample Date/Time	11/19/2023 1:07
# of Subsamples taken	1

Comments:

Set Up/ Shut Down Form – ISCO

STATION: Americana

SET UP

Personnel: KC, ST

Date/Time

On-Site: 11/17/23 1537

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1541	5.43	-0.23	-0.291	11.78
Enable Condition:		6.96		
Hysteresis:		1		
Flow Pulse Interval:		KC 2910 cfs		

On-Site

- ☒ Replace flowmeter battery, install sampler battery.
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time directly on keypad 1541
- ☐ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 11/20 11:47

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
11:54	5.2	1.272	1.716	12.12
Downloaded to:		Stevens USB		

On-Site

- ☐ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 11/27 3:58 PM
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Didn't change settings back to dry weather till 11/27. Battery was dead and the last time that was read was 11/27 @ 00:02. -ST

Composite Sample Collection

STATION: Americana
 Personnel: _____

Bottle 1 of 4

Date/Time On-Site: _____

☒ Halt sampler program		
☒ Put lid on sample bottle; label sample bottle		
Sample ID:	<u>231119-14</u>	-WC
Approx Sample Volume (mL):	<u>11750 ml</u>	
Clarity (ex. Clear, Cloudy, Silty):	<u>cloudy</u>	
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Tan/yellow</u>	
QA/QC Sample ID:		-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>11/17/23 132</u>	<u>Success</u>	13	<u>320</u>	
2	<u>149</u>		14	<u>326</u>	
3	<u>204</u>		15	<u>332</u>	
4	<u>214</u>		16	<u>338</u>	
5	<u>223</u>		17	<u>344</u>	
6	<u>231</u>		18	<u>351</u>	
7	<u>239</u>		19	<u>357</u>	
8	<u>246</u>		20	<u>405</u>	
9	<u>254</u>		21		
10	<u>301</u>		22		
11	<u>307</u>		23		
12	<u>314</u>		24		

Comments:

If sampling is complete:

- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☒ Keep flowmeter running
- ☒ Install new 15L bottle; add ice
- ☒ Restart program from beginning

Date/Time Restarted: 11/19/23 0411

- ☒ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Americana

Bottle 2 of 4

Personnel: _____

Date/Time On-Site: _____

☐ Halt Sampler program

☐ Put lid on sample bottle; label sample bottle

Sample ID:	23119-14-	-WC
Approx Sample Volume (mL):	13250	
Clarity (ex. Clear, Cloudy, Silty):	Silty	
Color (ex. Clear, Gray, Tan, Brown, Black):	Tan	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	11/19/23 4:12	Success	13	6:08	
2	4:20		14	6:03	
3	4:25		15	6:08	
4	4:38		16	6:13	
5	4:49		17	6:17	
6	5:01		18	6:21	
7	5:13		19	6:26	
8	5:25		20	6:31	
9	5:33		21	6:36	
10	5:40		22	6:41	
11	5:41		23	6:48	
12	5:53		24	6:55	

Comments:

If sampling is complete:

- ☐ Power off sampler
- ☐ Verify flowmeter is running
- ☐ Add ice to sample transport cooler
- ☐ Complete COC form; arrange transport to lab

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: 08:05

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Amesbury
 Personnel: EC, ST

Bottle 3 of 4
 Date/Time On-Site: 11/19/23 1005

☒ Halt Sampler program
☐ Put lid on sample bottle; label sample bottle
Sample ID: <u>231119-14</u> -WC
Approx Sample Volume (mL): <u>13250 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 804</u>	<u>Success</u>	13	<u>857</u>	<u>Success</u>
2	<u>809</u>		14	<u>901</u>	
3	<u>814</u>		15	<u>905</u>	
4	<u>819</u>		16	<u>909</u>	
5	<u>823</u>		17	<u>913</u>	
6	<u>827</u>		18	<u>918</u>	
7	<u>832</u>		19	<u>922</u>	
8	<u>836</u>		20	<u>927</u>	
9	<u>840</u>		21	<u>932</u>	
10	<u>844</u>		22	<u>936</u>	
11	<u>848</u>		23	<u>941</u>	
12	<u>852</u>		24	<u>947</u>	

Comments:

If sampling is complete: ☐ Power off sampler ☐ Verify Flowmeter is running ☐ Add ice to sample transport cooler ☐ Complete COC form; arrange transport to lab	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>11/19/23 1010</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	<u>9.5"</u>	<u>13250 mL</u>	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

STATION: Americana
 Personnel: K.C. ST

Composite Sample Collection

Bottle 4 of 4
 Date/Time On-Site: 11/19/23 1141

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>23119-14</u> -WC
Approx Sample Volume (mL): <u>11750 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: <u>-103</u> (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	11/19/23 1014	Success	13	11/19/23 1147	Success
2	1020		14	1201	
3	1026		15	1215	
4	1032		16	1231	
5	1039		17	1300	
6	1045		18	1320	
7	1052		19	1342	
8	1100		20	1407	
9	1108		21		
10	1116		22		
11	1126		23		
12	1136		24		

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Amurina

Personnel: KC, ST Date/Time On-Site: 11/19/23 140

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0145	7.28	2.99	2.462	12.00		

Grab Information					
	Sample ID		Date	Time	Labeled?
Site E.Coli	23119-14	-WG	11/19/23	153	☒
Field Duplicate E.Coli	23119-14	-101	11/19/23	156	☒
Field Blank E.Coli	23119-14	-001	11/19/23	159	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	0151	14.16			

Sampler Current Status	
First Subsample Date/Time	11/19/23 0132
Last Subsample Date/Time	11/19/23 0132
# of Subsamples taken	1

Comments:

Field parameters (DO, pH, + cond) accidentally not recorded in field. *not*

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: AS_6

SET UP

Personnel: KL, ST

Date/Time 11/17/23 11:19
On-Site: 11/17/23 10:19

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1731	0.0	0.0	0.0	12.2
Enable Condition or Velocity Cutoff:			0.02	
Deadband:				
Trigger Volume:			221 cf	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☐ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

Sample volume set to 490ml due to calibration issues.

SHUT DOWN

Personnel: ST

Date/Time 11/20 11:03
On-Site: 11/20 11:03

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
11:11	0.0	0.0	0.0		12.8
Downloaded to:			Rugged 6		

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6
 Personnel: KC, ST

Bottle 1 of 4
 Date/Time On-Site: 11/19/23 6:13

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>231119-206</u> -WC
Approx Sample Volume (mL):	<u>13250 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Dark Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>11/19/23 3:14</u>		13	<u>540</u>	
2	<u>327</u>		14	<u>549</u>	
3	<u>340</u>		15	<u>556</u>	
4	<u>352</u>		16	<u>602</u>	
5	<u>403</u>		17	<u>608</u>	
6	<u>414</u>		18	<u>613</u>	
7	<u>425</u>		19	<u>618</u>	
8	<u>437</u>		20	<u>622</u>	
9	<u>450</u>		21	<u>626</u>	
10	<u>503</u>		22	<u>630</u>	
11	<u>517</u>		23	<u>634</u>	
12	<u>529</u>		24	<u>637</u>	

Comments:

Here at 2:20 but not enough flow for Grab Sample.

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle, add ice ☒ Restart program from beginning - Date/Time Restarted: <u>11/19/23 6:42</u> ☒ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: AS-6
 Personnel: ST. ICC

Bottle 2 of 4
 Date/Time On-Site: 11/19/23 8:10

☐ Halt Sampler program
☐ Put lid on sample bottle; label sample bottle
Sample ID: <u>2311A-206</u> -WC
Approx Sample Volume (mL): <u>17750</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	11/19/23 6:44	Success	13		
2	6:50	Dist. error	14		
3	6:58	Success	15		
4	7:03	Success	16		
5	7:08		17		
6	7:13		18		
7	7:19		19		
8	7:25		20		
9	7:33		21		
10	7:40	Dist. error	22		
11			23		
12			24		

Comments: Bottle completely full + water in tubing.
 Battery was dead. Replaced battery + restarted

If sampling is complete: ☐ Power off sampler ☐ Verify flowmeter is running ☐ Add ice to sample transport cooler ☐ Complete COC form; arrange transport to lab	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>11/19/23 8:26</u> ☒ Verify running
---	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

STATION: AS-6 Composite Sample Collection Bottle 3 of 4
 Personnel: VC, ST Date/Time On-Site: _____

☒ Halt Sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>231119-206</u> -WC
Approx Sample Volume (mL):	<u>12500</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>11/19/23 821</u>		13	<u>910</u>	
2	<u>826</u>		14	<u>914</u>	
3	<u>831</u>		15	<u>918</u>	
4	<u>836</u>		16	<u>922</u>	
5	<u>841</u>		17	<u>926</u>	
6	<u>845</u>		18	<u>929</u>	
7	<u>849</u>		19	<u>933</u>	
8	<u>852</u>		20	<u>936</u>	
9	<u>856</u>		21	<u>938</u>	
10	<u>859</u>		22	<u>941</u>	
11	<u>903</u>		23	<u>943</u>	
12	<u>907</u>		24	<u>946</u>	

Comments:

If sampling is complete: ☐ Power off sampler ☐ Verify Flowmeter is running ☐ Add ice to sample transport cooler ☐ Complete COC form; arrange transport to lab	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: AS-6
 Personnel: KC, ST

Bottle 9 of 4
 Date/Time On-Site: 11/19/23 1150

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	<u>11,000</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>11/19/23 953</u>	<u>No liquid err</u>	13	<u>1049</u>	<u>Success</u>
2	<u>957</u>	<u>Success</u>	14	<u>1054</u>	
3	<u>1001</u>		15	<u>1101</u>	
4	<u>1006</u>		16	<u>1107</u>	
5	<u>1010</u>		17	<u>1114</u>	
6	<u>1014</u>		18	<u>1121</u>	
7	<u>1019</u>		19	<u>1128</u>	
8	<u>1024</u>		20	<u>1136</u>	
9	<u>1029</u>		21	<u>1146</u>	
10	<u>1034</u>		22	<u>1156</u>	
11	<u>1038</u>		23	<u>1208</u>	
12	<u>1043</u>		24	<u>1221</u>	

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: AS-6

Personnel: KC, ST Date/Time On-Site: 11/19/23 0613

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
622	5.794	0.90	1.62	11.7		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E.Coli</i>	231119-206 -WG	11/19/23	622	☐
Field Duplicate <i>E.Coli</i>	-101			☐
Field Blank <i>E.Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

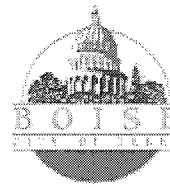
Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	620	9.04	9.44	7.18	184.28

Sampler Current Status	
First Subsample Date/Time	11/19/2023 314
Last Subsample Date/Time	11/19/2023 622
# of Subsamples taken	20

Comments:

Attachment D: Storm Event Analytical Reports

Report Date: 12/08/2023 12:41



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00323-01	ACST1B	231119-03-WG	Water		11/19/2023	11/19/2023
AC00323-02	ACST1B	231119-11-WG	Water		11/19/2023	11/19/2023
AC00323-03	ACST1B	231119-12-WG	Water		11/19/2023	11/19/2023
AC00323-04	ACST1B	231119-14-WG	Water		11/19/2023	11/19/2023
AC00323-05	ACST1B	231119-14-101	Water		11/19/2023	11/19/2023
AC00323-06	ACST1B	231119-14-001	Water		11/19/2023	11/19/2023

Report Date: 12/08/2023 12:41



Boise City Public Works
Water Quality Laboratory
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Analysis Report

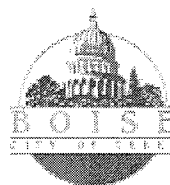
Location: ACST1B
Date/Time Collected: 11/19/2023 01:38
Lab Number: AC00323-01
Sample Type: Grab

Location Description: 231119-03-WG
Sample Collector: GK
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B234656	2.0 MPN/100 mL		1.0	1.0	IDEXX - Colilert	11/19/23 08:58	11/20/23 9:22	SMC	
Wet Chemistry										
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/19/23 8:36	ASE	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/08/2023 12:41



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 11/19/2023 02:39
Lab Number: AC00323-02
Sample Type: Grab

Location Description: 231119-11-WG
Sample Collector: GK
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B234656	99.0 MPN/100 mL		1.0	1.0	IDEXX - Colilert	11/19/23 08:58	11/20/23 9:22	SMC		
Wet Chemistry											
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/19/23 8:36	ASE		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/08/2023 12:41



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Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 11/19/2023 01:19
Lab Number: AC00323-03
Sample Type: Grab

Location Description: 231119-12-WG
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst		
				MDL *	MDL				Initials	Qualifier	
Microbiology											
E. Coli	B234656	30.9MPN/100 mL		1.0	1.0	IDEXX - Colilert	11/19/23 08:58	11/20/23 9:22	SMC		
Wet Chemistry											
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/19/23 8:36	ASE		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/08/2023 12:41



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Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 11/19/2023 01:53
Lab Number: AC00323-04
Sample Type: Grab

Location Description: 231119-14-WG
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B234656	1340.0 MPN/100 mL		100.0	1.0	IDEXX - Colilert	11/19/23 08:58	11/20/23 9:22	SMC	D	
Wet Chemistry											
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/19/23 8:36	ASE		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/08/2023 12:41



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 11/19/2023 12:00
Lab Number: AC00323-05
Sample Type: Grab

Location Description: 231119-14-101
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B234656	866.4 MPN/100 mL		1.0	1.0	IDEXX - Colilert	11/19/23 08:58	11/20/23 9:22	SMC		
Wet Chemistry											
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/19/23 8:36	ASE		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/08/2023 12:41



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

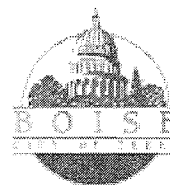
Location: ACST1B
Date/Time Collected: 11/19/2023 12:00
Lab Number: AC00323-06
Sample Type: Grab

Location Description: 231119-14-001
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B234656	<1.0 MPN/100 mL		1.0	1.0	IDEXX - Colilert	11/19/23 08:58	11/20/23 9:22	SMC	U	
Wet Chemistry											
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/19/23 8:36	ASE		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/08/2023 12:41



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
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Microbiology

Batch: B234656

Blank (B234656-BLK1)

E. Coli	Absent						11/20/2023	SMC	
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LCS (B234656-BS1)

E. Coli				Present			11/20/2023	SMC	
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Duplicate (B234656-DUP2) Source ID: AC00323-04RE1

E. Coli					Pass	128	11/20/2023	SMC	
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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418

Tel. (208) 387-6269

Fax (208) 387-6391

Purchase Order:

63065628

Project:

Stormwater-PI

Sampler(s):

Steven Turner

Kristen Chisholm

Hannah Johnson

Gabriella Kanoa

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix		Type	Composite	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 361.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ - D	Total Containers
							Water	Grab																		
AC00323	11/19/23		0138		231119-03-WG	GR	X	X												X						1
-01			0239		231119-11-WG	GR	X	X												X						1
-02			0119		231119-12-WG	ST	X	X												X						1
-03			0153		231119-14-WG	ST	X	X												X						1
-04			1200		231119-14- W 101	ST	X	X												X						1
-05			1200		231119-14-001	ST	X	X												X						1
-06																										

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Hannah Johnson	4:04 11/19/23	ASE	Received samples 11-19-23 0758

Report Date: 12/20/2023 13:21



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00324-01	ACST1B	231119-206-WG	Water		11/19/2023	11/19/2023
AC00324-02	ACST1C	231119-206-WC	Water		11/19/2023	11/19/2023
AC00324-03	ACST1C	231119-03-WC	Water		11/19/2023	11/19/2023
AC00324-04	ACST1C	231119-11-WC	Water		11/19/2023	11/19/2023
AC00324-05	ACST1C	231119-12-WC	Water		11/19/2023	11/19/2023
AC00324-06	ACST1C	231119-14-WC	Water		11/19/2023	11/19/2023

Report Date: 12/20/2023 13:21



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Analysis Report

Location: ACST1B

Date/Time Collected: 11/19/2023 06:22

Lab Number: AC00324-01

Sample Type: Grab

Location Description: 231119-206-WG

Sample Collector: S.T

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL	Reference			Initials	Qualifier	
Microbiology											
E. Coli	B234656	1732.9 MPN/100 mL		1.0	1.0	IDEXX - Colilert	11/19/23 13:58	11/20/23 13:59	SMC		
Net Chemistry											
Chlorine Screen	B234655	Absent				SM 4500-CL G-2000 mod	11/19/23	11/20/23 13:52	ASE		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 12/20/2023 13:21



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Analysis Report

Location: ACST1C
Date/Time Collected: 11/19/2023 03:14 - 11/19/2023 12:21
Lab Number: AC00324-02
Sample Type: Composite

Location Description: 231119-206-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234817	0.563	mg/L	0.0350	0.0350	SM 4500-NH ₃ D-2011	12/01/23	12/1/23 13:36	JAL	
BOD ₅	B234673	162	mg/L	2.00	2.00	SM 5210 B-2016	11/20/23	11/25/23 13:42	MEC	
COD	B234668	329	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	11/20/23	11/20/23 12:29	BAK	
Nitrate-Nitrite, as N	B234773	0.136	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	11/29/23	11/29/23 13:43	JAL	
TKN	B234964	3.17	mg/L	0.800	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	12/15/23	12/15/23 10:46	JAL	D
Total Dissolved Solids	B234678	263	mg/L	20.0	20.0	SM 2540 C-2015	11/20/23	11/22/23 9:26	RKT	
Total Suspended Solids	B234665	28.7	mg/L	0.900	0.900	SM 2540 D-2015	11/20/23	11/20/23 12:06	NTS	
Turbidity	B234675	21.1	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	11/20/23	11/20/23 13:00	JAL	
Dissolved Wet Chemistry										
Orthophosphate, as P	B234672	1.71	mg/L	0.0300	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	11/20/23	11/20/23 11:43	JAL	D
Total Metals										
Mercury	B234760	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	11/29/23	11/30/23 9:22	SAS	U
Arsenic	B234724	1.7	ug/L	0.070	0.070	EPA 200.8	11/25/23	11/26/23 14:05	DMW	
Cadmium	B234724	0.059	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:05	DMW	
Calcium	B234692	11.8	mg/L	0.0400	0.0400	EPA 200.7	11/21/23	11/22/23 17:43	EDM	
Lead	B234724	3.3	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:05	DMW	
Magnesium	B234692	3370	ug/L	80.0	80.0	EPA 200.7	11/21/23	11/22/23 17:43	EDM	
Phosphorus as P	B234692	2.06	mg/L	0.0120	0.0120	EPA 200.7	11/21/23	11/22/23 17:43	EDM	
Hardness	B234692	43.3	mg/L	0.100	0.100	SM 2340 B-2011	11/21/23	11/22/23 17:43	EDM	
Dissolved Metals										
Cadmium	B234723	0.029	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/25/23 16:25	DMW	
Copper	B234723	8.5	ug/L	0.15	0.15	EPA 200.8	11/25/23	11/25/23 16:25	DMW	
Lead	B234723	0.93	ug/L	9.00E-3	9.00E-3	EPA 200.8	11/25/23	11/25/23 16:25	DMW	
Zinc	B234723	61.8	ug/L	0.50	0.50	EPA 200.8	11/25/23	11/25/23 16:25	DMW	

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Report Date: 12/20/2023 13:21



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
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Analysis Report

Location:	ACST1C	Location Description:	231119-03-WC
Date/Time Collected:	11/19/2023 02:16 - 11/19/2023 13:28		
Lab Number:	AC00324-03	Sample Collector:	S.T
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted Method MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234817	0.530	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	12/01/23	12/1/23 13:41	JAL	
BOD5	B234673	59.5	mg/L	2.00	2.00	SM 5210 B-2016	11/20/23	11/25/23 13:24	MEC	
COD	B234668	137	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	11/20/23	11/20/23 12:29	BAK	
Nitrate-Nitrite, as N	B234773	0.145	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	11/29/23	11/29/23 13:44	JAL	
TKN	B234779	1.76	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	11/30/23	12/1/23 10:11	ALN	
Total Dissolved Solids	B234678	136	mg/L	20.0	20.0	SM 2540 C-2015	11/20/23	11/22/23 9:28	RKT	
Total Suspended Solids	B234665	8.63	mg/L	0.900	0.900	SM 2540 D-2015	11/20/23	11/20/23 10:04	NTS	
Turbidity	B234675	8.6	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	11/20/23	11/20/23 13:04	JAL	
Dissolved Wet Chemistry										
Orthophosphate, as P	B234672	0.538	mg/L	0.0150	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	11/20/23	11/20/23 11:45	JAL	D
Total Metals										
Mercury	B234760	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	11/29/23	11/30/23 9:08	SAS	U
Arsenic	B234724	0.93	ug/L	0.070	0.070	EPA 200.8	11/25/23	11/26/23 14:15	DMW	
Cadmium	B234724	0.030	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:15	DMW	
Calcium	B234692	8.66	mg/L	0.0400	0.0400	EPA 200.7	11/21/23	11/22/23 17:38	EDM	
Lead	B234724	0.33	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:15	DMW	
Magnesium	B234692	3430	ug/L	80.0	80.0	EPA 200.7	11/21/23	11/22/23 17:38	EDM	
Phosphorus as P	B234692	0.710	mg/L	0.0120	0.0120	EPA 200.7	11/21/23	11/22/23 17:38	EDM	
Hardness	B234692	35.8	mg/L	0.100	0.100	SM 2340 B-2011	11/21/23	11/22/23 17:38	EDM	
Dissolved Metals										
Cadmium	B234723	0.012	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/25/23 16:35	DMW	
Copper	B234723	3.5	ug/L	0.15	0.15	EPA 200.8	11/25/23	11/25/23 16:35	DMW	
Lead	B234723	0.085	ug/L	9.00E-3	9.00E-3	EPA 200.8	11/25/23	11/25/23 16:35	DMW	
Zinc	B234723	32.7	ug/L	0.50	0.50	EPA 200.8	11/25/23	11/25/23 16:35	DMW	

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Report Date: 12/20/2023 13:21



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1C
Date/Time Collected: 11/19/2023 02:24 - 11/19/2023 15:28
Lab Number: AC00324-04
Sample Type: Composite

Location Description: 231119-11-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analized	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234817	0.527	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	12/01/23	12/1/23 13:53	JAL	
BOD5	B234673	61.9	mg/L	2.00	2.00	SM 5210 B-2016	11/20/23	11/25/23 13:17	MEC	
COD	B234668	167	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	11/20/23	11/20/23 12:29	BAK	
Nitrate-Nitrite, as N	B234773	0.182	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	11/29/23	11/29/23 13:45	JAL	
TKN	B234779	2.07	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	11/30/23	12/1/23 10:12	ALN	
Total Dissolved Solids	B234678	180	mg/L	20.0	20.0	SM 2540 C-2015	11/20/23	11/22/23 9:29	RKT	
Total Suspended Solids	B234665	27.3	mg/L	0.900	0.900	SM 2540 D-2015	11/20/23	11/20/23 11:05	NTS	
Turbidity	B234675	19.7	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	11/20/23	11/20/23 13:15	JAL	
Dissolved Wet Chemistry										
Orthophosphate, as P	B234672	0.768	mg/L	0.0150	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	11/20/23	11/20/23 11:46	JAL	D
Total Metals										
Mercury	B234760	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	11/29/23	11/30/23 9:25	SAS	U
Arsenic	B234724	1.7	ug/L	0.070	0.070	EPA 200.8	11/25/23	11/26/23 14:17	DMW	
Cadmium	B234724	0.041	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:17	DMW	
Calcium	B234692	13.3	mg/L	0.0400	0.0400	EPA 200.7	11/21/23	11/22/23 17:40	EDM	
Lead	B234724	2.2	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:17	DMW	
Magnesium	B234692	2850	ug/L	80.0	80.0	EPA 200.7	11/21/23	11/22/23 17:40	EDM	
Phosphorus as P	B234692	0.958	mg/L	0.0120	0.0120	EPA 200.7	11/21/23	11/22/23 17:40	EDM	
Hardness	B234692	45.0	mg/L	0.100	0.100	SM 2340 B-2011	11/21/23	11/22/23 17:40	EDM	
Dissolved Metals										
Cadmium	B234723	<0.0100	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/25/23 16:37	DMW	U
Copper	B234723	5.0	ug/L	0.15	0.15	EPA 200.8	11/25/23	11/25/23 16:37	DMW	
Lead	B234723	0.21	ug/L	9.00E-3	9.00E-3	EPA 200.8	11/25/23	11/25/23 16:37	DMW	
Zinc	B234723	32.3	ug/L	0.50	0.50	EPA 200.8	11/25/23	11/25/23 16:37	DMW	

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Report Date: 12/20/2023 13:21



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11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location:	ACST1C	Location Description:	231119-12-WC
Date/Time Collected:	11/19/2023 01:07 - 11/19/2023 14:42		
Lab Number:	AC00324-05	Sample Collector:	S.T
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234817	0.610	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	12/01/23	12/1/23 13:49	JAL	
BOD5	B234673	19.9	mg/L	2.00	2.00	SM 5210 B-2016	11/20/23	11/25/23 13:10	MEC	
COD	B234668	61.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	11/20/23	11/20/23 12:29	BAK	
Nitrate-Nitrite, as N	B234773	0.246	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	11/29/23	11/29/23 13:46	JAL	
TKN	B234779	1.14	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	11/30/23	12/1/23 10:14	ALN	
Total Dissolved Solids	B234678	61.0	mg/L	20.0	20.0	SM 2540 C-2015	11/20/23	11/22/23 9:30	RKT	
Total Suspended Solids	B234665	16.2	mg/L	0.900	0.900	SM 2540 D-2015	11/20/23	11/20/23 11:04	NTS	
Turbidity	B234675	11.7	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	11/20/23	11/20/23 13:12	JAL	

Dissolved Wet Chemistry										
Orthophosphate, as P	B234672	0.167	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	11/20/23	11/20/23 11:33	JAL	

Total Metals										
Mercury	B234760	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	11/29/23	11/30/23 9:36	SAS	U
Arsenic	B234724	0.66	ug/L	0.070	0.070	EPA 200.8	11/25/23	11/26/23 14:20	DMW	
Cadmium	B234724	0.045	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:20	DMW	
Calcium	B234692	5.87	mg/L	0.0400	0.0400	EPA 200.7	11/21/23	11/22/23 17:22	EDM	
Lead	B234724	1.7	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:20	DMW	
Magnesium	B234692	1120	ug/L	80.0	80.0	EPA 200.7	11/21/23	11/22/23 17:22	EDM	
Phosphorus as P	B234692	0.226	mg/L	0.0120	0.0120	EPA 200.7	11/21/23	11/22/23 17:22	EDM	
Hardness	B234692	19.3	mg/L	0.100	0.100	SM 2340 B-2011	11/21/23	11/22/23 17:22	EDM	

Dissolved Metals										
Cadmium	B234723	0.015	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/25/23 16:39	DMW	
Copper	B234723	2.7	ug/L	0.15	0.15	EPA 200.8	11/25/23	11/25/23 16:39	DMW	
Lead	B234723	0.12	ug/L	9.00E-3	9.00E-3	EPA 200.8	11/25/23	11/25/23 16:39	DMW	
Zinc	B234723	25.9	ug/L	0.50	0.50	EPA 200.8	11/25/23	11/25/23 16:39	DMW	

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Report Date: 12/20/2023 13:21



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Telephone (208) 608-7240
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Analysis Report

Location: ACST1C
Date/Time Collected: 11/19/2023 01:32 - 11/19/2023 14:07
Lab Number: AC00324-06
Sample Type: Composite

Location Description: 231119-14-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B234817	0.454	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	12/01/23	12/1/23 13:45	JAL	
BOD5	B234673	36.5	mg/L	2.00	2.00	SM 5210 B-2016	11/20/23	11/25/23 13:06	MEC	
COD	B234668	94.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	11/20/23	11/20/23 12:29	BAK	
Nitrate-Nitrite, as N	B234773	0.614	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	11/29/23	11/29/23 13:47	JAL	
TKN	B234779	1.27	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	11/30/23	12/1/23 10:15	ALN	
Total Dissolved Solids	B234678	153	mg/L	20.0	20.0	SM 2540 C-2015	11/21/23	11/22/23 9:31	RKT	
Total Suspended Solids	B234665	21.7	mg/L	0.900	0.900	SM 2540 D-2015	11/20/23	11/20/23 10:03	NTS	
Turbidity	B234675	15.0	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	11/20/23	11/20/23 13:07	JAL	
Dissolved Wet Chemistry										
Orthophosphate, as P	B234672	0.402	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	11/20/23	11/20/23 11:37	JAL	
Total Metals										
Mercury	B234760	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	11/29/23	11/30/23 9:39	SAS	U
Arsenic	B234724	2.1	ug/L	0.070	0.070	EPA 200.8	11/25/23	11/26/23 14:22	DMW	
Cadmium	B234724	0.061	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:22	DMW	
Calcium	B234692	17.4	mg/L	0.0400	0.0400	EPA 200.7	11/21/23	11/22/23 17:24	EDM	
Lead	B234724	1.9	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/26/23 14:22	DMW	
Magnesium	B234692	3490	ug/L	80.0	80.0	EPA 200.7	11/21/23	11/22/23 17:24	EDM	
Phosphorus as P	B234692	0.504	mg/L	0.0120	0.0120	EPA 200.7	11/21/23	11/22/23 17:24	EDM	
Hardness	B234692	57.8	mg/L	0.100	0.100	SM 2340 B-2011	11/21/23	11/22/23 17:24	EDM	
Dissolved Metals										
Cadmium	B234723	0.022	ug/L	0.010	0.010	EPA 200.8	11/25/23	11/25/23 16:42	DMW	
Copper	B234723	4.0	ug/L	0.15	0.15	EPA 200.8	11/25/23	11/25/23 16:42	DMW	
Lead	B234723	0.11	ug/L	9.00E-3	9.00E-3	EPA 200.8	11/25/23	11/25/23 16:42	DMW	
Zinc	B234723	27.2	ug/L	0.50	0.50	EPA 200.8	11/25/23	11/25/23 16:42	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B234656									
Blank (B234656-BLK1)									
E. Coli	Absent						11/20/2023	SMC	
LCS (B234656-BS1)									
E. Coli				Present			11/20/2023	SMC	
Duplicate (B234656-DUP2) Source ID: AC00323-04RE1									
E. Coli					Pass	128	11/20/2023	SMC	
Met Chemistry									
Batch: B234665									
Blank (B234665-BLK1)									
Total Suspended Solids	<0.9	mg/L					11/20/2023	NTS	U
LCS (B234665-BS1)									
Total Suspended Solids			97.5	90-110			11/20/2023	NTS	
Duplicate (B234665-DUP1) Source ID: WB02817-07									
Total Suspended Solids					3.88	20	11/20/2023	NTS	
Duplicate (B234665-DUP2) Source ID: LS01764-02									
Total Suspended Solids					3.33	20	11/20/2023	NTS	
Batch: B234668									
Blank (B234668-BLK1)									
COD	<7	mg/L					11/20/2023	BAK	U
LCS (B234668-BS1)									
COD			101	90-110			11/20/2023	BAK	
Duplicate (B234668-DUP1) Source ID: AC00324-02									
COD					0.304	10	11/20/2023	BAK	
Batch: B234673									
Blank (B234673-BLK1)									
BOD5	<2	mg/L					11/25/2023	MEC	U
LCS (B234673-BS2)									
BOD5			110	84.6-115.4			11/25/2023	MEC	
Duplicate (B234673-DUP1) Source ID: ST00061-02									
BOD5					1.13	30	11/25/2023	MEC	D
Duplicate (B234673-DUP2) Source ID: AC00324-03									
BOD5					3.79	30	11/25/2023	MEC	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B234675									
Blank (B234675-BLK1)									
Turbidity	<0.3	NTU					11/20/2023	JAL	U
LCS (B234675-BS1)									
Turbidity			97.9	90-110			11/20/2023	JAL	
Duplicate (B234675-DUP1)	Source ID: AC00324-06								
Turbidity					5.41	25	11/20/2023	JAL	
Batch: B234678									
Blank (B234678-BLK1)									
Total Dissolved Solids	<20	mg/L					11/22/2023	RKT	U
LCS (B234678-BS1)									
Total Dissolved Solids			95.5	90-110			11/22/2023	RKT	
Duplicate (B234678-DUP1)	Source ID: AC00324-02								
Total Dissolved Solids					0.286	10	11/22/2023	RKT	
Batch: B234773									
Blank (B234773-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					11/29/2023	JAL	U
Blank (B234773-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					11/29/2023	JAL	U
LCS (B234773-BS1)									
Nitrate-Nitrite, as N			98.7	90-110			11/29/2023	JAL	
LCS (B234773-BS2)									
Nitrate-Nitrite, as N			98.8	90-110			11/29/2023	JAL	
Duplicate (B234773-DUP1)	Source ID: BB03404-02								
Nitrate-Nitrite, as N					8.87	10	11/29/2023	JAL	
Duplicate (B234773-DUP2)	Source ID: RW00047-01								
Nitrate-Nitrite, as N					0.228	10	11/29/2023	JAL	
Duplicate (B234773-DUP3)	Source ID: WB02832-06								
Nitrate-Nitrite, as N					0.449	10	11/29/2023	JAL	
Matrix Spike (B234773-MS1)	Source ID: BB03404-02								
Nitrate-Nitrite, as N			100	90-110			11/29/2023	JAL	
Matrix Spike (B234773-MS2)	Source ID: RW00047-01								
Nitrate-Nitrite, as N			97.9	90-110			11/29/2023	JAL	
Matrix Spike (B234773-MS3)	Source ID: WB02832-06								
Nitrate-Nitrite, as N			103	90-110			11/29/2023	JAL	
Matrix Spike Dup (B234773-MSD1)	Source ID: BB03404-02								
Nitrate-Nitrite, as N			101	90-110	0.293	10	11/29/2023	JAL	
Matrix Spike Dup (B234773-MSD2)	Source ID: RW00047-01								
Nitrate-Nitrite, as N			97.8	90-110	0.0212	10	11/29/2023	JAL	
Matrix Spike Dup (B234773-MSD3)	Source ID: WB02832-06								
Nitrate-Nitrite, as N			104	90-110	0.135	10	11/29/2023	JAL	

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Quality Control Report
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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Met Chemistry (Continued)									
Batch: B234779									
Blank (B234779-BLK1) TKN	<0.2	mg/L					12/01/2023	ALN	U
Blank (B234779-BLK2) TKN	<0.2	mg/L					12/01/2023	ALN	U
LCS (B234779-BS1) TKN			100	80-120			12/01/2023	ALN	
LCS (B234779-BS2) TKN			99.5	80-120			12/01/2023	ALN	
Duplicate (B234779-DUP2) TKN	Source ID: BB03404-01				2.65	20	12/01/2023	ALN	D
Duplicate (B234779-DUP3) TKN	Source ID: LS01768-02				3.57	20	12/01/2023	ALN	D
Duplicate (B234779-DUP4) TKN	Source ID: RW00047-02				2.40	20	12/01/2023	ALN	D
Matrix Spike (B234779-MS2) TKN	Source ID: BB03404-01		95.4	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS3) TKN	Source ID: LS01768-02		102	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS4) TKN	Source ID: RW00047-02		105	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS5) TKN	Source ID: EP00286-01		81.5	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS6) TKN	Source ID: EP00287-01		101	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS7) TKN	Source ID: EP00288-01		97.9	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS8) TKN	Source ID: EP00289-01		105	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MS9) TKN	Source ID: EP00290-01		99.1	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MSA) TKN	Source ID: EP00291-01		102	80-120			12/01/2023	ALN	D
Matrix Spike (B234779-MSC) TKN	Source ID: EP00294-01		104	80-120			12/01/2023	ALN	D
Matrix Spike Dup (B234779-MSD2) TKN	Source ID: BB03404-01		98.0	80-120	1.43	20	12/01/2023	ALN	D
Matrix Spike Dup (B234779-MSD3) TKN	Source ID: LS01768-02		102	80-120	0.104	20	12/01/2023	ALN	D
Matrix Spike Dup (B234779-MSD4) TKN	Source ID: RW00047-02		108	80-120	1.54	20	12/01/2023	ALN	D

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Quality Control Report

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B234817									
Blank (B234817-BLK1)									
Ammonia, as N	<0.035	mg/L					12/01/2023	JAL	U
LCS (B234817-BS1)									
Ammonia, as N			110	90-110			12/01/2023	JAL	
Duplicate (B234817-DUP1) Source ID: BB03379-02									
Ammonia, as N					0.316	10	12/01/2023	JAL	
Duplicate (B234817-DUP2) Source ID: BB03389-01									
Ammonia, as N					0.892	10	12/01/2023	JAL	
Matrix Spike (B234817-MS1) Source ID: BB03379-02									
Ammonia, as N			105	80-120			12/01/2023	JAL	
Matrix Spike (B234817-MS2) Source ID: BB03389-01									
Ammonia, as N			102	80-120			12/01/2023	JAL	
Matrix Spike Dup (B234817-MSD1) Source ID: BB03379-02									
Ammonia, as N			105	80-120	0.156	10	12/01/2023	JAL	
Matrix Spike Dup (B234817-MSD2) Source ID: BB03389-01									
Ammonia, as N			104	80-120	1.30	10	12/01/2023	JAL	
Batch: B234948									
Blank (B234948-BLK1)									
TKN	<0.2	mg/L					12/13/2023	EDM	U
LCS (B234948-BS1)									
TKN			100	80-120			12/13/2023	EDM	
Duplicate (B234948-DUP1) Source ID: BB03406-01									
TKN					1.18	20	12/13/2023	EDM	D
Duplicate (B234948-DUP2) Source ID: BB03408-01									
TKN					0.505	20	12/13/2023	EDM	D
Matrix Spike (B234948-MS1) Source ID: BB03406-01									
TKN			96.3	80-120			12/13/2023	EDM	D
Matrix Spike (B234948-MS2) Source ID: BB03408-01									
TKN			105	80-120			12/13/2023	EDM	D
Matrix Spike (B234948-MS4) Source ID: EP00293-01RE1									
TKN			99.4	80-120			12/13/2023	EDM	D
Matrix Spike (B234948-MS5) Source ID: EP00295-01									
TKN			103	80-120			12/13/2023	EDM	D
Matrix Spike Dup (B234948-MSD1) Source ID: BB03406-01									
TKN			92.3	80-120	1.14	20	12/13/2023	EDM	D
Matrix Spike Dup (B234948-MSD2) Source ID: BB03408-01									
TKN			104	80-120	0.586	20	12/13/2023	EDM	D

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Quality Control Report
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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Vet Chemistry (Continued)									
Batch: B234964									
Blank (B234964-BLK1)									
TKN	<0.2	mg/L					12/15/2023	JAL	U
LCS (B234964-BS1)									
TKN			93.6	80-120			12/15/2023	JAL	
Duplicate (B234964-DUP2) Source ID: BB03420-03									
TKN					4.44	20	12/15/2023	JAL	D
Duplicate (B234964-DUP3) Source ID: AC00324-02RE2									
TKN					15.8	20	12/15/2023	JAL	D
Matrix Spike (B234964-MS2) Source ID: BB03420-03									
TKN			98.0	80-120			12/15/2023	JAL	D
Matrix Spike (B234964-MS3) Source ID: AC00324-02RE2									
TKN			95.8	80-120			12/15/2023	JAL	D
Matrix Spike Dup (B234964-MSD2) Source ID: BB03420-03									
TKN			106	80-120	3.42	20	12/15/2023	JAL	D
Matrix Spike Dup (B234964-MSD3) Source ID: AC00324-02RE2									
TKN			110	80-120	11.9	20	12/15/2023	JAL	D
Dissolved Wet Chemistry									
Batch: B234672									
Blank (B234672-BLK1)									
Orthophosphate, as P	<0.003	mg/L					11/20/2023	JAL	U
LCS (B234672-BS1)									
Orthophosphate, as P			95.7	90-110			11/20/2023	JAL	
Duplicate (B234672-DUP1) Source ID: AC00324-05									
Orthophosphate, as P					0.720	10	11/20/2023	JAL	
Matrix Spike (B234672-MS1) Source ID: AC00324-05									
Orthophosphate, as P			99.0	90-110			11/20/2023	JAL	
Matrix Spike Dup (B234672-MSD1) Source ID: AC00324-05									
Orthophosphate, as P			99.7	90-110	0.267	10	11/20/2023	JAL	

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Quality Control Report

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B234692									
Blank (B234692-BLK1)									
Calcium	<0.04	mg/L					11/22/2023	EDM	U
Magnesium	<80	ug/L					11/22/2023	EDM	U
Phosphorus as P	<0.012	mg/L					11/22/2023	EDM	U
LCS (B234692-BS1)									
Calcium			100	85-115			11/22/2023	EDM	
Magnesium			99.6	85-115			11/22/2023	EDM	
Phosphorus as P			98.6	85-115			11/22/2023	EDM	
Duplicate (B234692-DUP1) Source ID: AC00324-06									
Calcium					0.0422	20	11/22/2023	EDM	
Magnesium					0.465	20	11/22/2023	EDM	
Phosphorus as P					0.357	20	11/22/2023	EDM	
Matrix Spike (B234692-MS1) Source ID: AC00324-06									
Calcium			100	70-130			11/22/2023	EDM	
Magnesium			101	70-130			11/22/2023	EDM	
Phosphorus as P			99.0	70-130			11/22/2023	EDM	
Matrix Spike Dup (B234692-MSD1) Source ID: AC00324-06									
Calcium			99.9	70-130	0.151	20	11/22/2023	EDM	
Magnesium			100	70-130	0.422	20	11/22/2023	EDM	
Phosphorus as P			99.3	70-130	0.191	20	11/22/2023	EDM	
Batch: B234724									
Blank (B234724-BLK1)									
Arsenic	<0.070	ug/L					11/26/2023	DMW	U
Cadmium	<0.010	ug/L					11/26/2023	DMW	U
Lead	<0.010	ug/L					11/26/2023	DMW	U
LCS (B234724-BS1)									
Arsenic			96.0	85-115			11/26/2023	DMW	
Cadmium			99.8	85-115			11/26/2023	DMW	
Lead			99.9	85-115			11/26/2023	DMW	
Duplicate (B234724-DUP1) Source ID: AC00324-02									
Arsenic					3.50	20	11/26/2023	DMW	
Cadmium					13.9	20	11/26/2023	DMW	
Lead					1.94	20	11/26/2023	DMW	
Matrix Spike (B234724-MS1) Source ID: AC00324-02									
Arsenic			96.2	70-130			11/26/2023	DMW	
Cadmium			99.4	70-130			11/26/2023	DMW	
Lead			95.5	70-130			11/26/2023	DMW	
Matrix Spike Dup (B234724-MSD1) Source ID: AC00324-02									
Arsenic			99.6	70-130	2.94	20	11/26/2023	DMW	
Cadmium			102	70-130	2.75	20	11/26/2023	DMW	
Lead			97.1	70-130	1.27	20	11/26/2023	DMW	

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Quality Control Report
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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B234760									
Blank (B234760-BLK1)									
Mercury	<0.01	ug/L					11/30/2023	SAS	U
LCS (B234760-BS1)									
Mercury			98.9	85-115			11/30/2023	SAS	
Duplicate (B234760-DUP1) Source ID: AC00324-03									
Mercury					NR	20	11/30/2023	SAS	U
Duplicate (B234760-DUP2) Source ID: EP00285-01									
Mercury					NR	20	11/30/2023	SAS	U
Matrix Spike (B234760-MS1) Source ID: AC00324-03									
Mercury			103	70-130			11/30/2023	SAS	
Matrix Spike (B234760-MS2) Source ID: EP00285-01									
Mercury			101	70-130			11/30/2023	SAS	
Matrix Spike Dup (B234760-MSD1) Source ID: AC00324-03									
Mercury			103	70-130	0.0974	20	11/30/2023	SAS	
Matrix Spike Dup (B234760-MSD2) Source ID: EP00285-01									
Mercury			104	70-130	2.73	20	11/30/2023	SAS	
Dissolved Metals									
Batch: B234723									
Blank (B234723-BLK1)									
Cadmium	<0.010	ug/L					11/25/2023	DMW	U
Copper	<0.15	ug/L					11/25/2023	DMW	U
Lead	<0.0090	ug/L					11/25/2023	DMW	U
Zinc	<0.50	ug/L					11/25/2023	DMW	U
LCS (B234723-BS1)									
Cadmium			94.9	85-115			11/25/2023	DMW	
Copper			94.3	85-115			11/25/2023	DMW	
Lead			96.9	85-115			11/25/2023	DMW	
Zinc			93.8	85-115			11/25/2023	DMW	
Duplicate (B234723-DUP1) Source ID: AC00324-02									
Cadmium					5.41	10	11/25/2023	DMW	
Copper					0.546	10	11/25/2023	DMW	
Lead					1.75	10	11/25/2023	DMW	
Zinc					0.526	10	11/25/2023	DMW	
Matrix Spike (B234723-MS1) Source ID: AC00324-02									
Cadmium			96.5	70-130			11/25/2023	DMW	
Copper			104	70-130			11/25/2023	DMW	
Lead			93.1	70-130			11/25/2023	DMW	
Zinc			103	70-130			11/25/2023	DMW	
Matrix Spike Dup (B234723-MSD1) Source ID: AC00324-02									
Cadmium			97.9	70-130	1.50	10	11/25/2023	DMW	
Copper			103	70-130	0.713	10	11/25/2023	DMW	
Lead			94.5	70-130	1.37	10	11/25/2023	DMW	
Zinc			99.7	70-130	0.915	10	11/25/2023	DMW	

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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

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Purchase Order:

63065628

Project:

Stormwater-PI

Sampler(s):

Steven Turner
Kristen Chisholm

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ - D	Total Containers
AC00324-01	11/19/23		622	622	231119-206-WG	ST	Water	Grab	Composite											X				1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Steven Turner	11/19/2023 1:42 PM	Brent [Signature]	11/19/23

AC00324

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Project: S
Sampler(s):

Stormwater-PI

Steven Turner
Kristen Chisholm

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initial	Water	Grab	Composite	BOD ₅ - SM 521	COD - Hach 8000	TSS - SM 2540	TDS - SM 2540	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate	Total As, Cd, P	Diss. Cd Cu, P	Total Hg - EPA	E. Coli - IDEXX	Turbidity - EPA	Hardness - EPA	NO ₃ +NO ₂ - EPA	NH ₃ - SM 4500	Total Containe
000324-02	11/19/23		314	1221	231119-206-WC	ST	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	4

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>[Signature]</i>	11/19/2023 1:42 PM	<i>[Signature]</i> 11/19/23	1342 11/11/23

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Sampler(s):

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Stormwater-PI

Kristen Christensen
Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix		Type	Composite	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
							Water	Grab																		
AE00324-03	11/19/23		214	1328	231119-03-WC	ST	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Kristen Christensen</i>	11/19/23 1603	<i>Steven Turner</i> 1603	11/19/23

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Sampler(s):

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Stormwater-PI
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AE00324-04	11/17/23.	0224 1528 231119-11-WC	ST	x	x	x x x x x x x x	x x x x 3
-05	└─┘	G107 1442 231119-12-WC	ST	x	x	x x x x x x x x	x x x x 3
-06		U132 1407231119-14-WC	ST	x	x	x x x x x x x x	x x x x 4

Kristen Kishel	11/19/23 1716	Breast 1716	11/19/23
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ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 1 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots 47-32, 47-73, 47-20	Bottles Split	Comments
#1 Lims#: <u>AC00324-02</u> Location: <u>ACSTIC</u> Sample Date: <u>11-19-23</u> Sample ID: <u>23119- -206-WC</u>	Split Date: <u>11-19-23</u> Start Split: <u>1402</u> Start Filter: <u>1402</u> Comp Time: <u>1356</u> Analyst: <u>DMW/WR</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>47-73</u> Comp Jug: <u>CC00023-78</u> SS Tubing: <u>CC00044-92</u> SS Helper: <u>SSAS</u> ↓ Stir Bar: <u>CC00047-50</u> Connector: <u>CC00044-99</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	0.45µm High Capacity ^{color prof} Very black-looking; leaves minimal debris 4 jugs
#2 Lims#: <u>AC00324-03</u> Location: <u>ACSTIC</u> Sample Date: <u>11-19-23</u> Sample ID: <u>23119-03</u> -WC	Split Date: <u>11-19-23</u> Start Split: <u>1620</u> Start Filter: <u>1620</u> Comp Time: <u>1617</u> Analyst: <u>DMW/WR</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>47-32, 47-88</u> Comp Jug: <u>CC00030-62</u> (x2) SS Tubing: <u>CC00047-43</u> SS Helper: <u>SSAB</u> ↓ Stir Bar: <u>CC00047-50</u> Connector: <u>CC00047-89</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	0.45µm High Capacity Dark minimal debris 2 jugs
#3 Lims#: <u>AC00324-06</u> Location: <u>ACSTIC</u> Sample Date: <u>11-19-23</u> Sample ID: <u>23119-14</u> -WC	Split Date: <u>11-19-23</u> Start Split: <u>1728</u> Start Filter: <u>1728</u> Comp Time: <u>1723</u> Analyst: <u>DMW/WR</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>47-32, 47-88, 47-32</u> Comp Jug: <u>CC00010-72</u> SS Tubing: <u>CC00047-43</u> SS Helper: <u>SSI2</u> ↓ Stir Bar: <u>CC00047-50</u> Connector: <u>CC00040-06</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	0.45µm High Capacity Minimal debris (1) of the 16L jugs didn't have cert label 4 jugs
#4 Lims#: <u>AC00324-04</u> Location: <u>ACSTIC</u> Sample Date: <u>11-19-23</u> Sample ID: <u>23119-11</u> -WC	Split Date: <u>11-19-23</u> Start Split: <u>1752</u> Start Filter: <u>1752</u> Comp Time: <u>1748</u> Analyst: <u>DMW/WR</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>47-73, 47-32</u> Comp Jug: <u>CC00023-78</u> SS Tubing: <u>CC00039-99</u> SS Helper: <u>SSI7</u> ↓ Stir Bar: <u>CC00047-67</u> (x2) Connector: <u>CC00040-06</u>	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	0.45µm High Capacity (1) of the 16L jugs missing cert. label. Minimal debris 3 jugs
#5 Lims#: <u>AC00324-05</u> Location: <u>ACSTIC</u> Sample Date: <u>11-19-23</u> Sample ID: <u>23119-12</u> -WC	Split Date: <u>11-19-23</u> Start Split: <u>1814</u> Start Filter: <u>1814</u> Comp Time: <u>1811</u> Analyst: <u>DMW/WR</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>47-73, 47-88</u> Comp Jug: <u>CC00011-67</u> SS Tubing: <u>CC00047-85</u> SS Helper: <u>SSA2</u> ↓ Stir Bar: <u>CC00047-67</u> Connector: <u>CC00040-06</u> (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	0.45µm High Capacity (1) of the 16L missing cert. label. minimal debris 3 jugs

39-76 (x2)

ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 2 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
#6 Lims#: _____ Location: _____ Sample Date: <u>11-19-23</u> Sample ID: _____	Split Date: <u>11-19-23</u> Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: <u>DMW/JPR</u>	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: _____ Comp Jug: _____ SS Tubing: <u>C00047-39</u> SS Helper: <u>SS9</u> Stir Bar: <u>C00047-90</u> Connector: <u>C00041-46</u>	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	<u>0.45µm High Capacity</u> <u>Not Needed</u>
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ _____ ☒ COD ☐ _____	



Technical Memorandum

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Phone: 801.316.9859

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2024

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for February 1, 2024

Date: April 23, 2024

To: Monica Lowe

Cc: Steven Turner

Kristen Chisholm

From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

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 10, 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.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2024 (October 1, 2023, through September 30, 2024). The following storm event report summarizes stormwater sampling results from the February 1, 2024, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2024 Phase I Stormwater Outfall Monitoring. When samples are qualified, additional samples will be attempted from subsequent storms to collect unqualified samples.

Table 2-1. WY 2024 Samples Collected					
Date	Lucky	Whitewater	Main	Americana	AS_6
October 10, 2023	G, C ^{1,2}	G	--	G, C ³	--
November 19, 2023	G, C	G, C	G, C	G ⁴ , C	G, C
February 1, 2024	G ⁵ , C	G ⁵ , C ⁶	G ⁵ , C	G ⁵ , C	G ⁵ , C
Unqualified Samples:	2G, 2C	2G, 1C	1G, 2C	1G, 2C	1G, 2C
Samples Remaining:	1G, 1C	1G, 2C	2G, 1C	2G, 1C	2G, 1C

Notes:

-- = no samples taken

C = composite sample

G = grab sample

¹ Composite samples qualified due to lack of representativeness (50%–75%).

² Incomplete water quality analysis due to low composite sample volume.

³ Composite samples qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

⁴ Grab sample qualified due to incomplete field parameter collection.

⁵ E. coli sample qualified due to exceeded hold time.

⁶ Composite sample rejected due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented more than 10% of the composite volume.

Section 3: Storm Event Summary

The February 1, 2024, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from February 1, 2024, is included in Attachment A for reference.

Wednesday, January 31, 2024 (Sampling Event Communication and Set Up)

- On the morning of January 31, the National Weather Service issued a forecast for widespread rain in the Boise area, starting February 1 at 0500 and ending on February 2 at 1100. The chance of precipitation was greater than 90%, with 0.50 inches of precipitation forecasted.
- Setup was accomplished in the afternoon of January 31. An expected precipitation depth of 0.3 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Thursday, February 1, 2024 to Friday, February 2, 2024 (Storm Event)

- Moderate rain first started at approximately February 1 at 1607 and ended on February 2 at 1305.
- Precipitation totals ranged between 0.31 and 0.37 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrograph for the Lucky, Whitewater, Main, Americana and AS_6 site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana and AS_6 monitoring stations were set up on January 31, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, Main and Americana flowmeters. A site-specific velocity cutoff value was programmed into AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

Two, two-member teams mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on February 1 at 1800. Grab samples for Lucky, Whitewater, Main, Americana, and AS_6 were submitted to the West Boise Water Quality Lab (WQL) at 2032 on February 1.

Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at the Main, Americana and AS_6 monitoring station and submitted to the WQL at 1101 and 1102 on February 2. The composite samples at Lucky and Whitewater monitoring stations were submitted to the WQL at 1154 on February 2.

Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. Laboratory analytical reports are included in Attachment D.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the February 1, 2024, storm event is presented below in Table 4-1. A field blank and field duplicate was collected from the Lucky monitoring station and a lab duplicate/composite split was collected from the Whitewater monitoring station. The analytical results for these samples are included in Table 4-1.

Table 4-1. Quality Control Samples			
Sample ID	Sample Type	Parent Sample	Conclusions
240201-03-001	Field blank	Lucky grab	No <i>E. coli</i> detection was reported in the field blank.
240201-03-101	Field duplicate	Lucky grab	Relative percent difference was not within the acceptable range. Field duplicate qualified due to exceeding <i>E. coli</i> hold time.
240201-11-103	Lab duplicate/composite split	Whitewater composite	The Whitewater composite parent sample was rejected due to non-stormwater subsamples, leading to an inaccurate relative percent difference.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A.

An acceptable composite sample represents at least 75 percent of the total discharge or at least 6 hours of the storm duration. All composite samples, except for Whitewater, met the criteria. However, all the grab samples, including the QC field duplicate were qualified due to *E. coli* exceeding hold time. A grab sample is qualified if the sample is prepared 8 to 16 hours after sample collection. Samples are rejected if prepared 16 hours or later after sample collection. All samples were prepared within approximately 12 hours of sample collection and are therefore qualified.

Prior to the start of the storm precipitation or runoff, five subsamples were successfully collected by the automatic sampler at the Whitewater monitoring site. These subsamples are considered non-stormwater, as there was no evidence of flow or precipitation during the morning of January 31st through the afternoon of February 1st. Following the SWOMP guidelines, calculations were conducted to determine if the non-stormwater subsample volume accounted for 10% of the total composite sample volume. The non-stormwater composite subsamples accounted for 12% of the total composite sample volume (see Table 4-2), rejecting the Whitewater composite sample.

Table 4-2. Non-Stormwater Subsample Evaluation		
Composite Sample Volume (ft ³)	Non-Stormwater Subsample Volume (ft ³)	Non-stormwater Subsample Ratio
74,325	8,744	12 %

Section 5: Notes and Recommendations

Whitewater

The sampling team identified the automatic sampler's clock was not synchronized with the flowmeter, resulting in incorrect subsample times displayed on the sampler. The sampling team recorded actual composite subsample times from the flow meter prior to submitting the chain of custody form to the WQL. Additionally, the five subsamples collected before the start of storm flow were due to a flowmeter programming error. It was determined the STORM EVENT and SAMPLER ENABLE equations were assigned the wrong threshold conditions. Specifically, STORM EVENT had the threshold condition assigned rather than the timetable condition. SAMPLER ENABLE had the timetable equation set. Therefore, the flowmeter was incorrectly programmed to enable the sampler 24 hours a day and pull a sample every 2185 cubic feet

without a minimum level condition. The early subsamples appear to be equally spaced apart because of the poor velocity signal, which resulted in the velocity reading a constant value before the start of storm flow. In the case of poor velocity signal readings, the flowmeter will continue to record the last velocity reading until it is able to get another valid reading. For this reason, the sampler was collecting subsamples before increased levels as expected during storm flows.

AS_6

After collecting the grab sample at AS_6, the sampling team noticed a build-up of leaves on the sensor. The sampling team immediately cleared the sensor, and flow started moving rapidly. The removal of leaves seemed to normalize the flow.

Data Tables



TAB-1

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	YES	YES	YES	YES	YES
Trigger volume (gal or ft ³)	7899 gal	2185 ft ³	9313 gal	8071 ft ³	601 ft ³
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	Level > 2.68"	Level > 2.55" ⁴	Level > 2.06"	Level > 6.46"	--
Runoff start time	1747 ¹	1647 ¹	1657 ¹	1607 ¹	1823 ¹
Grab sample collection time	1825	1859	1815	1841	1906
Composite sample stop time	0926	1016	0757	0936	0936
Runoff stop time	1135 ²	1305 ²	1132 ²	1220 ²	1108 ²
Volume of discharge sampled (ft ³)	12,963	74,325 ³	17,733	216,570	13,220
Volume of non-stormwater subsamples (ft ³)	--	8,744	--	--	--
Total runoff volume (ft ³)	14,425	71,141	19,927	260,647	15,912
Percent of storm flow sampled (%)	90%	104% ³	89%	83%	83%
Percent of non-stormwater volume to total discharge sampled volume (%)	--	12%	--	--	--
Composite sample duration (hrs)	14.5	40 ³	13	13.5	10.5
Storm Precipitation (in)	0.31	0.33	0.31	0.31/0.37	0.31/0.37
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	13	36	15	29	24
Number of composite bottles filled	1	2	1	2	2
Composite sample volume (Approx.; ml)	7,250 ml	19000 ml	10250 ml	14500 ml	24400 ml

Notes:

-- = No data.

¹ Storm runoff started on 2/1/24

² Storm runoff ended on 2/2/24

³ Non stormwater samples were collected prior to the start of storm precipitation or runoff

⁴ Programming error occurred at setup

Table 2. Field and Analytical Data Summary																											
Monitoring Station	Sample Date	Sample ID Grab	Field Parameters						Sample ID Composite	Analytical Parameters																	
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	80D ₅		COD	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C	mpn/100 mL	mg/L		mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	2/1/2024	240201-03-WG	4.92	7.15	593.29	14.62	<1.0 ^{4J}	240201-03-WC	7.27	39.0	16.0	60.5	18.8	52.8	0.174	0.100	0.173	0.204	0.894	0.85	<0.0100	0.024	2.0	0.056	0.82	<0.0100	17.5
Whitewater	2/1/2024	240201-11-WG	8.42	7.60	287.02	11.10	68.9 ^{4J}	240201-11-WC	9.34 ^{3R}	82 ^{3R}	43 ^{3R}	106 ^{3R}	58.4 ^{3R}	139 ^{3R}	0.321 ^{3R}	0.171 ^{3R}	0.169 ^{3R}	0.375 ^{3R}	1.33 ^{3R}	2.4 ^{3R}	<0.0100 ^{3R}	0.058 ^{3R}	3.9 ^{3R}	0.18 ^{3R}	4.8 ^{3R}	0.0148 ^{3R}	25.7 ^{3R}
Main	2/1/2024	240201-12-WG	10.11	8.03	353.6	6.30	238.2 ^{4J}	240201-12-WC	5.74	77.0	18.3	103	59.8	64.2	0.143	0.0557	0.351	0.209	1.12	1.4	0.012	0.066	3.6	0.084	4.1	0.0112	18.4
Americana	2/1/2024	240201-14-WG	10.05	7.73	552.2	8.34	65.0 ^{4J}	240201-14-WC	6.98	55.0	93.3	89.6	50.7	224	0.213	0.116	0.193	0.905	1.05	3.4	0.016	0.063	3.4	0.090	4.2	<0.0100	17.3
AS_6	2/1/2024	240201-206-WG	9.33	8.03	542.9	5.55	290.9 ^{4J}	240201-206-WC	11.6	108	16.8	143	70.3	116	0.464	0.285	0.159	0.191	1.83	3.0	0.013	0.077	4.5	0.29	6.7	0.0168	10.5

Notes:
-- 3R No data.
^{3R} Composite sample rejected due to non stormwater sample volume comprising 10% or more of the the total composite sample volume
^{4J} E. coli sample qualified due to exceeded hold time

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	2/1/2024	16.9	0.157	0.156	0.184	0.805
Whitewater	2/1/2024	168 ^{1R}	0.92 ^{1R}	0.750 ^{1R}	1.08 ^{1R}	3.81 ^{1R}
Main	2/1/2024	74.4	0.178	0.437	0.260	1.39
Americana	2/1/2024	825	3.46	3.140	14.7	17.1
AS_6	2/1/2024	69.8	0.46	0.158	0.190	1.82

Notes:

^{1R} Composite sample rejected due to non stormwater sample volume comprising 10% or more of the the total composite sample volume

Table 4. QC Sample Summary																							
Date	Parent Sample	Sample ID	Type	E. coli	BOD ₅	COD	Hardness as CaCO3	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
				mpn/100 mL	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2/1/2024	240201-03-WG	240201-03-001	Field Blank	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/1/2024	240201-03-WG	240201-03-101	Field Duplicate	2 ⁴¹	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calculated parent/duplicate RPD ¹				100%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Allowable RPD				40%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
2/1/2024	240201-11-WC	240201-11-103	Lab Duplicate/Composite Split	--	8.9	83.0	42.4	113	53.8	140	0.312	0.172	0.170	0.378	1.35	2.4	0.011	0.052	3.7	0.19	4.9	0.0127	26.6
Calculated parent/duplicate RPD ²				--	5%	1%	1%	6%	8%	1%	3%	1%	1%	1%	1%	0%	10%	11%	5%	5%	2%	15%	3%
Allowable RPD				40%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%

Notes:

¹ Relative percent difference was not within the acceptable range. Field duplicate qualified due to exceeding E. Coli hold time

² The Whitewater composite parent sample was rejected due to non-stormwater subsamples, leading to an inaccurate relative percent difference

⁴¹ E.coli sample qualified due to exceeded hold time

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 01/31/2024	Time: 9:39 AM	Initials: ML
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.06"
Date and time of expected event	2/1/2024 5am – 2/2/2024 5am-11am?
Expected amount of precipitation	Up to 0.5"
Percent chance of precipitation	90%
Percent chance of >0.10" over 12 hours	30-40% during Thursday 5am-5Pm

NWS Update

I spoke with Bill from the NWS. They said precip could start as early as 5-8am Thursday morning but are only expecting maybe a tenth throughout the day. Precip expected to pick up in the afternoon and into the evening especially after 5PM. The storm is predicted to be continuous and widespread once it starts with breaks and rain shadowing unlikely. Storm should be over ~5am but could be as late as 11am depending pace of storm.

<u>Targeted Station & Samples</u>					
Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday

☐ Waiting on Antecedent Dry Period – Expires:

☐ Equipment Concerns:

☐ Other:

Text Forecast

NWS Forecast for: 2 Miles NNW Garden City ID
 Issued by: National Weather Service Boise, ID
 Last Update: 3:29 am MST Jan 31, 2024

Today: Mostly sunny, with a high near 63. Southeast wind 7 to 17 mph, with gusts as high as 26 mph.
 Tonight: A 20 percent chance of rain after 11pm. Mostly cloudy, with a low around 44. East southeast wind 13 to 15 mph, with gusts as high as 24 mph.

Thursday: Rain. High near 56. Southeast wind 14 to 16 mph, with gusts as high as 25 mph. Chance of precipitation is 90%. New precipitation amounts between a tenth and quarter of an inch possible.

Thursday Night: Rain. Low around 39. Southeast wind 5 to 9 mph becoming light and variable in the evening. Chance of precipitation is 80%. New precipitation amounts between a quarter and half of an inch possible.

Friday: Rain likely, mainly before 11am. Mostly cloudy, with a high near 48. West northwest wind 3 to 8 mph. Chance of precipitation is 60%.

Friday Night: A 40 percent chance of rain. Mostly cloudy, with a low around 35.

Saturday: A 30 percent chance of rain, mainly before 11am. Mostly cloudy, with a high near 45.

Saturday Night: Mostly cloudy, with a low around 31.

Sunday: Mostly sunny, with a high near 47.

Sunday Night: A 40 percent chance of rain, mainly after 11pm. Mostly cloudy, with a low around 35.

Monday: A chance of rain and snow. Mostly cloudy, with a high near 49. Chance of precipitation is 50%.

Monday Night: A 50 percent chance of rain. Mostly cloudy, with a low around 36.

Tuesday: A 50 percent chance of rain. Mostly cloudy, with a high near 49.

Forecast Discussion

National Weather Service Boise ID

243 AM MST Wed Jan 31 2024

.SHORT TERM...Today through Friday night...A pattern shift towards [normal](#) late winter conditions is expect on Thursday as the large [upper level](#) low reaches the Pacific Northwest. However, until then, unseasonably warm temperatures will continue today with record high temperatures forecast for several valley locations. The approaching Pacific system will enhance the pressure [gradient](#) for gusty southeast winds in the Snake Plain today. Gusts are expected to be in the 30-40 mph range.

Expect record temperatures in the Treasure Valley today aid by a much stronger southeasterly winds in response to the approaching [upper level](#) low. Model guidance has consistently under forecast temperatures the last 6 days and looks to be under forecasting today by another 3 to 5 degrees. Thus, used a bias corrected [analog](#) which has worked well the last couple of nights. This correction gives a 70% chance of Boise reaching 64 degrees or greater today. The forecast high of 64 would not only break the daily record of 61, but also tie the all-time record of 63 (set on Jan 9, 1953). Temperatures will start to cool down on Thursday with the arrival of widespread clouds and precipitation. A [Public Information Statement](#), BOIPNSBOI, includes the updated forecast highs and records.

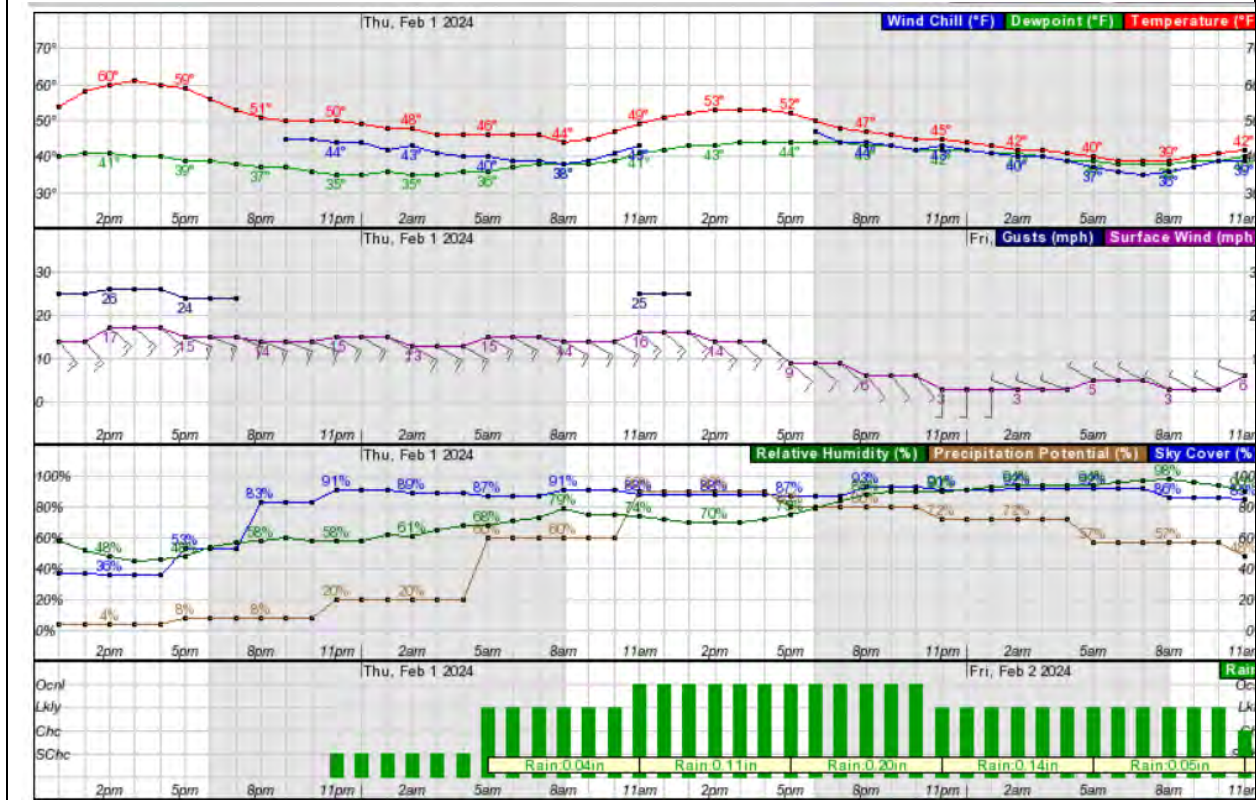
[Fog](#) and [stratus](#) has remained persistent across the valleys of Southeast Oregon the last couple of days. However, this should begin to dissipate today with better mixing and increased surface winds ahead of the next system.

A very moist plume of Pacific [moisture](#) off the west coast, known as an atmospheric river, associated with an [upper level low pressure system](#), will move inland this afternoon. This will spread the [moisture](#) across our area late tonight into Thursday. Snow levels near 7000 feet today will lower to around 6000 feet on Thursday. Accumulating snow will be limited to the mountains. Precipitation totals of up to a half inch in the valleys and an inch in the mountains are expected.

.LONG TERM...Saturday through Wednesday...A weak [upper level trough](#) remains over the region Saturday and Sunday continuing the threat for light snow showers in the mountains and a mix of rain and snow in the valleys. The [low pressure system](#) over the west coast will again interact with another plume of [moisture](#) from the Central Pacific (or Atmospheric River) on Sunday which looks to spread across our area from the southwest on Monday. Snow levels remain around 4000 feet for snow in the mountains and cold rain in the valleys. There is growing confidence in the system for Monday however, there is quite a large spread on the amount of [moisture](#) that makes it into the Intermountain West. Colder but drier conditions follow as the

the region remains on under a [large scale trough](#) as the low center continues south along the California coast.

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE 2/1/24

A. Event and Data Completeness	Yes	No	N/A	Notes					
1. Field data sheets filled out completely and clearly	X								
2. Field parameters reviewed, and any problems/issues addressed	X			Whitewater FM and SA clocks werent synced during setup					
3. All samples collected as specified	X								
4. All samples delivered to lab promptly (review chain of custody rpts)	X								
5. Inconsistencies/clarifications discussed with sampling team member			X						
6. All analytical reports from lab received	X								
B. Validation and Verification Methods	Yes	No	N/A	Notes					
1. Outliers and unexpected values discussed with lab			X						
2. Appropriate analytical methods used	X								
3. All lab QA samples were within method acceptance criteria	X								
4. All samples reviewed and data qualifiers assigned if needed	X								
5. Data quality objective achieved	X								
C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.00	0.00	0.00	0.00	0.00	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.31	0.33	0.31	0.31/0.37	0.31/0.37	> 0.10"	X		
3. Sampled amount (% of total run-off)	90%	104%*	89%	83%	83%	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	X		X _{ww}
4. Composite sample duration (hours)	14.5	40	13	13.5	10.5	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject		X	
4. Ecoli sample holding time (hours)	12	11.5	12	12	12	<= 24 hrs: no qualifier > 24 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)	3.5	2.0	3.0	2.0	2.0	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

E. coli samples were qualified due to exceeded holding times from all sites.
 * Whitewater composite rejected due to >10% total sample volume composed of non-stormwater.

Reviewed by Steven Turner Date 2/4/24

Approved by Monica Lowe Date 4/9/24

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.

Step 2. Enter expected precipitation depth (in) in blue cell.

Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.3

Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft ³)	Trigger Vol (ft ³)
Lucky	105	0.157	17952.2	1056
Whitewater	498	0.069	37149.1	2185
Main	79	0.246	21163.6	1245
Main Alt	60	0.200	13068.0	769
Americana	875	0.144	137214.0	8071
AS_6	204	0.046	10219.2	601
State	34	0.160	5924.2	348

Notes:

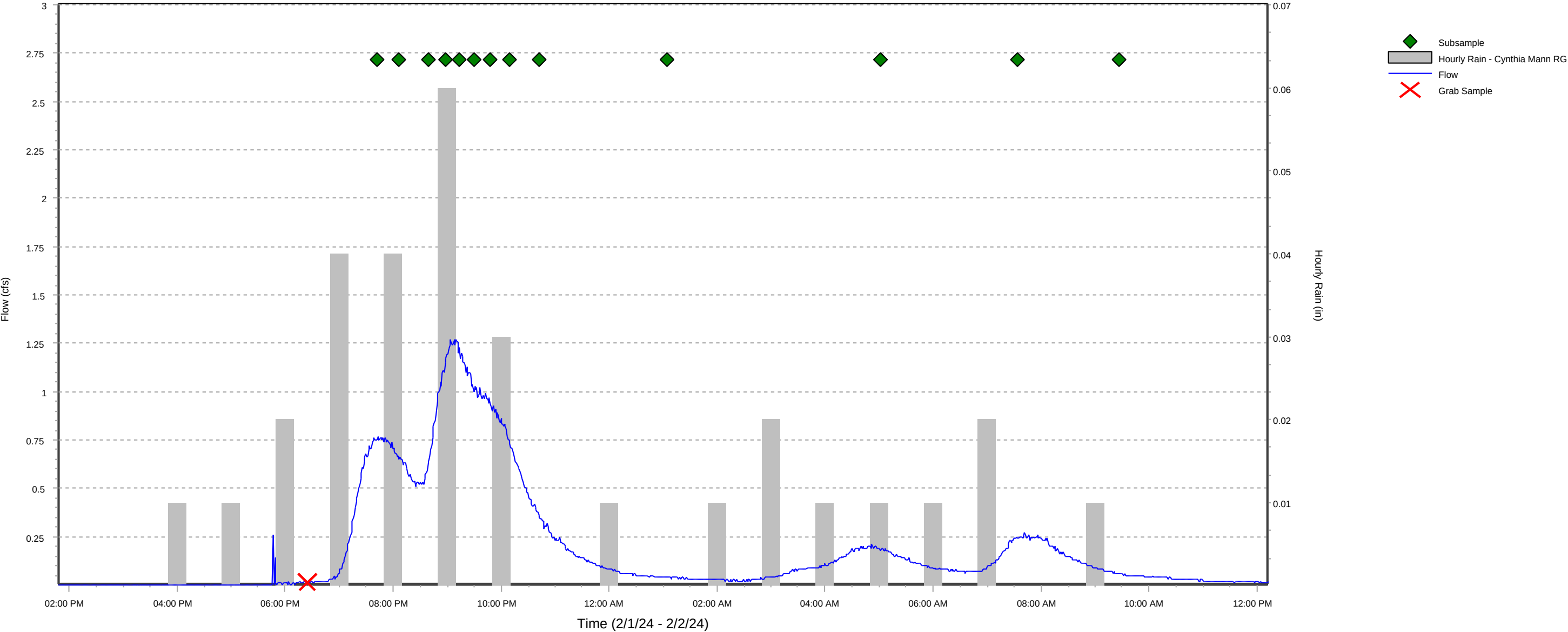
Calculated RC = Average (precip (ft) / [volume (ft³) x area (ft²)])

Where precip (ft) is the measured amount from local rain guage, and volume (ft³) is the measured discharge, and area (ft²) is the watershed area

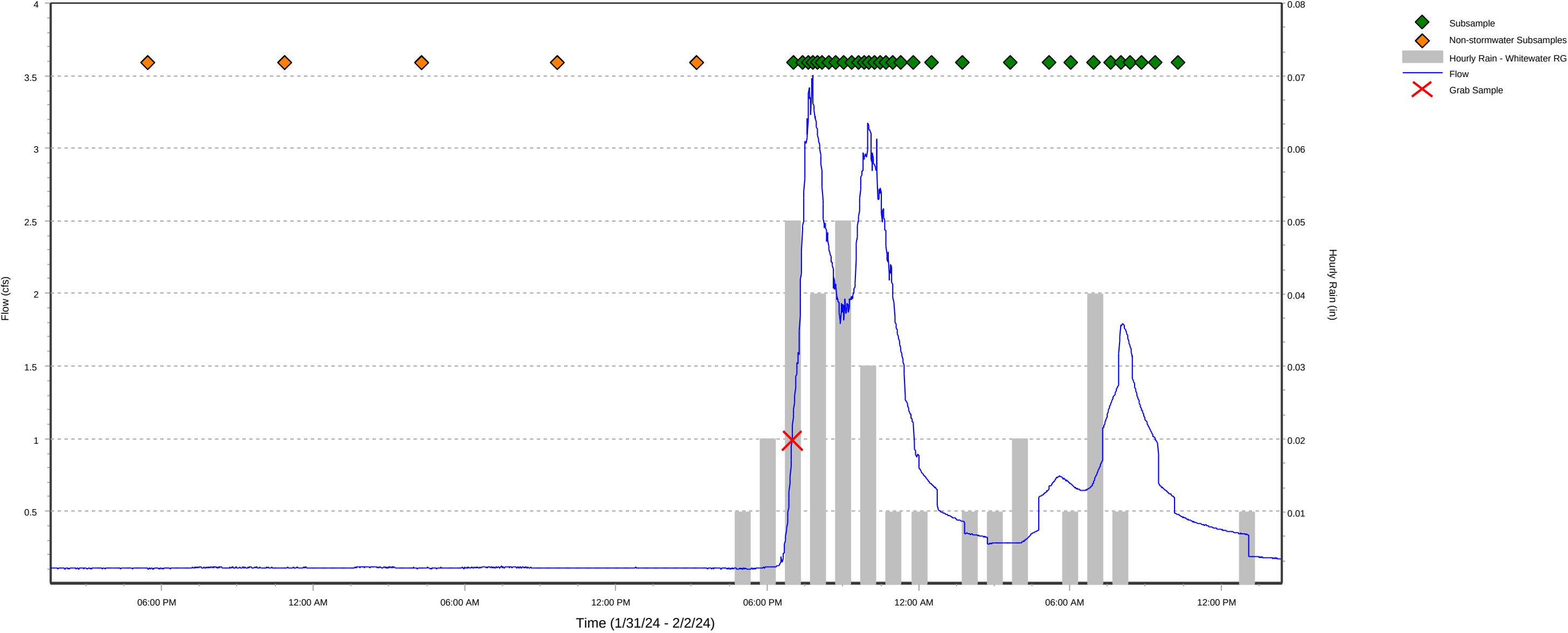
Expected volume (ft³) = RC x expected precip (ft) x area (ft²)

Attachment B: Storm Event Hydrographs

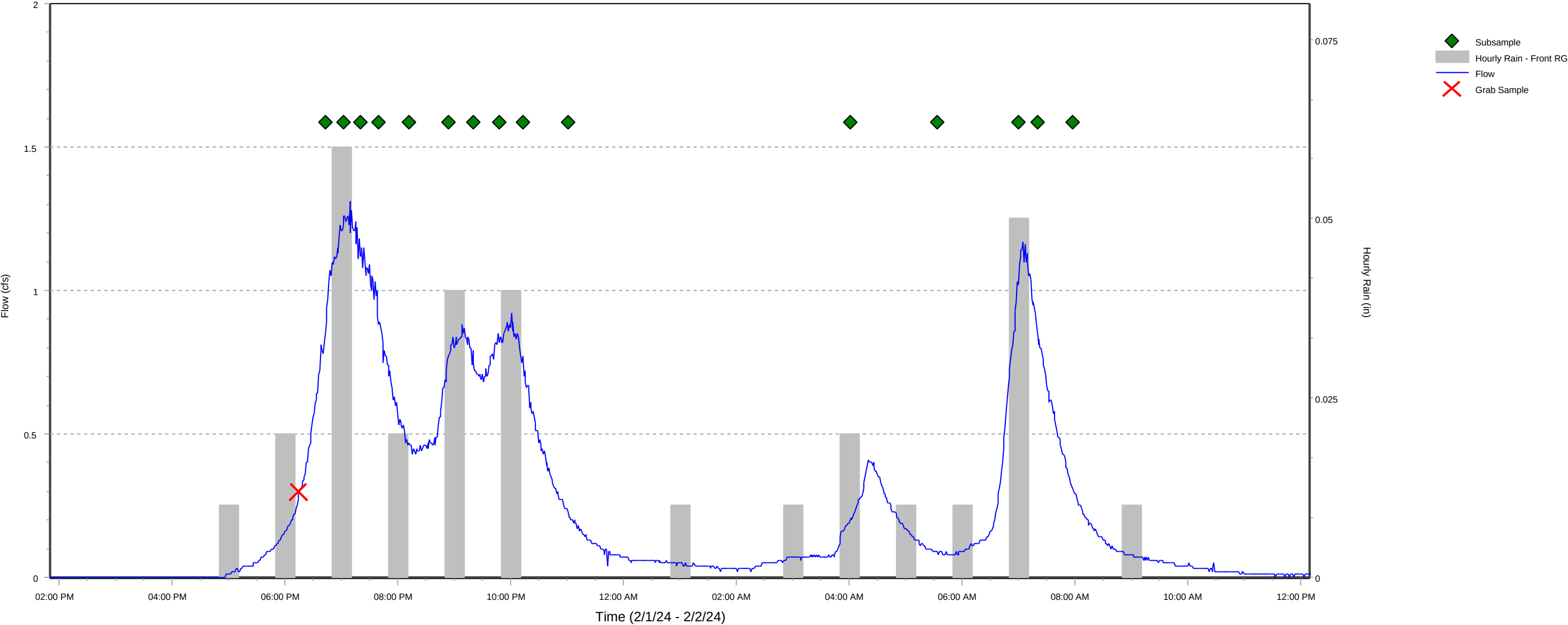
Lucky Hydrograph



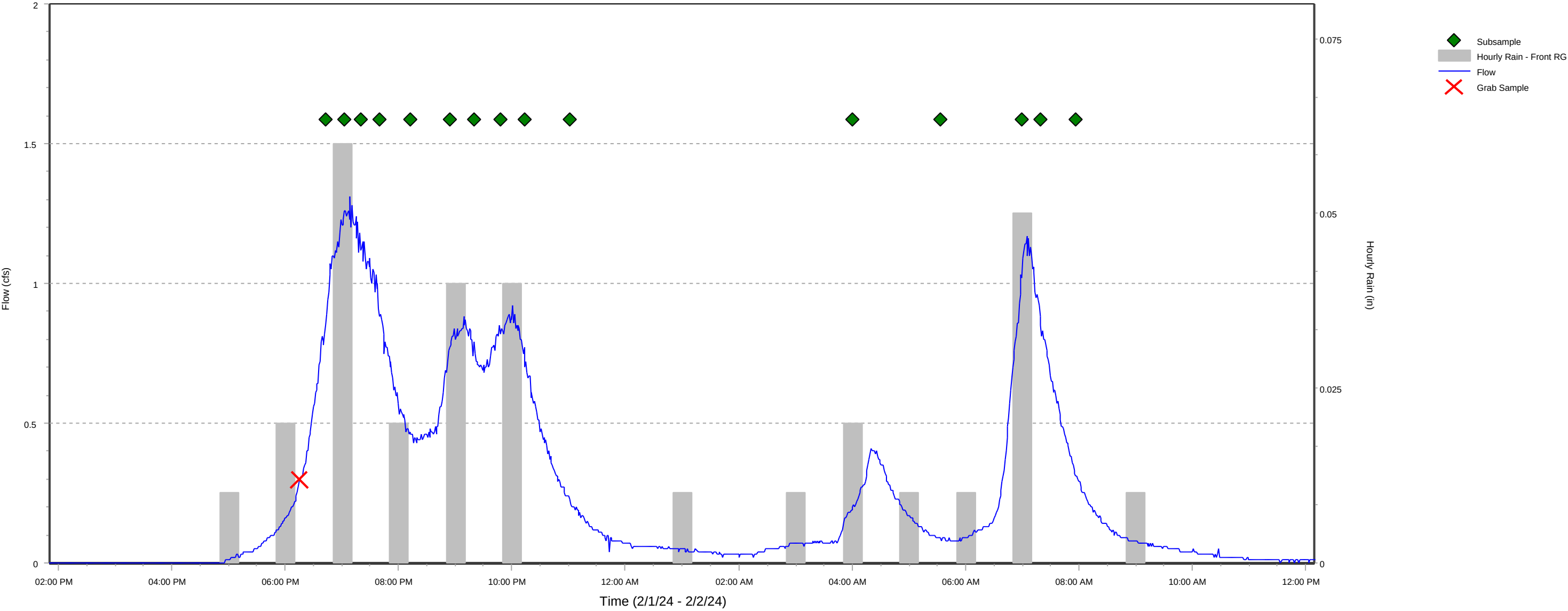
Whitewater Hydrograph



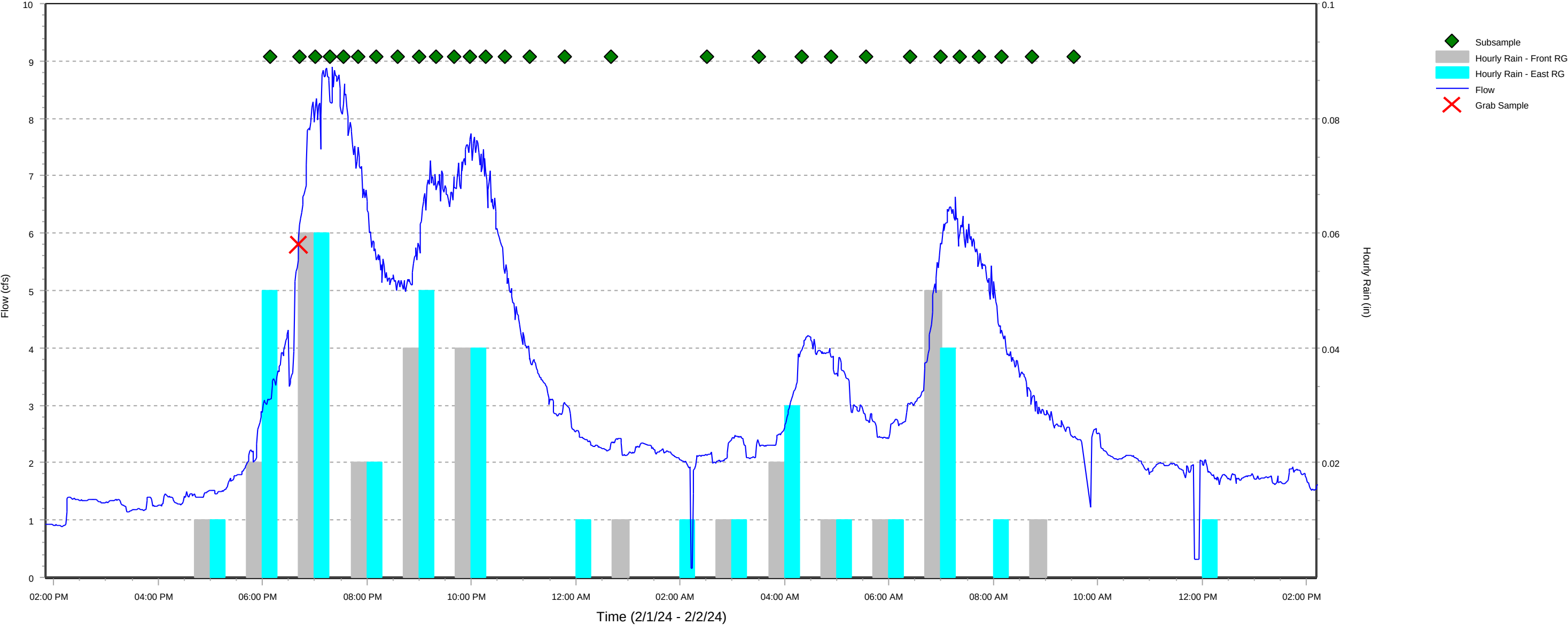
Main Hydrograph



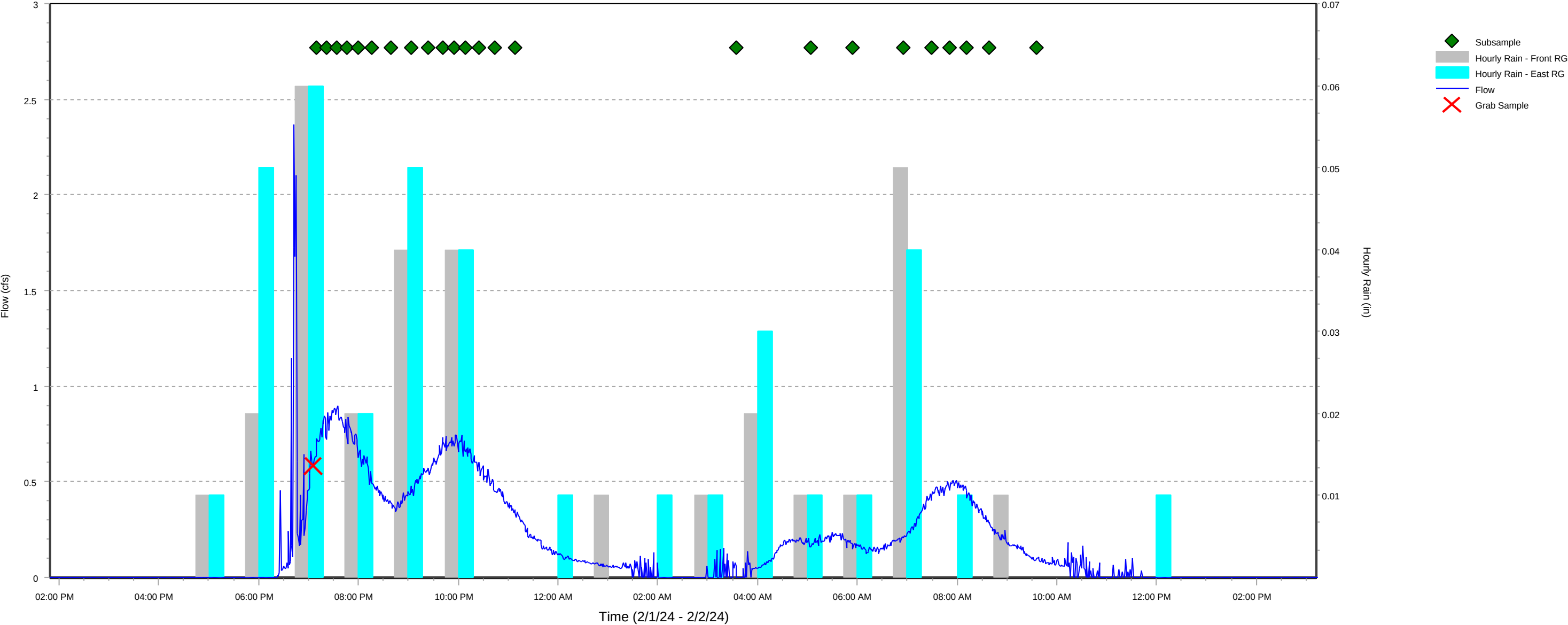
Main Hydrograph



Americana Hydrograph



AS_6 Hydrograph



Attachment C: Field Forms

Grab Sample Data Form

STATION: Lucky 1800
 Personnel: Tim / Chad Date/Time On-Site: 1800 2/1/24

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1807	1.96"	2.55	.06	12.8	2/1/24 1800	

Grab Information				
	Sample ID	Date	Time	Labeled?
Site E.Coli	240201-03 -WG	2/1/24	1825	☒
Field Duplicate E.Coli	240201-03 -101	2/1/24	1830	☒
Field Blank E.Coli	240201-03 -001	2/1/24	1830	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
1019508	1819	14.62	4.92	7.15	593.29

MP11

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	0/0

Comments:

Grab Sample Data Form

STATION: White Water

Personnel: Chad Tim Date/Time On-Site: 2/1/24 1846

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1846	2.79	.27	0.67	—		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site E.Coli	24020111 -WG	2/1/24	1859	☒
Field Duplicate E.Coli	-101			☐
Field Blank E.Coli	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
1019508 MP11	1855	11.10	8.42	7.60	287.02

Sampler Current Status	
First Subsample Date/Time	05/28 2/1/24 1337
Last Subsample Date/Time	2/1/24 1904
# of Subsamples taken	6

Comments:

Grab Sample Data Form

STATION: Main

Personnel: MB, KC Date/Time On-Site: 1804 2/1/24

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1804	3.17"	79.57	0.64	12.7		

Grab Information					
	Sample ID		Date	Time	Labeled?
Site <i>E. Coli</i>	240201-12	-WG	2/1/24	1815	☒
Field Duplicate <i>E. Coli</i>	240201-12	-101	2/1/24	1818	☒
Field Blank <i>E. Coli</i>	240201-12	-001	2/1/24	1812	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	1819	6.3	10.11	8.03	353.6

Sampler Current Status	
First Subsample Date/Time	NA
Last Subsample Date/Time	
# of Subsamples taken	NA

Comments:

main - alternate QC site. lucky grab QC successful, so main QC discarded and not submitted to lab. wh

Grab Sample Data Form

STATION: Americana

03/01/2024

Personnel: MB, VC

Date/Time On-Site: 1835

~~020724~~ 03/01/24

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1835	8.54	3.29	2.172	12.1		

Grab Information					
	Sample ID	Date	Time	Labeled?	
Site <i>E.Coli</i>	24020514 -WG	2/1/24	1841	☒	
Field Duplicate <i>E.Coli</i>	-101			☐	
Field Blank <i>E.Coli</i>	-001			☐	

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	1845	8.34	10.05	7.73	552.2

Sampler Current Status	
First Subsample Date/Time	1811 03/01/24
Last Subsample Date/Time	
# of Subsamples taken	1

Comments:

Offsite @ 1850

Grab Sample Data Form

STATION: AS-6

Personnel: MB-KC Date/Time On-Site: 02/01/2024 1855

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1911	4.67	0.71	1.76	12.5		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E. Coli</i>	240201-20 -WG	02/01/2024	1900	☒
Field Duplicate <i>E. Coli</i>	-101			☐
Field Blank <i>E. Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MPO7	1910	5.55	9.33	8.03	540.9

Sampler Current Status	
First Subsample Date/Time	1846 02/01/24
Last Subsample Date/Time	1909 02/01/24
# of Subsamples taken	2 (1 missed)

Comments:

missed sample #
 first sub sample had rinse error
 cleaned leaves of rinse tubing
 offsite @ 1913

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: Lucky

SET UP

Personnel: MB, SJ, TA, JC, KC

Date/Time: Jan 31, 24 11:00

On-Site: Jan 31, 24 11:00

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
11:00	1.00	0.00	0.00	13.0
11:31	1.08	0.00/min	0.00	13.0
Enable Condition or Velocity Cutoff:			2.00	2.08" (ML)
Deadband:			1"	
Trigger Volume:			7899 gal	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

liquid detection sensor knob keeps falling off

SHUT DOWN

Personnel: ST

Date/Time: 2/5/24 12:28

On-Site: 2/5/24 12:28

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
12:30	1.74	0.00	0.00		12.3
Downloaded to:		Stevens USB			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky
 Personnel: KC, SP

Bottle 1 of 1
 Date/Time On-Site: 2/1/24 2032

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240201-03</u> , -WC
Approx Sample Volume (mL): <u>7250 ml</u>
Clarity (ex. Clear, Cloudy, Silty): <u>clear</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	2/1/24 1942	Success	13	0926	1
2	2/1/24 2007		14		
3	2039		15		
4	2059		16		
5	2114		17		
6	2130		18		
7	2148		19		
8	2209		20		
9	2242		21		
10	2/2/24 2:0104		22		
11	0502		23		
12	0734		24		

Comments:

If sampling is complete: ☒ Power off sampler, if separate from flowmeter ☒ Keep flowmeter running ☒ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle, add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

TATION: White water

SET UP

Personnel: ST, MB, TA, ST, KC

Date/Time

On-Site: 1/31/24 11:53

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
11:53	1.52	0.11	0.063	—
Enable Condition:		2.55		
Hysteresis:		1		
Flow Pulse Interval:		218.5		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 1/31/24 11:57
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

Time off site 12:22

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 2/5/24 13:13

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
13:13	1.84	0.03	0.14	—
Downloaded to:		Sitewens USB		

On-Site

- ☐ Replace flowmeter battery
- ☐ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 2/5 13:14
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: upstream
Personnel: VC, ST

Bottle 1 of 2

Date/Time On-Site: _____

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	240201-11- 10 -WC
Approx Sample Volume (mL):	12500
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Brown
QA/QC Sample ID:	240201-11 -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	1/1/24 1337	Success	13	1654	
2	1 1904		14	1713	
3	1/2/24 0028		15	1731	
4	552		16	1749	
5	1122		17	1802	
6	1513		18	1814	
7	1536		19	1826	
8	1548		20	1839	
9	1551		21	1853	
10	1610		22	1909	
11	1622		23	1930	
12	1637		24	1958	

Comments: Samples taken successfully. Timing does not make sense
Collected subsample times from flowmeter to submit to lab,
Actual begin time: 2/1/24 4:16 - 2/1/24 2346

Post storm determined FM+SA not sync'd for time during setup. ugh

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2/2/24 0004</u> ☒ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: VC, ST

Bottle 2 of 2
 Date/Time On-Site: 2/2/24 1040

☒ Halt Sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240201-11-</u> -WC
Approx Sample Volume (mL): <u>4500</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Tan cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: <u>-103</u> (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	<u>2/2/24 0032</u>	<u>Success</u>	13		
2	<u>0143</u>		14		
3	<u>0338</u>		15		
4	<u>0511</u>		16		
5	<u>0602</u>		17		
6	<u>0657</u>		18		
7	<u>0736</u>		19		
8	<u>0802</u>		20		
9	<u>0823</u>		21		
10	<u>0849</u>		22		
11	<u>0922</u>		23		
12	<u>1016</u>		24		

Comments: Date/time on sampler is incorrect. Real subsample times are on the flowmeter.

Debris caught on flowmeter 2/2/24 1049

Post-storm determined Fm+SA not sync'd for time during setup. un

If sampling is complete:

- ☒ Power off sampler
- ☒ Verify flowmeter is running
- ☒ Add ice to sample transport cooler
- ☒ Complete COC form; arrange transport to lab

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: Main

SET UP

Personnel: SJ, TA, MB, ST, KC

Date/Time

On-Site: 1/31/24 13:18

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
13:41	1.05	10.46 gpm	0.27	12.9 SJ
13:45	1.06	0.00 gpm	0.00	12.9
Enable Condition or Velocity Cutoff:			0.02 SS	2.00
Deadband:			1	
Trigger Volume:			9313	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 2/5/24 1328

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1328	0.88	0.00 gpm	0.000		12.4
Downloaded to:		Stevens USB			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Main
 Personnel: ST KC

Bottle 1 of 1
 Date/Time On-Site: 2/1/24 2110

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>ST 231240201-12</u> -WC
Approx Sample Volume (mL):	<u>10250 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Silty, Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/1/24 1843</u>	<u>Success</u>	13	<u>0700</u>	
2	<u>1903</u>		14	<u>0720</u>	
3	<u>1920</u>		15	<u>0757</u>	
4	<u>1940</u>		16		
5	<u>2012</u>		17		
6	<u>2054</u>		18		
7	<u>2120</u>		19		
8	<u>2148</u>		20		
9	<u>2213</u>		21		
10	<u>2301</u>		22		
11	<u>2/2/24 0401</u>		23		
12	<u>1 0534</u>		24		

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning
- Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

TATION: Americana

SET UP

Personnel: ST, KC, TA, MB, SJ

Date/Time

On-Site: 1/31/24 1404

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1406	5.13	1.36	1.881	12.5
Enable Condition:		6.46		
Hysteresis:		1		
Flow Pulse Interval:		8071 c/s		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 1/31/24 1411
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

offsite 14:40

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 2/5/24 13:55

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1356	5.58	1.54	1.885	11.82
Downloaded to:		Stevens USB		

On-Site

- ☒ Replace flowmeter battery
- ☐ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 2/5 1357
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Americana
 Personnel: ST, KC

Bottle 1 of 2
 Date/Time On-Site: 2/1/24 2123

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240201-14</u> -WC
Approx Sample Volume (mL):	<u>9500 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/1/24 1811</u>	<u>Success</u>	13	<u>2/1/24 220920</u>	
2	<u>1845</u>		14	<u>2249220</u>	
3	<u>1904 1845</u>		15	<u>2311 2242</u>	
4	<u>1921 1904</u>		16	<u>2351 2311</u>	
5	<u>1937 1921</u>		17	<u>2421 2351</u>	
6	<u>1953 1937</u>		18	<u>2421 24045</u>	
7	<u>2013 1953</u>		19		
8	<u>2038 2013</u>		20		
9	<u>2103 2038</u>		21		
10	<u>2123 2103</u>		22		
11	<u>2144 2123</u>		23		
12	<u>2022 2144</u>		24		

Comments: Accidentally turned off sampler + it restarted the program. Chose to put on new bottle since we had to start program from the beginning.

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2/2/24 101</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

STATION: Americana
 Personnel: ST. ICC

Composite Sample Collection

Bottle 2 of 2
 Date/Time On-Site: 2/2/24 0940

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240201-14-WC</u> -WC
Approx Sample Volume (mL):	<u>5000mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Tan</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/2/24 0233</u>	<u>Success</u>	13		
2	<u>0334</u>		14		
3	<u>0423</u>		15		
4	<u>0457</u>		16		
5	<u>0538</u>		17		
6	<u>0627</u>		18		
7	<u>0702</u>		19		
8	<u>0724</u>		20		
9	<u>0746</u>		21		
10	<u>0812</u>		22		
11	<u>0848</u>		23		
12	<u>0936</u>		24		

Comments:

If sampling is complete: ☒ Power off sampler, if separate from flowmeter ☒ Keep flowmeter running ☒ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: AS_6

SET UP

Personnel: SJ, TAMB, ST, KL

Date/Time

On-Site: 1/31/24 1454

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1503	0.0	0.0	0.0	12.4
Enable Condition or Velocity Cutoff:			0.02	
Deadband:			1	
Trigger Volume:			6.02 601cf	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments: Time off site: 1512

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 2/6/24 0941

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
0943	0.000	0.00	0.00	88302	11.3
Downloaded to:		Rugged6			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6
 Personnel: KC, ST

Bottle 1 of 2

Date/Time On-Site: _____

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240201-206</u> -WC
Approx Sample Volume (mL): <u>19400</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	21/24 1846	Rinse error	13	21/24 2209	Success
2	1909	Success	14	2225	
3	1922		15	2244	
4	1934		16	2308	
5	1946		17	2353	diagnostic error
6	2000		18		
7	2016		19		
8	2039		20		
9	2104		21		
10	2124		22		
11	2141		23		
12	2155		24		

Comments: Bottle completely full to rim. New bottle installed & program restarted.

If sampling is complete:

- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☒ Keep flowmeter running
- ☒ Install new 15L bottle, add ice
- ☒ Restart program from beginning

Date/Time Restarted: 21/24 0635

- ☒ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

15"

Composite Sample Collection

STATION: AS-6
 Personnel: KC, ST

Bottle 2 of 2
 Date/Time On-Site: 2/2/24 1005

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240201-206</u> -WC
Approx Sample Volume (mL): <u>5000 ml</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/2/24 0835</u>	<u>Success</u>	13		
2	<u>0904</u>		14		
3	<u>0554</u>		15		
4	<u>0606</u>		16		
5	<u>0729</u>		17		
6	<u>0751</u>		18		
7	<u>0812</u>		19		
8	<u>0839</u>		20		
9	<u>0936</u>		21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete: ☒ Power off sampler, if separate from flowmeter ☒ Keep flowmeter running ☒ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Attachment D: Storm Event Analytical Reports

Report Date: 02/12/2024 16:32



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00327-01	ACST1B	240201-03-WG	Water		02/01/2024	02/02/2024
AC00327-02	ACST1B	240201-03-101	Water		02/01/2024	02/02/2024
AC00327-03	ACST1B	240201-03-001	Water		02/01/2024	02/02/2024
AC00327-04	ACST1B	240201-11-WG	Water		02/01/2024	02/02/2024
AC00327-05	ACST1B	240201-12-WG	Water		02/01/2024	02/02/2024
AC00327-06	ACST1B	240201-14-WG	Water		02/01/2024	02/02/2024
AC00327-07	ACST1B	240201-206-WG	Water		02/01/2024	02/02/2024

Report Date: 02/12/2024 16:32



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 18:25
Lab Number: AC00327-01
Sample Type: Grab

Location Description: 240201-03-WG
Sample Collector: T.A
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B240390	<1.0MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/02/24 06:23	2/3/24 8:23	MEC	H U	
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod	02/02/24	2/2/24 7:05	LRF		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 02/12/2024 16:32



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Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 12:00
Lab Number: AC00327-02
Sample Type: Grab

Location Description: 240201-03-101
Sample Collector: T.A
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst		
				MDL *	MDL				Initials	Qualifier	
Microbiology											
E. Coli	B240390	2.0MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/02/24 07:23	2/3/24 8:23	MEC	H	
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod	02/02/24	2/2/24 7:18	LRF		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 02/12/2024 16:32



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Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 12:00
Lab Number: AC00327-03
Sample Type: Grab

Location Description: 240201-03-001
Sample Collector: T.A
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method		Prepared	Analyzed	Analyst	
				MDL *	MDL	Reference				Initials	Qualifier
Microbiology											
E. Coli	B240390	<1.0MPN/100 mL		1.0	1.0	IDEXX - Colilert		02/02/24 07:23	2/3/24 8:23	MEC	H U
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod		02/02/24	2/2/24 7:18	LRF	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 02/12/2024 16:32



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Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 18:59
Lab Number: AC00327-04
Sample Type: Grab

Location Description: 240201-11-WG
Sample Collector: C.S
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst		
				MDL *	MDL				Initials	Qualifier	
Microbiology											
E. Coli	B240390	68.9MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/02/24 06:34	2/3/24 8:23	MEC	H	
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod	02/02/24	2/2/24 7:09	LRF		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 02/12/2024 16:32



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Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 18:15
Lab Number: AC00327-05
Sample Type: Grab

Location Description: 240201-12-WG
Sample Collector: K.C
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst		
				MDL *	MDL				Initials	Qualifier	
Microbiology											
E. Coli	B240390	238.2 MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/02/24 06:10	2/3/24 8:23	MEC	H	
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod	02/02/24	2/2/24 7:05	LRF		

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Report Date: 02/12/2024 16:32



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Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 18:41
Lab Number: AC00327-06
Sample Type: Grab

Location Description: 240201-14-WG
Sample Collector: M.B
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B240390	65.0MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/02/24 06:28	2/3/24 8:23	MEC	H	
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod	02/02/24	2/2/24 7:05	LRF		

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 02/12/2024 16:32



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Analysis Report

Location: ACST1B
Date/Time Collected: 02/01/2024 19:06
Lab Number: AC00327-07
Sample Type: Grab

Location Description: 240201-206-WG
Sample Collector: K.C
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst		
				MDL *	MDL				Reference	Initials	Qualifier
Microbiology											
E. Coli	B240390	290.9 MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/02/24 06:58	2/3/24 8:23	MEC	H	
Wet Chemistry											
Chlorine Screen	B240392	Absent				SM 4500-CL G-2000 mod	02/02/24	2/2/24 7:09	LRF		

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Report Date: 02/12/2024 16:32



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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B240390									
Blank (B240390-BLK1)									
E. Coli	Absent						02/03/2024	MEC	
LCS (B240390-BS1)									
E. Coli				Present			02/03/2024	MEC	
Duplicate (B240390-DUP1) Source ID: AC00327-07									
E. Coli					Pass	128	02/03/2024	MEC	



Notes and Definitions

Item	Definition
H	Hold time Exceeded.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order:

63065628

Project: Stormwater-PI

Sampler(s):

Kristen Chisholm
Chad Schwend
Tim Anderson
Michael Bule

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coll - IDEXX Colliert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
AC00327																								
-01	2/1/24		1825		240201-03-WG	TA	X	X										X						1
-02	2/1/24		1200		240201-03-101	TA	X	X										X						1
-03	2/1/24		1200		240201-03-001	TA	X	X										X						1
-04	2/1/24		1859		240201-11- 400 WG	CS	X	X										X						1
-05	2/1/24		1815		240201-12-WG	KC	X	X										X						1
-06	2/1/24		1841		240201-14-WG	MB	X	X										X						1
-07	2/1/24		1906		240201-206-WG	KC	X	X										X						1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Kristen Chisholm</i>	2/1/2024 1957	<i>Chad Schwend</i> 2/1/24 1957	
<i>Chad Schwend</i>	2/1/2024 2032	<i>Tim Anderson</i> 2-2-24 0601	

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00329-01	ACST1C	240201-12-WC	Water		02/02/2024	02/02/2024
AC00329-02	ACST1C	240201-14-WC	Water		02/02/2024	02/02/2024
AC00329-03	ACST1C	240201-206-WC	Water		02/02/2024	02/02/2024
AC00329-04	ACST1C	240201-03-WC	Water		02/02/2024	02/02/2024
AC00329-05	ACST1C	240201-11-WC	Water		02/02/2024	02/02/2024
AC00329-06	ACST1C	240201-11-103	Water		02/02/2024	02/02/2024

Revised Report



Boise City Public Works
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Analysis Report

Location: ACST1C

Location Description: 240201-12-WC

Date/Time Collected: 02/01/2024 18:43 - 02/02/2024 07:57

Lab Number: AC00329-01

Sample Collector: S.T

Sample Type: Composite

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240477	351		35.0	35.0	SM 4500-NH3 D-2011	02/09/24	2/9/24 9:02	ALN	
BOD5	B240404	5.74	mg/L	2.00	2.00	SM 5210 B-2016	02/03/24	2/8/24 9:58	ASE	
Chloride	B240518	12.7	mg/L	0.0800	0.0800	EPA 300.0, Rev. 2.1 (1993)	02/12/24	2/12/24 17:58	BAK	
COD	B240401	77.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/03/24	2/3/24 10:18	RKT	
Nitrate-Nitrite, as N	B240479	0.209	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/09/24	2/9/24 11:13	RKT	
TKN	B240548	1.12	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	02/15/24	2/16/24 9:56	JAL	
Total Dissolved Solids	B240407	64.2	mg/L	20.0	20.0	SM 2540 C-2015	02/02/24	2/6/24 11:51	ASE	
Total Suspended Solids	B240408	59.8	mg/L	0.900	0.900	SM 2540 D-2015	02/04/24	2/4/24 12:48	CLH	
Turbidity	B240400	103	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/02/24	2/2/24 13:26	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240398	0.0557	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:25	RKT	
Total Metals										
Mercury	B240440	0.0112	ug/L	0.0100	0.0100	EPA 245.1	02/07/24	2/8/24 8:20	SAS	
Arsenic	B240405	1.4	ug/L	0.070	0.070	EPA 200.8	02/04/24	2/8/24 13:37	DMW	
Cadmium	B240405	0.066	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:37	DMW	
Calcium	B240429	4.17	mg/L	0.0400	0.0400	EPA 200.7	02/06/24	2/8/24 11:51	AMO	
Lead	B240405	4.1	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:37	DMW	
Magnesium	B240429	1930	ug/L	80.0	80.0	EPA 200.7	02/06/24	2/8/24 11:51	AMO	
Phosphorus as P	B240429	0.143	mg/L	0.0120	0.0120	EPA 200.7	02/06/24	2/8/24 11:51	AMO	
Hardness	B240429	18.3	mg/L	0.100	0.100	SM 2340 B-2011	02/06/24	2/8/24 11:51	AMO	
Dissolved Metals										
Cadmium	B240406	0.012	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/4/24 14:36	DMW	
Copper	B240406	3.6	ug/L	0.15	0.15	EPA 200.8	02/04/24	2/4/24 14:36	DMW	
Lead	B240406	0.084	ug/L	9.00E-3	9.00E-3	EPA 200.8	02/04/24	2/4/24 14:36	DMW	
Zinc	B240406	18.4	ug/L	0.50	0.50	EPA 200.8	02/04/24	2/4/24 14:36	DMW	

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Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Analysis Report

Location: ACST1C

Location Description: 240201-14-WC

Date/Time Collected: 02/01/2024 18:11 - 02/02/2024 09:36

Lab Number: AC00329-02

Sample Collector: S.T

Sample Type: Composite

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240477	193		35.0	35.0	SM 4500-NH3 D-2011	02/09/24	2/9/24 9:10	ALN	
BOD5	B240404	6.98	mg/L	2.00	2.00	SM 5210 B-2016	02/03/24	2/8/24 9:52	ASE	
Chloride	B240518	64.1	mg/L	0.0800	0.0800	EPA 300.0, Rev. 2.1 (1993)	02/12/24	2/12/24 18:24	BAK	
COD	B240401	55.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/03/24	2/3/24 10:18	RKT	
Nitrate-Nitrite, as N	B240479	0.905	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/09/24	2/9/24 11:14	RKT	
TKN	B240548	1.05	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	02/15/24	2/16/24 10:01	JAL	
Total Dissolved Solids	B240407	224	mg/L	20.0	20.0	SM 2540 C-2015	02/02/24	2/6/24 11:52	ASE	
Total Suspended Solids	B240408	50.7	mg/L	0.900	0.900	SM 2540 D-2015	02/04/24	2/4/24 12:04	CLH	
Turbidity	B240400	89.6	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/02/24	2/2/24 13:47	LRF	D

Dissolved Wet Chemistry

Orthophosphate, as P	B240398	0.116	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:26	RKT	
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Total Metals

Mercury	B240440	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	02/07/24	2/8/24 8:23	SAS	U
Arsenic	B240405	3.4	ug/L	0.070	0.070	EPA 200.8	02/04/24	2/8/24 13:47	DMW	
Cadmium	B240405	0.063	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:47	DMW	
Calcium	B240429	27.3	mg/L	0.0400	0.0400	EPA 200.7	02/06/24	2/8/24 11:54	AMO	
Lead	B240405	4.2	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:47	DMW	
Magnesium	B240429	6070	ug/L	80.0	80.0	EPA 200.7	02/06/24	2/8/24 11:54	AMO	
Phosphorus as P	B240429	0.213	mg/L	0.0120	0.0120	EPA 200.7	02/06/24	2/8/24 11:54	AMO	
Hardness	B240429	93.3	mg/L	0.100	0.100	SM 2340 B-2011	02/06/24	2/8/24 11:54	AMO	

Dissolved Metals

Cadmium	B240406	0.016	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/4/24 14:39	DMW	
Copper	B240406	3.4	ug/L	0.15	0.15	EPA 200.8	02/04/24	2/4/24 14:39	DMW	
Lead	B240406	0.090	ug/L	9.00E-3	9.00E-3	EPA 200.8	02/04/24	2/4/24 14:39	DMW	
Zinc	B240406	17.3	ug/L	0.50	0.50	EPA 200.8	02/04/24	2/4/24 14:39	DMW	

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Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1C
Date/Time Collected: 02/01/2024 19:09 - 02/02/2024 09:36
Lab Number: AC00329-03
Sample Type: Composite

Location Description: 240201-206-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240477	159		35.0	35.0	SM 4500-NH3 D-2011	02/09/24	2/9/24 9:08	ALN	
BOD5	B240404	11.6	mg/L	2.00	2.00	SM 5210 B-2016	02/03/24	2/8/24 9:47	ASE	
Chloride	B240518	14.5	mg/L	0.0800	0.0800	EPA 300.0, Rev. 2.1 (1993)	02/12/24	2/12/24 19:17	BAK	
COD	B240401	108	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/03/24	2/3/24 10:18	RKT	
Nitrate-Nitrite, as N	B240479	0.191	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/09/24	2/9/24 11:15	RKT	
TKN	B240548	1.83	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	02/15/24	2/16/24 10:02	JAL	
Total Dissolved Solids	B240407	116	mg/L	20.0	20.0	SM 2540 C-2015	02/02/24	2/6/24 11:53	ASE	
Total Suspended Solids	B240408	70.3	mg/L	0.900	0.900	SM 2540 D-2015	02/04/24	2/4/24 12:49	CLH	
Turbidity	B240400	143	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:01	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240398	0.285	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:27	RKT	
Total Metals										
Mercury	B240440	0.0168	ug/L	0.0100	0.0100	EPA 245.1	02/07/24	2/8/24 8:27	SAS	
Arsenic	B240405	3.0	ug/L	0.070	0.070	EPA 200.8	02/04/24	2/8/24 13:50	DMW	
Cadmium	B240405	0.077	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:50	DMW	
Calcium	B240429	3.33	mg/L	0.0400	0.0400	EPA 200.7	02/06/24	2/8/24 11:57	AMO	
Lead	B240405	6.7	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:50	DMW	
Magnesium	B240429	2060	ug/L	80.0	80.0	EPA 200.7	02/06/24	2/8/24 11:57	AMO	
Phosphorus as P	B240429	0.464	mg/L	0.0120	0.0120	EPA 200.7	02/06/24	2/8/24 11:57	AMO	
Hardness	B240429	16.8	mg/L	0.100	0.100	SM 2340 B-2011	02/06/24	2/8/24 11:57	AMO	
Dissolved Metals										
Cadmium	B240406	0.013	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/4/24 14:48	DMW	
Copper	B240406	4.5	ug/L	0.15	0.15	EPA 200.8	02/04/24	2/4/24 14:48	DMW	
Lead	B240406	0.29	ug/L	9.00E-3	9.00E-3	EPA 200.8	02/04/24	2/4/24 14:48	DMW	
Zinc	B240406	10.5	ug/L	0.50	0.50	EPA 200.8	02/04/24	2/4/24 14:48	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1C

Location Description: 240201-03-WC

Date/Time Collected: 02/01/2024 19:42 - 02/02/2024 09:26

Lab Number: AC00329-04

Sample Collector: S.T

Sample Type: Composite

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240477	173		35.0	35.0	SM 4500-NH3 D-2011	02/09/24	2/9/24 9:05	ALN	
BOD5	B240404	7.27	mg/L	2.00	2.00	SM 5210 B-2016	02/03/24	2/8/24 9:43	ASE	
Chloride	B240518	6.25	mg/L	0.0800	0.0800	EPA 300.0, Rev. 2.1 (1993)	02/12/24	2/12/24 19:43	BAK	
COD	B240401	39.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/03/24	2/3/24 10:18	RKT	
Nitrate-Nitrite, as N	B240479	0.204	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/09/24	2/9/24 11:16	RKT	
TKN	B240548	0.894	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	02/15/24	2/16/24 10:03	JAL	
Total Dissolved Solids	B240407	52.8	mg/L	20.0	20.0	SM 2540 C-2015	02/04/24	2/6/24 11:55	ASE	
Total Suspended Solids	B240408	18.8	mg/L	0.900	0.900	SM 2540 D-2015	02/04/24	2/4/24 13:41	CLH	
Turbidity	B240400	60.5	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/02/24	2/2/24 13:33	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240398	0.100	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:28	RKT	
Total Metals										
Mercury	B240440	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	02/07/24	2/8/24 7:41	SAS	U
Arsenic	B240405	0.85	ug/L	0.070	0.070	EPA 200.8	02/04/24	2/8/24 13:52	DMW	
Cadmium	B240405	0.024	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:52	DMW	
Calcium	B240429	4.01	mg/L	0.0400	0.0400	EPA 200.7	02/06/24	2/8/24 12:00	AMO	
Lead	B240405	0.82	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:52	DMW	
Magnesium	B240429	1460	ug/L	80.0	80.0	EPA 200.7	02/06/24	2/8/24 12:00	AMO	
Phosphorus as P	B240429	0.174	mg/L	0.0120	0.0120	EPA 200.7	02/06/24	2/8/24 12:00	AMO	
Hardness	B240429	16.0	mg/L	0.100	0.100	SM 2340 B-2011	02/06/24	2/8/24 12:00	AMO	
Dissolved Metals										
Cadmium	B240406	<0.0100	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/4/24 14:51	DMW	U
Copper	B240406	2.0	ug/L	0.15	0.15	EPA 200.8	02/04/24	2/4/24 14:51	DMW	
Lead	B240406	0.056	ug/L	9.00E-3	9.00E-3	EPA 200.8	02/04/24	2/4/24 14:51	DMW	
Zinc	B240406	17.5	ug/L	0.50	0.50	EPA 200.8	02/04/24	2/4/24 14:51	DMW	

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Revised Report



Boise City Public Works
Water Quality Laboratory
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Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1C

Location Description: 240201-11-WC

Date/Time Collected: 02/01/2024 04:16 - 02/02/2024 10:16

Lab Number: AC00329-05

Sample Collector: S.T

Sample Type: Composite

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240477	169		35.0	35.0	SM 4500-NH3 D-2011	02/09/24	2/9/24 9:39	ALN	
BOD5	B240404	9.34	mg/L	2.00	2.00	SM 5210 B-2016	02/03/24	2/8/24 9:37	ASE	
Chloride	B240518	35.6	mg/L	0.0800	0.0800	EPA 300.0, Rev. 2.1 (1993)	02/12/24	2/12/24 20:10	BAK	
COD	B240401	82.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/03/24	2/3/24 10:18	RKT	
Nitrate-Nitrite, as N	B240479	0.375	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/09/24	2/9/24 11:17	RKT	
TKN	B240548	1.33	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	02/15/24	2/16/24 10:04	JAL	
Total Dissolved Solids	B240407	139	mg/L	20.0	20.0	SM 2540 C-2015	02/02/24	2/6/24 11:56	ASE	
Total Suspended Solids	B240408	58.4	mg/L	0.900	0.900	SM 2540 D-2015	02/04/24	2/4/24 12:51	CLH	
Turbidity	B240400	106	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:08	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240398	0.171	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:30	RKT	
Total Metals										
Mercury	B240440	0.0148	ug/L	0.0100	0.0100	EPA 245.1	02/07/24	2/8/24 8:30	SAS	
Arsenic	B240405	2.4	ug/L	0.070	0.070	EPA 200.8	02/04/24	2/8/24 13:54	DMW	
Cadmium	B240405	0.058	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:54	DMW	
Calcium	B240429	10.0	mg/L	0.0400	0.0400	EPA 200.7	02/06/24	2/8/24 12:03	AMO	
Lead	B240405	4.8	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:54	DMW	
Magnesium	B240429	4370	ug/L	80.0	80.0	EPA 200.7	02/06/24	2/8/24 12:03	AMO	
Phosphorus as P	B240429	0.321	mg/L	0.0120	0.0120	EPA 200.7	02/06/24	2/8/24 12:03	AMO	
Hardness	B240429	43.0	mg/L	0.100	0.100	SM 2340 B-2011	02/06/24	2/8/24 12:03	AMO	
Dissolved Metals										
Cadmium	B240406	<0.0100	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/4/24 14:53	DMW	U
Copper	B240406	3.9	ug/L	0.15	0.15	EPA 200.8	02/04/24	2/4/24 14:53	DMW	
Lead	B240406	0.18	ug/L	9.00E-3	9.00E-3	EPA 200.8	02/04/24	2/4/24 14:53	DMW	
Zinc	B240406	25.7	ug/L	0.50	0.50	EPA 200.8	02/04/24	2/4/24 14:53	DMW	

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Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1C
Date/Time Collected: 02/02/2024 04:16 - 02/02/2024 10:16
Lab Number: AC00329-06
Sample Type: Composite

Location Description: 240201-11-103
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240477	170		35.0	35.0	SM 4500-NH3 D-2011	02/09/24	2/9/24 9:36	ALN	
BOD5	B240404	8.90	mg/L	2.00	2.00	SM 5210 B-2016	02/03/24	2/8/24 9:34	ASE	
Chloride	B240518	35.6	mg/L	0.0800	0.0800	EPA 300.0, Rev. 2.1 (1993)	02/12/24	2/12/24 20:36	BAK	
COD	B240401	83.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/03/24	2/3/24 10:18	RKT	
Nitrate-Nitrite, as N	B240479	0.378	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/09/24	2/9/24 11:19	RKT	
TKN	B240548	1.35	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	02/15/24	2/16/24 10:06	JAL	
Total Dissolved Solids	B240407	140	mg/L	20.0	20.0	SM 2540 C-2015	02/02/24	2/6/24 11:57	ASE	
Total Suspended Solids	B240408	53.8	mg/L	0.900	0.900	SM 2540 D-2015	02/04/24	2/4/24 12:48	CLH	
Turbidity	B240400	113	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:16	LRF	D

Dissolved Wet Chemistry

Orthophosphate, as P	B240398	0.172	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/02/24	2/2/24 14:31	RKT	
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Total Metals

Mercury	B240440	0.0127	ug/L	0.0100	0.0100	EPA 245.1	02/07/24	2/8/24 8:34	SAS	
Arsenic	B240405	2.4	ug/L	0.070	0.070	EPA 200.8	02/04/24	2/8/24 13:57	DMW	
Cadmium	B240405	0.052	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:57	DMW	
Calcium	B240429	9.88	mg/L	0.0400	0.0400	EPA 200.7	02/06/24	2/8/24 12:06	AMO	
Lead	B240405	4.9	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/8/24 13:57	DMW	
Magnesium	B240429	4290	ug/L	80.0	80.0	EPA 200.7	02/06/24	2/8/24 12:06	AMO	
Phosphorus as P	B240429	0.312	mg/L	0.0120	0.0120	EPA 200.7	02/06/24	2/8/24 12:06	AMO	
Hardness	B240429	42.4	mg/L	0.100	0.100	SM 2340 B-2011	02/06/24	2/8/24 12:06	AMO	

Dissolved Metals

Cadmium	B240406	0.011	ug/L	0.010	0.010	EPA 200.8	02/04/24	2/4/24 14:56	DMW	
Copper	B240406	3.7	ug/L	0.15	0.15	EPA 200.8	02/04/24	2/4/24 14:56	DMW	
Lead	B240406	0.19	ug/L	9.00E-3	9.00E-3	EPA 200.8	02/04/24	2/4/24 14:56	DMW	
Zinc	B240406	26.6	ug/L	0.50	0.50	EPA 200.8	02/04/24	2/4/24 14:56	DMW	

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Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B240400									
Blank (B240400-BLK1)									
Turbidity	<0.3	NTU					02/02/2024	LRF	U
LCS (B240400-BS1)									
Turbidity			99.5	90-110			02/02/2024	LRF	
Duplicate (B240400-DUP1)	Source ID: AC00329-02								
Turbidity					9.90	25	02/02/2024	LRF	D
Batch: B240401									
Blank (B240401-BLK1)									
COD	<7	mg/L					02/03/2024	RKT	U
LCS (B240401-BS1)									
COD			95.7	90-110			02/03/2024	RKT	
Duplicate (B240401-DUP1)	Source ID: AC00330-01								
COD					0.00	10	02/03/2024	RKT	
Batch: B240404									
Blank (B240404-BLK1)									
BOD5	<2	mg/L					02/08/2024	ASE	U
LCS (B240404-BS1)									
BOD5			107	84.6-115.4			02/08/2024	ASE	
LCS (B240404-BS2)									
BOD5			100	84.6-115.4			02/08/2024	ASE	
Duplicate (B240404-DUP1)	Source ID: BB03562-02								
BOD5					3.49	30	02/08/2024	ASE	D
Batch: B240407									
Blank (B240407-BLK1)									
Total Dissolved Solids	<20	mg/L					02/06/2024	ASE	U
LCS (B240407-BS1)									
Total Dissolved Solids			92.4	90-110			02/06/2024	ASE	
Duplicate (B240407-DUP1)	Source ID: AC00330-01								
Total Dissolved Solids					1.35	10	02/06/2024	ASE	

Revised Report



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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240408									
Blank (B240408-BLK1)									
Total Suspended Solids	<0.9	mg/L					02/04/2024	CLH	U
LCS (B240408-BS1)									
Total Suspended Solids			97.1	90-110			02/04/2024	CLH	
Duplicate (B240408-DUP1) Source ID: AC00330-01									
Total Suspended Solids					5.76	20	02/04/2024	CLH	
Duplicate (B240408-DUP2) Source ID: BB03562-01									
Total Suspended Solids					3.48	20	02/04/2024	CLH	
Batch: B240477									
Blank (B240477-BLK1)									
Ammonia, as N	<35	ug/L					02/09/2024	ALN	U
Blank (B240477-BLK2)									
Ammonia, as N	<35	ug/L					02/09/2024	ALN	U
LCS (B240477-BS1)									
Ammonia, as N			101	90-110			02/09/2024	ALN	
LCS (B240477-BS2)									
Ammonia, as N			103	90-110			02/09/2024	ALN	
Duplicate (B240477-DUP1) Source ID: BB03559-02									
Ammonia, as N					1.51	10	02/09/2024	ALN	
Duplicate (B240477-DUP2) Source ID: LS01853-02									
Ammonia, as N					0.108	10	02/09/2024	ALN	
Duplicate (B240477-DUP3) Source ID: BB03578-01									
Ammonia, as N					0.524	10	02/09/2024	ALN	
Duplicate (B240477-DUP4) Source ID: BB03570-04									
Ammonia, as N					0.00	10	02/09/2024	ALN	
Matrix Spike (B240477-MS1) Source ID: BB03559-02									
Ammonia, as N			106	80-120			02/09/2024	ALN	
Matrix Spike (B240477-MS2) Source ID: LS01853-02									
Ammonia, as N			106	80-120			02/09/2024	ALN	
Matrix Spike (B240477-MS3) Source ID: BB03578-01									
Ammonia, as N			103	80-120			02/09/2024	ALN	
Matrix Spike (B240477-MS4) Source ID: BB03570-04									
Ammonia, as N			102	80-120			02/09/2024	ALN	
Matrix Spike Dup (B240477-MSD1) Source ID: BB03559-02									
Ammonia, as N			104	80-120	1.15	10	02/09/2024	ALN	
Matrix Spike Dup (B240477-MSD2) Source ID: LS01853-02									
Ammonia, as N			107	80-120	0.685	10	02/09/2024	ALN	
Matrix Spike Dup (B240477-MSD3) Source ID: BB03578-01									
Ammonia, as N			106	80-120	2.14	10	02/09/2024	ALN	

Revised Report



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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240477 (Continued)									
Matrix Spike Dup (B240477-MSD4) Ammonia, as N	Source ID: BB03570-04		103	80-120	0.553	10	02/09/2024	ALN	
Batch: B240479									
Blank (B240479-BLK1) Nitrate-Nitrite, as N	<0.025	mg/L					02/09/2024	RKT	U
Blank (B240479-BLK2) Nitrate-Nitrite, as N	<0.025	mg/L					02/09/2024	RKT	U
Blank (B240479-BLK3) Nitrate-Nitrite, as N	<0.025	mg/L					02/09/2024	RKT	U
LCS (B240479-BS1) Nitrate-Nitrite, as N			99.7	90-110			02/09/2024	RKT	
LCS (B240479-BS2) Nitrate-Nitrite, as N			98.9	90-110			02/09/2024	RKT	
LCS (B240479-BS3) Nitrate-Nitrite, as N			97.7	90-110			02/09/2024	RKT	
Duplicate (B240479-DUP1) Nitrate-Nitrite, as N	Source ID: BB03548-02RE1				NR	10	02/09/2024	RKT	
Duplicate (B240479-DUP2) Nitrate-Nitrite, as N	Source ID: BB03578-04				2.93	10	02/09/2024	RKT	
Duplicate (B240479-DUP3) Nitrate-Nitrite, as N	Source ID: LS01856-02				0.191	10	02/09/2024	RKT	
Duplicate (B240479-DUP4) Nitrate-Nitrite, as N	Source ID: WB02951-06				0.252	10	02/09/2024	RKT	
Duplicate (B240479-DUP5) Nitrate-Nitrite, as N	Source ID: BB03584-01				0.814	10	02/09/2024	RKT	
Matrix Spike (B240479-MS1) Nitrate-Nitrite, as N	Source ID: BB03548-02RE1		99.2	90-110			02/09/2024	RKT	
Matrix Spike (B240479-MS2) Nitrate-Nitrite, as N	Source ID: BB03578-04		95.4	90-110			02/09/2024	RKT	
Matrix Spike (B240479-MS3) Nitrate-Nitrite, as N	Source ID: LS01856-02		96.4	90-110			02/09/2024	RKT	
Matrix Spike (B240479-MS4) Nitrate-Nitrite, as N	Source ID: WB02951-06		96.5	90-110			02/09/2024	RKT	
Matrix Spike (B240479-MS5) Nitrate-Nitrite, as N	Source ID: BB03584-01		98.3	90-110			02/09/2024	RKT	
Matrix Spike Dup (B240479-MSD1) Nitrate-Nitrite, as N	Source ID: BB03548-02RE1		97.8	90-110	1.46	10	02/09/2024	RKT	
Matrix Spike Dup (B240479-MSD2) Nitrate-Nitrite, as N	Source ID: BB03578-04		94.6	90-110	0.730	10	02/09/2024	RKT	

Revised Report



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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240479 (Continued)									
Matrix Spike Dup (B240479-MSD3) Nitrate-Nitrite, as N	Source ID: LS01856-02		98.1	90-110	0.886	10	02/09/2024	RKT	
Matrix Spike Dup (B240479-MSD4) Nitrate-Nitrite, as N	Source ID: WB02951-06		96.3	90-110	0.0725	10	02/09/2024	RKT	
Matrix Spike Dup (B240479-MSD5) Nitrate-Nitrite, as N	Source ID: BB03584-01		98.4	90-110	0.0649	10	02/09/2024	RKT	
Batch: B240518									
Blank (B240518-BLK1) Chloride	<0.08	mg/L					02/12/2024	BAK	U
Blank (B240518-BLK2) Chloride	<0.08	mg/L					02/13/2024	BAK	U
LCS (B240518-BS1) Chloride			97.6	90-110			02/12/2024	BAK	
LCS (B240518-BS2) Chloride			98.1	90-110			02/13/2024	BAK	
LCS (B240518-BS3) Chloride			97.6	90-110			02/12/2024	BAK	
Duplicate (B240518-DUP1) Chloride	Source ID: LS01859-01				0.0260	10	02/12/2024	BAK	
Duplicate (B240518-DUP2) Chloride	Source ID: ES00298-02				0.0302	10	02/13/2024	BAK	
Duplicate (B240518-DUP3) Chloride	Source ID: LS01859-01RE1				0.0989	10	02/13/2024	BAK	D
Matrix Spike (B240518-MS1) Chloride	Source ID: LS01859-01		93.6	90-110			02/12/2024	BAK	
Matrix Spike (B240518-MS2) Chloride	Source ID: ES00298-02		96.1	90-110			02/13/2024	BAK	
Matrix Spike (B240518-MS3) Chloride	Source ID: LS01859-01RE1		97.1	90-110			02/13/2024	BAK	D
Matrix Spike (B240518-MS4) Chloride	Source ID: AC00329-02		94.4	90-110			02/12/2024	BAK	
Matrix Spike (B240518-MS5) Chloride	Source ID: AC00329-02		94.8	90-110			02/13/2024	BAK	
Matrix Spike (B240518-MS6) Chloride	Source ID: WQ00200-05		95.5	90-110			02/13/2024	BAK	
Matrix Spike Dup (B240518-MSD1) Chloride	Source ID: LS01859-01		94.0	90-110	0.127	10	02/12/2024	BAK	
Matrix Spike Dup (B240518-MSD2) Chloride	Source ID: ES00298-02		95.7	90-110	0.192	10	02/13/2024	BAK	

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240518 (Continued)									
Matrix Spike Dup (B240518-MSD3) Chloride			Source ID: LS01859-01RE1 98.0	90-110	0.388	10	02/13/2024	BAK	D
Batch: B240548									
Blank (B240548-BLK1) TKN	<0.1	mg/L					02/16/2024	JAL	U
Blank (B240548-BLK2) TKN	<0.1	mg/L					02/16/2024	JAL	U
Blank (B240548-BLK3) TKN	<0.1	mg/L					02/16/2024	JAL	U
LCS (B240548-BS1) TKN			100	80-120			02/16/2024	JAL	
LCS (B240548-BS2) TKN			106	80-120			02/16/2024	JAL	
LCS (B240548-BS3) TKN			94.4	80-120			02/16/2024	JAL	
Duplicate (B240548-DUP1) TKN			Source ID: AC00329-01		0.415	20	02/16/2024	JAL	
Duplicate (B240548-DUP2) TKN			Source ID: BB03570-01		2.83	20	02/16/2024	JAL	D
Duplicate (B240548-DUP3) TKN			Source ID: BB03578-03		1.87	20	02/16/2024	JAL	D
Duplicate (B240548-DUP4) TKN			Source ID: LS01856-05		5.74	20	02/16/2024	JAL	D
Matrix Spike (B240548-MS1) TKN			Source ID: AC00329-01 99.7	80-120			02/16/2024	JAL	
Matrix Spike (B240548-MS2) TKN			Source ID: BB03570-01 99.2	80-120			02/16/2024	JAL	D
Matrix Spike (B240548-MS3) TKN			Source ID: BB03578-03 102	80-120			02/16/2024	JAL	D
Matrix Spike (B240548-MS4) TKN			Source ID: LS01856-05 86.1	80-120			02/16/2024	JAL	D
Matrix Spike (B240548-MS5) TKN			Source ID: WQ00200-03 97.5	80-120			02/16/2024	JAL	
Matrix Spike (B240548-MS6) TKN			Source ID: WQ00200-04 94.9	80-120			02/16/2024	JAL	
Matrix Spike Dup (B240548-MSD1) TKN			Source ID: AC00329-01 101	80-120	1.39	20	02/16/2024	JAL	
Matrix Spike Dup (B240548-MSD2) TKN			Source ID: BB03570-01 99.6	80-120	0.237	20	02/16/2024	JAL	D

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240548 (Continued)									
Matrix Spike Dup (B240548-MSD3) TKN	Source ID: BB03578-03		104	80-120	0.657	20	02/16/2024	JAL	D
Matrix Spike Dup (B240548-MSD4) TKN	Source ID: LS01856-05		92.5	80-120	2.57	20	02/16/2024	JAL	D
Dissolved Wet Chemistry									
Batch: B240398									
Blank (B240398-BLK1) Orthophosphate, as P	<0.003	mg/L					02/02/2024	RKT	U
LCS (B240398-BS1) Orthophosphate, as P			98.7	90-110			02/02/2024	RKT	
Duplicate (B240398-DUP1) Orthophosphate, as P	Source ID: WB02944-06				0.461	10	02/02/2024	RKT	D
Duplicate (B240398-DUP2) Orthophosphate, as P	Source ID: LS01852-02				0.270	10	02/02/2024	RKT	D
Matrix Spike (B240398-MS1) Orthophosphate, as P	Source ID: WB02944-06		103	90-110			02/02/2024	RKT	D
Matrix Spike (B240398-MS2) Orthophosphate, as P	Source ID: LS01852-02		102	90-110			02/02/2024	RKT	D
Matrix Spike Dup (B240398-MSD1) Orthophosphate, as P	Source ID: WB02944-06		102	90-110	0.249	10	02/02/2024	RKT	D
Matrix Spike Dup (B240398-MSD2) Orthophosphate, as P	Source ID: LS01852-02		102	90-110	0.0492	10	02/02/2024	RKT	D

Revised Report



Boise City Public Works
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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B240405									
Blank (B240405-BLK1)									
Arsenic	<0.070	ug/L					02/08/2024	DMW	U
Cadmium	<0.010	ug/L					02/08/2024	DMW	U
Lead	<0.010	ug/L					02/08/2024	DMW	U
LCS (B240405-BS1)									
Arsenic			101	85-115			02/08/2024	DMW	
Cadmium			101	85-115			02/08/2024	DMW	
Lead			102	85-115			02/08/2024	DMW	
Duplicate (B240405-DUP1) Source ID: AC00329-01									
Arsenic					2.22	20	02/08/2024	DMW	
Cadmium					2.34	20	02/08/2024	DMW	
Lead					2.48	20	02/08/2024	DMW	
Matrix Spike (B240405-MS1) Source ID: AC00329-01									
Arsenic			97.6	70-130			02/08/2024	DMW	
Cadmium			100	70-130			02/08/2024	DMW	
Lead			101	70-130			02/08/2024	DMW	
Matrix Spike Dup (B240405-MSD1) Source ID: AC00329-01									
Arsenic			98.3	70-130	0.625	20	02/08/2024	DMW	
Cadmium			101	70-130	0.665	20	02/08/2024	DMW	
Lead			101	70-130	0.234	20	02/08/2024	DMW	
Batch: B240429									
Blank (B240429-BLK1)									
Calcium	<0.04	mg/L					02/08/2024	AMO	U
Magnesium	<80	ug/L					02/08/2024	AMO	U
Phosphorus as P	<0.012	mg/L					02/08/2024	AMO	U
LCS (B240429-BS1)									
Calcium			102	85-115			02/08/2024	AMO	
Magnesium			103	85-115			02/08/2024	AMO	
Phosphorus as P			101	85-115			02/08/2024	AMO	
Duplicate (B240429-DUP1) Source ID: AC00330-01									
Calcium					1.74	20	02/08/2024	AMO	
Magnesium					1.98	20	02/08/2024	AMO	
Phosphorus as P					0.174	20	02/08/2024	AMO	
Matrix Spike (B240429-MS1) Source ID: AC00330-01									
Calcium			102	70-130			02/08/2024	AMO	
Magnesium			102	70-130			02/08/2024	AMO	
Phosphorus as P			101	70-130			02/08/2024	AMO	
Matrix Spike Dup (B240429-MSD1) Source ID: AC00330-01									
Calcium			102	70-130	0.0523	20	02/08/2024	AMO	
Magnesium			102	70-130	0.188	20	02/08/2024	AMO	
Phosphorus as P			102	70-130	0.474	20	02/08/2024	AMO	

Revised Report



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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B240440									
Blank (B240440-BLK1)									
Mercury	<0.01	ug/L					02/08/2024	SAS	U
LCS (B240440-BS1)									
Mercury			103	85-115			02/08/2024	SAS	
Duplicate (B240440-DUP1) Source ID: AC00329-04									
Mercury					NR	20	02/08/2024	SAS	U
Matrix Spike (B240440-MS1) Source ID: AC00329-04									
Mercury			106	70-130			02/08/2024	SAS	
Matrix Spike Dup (B240440-MSD1) Source ID: AC00329-04									
Mercury			109	70-130	2.55	20	02/08/2024	SAS	
Dissolved Metals									
Batch: B240406									
Blank (B240406-BLK1)									
Cadmium	<0.010	ug/L					02/04/2024	DMW	U
Copper	<0.15	ug/L					02/04/2024	DMW	U
Lead	<0.0090	ug/L					02/04/2024	DMW	U
Zinc	<0.50	ug/L					02/04/2024	DMW	U
LCS (B240406-BS1)									
Cadmium			103	85-115			02/04/2024	DMW	
Copper			97.2	85-115			02/04/2024	DMW	
Lead			102	85-115			02/04/2024	DMW	
Zinc			98.7	85-115			02/04/2024	DMW	
Duplicate (B240406-DUP1) Source ID: AC00329-02									
Cadmium					14.8	10	02/04/2024	DMW	QC-02
Copper					0.197	10	02/04/2024	DMW	
Lead					1.65	10	02/04/2024	DMW	
Zinc					1.45	10	02/04/2024	DMW	
Matrix Spike (B240406-MS1) Source ID: AC00329-02									
Cadmium			100	70-130			02/04/2024	DMW	
Copper			92.7	70-130			02/04/2024	DMW	
Lead			97.8	70-130			02/04/2024	DMW	
Zinc			94.2	70-130			02/04/2024	DMW	
Matrix Spike Dup (B240406-MSD1) Source ID: AC00329-02									
Cadmium			99.4	70-130	0.723	10	02/04/2024	DMW	
Copper			93.3	70-130	0.456	10	02/04/2024	DMW	
Lead			99.7	70-130	1.89	10	02/04/2024	DMW	
Zinc			96.0	70-130	1.20	10	02/04/2024	DMW	

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Notes and Definitions

Item	Definition
D	Data reported from a dilution
QC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

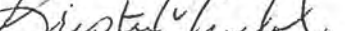

Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order: 6
Project: S
Sampler(s): K

Stormwater-P!

Kristen Chisholm
Stacey Turner

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
	2/1/24 1019		
	2/2/24 1101	 2-2-24 1102	

AC00329

ACD0379^{WY24}

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418

Tel. (208) 387-6269

Fax (208) 387-6391

Purchase Order:

63065628

Project:

Stormwater-PI

Sampler(s):

Steven Turner
Kristin Chickah

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	F-Calc DEXX Gottfert Chlorides	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
AC00329																								
-03	2/2/24	2/2/24	0335	0936	240201-206-WC	ST	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Kristin Chickah</i>	2/2/24 1019	<i>OK [Signature]</i>	
<i>[Signature]</i>	2/2/24 1102	<i>[Signature]</i> 2-2-24 1102	

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order:
Project:
Sampler(s):

63065628

Stormwater-PI

Kristin Chisholm
Steve Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colitag Chlorides	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Contaminants
AC00329																								
-04	2/1/24	2/2/24	1342	0926	240201-03-WC	ST	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
-05	2/2/24	2/2/24	0416	1016	240201-11-WC	ST	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
-06					240201-11-103 (Dup)																			

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristin Chisholm	2/2/2024 1134	Steve Turner	If sufficient volume, please split 240201-11-WC for a duplicate analysis under the name 240201-11-103.
Steve Turner	2/2/2024 1159	April B. [Signature]	If low volume for 240201-03-WC, prioritize dissolved parameters, then any other parameters you can, please.

Modified

Ada County Highway District

Attn: Steven Turner
 3775 Adams Street
 Garden City, Idaho 83714-6418
 Tel. (208) 387-6269
 Fax (208) 387-6391
 Purchase Order:
 Project:
 Sampler(s):

63065628
 Stormwater-PI
 Steven Turner
 Kristin Chisholm

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initial	Water	Grab	Composite	BOD ₅ - SM 521	COD - Hach 800	TSS - SM 2540	TDS - SM 2540	TKN - EPA 351	TP - EPA 200.7	Orthophosphate	Total As, Cd, Pb	Diss. Cd Cu, Pb	Total Hg - EPA	As, Cd, Cu, Pb, Zn, Hg Chlordes	Turbidity - EPA	Hardness - EPA	NO ₃ +NO ₂ - EPA	NH ₃ - SM 4500	Total Containers
AC00329																									
-03	2/1/24	2/2/24	0335	0936	240201-206-WC	ST	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2
	2/1/24		1909	0936																					

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristin Chisholm	2/2/24 1019	OK [Signature]	
[Signature]	2/2/24 1102	[Signature] 2-2-24 1102	

Modified

Ada County Highway District

Attn: Steven Turner
 3775 Adams Street
 Garden City, Idaho 83714-6418
 Tel. (208) 387-6269
 Fax (208) 387-6391
 Purchase Order:
 Project:
 Sampler(s):

63065628
 Stormwater-PI
 Kristina Chisholm
 Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initial	Water	Grab	Composite	BOD ₅ - SM 5210	COD - Hach 8000	TSS - SM 2540	TDS - SM 2540	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E-Coli - IDEXX Colitag	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Contaminants
AC00329																									
-04	2/1/24	2/2/24	1342	0926	240201-03-WC	ST	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
-05	2/1/24	2/2/24	0416	1016	240201-11-WC	ST	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
-06					240201-11-103 (Dup)																				

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristina Chisholm	2/2/2024 1134	Steven Turner	If sufficient volume, please split 240201-11-WC for a duplicate analysis under the name 240201-11-103.
Steven Turner	2/2/2024 1159	April 11/59	If low volume for 240201-03-WC, prioritize dissolved parameters, then any other parameters you can, please.

Azubike Emenari

To: Steven Turner; Stephen Quintero
Cc: Monica Lowe
Subject: RE: [External] RE: 2/2/24 Lab Report Issue

From: Steven Turner <sturner@achdidaho.org>
Sent: Wednesday, March 13, 2024 1:50 PM
To: Azubike Emenari <AEmenari@cityofboise.org>; Stephen Quintero <SQuintero@cityofboise.org>
Cc: Monica Lowe <mlowe@achdidaho.org>
Subject: [External] RE: 2/2/24 Lab Report Issue

Caution: This email came from outside the city. Use caution before clicking on links, opening attachments, or responding.

Hey lab folks,

Apologies asking for more changes to the 2/1/24 storm, but we noticed a few additional times that needed to be changed to the analysis report. Here is also a [rewritten chain of custody](#).

The following samples need their times adjusted:

- AC00329-03 begin time is 19:09 on 2/1/24 (previously written as 2/2/2024 3:35)
- AC00329-05 begin time is 4:16 on 2/1/24 (previously written as 2/2/2024 04:16)

It's not a big deal if these changes can't be made but let me know when we can expect this document to be sent over.

Again, sorry for the changes. We really appreciate all you do.

Best,
Steven Turner
Environmental Specialist | Environmental Department

Ada County Highway District (ACHD)
3775 Adams Street, Garden City, Idaho 83714
Phone: (208)407-4284
www.achdidaho.org
Connect with us on social! [@achdidaho](#)



From: Steven Turner
Sent: Tuesday, March 12, 2024 2:17 PM

ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 1 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
Lims#: <u>AC00329-01</u> Location: <u>ACSTIC</u> Sample Date: 2-2-24 Sample ID: <u>240201-</u> <u>1</u> <u>12-WC</u>	Split Date: 2-2-24 Start Split: <u>1111</u> Start Filter: <u>1111</u> Comp Time: <u>N/A</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-capacity ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>Not Avail.</u> Comp Jug: <u>N/A</u> SS Tubing/Helper: CC00047-43 (SSA1) Stir Bar: CC00048-85 Connector: CC00035-68 and CC00041-31	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	<u>only 1 jug</u>
Lims#: <u>AC00329-02</u> Location: <u>ACSTIC</u> Sample Date: 2-2-24 Sample ID: <u>240201-</u> <u>2</u> <u>14-WC</u>	Split Date: 2-2-24 Start Split: <u>1125</u> Start Filter: <u>1125</u> Comp Time: <u>1121</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45 high-capacity ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>CC00048-77</u> Comp Jug: <u>CC00048-77</u> SS Tubing/Helper: CC00047-85 (SSA4) Stir Bar: CC00048-85 Connector: CC00040-06 and CC00039-71	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	<u>composited into (1) of the 16L</u>
Lims#: <u>AC00329-03</u> Location: <u>ACSTIC</u> Sample Date: 2-2-24 Sample ID: <u>240201-</u> <u>3</u> <u>206-WC</u>	Split Date: 2-2-24 Start Split: <u>1142</u> Start Filter: <u>1142</u> Comp Time: <u>1138</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-capacity (x3) ☒ 5.0µm (x2) ☒ 10.0µm (x2)	Coll Jug: <u>CC00047-32</u> Comp Jug: <u>CC00048-86</u> SS Tubing/Helper: CC00048-70 (SSA5) Stir Bar: CC00048-85 Connector: CC00041-46 (x2) <u>CC00048-69</u>	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	<u>initially used 3 Voss filters, but plugged after 500mL waste, used another (4) Voss filters; was able to get needed volume then.</u>
Lims#: <u>AC00329-05</u> Location: <u>ACSTIC</u> Sample Date: 2-2-24 Sample ID: <u>240201-</u> <u>4</u> <u>11-WC</u>	Split Date: 2-2-24 Start Split: <u>1220</u> Start Filter: <u>1220</u> Comp Time: <u>1215</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-capacity ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>CC00048-78 (x2)</u> Comp Jug: <u>CC00048-78</u> SS Tubing/Helper: CC00047-42 (SSA6) Stir Bar: CC00050-10 Connector: CC00041-46 (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	<u>composited into 40L Round</u>
Lims#: <u>AC00329-06</u> Location: <u>ACSTIC</u> Sample Date: 2-2-24 Sample ID: <u>240201-</u> <u>5 BLP</u> <u>11-WC</u> <u>103</u>	Split Date: 2-2-24 Start Split: <u>1135</u> Start Filter: <u>1135</u> Comp Time: <u>1215</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-capacity ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>CC00048-78 (x2)</u> Comp Jug: <u>CC00048-78</u> SS Tubing/Helper: CC00047-18 (SSA7) Stir Bar: <u>CC00034-BB (Dr)</u> Connector: CC00044-99 (x2)	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	<u>Duplicate</u>

ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 2 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
Lims#: <u>A000329-04</u> Location: <u>ACSTIC</u> Sample Date: <u>2-2-24</u> Sample ID: <u>Amp/DKT</u> <u>240201-03-WC</u> <u>6</u>	Split Date: <u>2-2-24</u> Start Split: <u>1252</u> Start Filter: <u>1252</u> Comp Time: <u>N/A</u> Analyst: <u>Amp/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-capacity ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>CC00048-77</u> Comp Jug: <u>N/A</u> SS Tubing/Helper: <u>CC00048-70 (SSAB)</u> Stir Bar: <u>CC00040-97</u> Connector: <u>CC00044-99 (x2)</u>	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	Only 1 jug
Lims#: <u>A000330-01</u> <u>A000329-05</u> Location: <u>ACSTIC</u> Sample Date: <u>2-2-24</u> Sample ID: <u>240201-</u> <u>18-WC</u> <u>7</u>	Split Date: <u>2-2-24</u> Start Split: <u>1315</u> Start Filter: <u>1315</u> Comp Time: <u>1312</u> Analyst: <u>Amp/DKT</u>	Filter: ☒ Voss ☒ 0.45µm ^{high-capacity} ☐ 1.0µm ☒ 5.0µm ☒ Other: <u>10.0µm</u>	Coll Jug: <u>CC00048-78 (x2)</u> Comp Jug: <u>CC00048-78</u> SS Tubing: <u>SS17</u> SS Helper: <u>CC00050-08</u> Stir Bar: <u>CC00034-B3</u> Connector: <u>CC00044-99</u> <u>CC00048-69</u>	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	2nd jug had low volume and was noticeably lighter in color
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☐ COD ☐	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒ Voss ☒ 0.45µm ☐ 1.0µm ☒ 5.0µm ☐ Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒ Teflon Total ☒ TKN ☒ Teflon Diss (F) ☒ NH ₃ ☒ Hg CVAA ☒ NO _x (F) ☒ BOD ☒ ortho-P (F) ☒ TSS ☒ Turb ☒ TDS ☐ ☒ COD ☐	



Technical Memorandum

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Boise, ID 83702

Phone: 801.316.9859

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2024

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for February 26, 2024

Date: May 24, 2024

To: Monica Lowe

Cc: Steven Turner

Kristen Chisholm

From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

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 10, 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.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2024 (October 1, 2023, through September 30, 2024). The following storm event report summarizes stormwater sampling results from the February 26, 2024, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2024 Phase I Stormwater Outfall Monitoring. When samples are qualified, additional samples will be attempted from subsequent storms to collect unqualified samples.

Table 2-1. WY 2024 Samples Collected					
Date	Lucky	Whitewater	Main	Americana	AS_6
October 10, 2023	G, C ^{1,2}	G	--	G, C ³	--
November 19, 2023	G, C	G, C	G, C	G ⁴ , C	G, C
February 1, 2024	G ⁵ , C	G ⁵ , C ⁶	G ⁵ , C	G ⁵ , C	G ⁵ , C
February 26, 2024	G, C	G, C	G, C ⁷	G, C	G, C
Unqualified Samples:	3G, 3C	3G, 2C	2G, 2C	2G, 3C	2G, 3C
Samples Remaining:	0G, 0C	0G, 1C	1G, 1C	1G, 0C	1G, 0C

Notes:

-- = no samples taken

C = composite sample

G = grab sample

¹ Composite samples qualified due to lack of representativeness (50% – 75%).

² Incomplete water quality analysis due to low composite sample volume.

³ Composite samples qualified due to lack of representativeness (50% – 75%) of the calculated flow volume.

⁴ Incomplete field parameter collection on the grab sample data form due to field error.

⁵ E. coli sample qualified due to exceeded hold time.

⁶ Composite sample rejected due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented more than 10% of the composite volume.

⁷ Composite sample qualified due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented less than 10% of the composite volume.

Section 3: Storm Event Summary

The February 26, 2024, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from February 26, 2024, is included in Attachment A for reference.

Saturday, February 24, 2024 (Sampling Event Communication)

- On the afternoon of February 24, the National Weather Service issued a forecast for widespread rain in the Boise area, starting February 26 at 0400 and ending at 1500, with the heaviest precipitation from 1000 to 1300. The chance of precipitation was 90%, with 0.30 inches of precipitation forecasted.

Sunday, February 25, 2024 (Set Up)

- Setup was accomplished in the morning of February 25. An expected precipitation depth of 0.11 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Monday, February 26, 2024 (Storm Event)

- Moderate rain first started at approximately February 26 at 0821 and ended at 1241. A stronger second wave of rain started soon after around 1230 and ended at 2032.
- Precipitation totals ranged between 0.13 and 0.21 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrographs for the Lucky, Whitewater, Main, Americana and AS_6 site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana and AS_6 monitoring stations were set up on February 25, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programmed into the Whitewater and Americana flowmeters. A site-specific velocity cutoff value was programmed into Lucky, Main, and AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

Two, two-member teams mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on February 26 around 0910. Grab samples for Lucky, Whitewater, Main, Americana, and AS_6 were submitted to the West Boise Water Quality Lab (WQL) at 1201 on February 26.

Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at the Lucky, Whitewater, Main, and Americana monitoring station and submitted to the WQL at 2057 on February 26. The composite sample at AS_6 monitoring station was submitted at 2058 on February 26 to the WQL.

Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. Laboratory analytical reports are included in Attachment D.



Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the February 26, 2024, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Main monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples			
Sample ID	Sample Type	Parent Sample	Conclusions
240226-12-001	Field blank	Main grab	No <i>E. coli</i> detection was reported in the field blank.
240226-12-101	Field duplicate	Main grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A.

An acceptable composite sample represents at least 75 percent of the total discharge or at least 6 hours of the storm duration. All composite samples, except for Main, met the criteria.

Prior to the start of the storm precipitation or runoff, three subsamples were successfully collected by the automatic sampler at the Main monitoring site. These subsamples are considered non-stormwater, as there was no evidence of flow or precipitation during the evening of February 25th through the morning of February 26th. Following the SWOMP guidelines, calculations were conducted to determine if the non-stormwater composite subsamples volume accounted for 10% of the total composite sample volume. The non-stormwater composite subsamples accounted for 8% of the total composite sample volume (see Table 4-2), qualifying the Main composite sample.

Table 4-2. Non-Stormwater Subsample Evaluation		
Composite Sample Volume (ft ³)	Non-Stormwater Subsample Volume (ft ³)	Non-stormwater Subsample Ratio
11,165	913	8 %

Section 5: Notes and Recommendations

Main

The Main site collected non-stormwater samples at three instances prior to the sampling event. The samples had levels greater than the enabling condition of 1.87-inches. The sampler was programmed correctly at the time of set-up. Additional investigation is required to determine the cause of collecting samples when there was no evidence of flow or precipitation. ACHD will reach out to HACH for support.

Americana

Two “Skipped” sample messages were recorded during the composite sample collection at Americana. These sample messages appear when the sampling team pause the sampler program, stopping it from collecting the next subsample. The “Skipped” sample messages do not affect the sampling data nor is shown on the hydrograph.

Data Tables



TAB-1

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	YES	YES	YES	YES	YES
Trigger volume (gal or ft ³)	2895 gal	800 ft ³	3411 gal	2960 ft ³	137 ft ³
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	Level > 2.72 "	Level > 3.05 "	Level > 1.87 "	Level > 7.59 "	--
Runoff start time	0839	0848	0834	0821	0915
Grab sample collection time	1017	0928	0919	0948	1012
Composite sample stop time	1534	1908	1601	1606	1620
Runoff stop time	1752	2032	1733	1752	1759
Volume of Discharge Sampled (ft ³)	3,573	30,558	11,165 ¹	115,368	4,873
Volume of non-stormwater subsamples (ft ³)	--	--	913	--	--
Total runoff volume (ft ³)	3,965	35,198	10,885	140,004	5,447
Percent of storm flow sampled (%)	90%	87%	103% ¹	83%	89%
Percent of non-stormwater volume to total discharge sampled volume (%)	--	--	8%	--	--
Composite sample duration (hrs)	6.5	9.5	17 ¹	7	6
Storm Precipitation (in)	0.13	0.21	0.18	0.18/0.18	0.18/0.18
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	10	40	26	35	24
Number of composite bottles filled	1	2	2	2	2
Composite sample volume (Approx.; ml)	5,000 ml	23,500 ml	14,050 ml	20,500 ml	13,000 ml

Notes:

-- = No data.

¹ Non stormwater samples were collected prior to the start of the storm precipitation or runoff

Table 2. Field and Analytical Data Summary																											
Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				E. coli mpn/100 mL	Sample ID Composite	Analytical Parameters																		
			Dissolved Oxygen	pH	Conductivity	Temperature			BOD ₅	COD	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C			mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	2/26/2024	240226-03-WG	9.89	8.27	125.9	4.75	37.9	240226-03-WC	13.5	60.0	53.2	18.9	18.1	114	0.262	0.124	0.476	0.969	1.71	2.6	0.011	0.031	4.5	0.028	0.72	0.0150	13.5
Whitewater	2/26/2024	240226-11-WG	10.88	7.74	749.2	5.97	38.3	240226-11-WC	12.6	84.0	77.8	52.3	47.3	182	0.347	0.174	0.596	0.921	2.43	2.6	0.014	0.062	4.4	0.093	3.8	0.0151	24.5
Main	2/26/2024	240226-12-WG	9.79	7.94	165.88	9.53	24.3	240226-12-WC	13.9	119 ^{5/}	29.8 ^{5/}	94.7 ^{5/}	104 ^{5/}	85.2 ^{5/}	0.231 ^{5/}	0.0631 ^{5/}	0.829 ^{5/}	0.424 ^{5/}	1.96 ^{5/}	1.5 ^{5/}	0.032 ^{5/}	0.13 ^{5/}	5.6 ^{5/}	0.12 ^{5/}	6.1 ^{5/}	0.0191 ^{5/}	51.7 ^{5/}
Americana	2/26/2024	240226-14-WG	10.54	7.53	470.55	8.74	125.9	240226-14-WC	12.6	85.0	102	51.1	54.3	214	0.276	0.106	0.496	0.940	1.47	3.3	0.021	0.097	4.0	0.063	3.9	0.0148	24.3
AS_6	2/26/2024	240226-206-WG	9.39	7.44	124.28	6.49	53.7	240226-206-WC	17.7	122	22.2	75.5	75.8	85.8	0.570	0.289	0.522	0.278	2.43	2.2	0.016	0.087	5.0	0.26	6.3	0.0183	20.2

Notes:
 - = No data.
^{5/} Composite sample qualified due to non stormwater sample volume comprising less than 10% of the total composite sample volume

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	2/26/2024	4.48	0.0648	0.118	0.240	0.423
Whitewater	2/26/2024	104	0.762	1.31	2.02	5.34
Main	2/26/2024	70.6 ^{5J}	0.157 ^{5J}	0.563 ^{5J}	0.288 ^{5J}	1.33 ^{5J}
Americana	2/26/2024	474	2.41	4.33	8.21	12.8
AS_6	2/26/2024	25.8	0.194	0.177	0.0945	0.826

Notes:

^{5J} Composite sample qualified due to non stormwater sample volume comprising less than 10% of the total composite sample volume

Table 4. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/ 100 mL
2/26/2024	240226-12-WG	240226-12-001	Field Blank	<1.0
2/26/2024	240226-12-WG	240226-12-101	Field Duplicate	26.9
Calculated parent/duplicate RPD				2%
Allowable RPD				40%

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 02/24/2024	Time: 8:24 AM	Initials: ST
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	
Date and time of expected event	Monday, 2/26/24 @4:00 AM
Expected amount of precipitation	0.30"
Percent chance of precipitation	90%
Percent chance of >0.10" over 12 hours	75%

NWS Update

Spoke with Les from NWS and he thinks Boise will still get 0.3" of rain starting at 4:00 AM – 3:00 PM on Monday. It will be a heaviest around 10:00 AM – 1:00 PM.

<u>Targeted Station & Samples</u>					
Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday

☐ Waiting on Antecedent Dry Period – Expires:

☐ Equipment Concerns:

☐ Other:

Text Forecast

NWS Forecast for: 2 Miles NNW Garden City ID
 Issued by: National Weather Service Boise, ID
 Last Update: 4:08 am MST Feb 24, 2024

Today: Sunny, with a high near 60. South southeast wind 5 to 7 mph.
 Tonight: Clear, with a low around 35. Southeast wind around 6 mph.
 Sunday: Sunny, with a high near 62. Southeast wind 6 to 10 mph.
 Sunday Night: A 20 percent chance of rain after 11pm. Increasing clouds, with a low around 41. South wind 6 to 10 mph.

Monday: Rain. High near 48. Breezy, with a south southwest wind 11 to 16 mph becoming west 18 to 23 mph in the morning. Winds could gust as high as 36 mph. Chance of precipitation is 90%. New precipitation amounts between a tenth and quarter of an inch possible.

Monday Night: A 20 percent chance of snow before 11pm. Mostly cloudy, with a low around 27. Blustery.
 Tuesday: Partly sunny, with a high near 43.
 Tuesday Night: A 20 percent chance of snow after 11pm. Mostly cloudy, with a low around 30.
 Wednesday: A slight chance of rain and snow before 11am, then a chance of rain. Mostly cloudy, with a high near 50. Chance of precipitation is 30%.
 Wednesday Night: A 30 percent chance of rain. Mostly cloudy, with a low around 40.

Thursday: A 40 percent chance of rain. Mostly cloudy, with a high near 57.
Thursday Night: Rain likely. Mostly cloudy, with a low around 38. Chance of precipitation is 60%.
Friday: Rain likely. Mostly cloudy, with a high near 54. Chance of precipitation is 70%.

Forecast Discussion

[Area Forecast Discussion](#)

National Weather Service Boise ID
354 AM MST [Sat](#) Feb 24 2024

.SHORT TERM...Today through Monday night...Sunny, mild and dry conditions today will give way to increasing clouds on Sunday. Most areas will see high temperatures around 10 degrees above [normal](#) both days, but below records. Snow covered mountain valleys won't quite achieve the anomalous warmth, but will still warm above [normal](#). Light precipitation will develop over the w-central Idaho mountains Sunday afternoon as a storm drops out of Canada. Given the mild [air mass](#) snow levels will start between 5-6kft, meaning rain in mountain valleys. The precipitation expands across the higher terrain in e-central Oregon and Boise mountains Sunday night. By sunrise Monday morning snow levels will range between 4500-5500 feet bringing a change from rain to snow in mountain valleys. It's during the day Monday that we'll see the heaviest snowfall rates in the mountains and rain fill in across the valleys as the upper [trough](#) and accompanying cold [front](#) drop through the region. At elevations above 5500-6000 feet, where its all snow, accumulations of 6-12 inches are possible with locally higher amounts. Have less confidence on accumulation in mountain valleys as snow will have to overcome recent mild temperatures and daytime [insolation](#) along with temperatures above freezing. For now will keep the WS [Watch](#) headline.

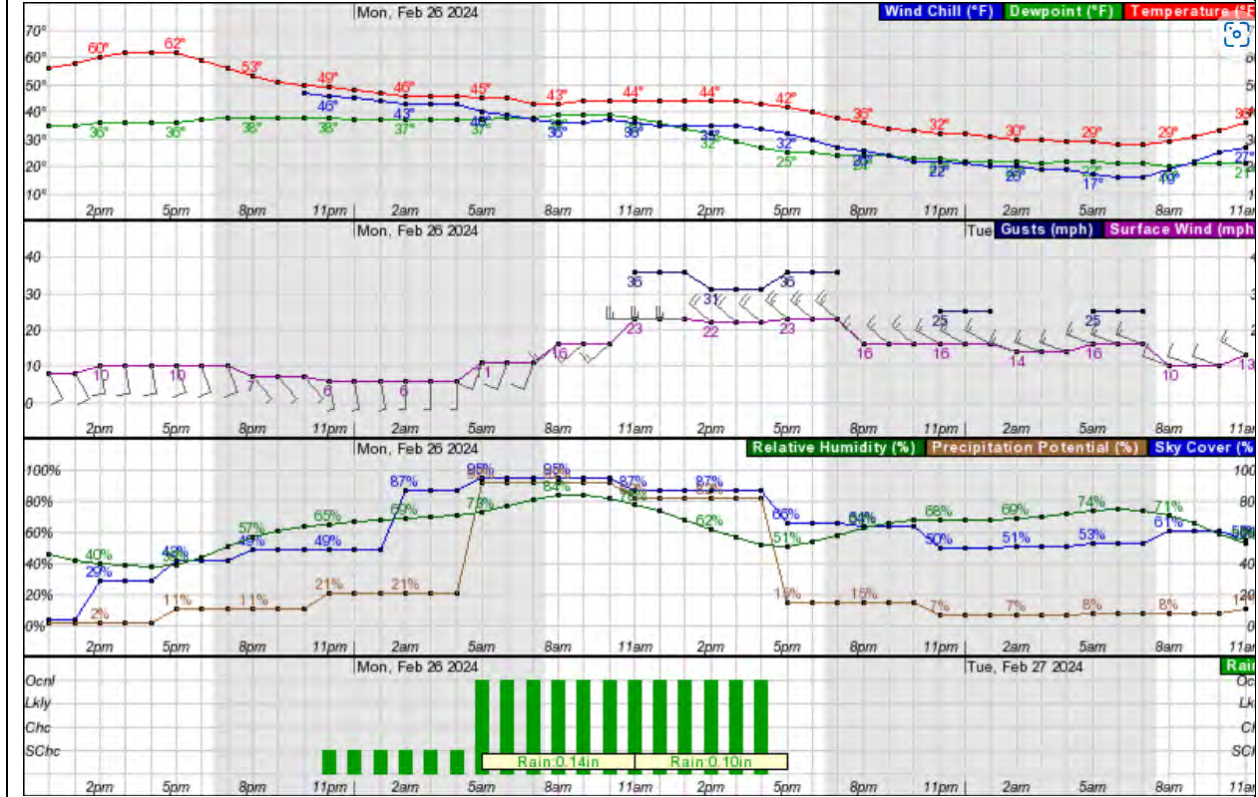
Strong [flow](#) aloft, 25-40 mph at ~5kft [MSL](#) and 45-60 mph at ~10kft [MSL](#), and a tightening surface pressure [gradient](#) will translate to gusty winds across the region. Elevated and open terrain will see the strongest winds as [flow](#) aloft mixes to the surface. This includes Harney and Malheur counties in Oregon and areas outside of the lower Snake Plain in SW Idaho. A high Wind [Watch](#) remains in place across southern and western zones as forecast speeds are solid Advisory and possible [Warning](#) magnitude. This is especially the case for areas closer to the NV border. The lower Snake Plain will see winds ramp up with the frontal passage Monday afternoon and Advisory winds are still in play.

Precipitation will shut off quickly behind the [front](#) Monday afternoon/evening as snow levels drop to valley floors. Sites below 4000 feet will [likely](#) see precipitation end as rain. In the Snake Plain the best chance to see a change to snow will be east of Mountain Home, and more so in the western Magic Valley where minor accumulations are forecast. Snow showers will continue in the mountains Monday night with light additional accumulation.

.LONG TERM...Tuesday through Saturday...As quickly as the [trough](#) entered the region, it's on the way out on Tuesday. Lower elevations dry out while [instability](#) supports continuation of showers across the mountains. Any accumulation will be light. By Wednesday, westerly [flow](#) off the Pacific will begin to moderate the [air mass](#), raising snow levels to 4500-5500 feet. Mountains will continue to see precipitation through the end of the week as a [deepening trough](#) along the [Pac](#) NW coast maintains a steady

and moist [flow](#) aloft. Lower elevations will see precipitation chances increase again toward the end of the week as the [trough](#) shifts inland. After Thursday, snow levels will gradually lower in response to the advancing [trough](#).

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE 2/26/24

A. Event and Data Completeness	Yes	No	N/A	Notes					
1. Field data sheets filled out completely and clearly	X								
2. Field parameters reviewed, and any problems/issues addressed	X								
3. All samples collected as specified	X								
4. All samples delivered to lab promptly (review chain of custody rpts)	X			See ^{3T} analytical reports for noted sample container temp.					
5. Inconsistencies/clarifications discussed with sampling team member			X						
6. All analytical reports from lab received	X			Reissued to report ammonia in mg/L					
B. Validation and Verification Methods	Yes	No	N/A	Notes					
1. Outliers and unexpected values discussed with lab			X						
2. Appropriate analytical methods used	X			Verified correct ammonia method + units					
3. All lab QA samples were within method acceptance criteria	X								
4. All samples reviewed and data qualifiers assigned if needed	X								
5. Data quality objective achieved	X								
C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.00	0.00	0.00	0.00	0.00	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.13	0.21	0.18	0.18/0.19	0.18/0.18	> 0.10"	X		
3. Sampled amount (% of total run-off)	90%	87%	95%	83%	89%	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	X		
4. Composite sample duration (hours)	6.5	9.5	17.0	7.0	6.0	<= 8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X		
4. Ecoli sample holding time (hours)	3.0	4.0	4.0	3.5	3.0	<= 24 hrs: no qualifier > 24 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)	16.0	12.5	16.5	16.0	16.0				
D. Notes									

Reviewed by Heum Turner Date 4/11/24

Approved by Monica Lowe Date 4/11/24

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.

Step 2. Enter expected precipitation depth (in) in blue cell.

Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.11
Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft ³)	Trigger Vol (ft ³)
Lucky	105	0.157	6582.5	387
Whitewater	498	0.069	13621.3	801
Main	79	0.246	7760.0	456
Main Alt	60	0.200	4791.6	282
Americana	875	0.144	50311.8	2960
AS_6	204	0.046	3747.0	220
State	34	0.160	2172.2	128

Notes:

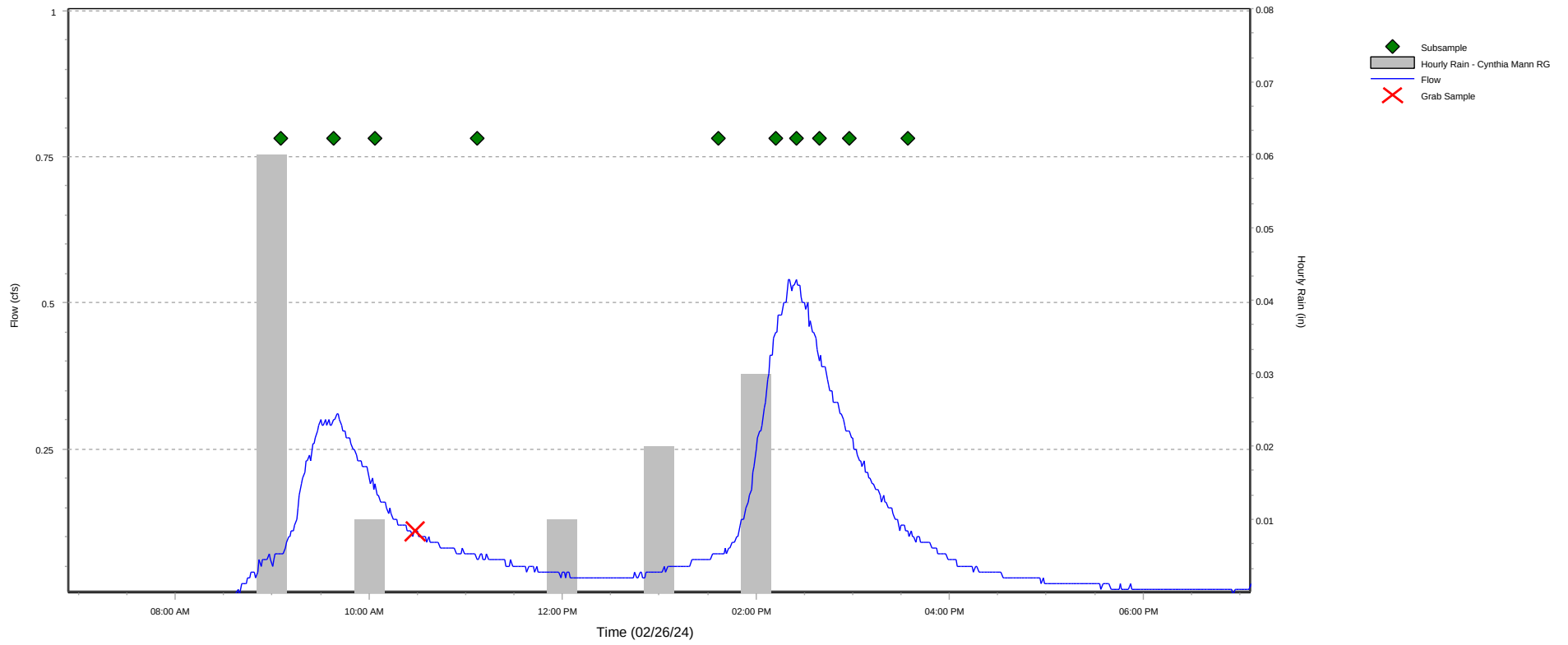
Calculated RC = Average (precip (ft) / [volume (ft³) x area (ft²)])

Where precip (ft) is the measured amount from local rain guage, and volume (ft³) is the measured discharge, and area (ft²) is the watershed area

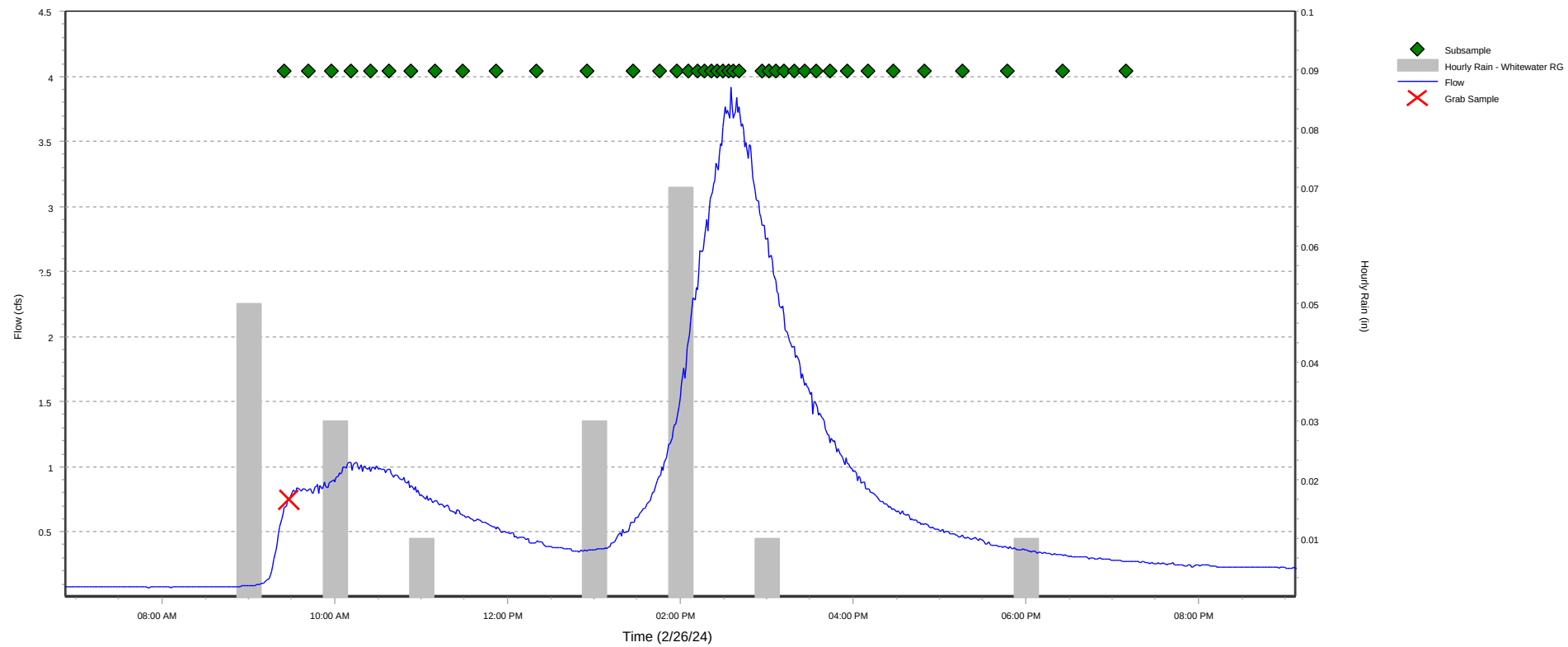
Expected volume (ft³) = RC x expected precip (ft) x area (ft²)

Attachment B: Storm Event Hydrographs

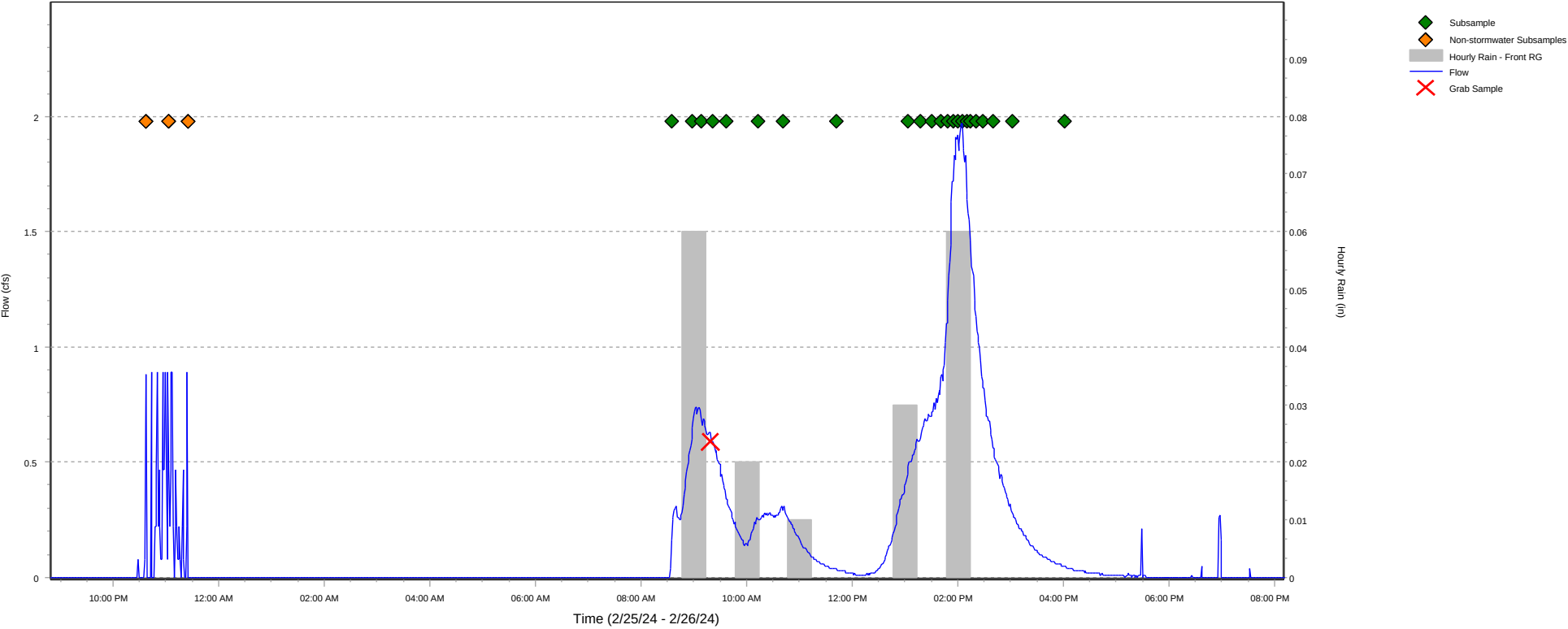
Lucky Hydrograph



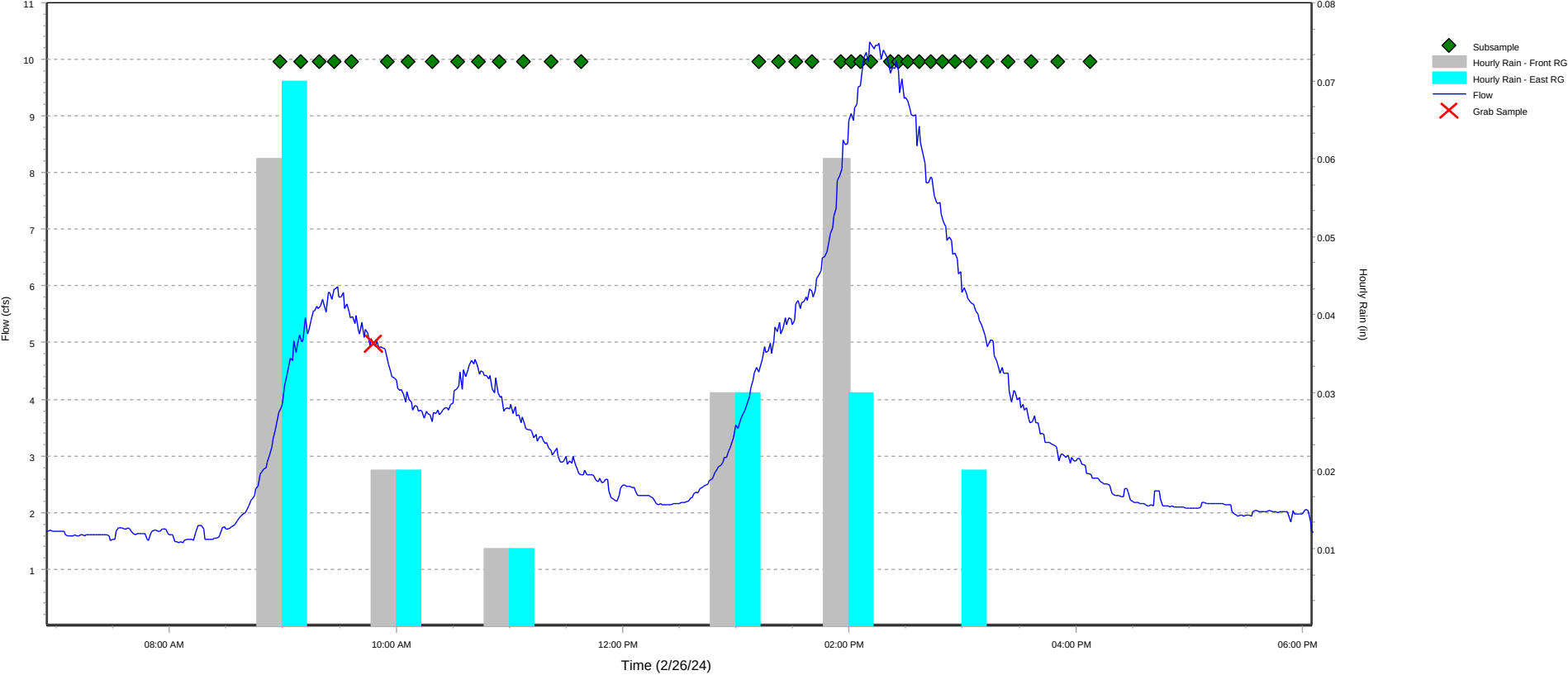
Whitewater Hydrograph



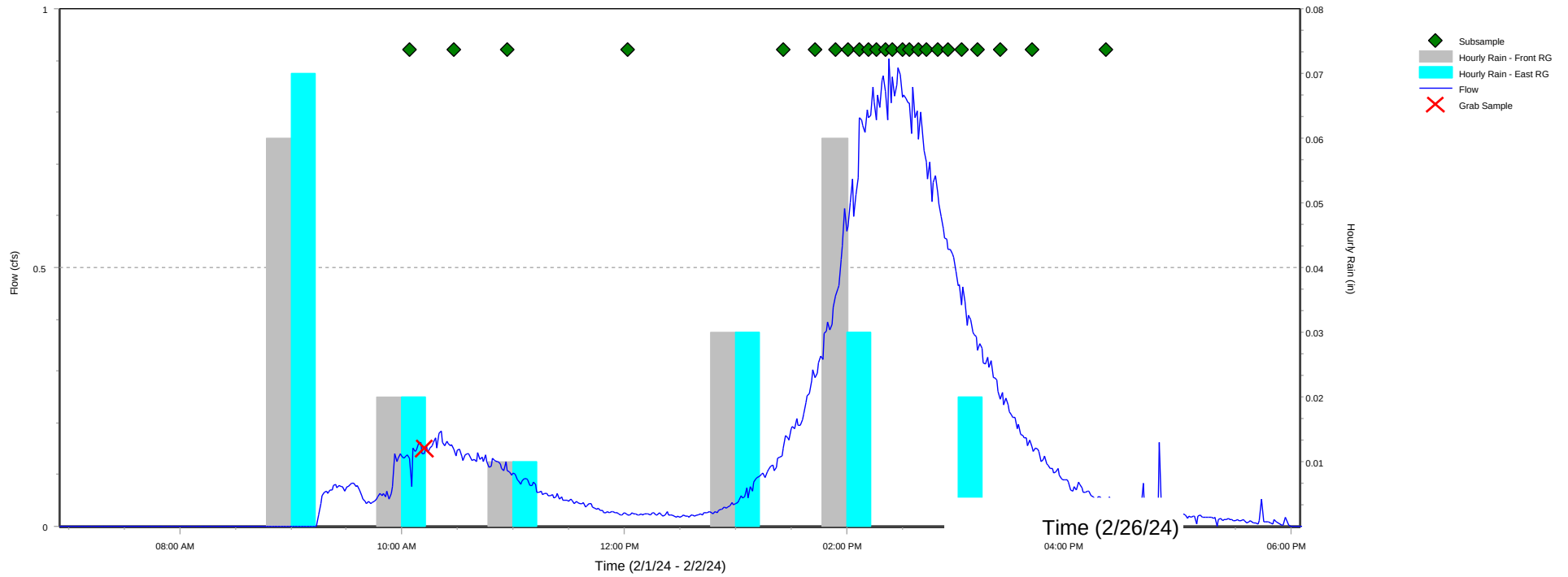
Main Hydrograph



Americana Hydrograph



AS_6 Hydrograph



Attachment C: Field Forms

Grab Sample Data Form

STATION: Lucky

Personnel: ST. PB Date/Time On-Site: 2/26/24 9:57

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
10:02	3.72	89.21 GPM	0.55	12.9		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E.Coli</i>	240226-03 -WG	2/26/24	10:17	☒
Field Duplicate <i>E.Coli</i>	-101			☐
Field Blank <i>E.Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	10:12	4.75	4.89	8.27	125.4

Sampler Current Status	
First Subsample Date/Time	2/26/24 9:05
Last Subsample Date/Time	2/26/24 10:04
# of Subsamples taken	3

Comments:

Flow reading in GPM instead of cfs.

Grab Sample Data Form

STATION: Whitewater

Personnel: ST, PD Date/Time On-Site: 9:10⁵ 2/26/24

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
9:15	251	0.16	0.50	—		

Grab Information					
	Sample ID		Date	Time	Labeled?
Site E.Coli	240226-11	-WG	2/26/24	9:28	☒
Field Duplicate E.Coli	240226-11	-101	2/26/24	9:37:12:00	☒
Field Blank E.Coli	240226-11	-001	2/26/24	9:38:12:00	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	9:42	5.97	10.88	7.74	749.2

Sampler Current Status	
First Subsample Date/Time	9:23
Last Subsample Date/Time	9:40
# of Subsamples taken	2

Comments:

~~Field duplicate + blank dumped. Main grab QC was successful.~~ ST
 Whitewater - alternate QC site. Main grab QC was successful, so whitewater's QC discarded and not submitted to the lab. -ST

Grab Sample Data Form

STATION: MAIN

Personnel: KC, LS, MV Date/Time On-Site: 9:12 AM 2/26/24

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
9:12	5.10	311.35	1.25	12.9	—	—

Grab Information					
	Sample ID		Date	Time	Labeled?
Site E.Coli	240226-12	-WG	240226	0919	☒
Field Duplicate E.Coli	240226-12	-101	240226	0922	☒
Field Blank E.Coli	240226-12	-001	240226	0925	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MR11	9:31	9.53	9.79	7.94	165.88

Sampler Current Status	
First Subsample Date/Time	22:38 2/25
Last Subsample Date/Time	9:09 2/26
# of Subsamples taken	6

Comments:

Grab Sample Data Form

STATION:

Americana

Personnel:

KG, LS, MV

Date/Time On-Site:

9:42 2/26/24

Flow Meter Current Status

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
9:42	9.19	5.24	3.130	12.09	—	—

Grab Information

	Sample ID	Date	Time	Labeled?
Site <i>E.Coli</i>	24022614 -WG	240226	0948	☐
Field Duplicate <i>E.Coli</i>	-101			☐
Field Blank <i>E.Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters

Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	0951	8.74	10.54	7.53	470.55

Sampler Current Status

First Subsample Date/Time	8:57 on 2/26
Last Subsample Date/Time	9:35 - 2/26
# of Subsamples taken	5

Comments:

Grab Sample Data Form

STATION: AS-6

Personnel: LE, LS, MV Date/Time On-Site: 10:05 2/26/24

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
10:05	2.962	0.15	0.71	12.2	—	—

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E.Coli</i>	240226-206 -WG	2/26 2/26/24	10:05	☒
Field Duplicate <i>E.Coli</i>	-101			☐
Field Blank <i>E.Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	10:15	16.49	8.939	7.44	124.28

Sampler Current Status	
First Subsample Date/Time	10:04 - 2/26/24
Last Subsample Date/Time	10:04 - 2/26/24
# of Subsamples taken	1

Comments:

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

TATION: Lucky

SET UP

Personnel: KC, ST

Date/Time 2/25/24 10:15

On-Site: offsite at 10:40

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
10:22	1.72	0.00	0.00	12.9
Enable Condition or Velocity Cutoff:			2.72	
Deadband:			1.00	
Trigger Volume:			2895	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: ST

Date/Time 2/27/24 1253

On-Site:

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
12:57	1.72	1.72	0.02		12.6
Downloaded to:		ST flashdrive			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky
 Personnel: ST, PB

Bottle 1 of 1
 Date/Time On-Site: 10/20 2/24/21

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	240226 - D3 -WC
Approx Sample Volume (mL):	2000 ml
Clarity (ex. Clear, Cloudy, Silty):	Clear
Color (ex. Clear, Gray, Tan, Brown, Black):	Tan
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	2/26 9:05	Soc 57	13		
2	2/26 9:38		14		
3	2/26 10:04		15		
4	11:07		16		
5	13:37		17		
6	14:12		18		
7	14:25		19		
8	14:39		20		
9	14:58		21		
10	15:34		22		
11			23		
12			24		

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

STATION:

Whitewater

SET UP

Personnel:

ST, ICC

Date/Time

On-Site:

2/25/24 10:52

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
10:55	1.86	0.04	0.17	—
Enable Condition:		3.05		
Hysteresis:		1.00		
Flow Pulse Interval:		800cf		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☐ Direct or Remote; Date/time Did not download
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

Flowmeter time was 7 minutes off. Time corrected. Did not download data. Reviewed data on flowmeter screen.

SHUT DOWN

Personnel:

ST

Date/Time

On-Site:

2/27/24 1336

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1336	2.39	0.13	0.41	—
Downloaded to:		Flowlink		

On-Site

- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 2/27 @ 10:25
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Whitewater
 Personnel: EC, ST

Bottle 1 of 2
 Date/Time On-Site: 2/26/24 1454

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240226-11</u> -WC
Approx Sample Volume (mL):	<u>14000 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/26 0923</u>	<u>Success</u>	13	<u>2/26 1325</u>	<u>Success</u>
2	<u>0940</u>		14	<u>1344</u>	
3	<u>0956</u>		15	<u>1356</u>	
4	<u>1010</u>		16	<u>1404</u>	
5	<u>1023</u>		17	<u>1411</u>	
6	<u>1037</u>		18	<u>1416</u>	
7	<u>1051</u>		19	<u>1420</u>	
8	<u>1108</u>		20	<u>1425</u>	
9	<u>1128</u>		21	<u>1428</u>	
10	<u>1156</u>		22	<u>1432</u>	
11	<u>1219</u>		23	<u>1436</u>	
12	<u>1254</u>		24	<u>1439</u>	

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2/26 1456</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: White Water
 Personnel: VCIST

Bottle 2 of 2

Date/Time On-Site: _____

☐ Halt sampler program
☐ Put lid on sample bottle; label sample bottle
Sample ID: <u>240226-11</u> -WC
Approx Sample Volume (mL): <u>9500 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	2/26/24 1455	Success	13	2/26/24 1715	Success
2	1500		14	1746	
3	1505		15	1824	
4	1511		16	1908	
5	1517		17		
6	1525		18		
7	1533		19		
8	1543		20		
9	1555		21		
10	1609		22		
11	1627		23		
12	1648		24		

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: Main

SET UP

Personnel: KC, ST

Date/Time: 2/25/24 1133

On-Site: 2/25/24 1133

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1136	0.87	0.00	0.00	12.8
Enable Condition or Velocity Cutoff:			1.87	
Deadband:			1.00	
Trigger Volume:			3411	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: ST

Date/Time: 2/27/24 1547

On-Site: 2/27/24 1547

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1547	0.85	0.00	0.00		12.4
Downloaded to: <u>Steven's USB</u>					

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Main
 Personnel: KC, ST

Bottle 1 of 2
 Date/Time On-Site: 2/26/24 1440

☒ Halt sampler program
☐ Put lid on sample bottle; label sample bottle
Sample ID: <u>240226-2012</u> -WC
Approx Sample Volume (mL): <u>13250 ml</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Brown</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	2/25/24 2238	Success	13	2/26/24 1318	Success
2	↓ 2304	↓	14	1330	↓
3	↓ 2326		15	1341	
4	2/26/24 0835		16	1349	
5	0858		17	1355	
6	0909		18	1400	
7	0921		19	1405	
8	0937		20	1410	
9	1013		21	1415	
10	1042		22	1421	
11	1142		23	1429	
12	↓ 1304	✓	24	↓ 1440	✓

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle, add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2/26/24 1443</u> ☒ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Main
 Personnel: EG ST

Bottle 2 of 2

Date/Time On-Site: _____

☐ Halt sampler program		
☐ Put lid on sample bottle; label sample bottle		
Sample ID:	<u>240226-12</u>	-WC
Approx Sample Volume (mL):	<u>800 mL</u>	
Clarity (ex. Clear, Cloudy, Silty):	<u>Clear</u>	
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Clear</u>	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/26/24 150Z</u>	<u>Success</u>	13		
2	<u>↓ 1601</u>	<u>↓</u>	14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete: ☒ Power off sampler, if separate from flowmeter ☒ Keep flowmeter running ☒ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

STATION: Americana

SET UP

Personnel: KC, ST

Date/Time

On-Site: 2/25/24 1212

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1212	5.53	2.168	2.061	12.41
Enable Condition:		6.53	7.59	
Hysteresis:		1.00		
Flow Pulse Interval:		2900 cfs		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time Did not need to download
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments: Data not downloaded. Recent flow history was viewed on the flowmeter screen.

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 2/27/24 1502

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
15:03	5.56	1.80	2.217	11.90
Downloaded to:		Flowlink		

On-Site

- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 2/27 10:21
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Americana
 Personnel: ST, KC

Bottle 1 of 2
 Date/Time On-Site: 2/24/24 1415

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240226-14</u> -WC
Approx Sample Volume (mL):	<u>12,500 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/24/24 0857</u>	<u>Success</u>	13	<u>2/26/24 1104</u>	<u>Success</u>
2	<u>0908</u>		14	<u>1121</u>	
3	<u>0918</u>		15	<u>1137</u>	
4	<u>0926</u>		16	<u>1311</u>	
5	<u>0935</u>		17	<u>1321</u>	
6	<u>0944</u>	<u>Sample skipped</u>	18	<u>1330</u>	
7	<u>0954</u>	<u>Success</u>	19	<u>1339</u>	
8	<u>1005</u>		20	<u>1347</u>	<u>skipped</u>
9	<u>1018</u>		21	<u>1354</u>	<u>Success</u>
10	<u>1031</u>		22	<u>1400</u>	
11	<u>1042</u>		23	<u>1405</u>	
12	<u>1053</u>		24	<u>1410</u>	

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2/26 1418</u> ☒ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Americana

Personnel: V.C. ST

Bottle 2 of 2

Date/Time On-Site: 2/26/24 1805

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240226 - 14</u> -WC
Approx Sample Volume (mL):	<u>8,000 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Tan</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/26/24 1420</u>	<u>Success</u>	13	<u>2/26/24 1406</u>	<u>Successful</u>
2	<u>1425</u>		14		
3	<u>1430</u>		15		
4	<u>1436</u>		16		
5	<u>1442</u>		17		
6	<u>1448</u>		18		
7	<u>1455</u>		19		
8	<u>1503</u>		20		
9	<u>1512</u>		21		
10	<u>1523</u>		22		
11	<u>1535</u>		23		
12	<u>1549</u>		24		

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: AS-6

SET UP

Personnel: KC, ST

Date/Time
On-Site: 2/25/24 1253

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1253	0.00	0.00	0.00	11.9/12.4
Enable Condition or Velocity Cutoff:			0.02	
Deadband:				
Trigger Volume:			221	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: ST

Date/Time
On-Site: 2/27/24 1352

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1353	0.000	0.00	0.00	5448.2	12.4
Downloaded to:		Rugged - SD drive			
		Raw data			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6
 Personnel: KC, ST

Bottle 1 of 2
 Date/Time On-Site: 2/26/24 1553

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240226-206</u> -WC
Approx Sample Volume (mL):	<u>12,500 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Silty</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Brown</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/26/24 1004</u>	<u>Success</u>	13	<u>2/26/24 1425</u>	<u>Success</u>
2	<u>1028</u>		14	<u>1430</u>	
3	<u>1057</u>		15	<u>1434</u>	
4	<u>1202</u>		16	<u>1439</u>	
5	<u>1326</u>		17	<u>1443</u>	
6	<u>1343</u>		18	<u>1449</u>	
7	<u>1354</u>		19	<u>1455</u>	
8	<u>1401</u>		20	<u>1502</u>	
9	<u>1407</u>		21	<u>1511</u>	
10	<u>1412</u>		22	<u>1523</u>	
11	<u>1416</u>		23	<u>1540</u>	
12	<u>1421</u>		24		

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle, add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2/26 4:07</u> ☒ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: AS-6
 Personnel: VC, ST

Bottle 2 of 2
 Date/Time On-Site: 2/26/24 1853

☒ Halt sampler program
☐ Put lid on sample bottle; label sample bottle
Sample ID: <u>240226 - 206</u> -WC
Approx Sample Volume (mL): <u>400 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Clear</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>2/26/24 11020</u>	<u>Success</u>	13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:

- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Attachment D: Storm Event Analytical Reports

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00332-01	ACST1B	240226-03-WG	Water		02/26/2024	02/26/2024
AC00332-02	ACST1B	240226-11-WG	Water		02/26/2024	02/26/2024
AC00332-03	ACST1B	240226-12-WG	Water		02/26/2024	02/26/2024
AC00332-04	ACST1B	240226-12-101	Water		02/26/2024	02/26/2024
AC00332-05	ACST1B	240226-12-001	Water		02/26/2024	02/26/2024
AC00332-06	ACST1B	240226-14-WG	Water		02/26/2024	02/26/2024

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 02/26/2024 10:17
Lab Number: AC00332-01
Sample Type: Grab

Location Description: 240226-03-WG
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst	
				MDL *	MDL				Reference	Initials
Microbiology										
E. Coli	B240669	37.9MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:38	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1B
Date/Time Collected: 02/26/2024 09:28
Lab Number: AC00332-02
Sample Type: Grab

Location Description: 240226-11-WG
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E. Coli	B240669	38.3MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:38	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



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Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location: ACST1B

Location Description: 240226-12-WG

Date/Time Collected: 02/26/2024 09:19

Lab Number: AC00332-03

Sample Collector: L.S

Sample Type: Grab

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E. Coli	B240669	24.3MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:38	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



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Analysis Report

Location: ACST1B

Location Description: 240226-12-101

Date/Time Collected: 02/26/2024 12:00

Lab Number: AC00332-04

Sample Collector: L.S

Sample Type: Grab

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E. Coli	B240669	26.9MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:38	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location: ACST1B Location Description: 240226-12-001
Date/Time Collected: 02/26/2024 12:00
Lab Number: AC00332-05 Sample Collector: L.S.
Sample Type: Grab Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E Coli	B240669	<1.0MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	U
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:42	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B, was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 02/26/2024 09:48
Lab Number: AC00332-06
Sample Type: Grab

Location Description: 240226-14-WG
Sample Collector: M.V
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E. Coli	B240669	125.9 MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:42	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B240669									
Blank (B240669-BLK1)									
E. Coli	Absent						02/27/2024	KMR	
LCS (B240669-BS1)									
E. Coli				Present			02/27/2024	KMR	
Duplicate (B240669-DUP1) Source ID: WB02977-06									
E. Coli					Pass	128	02/27/2024	KMR	
Duplicate (B240669-DUP2) Source ID: AC00332-01									
E. Coli					Pass	128	02/27/2024	KMR	

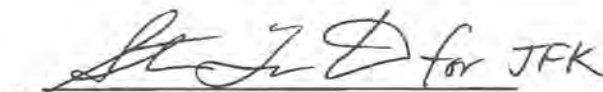


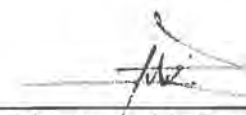
Notes and Definitions

Item	Definition
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order:
Project:
Sampler(s):

63065628

Stormwater-PI

Steven Turner
Paul Bomber
Kristen Christensen
Lindsey Sincot Mike Van Lydegraf

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	Composite	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colliert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
Acc00332																									
-01	2/26/24		1017		240226-03-WG	ST	X	X												X					1
-02			0928		240226-11-WG	ST	X	X												X					1
-03			0919		240226-12-WG	LS	X	X												X					1
-04			1200		240226-12-101	LS	X	X												X					1
-05			1200		240226-12-001	LS	X	X												X					1
-06			0948		240226-14-WG	LV	X	X												X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Kristen Christensen</i>	2/26/24 1201	<i>April [Signature]</i> 2-26-24 1204	

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00333-01	ACST1B	240226-206-WG	Water		02/26/2024	02/26/2024

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 02/26/2024 10:12
Lab Number: AC00333-01
Sample Type: Grab

Location Description: 240226-206-WG
Sample Collector: M.V
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E Coli	B240669	53.7 MPN/100 mL		1.0	1.0	IDEXX - Colilert	02/26/24 13:24	2/27/24 13:41	KMR	
Wet Chemistry										
Chlorine Screen	B240674	Absent				SM 4500-CL G-2000 mod	02/26/24	2/26/24 12:42	ALN	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 03/08/2024 13:51



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1075
Telephone (208) 608-7240
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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B240669									
Blank (B240669-BLK1)									
E. Coli	Absent						02/27/2024	KMR	
LCS (B240669-BS1)									
E. Coli				Present			02/27/2024	KMR	
Duplicate (B240669-DUP1) Source ID: WB02977-06									
E. Coli					Pass	128	02/27/2024	KMR	
Duplicate (B240669-DUP2) Source ID: AC00332-01									
E. Coli					Pass	128	02/27/2024	KMR	



Notes and Definitions

Item	Definition
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No notes entered.

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order: 6
Project: S
Sampler(s): 2

Stormwater-PI

Kristen Chisholm
Lindsey Smoot
Mike Van Lydegraf

[illegible]

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Kristen Chisholm</i>	2/26/24 1201	<i>April R. Giff</i> 2-26-24 1204	

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00337-01	ACST1C	240226-03-WC	Water		02/26/2024	02/27/2024
Comments: Container temp #1 - 4.8 C						
AC00337-02	ACST1C	240226-11-WC	Water		02/26/2024	02/27/2024
Comments: Container temps: #1 - 6.4 C, #2 - 5.7 C						
AC00337-03	ACST1C	240226-12-WC	Water		02/26/2024	02/27/2024
Comments: Container temps: #1 - 8.4 C, #2 - 7.2 C						
AC00337-04	ACST1C	240226-14-WC	Water		02/26/2024	02/27/2024
Comments: Container temps: #1 - 7.4 C, #2 - 5.6 C						

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1C

Location Description: 240226-03-WC

Date/Time Collected: 02/26/2024 09:05 - 02/26/2024 15:34

Lab Number: AC00337-01

Sample Collector: S.T

Sample Type: Composite

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240744	0.476	mg/L	0.0500	0.0500	SM 4500-NH3 D-2011	03/01/24	3/1/24 11:29	MEC	
BOD5	B240684	13.5	mg/L	2.00	2.00	SM 5210 B-2016	02/27/24	3/3/24 11:21	BAK	
Chloride	B240796	8.92	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	03/06/24	3/6/24 22:25	ALN	
COD	B240680	60.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/27/24	2/27/24 10:52	MCB	
Nitrate-Nitrite, as N	B240718	0.969	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/29/24	2/29/24 12:18	LRF	
TKN	B240816	1.71	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/07/24	3/8/24 9:46	JAL	
Total Dissolved Solids	B240696	114	mg/L	20.0	20.0	SM 2540 C-2015	02/28/24	2/29/24 13:59	MEC	
Total Suspended Solids	B240708	18.1	mg/L	0.900	0.900	SM 2540 D-2015	02/28/24	2/28/24 10:21	RKT	
Turbidity	B240698	18.9	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	02/28/24	2/28/24 8:26	ASE	
Dissolved Wet Chemistry										
Orthophosphate, as P	B240685	0.124	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/27/24	2/27/24 10:06	RKT	
Total Metals										
Mercury	B240817	0.0150	ug/L	0.0100	0.0100	EPA 245.1	03/07/24	3/8/24 8:12	SAS	
Arsenic	B240750	2.6	ug/L	0.070	0.070	EPA 200.8	03/02/24	3/3/24 13:49	DMW	
Cadmium	B240750	0.031	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:49	DMW	
Calcium	B240695	17.6	mg/L	0.0400	0.0400	EPA 200.7	02/28/24	3/1/24 11:18	AMO	
Lead	B240750	0.72	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:49	DMW	
Magnesium	B240695	2250	ug/L	80.0	80.0	EPA 200.7	02/28/24	3/1/24 11:18	AMO	
Phosphorus as P	B240695	0.262	mg/L	0.0120	0.0120	EPA 200.7	02/28/24	3/1/24 11:18	AMO	
Hardness	B240695	53.2	mg/L	0.100	0.100	SM 2340 B-2011	02/28/24	3/1/24 11:18	AMO	
Dissolved Metals										
Cadmium	B241178	0.011	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 16:04	DMW	
Copper	B240802	4.5	ug/L	0.15	0.15	EPA 200.8	03/08/24	3/8/24 16:28	DMW	
Lead	B241178	0.028	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 16:04	DMW	
Zinc	B240802	13.5	ug/L	0.50	0.50	EPA 200.8	03/08/24	3/8/24 16:28	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1C
Date/Time Collected: 02/26/2024 09:23 - 02/26/2024 19:08
Lab Number: AC00337-02
Sample Type: Composite

Location Description: 240226-11-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240744	0.596	mg/L	0.0500	0.0500	SM 4500-NH3 D-2011	03/01/24	3/1/24 11:45	MEC	
BOD5	B240684	12.6	mg/L	2.00	2.00	SM 5210 B-2016	02/27/24	3/3/24 11:12	BAK	
Chloride	B240796	44.4	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	03/07/24	3/7/24 0:10	ALN	
COD	B240680	84.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/27/24	2/27/24 10:58	MCB	
Nitrate-Nitrite, as N	B240718	0.921	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/29/24	2/29/24 12:19	LRF	
TKN	B240816	2.43	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/07/24	3/8/24 9:47	JAL	
Total Dissolved Solids	B240696	182	mg/L	20.0	20.0	SM 2540 C-2015	02/28/24	2/29/24 14:00	MEC	
Total Suspended Solids	B240683	47.3	mg/L	0.900	0.900	SM 2540 D-2015	02/27/24	2/27/24 10:25	MEC	
Turbidity	B240698	52.3	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/28/24	2/28/24 9:53	ASE	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240685	0.174	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/27/24	2/27/24 10:07	RKT	
Total Metals										
Mercury	B240817	0.0151	ug/L	0.0100	0.0100	EPA 245.1	03/07/24	3/8/24 8:16	SAS	
Arsenic	B240750	2.6	ug/L	0.070	0.070	EPA 200.8	03/02/24	3/3/24 13:52	DMW	
Cadmium	B240750	0.062	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:52	DMW	
Calcium	B240695	22.5	mg/L	0.0400	0.0400	EPA 200.7	02/28/24	3/1/24 11:24	AMO	
Lead	B240750	3.8	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:52	DMW	
Magnesium	B240695	5260	ug/L	80.0	80.0	EPA 200.7	02/28/24	3/1/24 11:24	AMO	
Phosphorus as P	B240695	0.347	mg/L	0.0120	0.0120	EPA 200.7	02/28/24	3/1/24 11:24	AMO	
Hardness	B240695	77.8	mg/L	0.100	0.100	SM 2340 B-2011	02/28/24	3/1/24 11:24	AMO	
Dissolved Metals										
Cadmium	B241178	0.014	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 16:07	DMW	
Copper	B240802	4.4	ug/L	0.15	0.15	EPA 200.8	03/08/24	3/8/24 16:30	DMW	
Lead	B241178	0.093	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 16:07	DMW	
Zinc	B240802	24.5	ug/L	0.50	0.50	EPA 200.8	03/08/24	3/8/24 16:30	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1C
Date/Time Collected: 02/25/2024 22:38 - 02/26/2024 16:01
Lab Number: AC00337-03
Sample Type: Composite

Location Description: 240226-12-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240744	0.829	mg/L	0.0500	0.0500	SM 4500-NH3 D-2011	03/01/24	3/1/24 11:37	MEC	
BOD5	B240684	13.9	mg/L	2.00	2.00	SM 5210 B-2016	02/27/24	3/3/24 11:07	BAK	
Chloride	B240796	17.0	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	03/07/24	3/7/24 0:37	ALN	
COD	B240680	119	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/27/24	2/27/24 10:58	MCB	
Nitrate-Nitrite, as N	B240718	0.424	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/29/24	2/29/24 12:21	LRF	
TKN	B240816	1.96	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/07/24	3/8/24 9:48	JAL	
Total Dissolved Solids	B240696	85.2	mg/L	20.0	20.0	SM 2540 C-2015	02/28/24	2/29/24 14:01	MEC	
Total Suspended Solids	B240683	104	mg/L	0.900	0.900	SM 2540 D-2015	02/27/24	2/27/24 10:28	MEC	
Turbidity	B240698	94.7	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/28/24	2/28/24 9:08	ASE	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240685	0.0631	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/27/24	2/27/24 10:09	RKT	
Total Metals										
Mercury	B240817	0.0191	ug/L	0.0100	0.0100	EPA 245.1	03/07/24	3/8/24 8:51	SAS	
Arsenic	B240750	1.5	ug/L	0.070	0.070	EPA 200.8	03/02/24	3/3/24 13:54	DMW	
Cadmium	B240750	0.13	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:54	DMW	
Calcium	B240695	7.84	mg/L	0.0400	0.0400	EPA 200.7	02/28/24	3/1/24 11:51	AMO	
Lead	B240750	6.1	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:54	DMW	
Magnesium	B240695	2470	ug/L	80.0	80.0	EPA 200.7	02/28/24	3/1/24 11:51	AMO	
Phosphorus as P	B240695	0.231	mg/L	0.0120	0.0120	EPA 200.7	02/28/24	3/1/24 11:51	AMO	
Hardness	B240695	29.8	mg/L	0.100	0.100	SM 2340 B-2011	02/28/24	3/1/24 11:51	AMO	
Dissolved Metals										
Cadmium	B241178	0.032	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 16:09	DMW	
Copper	B240802	5.6	ug/L	0.15	0.15	EPA 200.8	03/08/24	3/8/24 16:33	DMW	
Lead	B241178	0.12	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 16:09	DMW	
Zinc	B240802	51.7	ug/L	0.50	0.50	EPA 200.8	03/08/24	3/8/24 16:33	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Analysis Report

Location: ACST1C
Date/Time Collected: 02/26/2024 08:57 - 02/26/2024 16:06
Lab Number: AC00337-04
Sample Type: Composite

Location Description: 240226-14-WC
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240744	0.496	mg/L	0.0500	0.0500	SM 4500-NH3 D-2011	03/01/24	3/1/24 11:39	MEC	
BOD5	B240684	12.6	mg/L	2.00	2.00	SM 5210 B-2016	02/27/24	3/3/24 11:01	BAK	
Chloride	B240796	56.1	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	03/07/24	3/7/24 1:03	ALN	
COD	B240680	85.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/27/24	2/27/24 10:58	MCB	
Nitrate-Nitrite, as N	B240718	0.940	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/29/24	2/29/24 12:22	LRF	
TKN	B240816	1.47	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/07/24	3/8/24 9:49	JAL	
Total Dissolved Solids	B240696	214	mg/L	20.0	20.0	SM 2540 C-2015	02/28/24	2/29/24 14:03	MEC	
Total Suspended Solids	B240683	54.3	mg/L	0.900	0.900	SM 2540 D-2015	02/27/24	2/27/24 11:21	MEC	
Turbidity	B240698	51.1	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/28/24	2/28/24 10:00	ASE	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240685	0.106	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/27/24	2/27/24 10:10	RKT	
Total Metals										
Mercury	B240817	0.0148	ug/L	0.0100	0.0100	EPA 245.1	03/07/24	3/8/24 8:54	SAS	
Arsenic	B240750	3.3	ug/L	0.070	0.070	EPA 200.8	03/02/24	3/3/24 13:57	DMW	
Cadmium	B240750	0.097	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:57	DMW	
Calcium	B240695	31.4	mg/L	0.0400	0.0400	EPA 200.7	02/28/24	3/1/24 11:57	AMO	
Lead	B240750	3.9	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:57	DMW	
Magnesium	B240695	5710	ug/L	80.0	80.0	EPA 200.7	02/28/24	3/1/24 11:57	AMO	
Phosphorus as P	B240695	0.276	mg/L	0.0120	0.0120	EPA 200.7	02/28/24	3/1/24 11:57	AMO	
Hardness	B240695	102	mg/L	0.100	0.100	SM 2340 B-2011	02/28/24	3/1/24 11:57	AMO	
Dissolved Metals										
Cadmium	B241178	0.021	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 16:12	DMW	
Copper	B240802	4.0	ug/L	0.15	0.15	EPA 200.8	03/08/24	3/8/24 16:43	DMW	
Lead	B241178	0.063	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 16:12	DMW	
Zinc	B240802	24.3	ug/L	0.50	0.50	EPA 200.8	03/08/24	3/8/24 16:43	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Revised Report



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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B240680									
Blank (B240680-BLK1)									
COD	<7	mg/L					02/27/2024	MCB	U
LCS (B240680-BS1)									
COD			100	90-110			02/27/2024	MCB	
Duplicate (B240680-DUP1)	Source ID: AC00335-01								
COD					3.92	10	02/27/2024	MCB	
Batch: B240683									
Blank (B240683-BLK1)									
Total Suspended Solids	<0.9	mg/L					02/27/2024	MEC	U
LCS (B240683-BS1)									
Total Suspended Solids			101	90-110			02/27/2024	MEC	
Duplicate (B240683-DUP1)	Source ID: BB03630-02								
Total Suspended Solids					8.03	20	02/27/2024	MEC	
Batch: B240684									
Blank (B240684-BLK1)									
BOD5	<2	mg/L					03/03/2024	BAK	U
LCS (B240684-BS1)									
BOD5			102	84.6-115.4			03/03/2024	BAK	
LCS (B240684-BS2)									
BOD5			109	84.6-115.4			03/03/2024	BAK	
Duplicate (B240684-DUP1)	Source ID: BB03630-03								
BOD5					3.10	30	03/03/2024	BAK	
Batch: B240696									
Blank (B240696-BLK1)									
Total Dissolved Solids	<20	mg/L					02/29/2024	MEC	U
LCS (B240696-BS1)									
Total Dissolved Solids			99.4	90-110			02/29/2024	MEC	
Duplicate (B240696-DUP1)	Source ID: LS01873-01								
Total Dissolved Solids					0.700	10	02/29/2024	MEC	

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Quality Control Report

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240698									
Blank (B240698-BLK1)									
Turbidity	<0.3	NTU					02/28/2024	ASE	U
LCS (B240698-BS1)									
Turbidity			98.2	90-110			02/28/2024	ASE	
Duplicate (B240698-DUP1) Source ID: AC00337-04									
Turbidity					3.45	25	02/28/2024	ASE	D
Batch: B240708									
Blank (B240708-BLK1)									
Total Suspended Solids	<0.9	mg/L					02/28/2024	RKT	U
LCS (B240708-BS1)									
Total Suspended Solids			96.2	90-110			02/28/2024	RKT	
Duplicate (B240708-DUP1) Source ID: BB03631-02									
Total Suspended Solids					3.63	20	02/28/2024	RKT	
Duplicate (B240708-DUP2) Source ID: BB03632-01									
Total Suspended Solids					6.00	20	02/28/2024	RKT	
Batch: B240718									
Blank (B240718-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					02/29/2024	LRF	U
Blank (B240718-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					02/29/2024	LRF	U
LCS (B240718-BS1)									
Nitrate-Nitrite, as N			104	90-110			02/29/2024	LRF	
LCS (B240718-BS2)									
Nitrate-Nitrite, as N			99.7	90-110			02/29/2024	LRF	
Duplicate (B240718-DUP1) Source ID: BB03631-02									
Nitrate-Nitrite, as N					NR	10	02/29/2024	LRF	
Duplicate (B240718-DUP2) Source ID: AC00336-01									
Nitrate-Nitrite, as N					0.514	10	02/29/2024	LRF	
Duplicate (B240718-DUP3) Source ID: LS01875-02									
Nitrate-Nitrite, as N					0.470	10	02/29/2024	LRF	
Matrix Spike (B240718-MS1) Source ID: BB03631-02									
Nitrate-Nitrite, as N			101	90-110			02/29/2024	LRF	
Matrix Spike (B240718-MS2) Source ID: AC00336-01									
Nitrate-Nitrite, as N			99.9	90-110			02/29/2024	LRF	
Matrix Spike (B240718-MS3) Source ID: LS01875-02									
Nitrate-Nitrite, as N			98.2	90-110			02/29/2024	LRF	
Matrix Spike Dup (B240718-MSD1) Source ID: BB03631-02									
Nitrate-Nitrite, as N			106	90-110	4.55	10	02/29/2024	LRF	
Matrix Spike Dup (B240718-MSD2) Source ID: AC00336-01									
Nitrate-Nitrite, as N			99.9	90-110	0.0278	10	02/29/2024	LRF	

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Quality Control Report

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240718 (Continued)									
Matrix Spike Dup (B240718-MSD3)	Source ID: LS01875-02								
Nitrate-Nitrite, as N			97.3	90-110	0.479	10	02/29/2024	LRF	
Batch: B240744									
Blank (B240744-BLK1)									
Ammonia, as N	<50	ug/L					03/01/2024	MEC	U
LCS (B240744-BS1)									
Ammonia, as N			97.7	90-110			03/01/2024	MEC	
Duplicate (B240744-DUP1)	Source ID: LS01873-02								
Ammonia, as N					1.34	10	03/01/2024	MEC	
Duplicate (B240744-DUP2)	Source ID: BB03629-03								
Ammonia, as N					1.56	10	03/01/2024	MEC	
Matrix Spike (B240744-MS1)	Source ID: LS01873-02								
Ammonia, as N			98.3	80-120			03/01/2024	MEC	
Matrix Spike (B240744-MS2)	Source ID: BB03629-03								
Ammonia, as N			104	80-120			03/01/2024	MEC	
Matrix Spike Dup (B240744-MSD1)	Source ID: LS01873-02								
Ammonia, as N			100	80-120	1.38	10	03/01/2024	MEC	
Matrix Spike Dup (B240744-MSD2)	Source ID: BB03629-03								
Ammonia, as N			106	80-120	1.01	10	03/01/2024	MEC	
Batch: B240796									
Blank (B240796-BLK1)									
Chloride	<0.015	mg/L					03/06/2024	ALN	U
Blank (B240796-BLK2)									
Chloride	<0.015	mg/L					03/07/2024	ALN	U
LCS (B240796-BS1)									
Chloride			95.7	90-110			03/06/2024	ALN	
LCS (B240796-BS2)									
Chloride			96.0	90-110			03/06/2024	ALN	
LCS (B240796-BS3)									
Chloride			95.4	90-110			03/07/2024	ALN	
Duplicate (B240796-DUP1)	Source ID: RW00054-10								
Chloride					3.94	10	03/07/2024	ALN	D
Duplicate (B240796-DUP2)	Source ID: RW00056-07								
Chloride					0.398	10	03/07/2024	ALN	D
Duplicate (B240796-DUP3)	Source ID: AC00337-01								
Chloride					0.672	10	03/06/2024	ALN	
Duplicate (B240796-DUP4)	Source ID: LS01873-01								
Chloride					0.319	10	03/07/2024	ALN	D
Matrix Spike (B240796-MS1)	Source ID: RW00054-10								
Chloride			96.6	90-110			03/07/2024	ALN	D

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240796 (Continued)									
Matrix Spike (B240796-MS2) Chloride	Source ID: RW00056-07		94.1	90-110			03/07/2024	ALN	D
Matrix Spike (B240796-MS3) Chloride	Source ID: AC00337-01		93.9	90-110			03/06/2024	ALN	
Matrix Spike (B240796-MS4) Chloride	Source ID: LS01873-01		94.6	90-110			03/07/2024	ALN	D
Matrix Spike Dup (B240796-MSD1) Chloride	Source ID: RW00054-10		97.2	90-110	0.377	10	03/07/2024	ALN	D
Matrix Spike Dup (B240796-MSD2) Chloride	Source ID: RW00056-07		94.2	90-110	0.0228	10	03/07/2024	ALN	D
Matrix Spike Dup (B240796-MSD3) Chloride	Source ID: AC00337-01		97.5	90-110	2.75	10	03/07/2024	ALN	
Matrix Spike Dup (B240796-MSD4) Chloride	Source ID: LS01873-01		95.4	90-110	0.336	10	03/07/2024	ALN	D
Batch: B240816									
Blank (B240816-BLK1) TKN	<0.1	mg/L					03/08/2024	JAL	U
Blank (B240816-BLK2) TKN	<0.1	mg/L					03/08/2024	JAL	U
Blank (B240816-BLK3) TKN	<0.1	mg/L					03/08/2024	JAL	U
LCS (B240816-BS1) TKN			96.1	80-120			03/08/2024	JAL	
LCS (B240816-BS2) TKN			105	80-120			03/08/2024	JAL	
LCS (B240816-BS3) TKN			104	80-120			03/08/2024	JAL	
Duplicate (B240816-DUP1) TKN	Source ID: BB03631-02				1.33	20	03/08/2024	JAL	D
Duplicate (B240816-DUP2) TKN	Source ID: BB03638-01				1.21	20	03/08/2024	JAL	D
Duplicate (B240816-DUP3) TKN	Source ID: LS01875-05				1.25	20	03/08/2024	JAL	D
Matrix Spike (B240816-MS1) TKN	Source ID: BB03631-02		106	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS2) TKN	Source ID: BB03638-01		107	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS3) TKN	Source ID: LS01875-05		108	80-120			03/08/2024	JAL	D

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Quality Control Report

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
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Wet Chemistry (Continued)**Batch: B240816 (Continued)**

Matrix Spike (B240816-MS4) TKN	Source ID: RW00055-01		107	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS5) TKN	Source ID: RW00055-03		105	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS6) TKN	Source ID: RW00055-04		103	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS7) TKN	Source ID: RW00055-06		102	80-120			03/08/2024	JAL	D
Matrix Spike Dup (B240816-MSD1) TKN	Source ID: BB03631-02		114	80-120	2.56	20	03/08/2024	JAL	D
Matrix Spike Dup (B240816-MSD2) TKN	Source ID: BB03638-01		115	80-120	2.66	20	03/08/2024	JAL	D
Matrix Spike Dup (B240816-MSD3) TKN	Source ID: LS01875-05		114	80-120	2.43	20	03/08/2024	JAL	D

Dissolved Wet Chemistry**Batch: B240685**

Blank (B240685-BLK1) Orthophosphate, as P		<0.003	mg/L				02/27/2024	RKT	U
LCS (B240685-BS1) Orthophosphate, as P				96.3	90-110		02/27/2024	RKT	
Duplicate (B240685-DUP1) Orthophosphate, as P	Source ID: LS01873-02					0.0687	10	02/27/2024	RKT D
Duplicate (B240685-DUP3) Orthophosphate, as P	Source ID: RW00054-07RE1					0.433	10	02/27/2024	RKT D
Matrix Spike (B240685-MS1) Orthophosphate, as P	Source ID: LS01873-02		98.4	90-110			02/27/2024	RKT	D
Matrix Spike (B240685-MS3) Orthophosphate, as P	Source ID: RW00054-07RE1		101	90-110			02/27/2024	RKT	D
Matrix Spike Dup (B240685-MSD1) Orthophosphate, as P	Source ID: LS01873-02		98.5	90-110	0.0349	10	02/27/2024	RKT	D
Matrix Spike Dup (B240685-MSD3) Orthophosphate, as P	Source ID: RW00054-07RE1		101	90-110	0.0489	10	02/27/2024	RKT	D

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B240695									
Blank (B240695-BLK1)									
Calcium	<0.04	mg/L					03/01/2024	AMO	U
Magnesium	<80	ug/L					03/01/2024	AMO	U
Phosphorus as P	<0.012	mg/L					03/01/2024	AMO	U
LCS (B240695-BS1)									
Calcium			102	85-115			03/01/2024	AMO	
Magnesium			101	85-115			03/01/2024	AMO	
Phosphorus as P			108	85-115			03/01/2024	AMO	
Duplicate (B240695-DUP1) Source ID: AC00337-02									
Calcium					0.727	20	03/01/2024	AMO	
Magnesium					0.793	20	03/01/2024	AMO	
Phosphorus as P					0.100	20	03/01/2024	AMO	
Matrix Spike (B240695-MS1) Source ID: AC00337-02									
Calcium			102	70-130			03/01/2024	AMO	
Magnesium			99.6	70-130			03/01/2024	AMO	
Phosphorus as P			112	70-130			03/01/2024	AMO	
Matrix Spike Dup (B240695-MSD1) Source ID: AC00337-02									
Calcium			101	70-130	0.172	20	03/01/2024	AMO	
Magnesium			99.4	70-130	0.180	20	03/01/2024	AMO	
Phosphorus as P			113	70-130	0.221	20	03/01/2024	AMO	
Batch: B240750									
Blank (B240750-BLK1)									
Arsenic	<0.070	ug/L					03/03/2024	DMW	U
Cadmium	<0.010	ug/L					03/03/2024	DMW	U
Lead	<0.010	ug/L					03/03/2024	DMW	U
LCS (B240750-BS1)									
Arsenic			102	85-115			03/03/2024	DMW	
Cadmium			105	85-115			03/03/2024	DMW	
Lead			107	85-115			03/03/2024	DMW	
Duplicate (B240750-DUP1) Source ID: AC00336-01									
Arsenic					1.36	20	03/03/2024	DMW	
Cadmium					9.29	20	03/03/2024	DMW	
Lead					0.499	20	03/03/2024	DMW	
Matrix Spike (B240750-MS1) Source ID: AC00336-01									
Arsenic			98.2	70-130			03/03/2024	DMW	
Cadmium			100	70-130			03/03/2024	DMW	
Lead			96.4	70-130			03/03/2024	DMW	
Matrix Spike Dup (B240750-MSD1) Source ID: AC00336-01									
Arsenic			98.3	70-130	0.110	20	03/03/2024	DMW	
Cadmium			103	70-130	3.09	20	03/03/2024	DMW	
Lead			97.5	70-130	0.693	20	03/03/2024	DMW	

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Quality Control Report

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B240817									
Blank (B240817-BLK1)									
Mercury	<0.01	ug/L					03/08/2024	SAS	U
LCS (B240817-BS1)									
Mercury			102	85-115			03/08/2024	SAS	
Duplicate (B240817-DUP1) Source ID: AC00336-01									
Mercury					1.32	20	03/08/2024	SAS	
Duplicate (B240817-DUP2) Source ID: BB03624-03									
Mercury					NR	20	03/08/2024	SAS	
Matrix Spike (B240817-MS1) Source ID: AC00336-01									
Mercury			99.4	70-130			03/08/2024	SAS	
Matrix Spike (B240817-MS2) Source ID: BB03624-03									
Mercury			106	70-130			03/08/2024	SAS	
Matrix Spike Dup (B240817-MSD1) Source ID: AC00336-01									
Mercury			98.6	70-130	0.699	20	03/08/2024	SAS	
Matrix Spike Dup (B240817-MSD2) Source ID: BB03624-03									
Mercury			107	70-130	0.600	20	03/08/2024	SAS	

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Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B240802									
Blank (B240802-BLK1)									
Copper	<0.15	ug/L					03/08/2024	DMW	U
Zinc	<0.50	ug/L					03/08/2024	DMW	U
LCS (B240802-BS1)									
Copper			91.8	85-115			03/08/2024	DMW	
Zinc			93.3	85-115			03/08/2024	DMW	
Duplicate (B240802-DUP1) Source ID: AC00337-03									
Copper					1.42	10	03/08/2024	DMW	
Zinc					1.17	10	03/08/2024	DMW	
Matrix Spike (B240802-MS1) Source ID: AC00337-03									
Copper			90.6	70-130			03/08/2024	DMW	
Zinc			89.1	70-130			03/08/2024	DMW	
Matrix Spike Dup (B240802-MSD1) Source ID: AC00337-03									
Copper			89.4	70-130	0.854	10	03/08/2024	DMW	
Zinc			86.0	70-130	1.20	10	03/08/2024	DMW	
Batch: B241178									
Blank (B241178-BLK1)									
Cadmium	<0.010	ug/L					04/04/2024	DMW	U
Lead	<0.0090	ug/L					04/04/2024	DMW	U
LCS (B241178-BS1)									
Cadmium			99.9	85-115			04/04/2024	DMW	
Lead			99.4	85-115			04/04/2024	DMW	
Duplicate (B241178-DUP1) Source ID: AC00340-01									
Cadmium					NR	10	04/04/2024	DMW	U
Lead					2.01	10	04/04/2024	DMW	
Matrix Spike (B241178-MS1) Source ID: AC00340-01									
Cadmium			102	70-130			04/04/2024	DMW	
Lead			98.4	70-130			04/04/2024	DMW	
Matrix Spike Dup (B241178-MSD1) Source ID: AC00340-01									
Cadmium			102	70-130	0.490	10	04/04/2024	DMW	
Lead			98.3	70-130	0.146	10	04/04/2024	DMW	

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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Fax (208) 387-6391

63065628

Stormwater-PI

Kristen Chisholm
Steven Turner

[illegible]

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Heister Chisholm</i>	2/26/24 1057	<i>Roz</i> 2-27-24 0705	If low volume for 240226-03-WC, please prioritize NOx + Diss Cd, Cu, Pb, Zn, & Orthophosphate.

AC00337

AC00337

ACHD SAMPLE FILTRATION, SPLITTING, AND COMPOSITING FOR METALS

PAGE 1 OF 2

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
Lims#: AC000337-01 Location: <u>-03</u> Sample Date: 2-26-24 Sample ID: ACSTIC #1	Split <u>7</u> Date: 2-26-24 <u>(P)</u> Start Split: <u>C 726</u> Start Filter: <u>0726</u> Comp Time: <u>N/A</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-cap. ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>C00051-25</u> Comp Jug: <u>N/A</u> SS Tubing: CC00051-28 SS Helper: SSA1 Stir Bar: CC00040-46 Connector: CC00044-99 (x2)	☒ Teflon Total ☒ Teflon Diss (F) ☒ Hg CVAA ☒ BOD ☒ TSS ☒ TDS ☒ COD ☒ TKN ☒ NH ₃ ☒ NO _x (F) ☒ ortho-P (F) ☒ Turb ☒ <u>IC(F)</u> ☐ _____	Prioritize NO _x , Diss, metals & DRP per ACHD.
Lims#: AC000337-02 Location: <u>-11</u> Sample Date: 2-26-24 Sample ID: ACSTIC #2	Split <u>7</u> Date: 2-26-24 <u>(P)</u> Start Split: <u>0744</u> Start Filter: <u>0744</u> Comp Time: <u>0739</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-cap. ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>C00048-77</u> Comp Jug: <u>C00051-37</u> SS Tubing: CC00051-28 SS Helper: SSA4 <u>(P)</u> Stir Bar: CC00040-AL 31-41 Connector: CC00044-99/48-69	☒ Teflon Total ☒ Teflon Diss (F) ☒ Hg CVAA ☒ BOD ☒ TSS ☒ TDS ☒ COD ☒ TKN ☒ NH ₃ ☒ NO _x (F) ☒ ortho-P (F) ☒ Turb ☒ <u>IC(F)</u> ☐ _____	2 jugs composited into 40L
Lims#: AC000337-03 Location: <u>-12</u> Sample Date: 2-26-24 Sample ID: ACSTIC #3	Split <u>7</u> Date: 2-26-24 <u>(P)</u> Start Split: <u>0823</u> Start Filter: <u>0823</u> Comp Time: <u>0819</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-cap. ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>C00051-25</u> Comp Jug: <u>C00051-25</u> SS Tubing: CC00051-28 SS Helper: SSA5 Stir Bar: CC00051-26 Connector: CC00044-99/48-69	☒ Teflon Total ☒ Teflon Diss (F) ☒ Hg CVAA ☒ BOD ☒ TSS ☒ TDS ☒ COD ☒ TKN ☒ NH ₃ ☒ NO _x (F) ☒ ortho-P (F) ☒ Turb ☒ <u>IC(F)</u> ☐ _____	2 jugs composited into 16L
Lims#: AC000337-04 Location: <u>-14</u> Sample Date: 2-26-24 Sample ID: ACSTIC #4	Split <u>7</u> Date: 2-26-24 <u>(P)</u> Start Split: <u>0803</u> Start Filter: <u>0803</u> Comp Time: <u>0759</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-cap. ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>C00048-77</u> Comp Jug: <u>C00051-37</u> SS Tubing: CC00051-28 SS Helper: SSA7 <u>23-59</u> Stir Bar: CC00051-28 Connector: CC00048-69 (x2)	☒ Teflon Total ☒ Teflon Diss (F) ☒ Hg CVAA ☒ BOD ☒ TSS ☒ TDS ☒ COD ☒ TKN ☒ NH ₃ ☒ NO _x (F) ☒ ortho-P (F) ☒ Turb ☒ <u>IC(F)</u> ☐ _____	2 jugs composited into 40L
Lims#: AC000336-01 Location: <u>-206</u> Sample Date: 2-26-24 Sample ID: ACSTIC #5	Split <u>7</u> Date: 2-26-24 <u>(P)</u> Start Split: <u>0833</u> Start Filter: <u>0833</u> Comp Time: <u>0834</u> Analyst: <u>AMO/DKT</u>	Filter: ☒ Voss ☒ 0.45µm high-cap. ☒ 5.0µm ☒ 10.0µm	Coll Jug: <u>C00051-38</u> Comp Jug: <u>C00051-38</u> SS Tubing: CC00051-28 SS Helper: SSA8 Stir Bar: CC00051-36 Connector: CC00048-69 (x2)	☒ Teflon Total ☒ Teflon Diss (F) ☒ Hg CVAA ☒ BOD ☒ TSS ☒ TDS ☒ COD ☒ TKN ☒ NH ₃ ☒ NO _x (F) ☒ ortho-P (F) ☒ Turb ☒ <u>IC(F)</u> ☐ _____	2 jugs composited into 16L used 2nd set of Voss filters (+3), connector cont 2's - C00051-27 (x2)

* ASE and SMC observed splitting

Report Date: 04/11/2024 08:19

Revised Report



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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00336-01	ACST1C	240226-206-WC	Water		02/26/2024	02/27/2024

Comments:

Container temps: #1 - 7.0 C, #2 - 8.1 C

Revised Report



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Analysis Report

Location: ACST1C

Location Description: 240226-206-WC

Date/Time Collected: 02/26/2024 10:04 - 02/26/2024 16:20

Lab Number: AC00336-01

Sample Collector: S.T

Sample Type: Composite

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B240744	0.522	mg/L	0.0500	0.0500	SM 4500-NH3 D-2011	03/01/24	3/1/24 11:42	MEC	
BOD5	B240684	17.7	mg/L	2.00	2.00	SM 5210 B-2016	02/27/24	3/3/24 11:26	BAK	
Chloride	B240796	9.39	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	03/06/24	3/6/24 21:58	ALN	
COD	B240680	122	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	02/27/24	2/27/24 11:18	MCB	
Nitrate-Nitrite, as N	B240718	0.278	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	02/29/24	2/29/24 12:13	LRF	
TKN	B240816	2.43	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/07/24	3/8/24 9:44	JAL	
Total Dissolved Solids	B240696	85.8	mg/L	20.0	20.0	SM 2540 C-2015	02/28/24	2/29/24 13:58	MEC	
Total Suspended Solids	B240683	75.8	mg/L	0.900	0.900	SM 2540 D-2015	02/27/24	2/27/24 10:39	MEC	
Turbidity	B240698	75.5	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	02/28/24	2/28/24 9:41	ASE	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B240685	0.289	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	02/27/24	2/27/24 10:05	RKT	
Total Metals										
Mercury	B240817	0.0183	ug/L	0.0100	0.0100	EPA 245.1	03/07/24	3/8/24 7:58	SAS	
Arsenic	B240750	2.2	ug/L	0.070	0.070	EPA 200.8	03/02/24	3/3/24 13:40	DMW	
Cadmium	B240750	0.087	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:40	DMW	
Calcium	B240695	5.43	mg/L	0.0400	0.0400	EPA 200.7	02/28/24	3/1/24 11:13	AMO	
Lead	B240750	6.3	ug/L	0.010	0.010	EPA 200.8	03/02/24	3/3/24 13:40	DMW	
Magnesium	B240695	2110	ug/L	80.0	80.0	EPA 200.7	02/28/24	3/1/24 11:13	AMO	
Phosphorus as P	B240695	0.570	mg/L	0.0120	0.0120	EPA 200.7	02/28/24	3/1/24 11:13	AMO	
Hardness	B240695	22.2	mg/L	0.100	0.100	SM 2340 B-2011	02/28/24	3/1/24 11:13	AMO	
Dissolved Metals										
Cadmium	B241178	0.016	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 16:02	DMW	
Copper	B240802	5.0	ug/L	0.15	0.15	EPA 200.8	03/08/24	3/8/24 16:25	DMW	
Lead	B241178	0.26	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 16:02	DMW	
Zinc	B240802	20.2	ug/L	0.50	0.50	EPA 200.8	03/08/24	3/8/24 16:25	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B240680									
Blank (B240680-BLK1)									
COD	<7	mg/L					02/27/2024	MCB	U
LCS (B240680-BS1)									
COD			100	90-110			02/27/2024	MCB	
Duplicate (B240680-DUP1)	Source ID: AC00335-01								
COD					3.92	10	02/27/2024	MCB	
Batch: B240683									
Blank (B240683-BLK1)									
Total Suspended Solids	<0.9	mg/L					02/27/2024	MEC	U
LCS (B240683-BS1)									
Total Suspended Solids			101	90-110			02/27/2024	MEC	
Duplicate (B240683-DUP1)	Source ID: BB03630-02								
Total Suspended Solids					8.03	20	02/27/2024	MEC	
Batch: B240684									
Blank (B240684-BLK1)									
BOD5	<2	mg/L					03/03/2024	BAK	U
LCS (B240684-BS1)									
BOD5			102	84.6-115.4			03/03/2024	BAK	
LCS (B240684-BS2)									
BOD5			109	84.6-115.4			03/03/2024	BAK	
Duplicate (B240684-DUP1)	Source ID: BB03630-03								
BOD5					3.10	30	03/03/2024	BAK	
Batch: B240696									
Blank (B240696-BLK1)									
Total Dissolved Solids	<20	mg/L					02/29/2024	MEC	U
LCS (B240696-BS1)									
Total Dissolved Solids			99.4	90-110			02/29/2024	MEC	
Duplicate (B240696-DUP1)	Source ID: LS01873-01								
Total Dissolved Solids					0.700	10	02/29/2024	MEC	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240698									
Blank (B240698-BLK1)									
Turbidity	<0.3	NTU					02/28/2024	ASE	U
LCS (B240698-BS1)									
Turbidity			98.2	90-110			02/28/2024	ASE	
Duplicate (B240698-DUP1)	Source ID: AC00337-04								
Turbidity					3.45	25	02/28/2024	ASE	D
Batch: B240718									
Blank (B240718-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					02/29/2024	LRF	U
Blank (B240718-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					02/29/2024	LRF	U
LCS (B240718-BS1)									
Nitrate-Nitrite, as N			104	90-110			02/29/2024	LRF	
LCS (B240718-BS2)									
Nitrate-Nitrite, as N			99.7	90-110			02/29/2024	LRF	
Duplicate (B240718-DUP1)	Source ID: BB03631-02								
Nitrate-Nitrite, as N					NR	10	02/29/2024	LRF	
Duplicate (B240718-DUP2)	Source ID: AC00336-01								
Nitrate-Nitrite, as N					0.514	10	02/29/2024	LRF	
Duplicate (B240718-DUP3)	Source ID: LS01875-02								
Nitrate-Nitrite, as N					0.470	10	02/29/2024	LRF	
Matrix Spike (B240718-MS1)	Source ID: BB03631-02								
Nitrate-Nitrite, as N			101	90-110			02/29/2024	LRF	
Matrix Spike (B240718-MS2)	Source ID: AC00336-01								
Nitrate-Nitrite, as N			99.9	90-110			02/29/2024	LRF	
Matrix Spike (B240718-MS3)	Source ID: LS01875-02								
Nitrate-Nitrite, as N			98.2	90-110			02/29/2024	LRF	
Matrix Spike Dup (B240718-MSD1)	Source ID: BB03631-02								
Nitrate-Nitrite, as N			106	90-110	4.55	10	02/29/2024	LRF	
Matrix Spike Dup (B240718-MSD2)	Source ID: AC00336-01								
Nitrate-Nitrite, as N			99.9	90-110	0.0278	10	02/29/2024	LRF	
Matrix Spike Dup (B240718-MSD3)	Source ID: LS01875-02								
Nitrate-Nitrite, as N			97.3	90-110	0.479	10	02/29/2024	LRF	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240744									
Blank (B240744-BLK1)									
Ammonia, as N	<50	ug/L					03/01/2024	MEC	U
LCS (B240744-BS1)									
Ammonia, as N			97.7	90-110			03/01/2024	MEC	
Duplicate (B240744-DUP1) Source ID: LS01873-02									
Ammonia, as N					1.34	10	03/01/2024	MEC	
Duplicate (B240744-DUP2) Source ID: BB03629-03									
Ammonia, as N					1.56	10	03/01/2024	MEC	
Matrix Spike (B240744-MS1) Source ID: LS01873-02									
Ammonia, as N			98.3	80-120			03/01/2024	MEC	
Matrix Spike (B240744-MS2) Source ID: BB03629-03									
Ammonia, as N			104	80-120			03/01/2024	MEC	
Matrix Spike Dup (B240744-MSD1) Source ID: LS01873-02									
Ammonia, as N			100	80-120	1.38	10	03/01/2024	MEC	
Matrix Spike Dup (B240744-MSD2) Source ID: BB03629-03									
Ammonia, as N			106	80-120	1.01	10	03/01/2024	MEC	
Batch: B240796									
Blank (B240796-BLK1)									
Chloride	<0.015	mg/L					03/06/2024	ALN	U
Blank (B240796-BLK2)									
Chloride	<0.015	mg/L					03/07/2024	ALN	U
LCS (B240796-BS1)									
Chloride			95.7	90-110			03/06/2024	ALN	
LCS (B240796-BS2)									
Chloride			96.0	90-110			03/06/2024	ALN	
LCS (B240796-BS3)									
Chloride			95.4	90-110			03/07/2024	ALN	
Duplicate (B240796-DUP1) Source ID: RW00054-10									
Chloride					3.94	10	03/07/2024	ALN	D
Duplicate (B240796-DUP2) Source ID: RW00056-07									
Chloride					0.398	10	03/07/2024	ALN	D
Duplicate (B240796-DUP3) Source ID: AC00337-01									
Chloride					0.672	10	03/06/2024	ALN	
Duplicate (B240796-DUP4) Source ID: LS01873-01									
Chloride					0.319	10	03/07/2024	ALN	D
Matrix Spike (B240796-MS1) Source ID: RW00054-10									
Chloride			96.6	90-110			03/07/2024	ALN	D
Matrix Spike (B240796-MS2) Source ID: RW00056-07									
Chloride			94.1	90-110			03/07/2024	ALN	D

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B240796 (Continued)									
Matrix Spike (B240796-MS3) Chloride	Source ID: AC00337-01		93.9	90-110			03/06/2024	ALN	
Matrix Spike (B240796-MS4) Chloride	Source ID: LS01873-01		94.6	90-110			03/07/2024	ALN	D
Matrix Spike Dup (B240796-MSD1) Chloride	Source ID: RW00054-10		97.2	90-110	0.377	10	03/07/2024	ALN	D
Matrix Spike Dup (B240796-MSD2) Chloride	Source ID: RW00056-07		94.2	90-110	0.0228	10	03/07/2024	ALN	D
Matrix Spike Dup (B240796-MSD3) Chloride	Source ID: AC00337-01		97.5	90-110	2.75	10	03/07/2024	ALN	
Matrix Spike Dup (B240796-MSD4) Chloride	Source ID: LS01873-01		95.4	90-110	0.336	10	03/07/2024	ALN	D
Batch: B240816									
Blank (B240816-BLK1) TKN		<0.1 mg/L					03/08/2024	JAL	U
Blank (B240816-BLK2) TKN		<0.1 mg/L					03/08/2024	JAL	U
Blank (B240816-BLK3) TKN		<0.1 mg/L					03/08/2024	JAL	U
LCS (B240816-BS1) TKN			96.1	80-120			03/08/2024	JAL	
LCS (B240816-BS2) TKN			105	80-120			03/08/2024	JAL	
LCS (B240816-BS3) TKN			104	80-120			03/08/2024	JAL	
Duplicate (B240816-DUP1) TKN	Source ID: BB03631-02				1.33	20	03/08/2024	JAL	D
Duplicate (B240816-DUP2) TKN	Source ID: BB03638-01				1.21	20	03/08/2024	JAL	D
Duplicate (B240816-DUP3) TKN	Source ID: LS01875-05				1.25	20	03/08/2024	JAL	D
Matrix Spike (B240816-MS1) TKN	Source ID: BB03631-02		106	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS2) TKN	Source ID: BB03638-01		107	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS3) TKN	Source ID: LS01875-05		108	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS4) TKN	Source ID: RW00055-01		107	80-120			03/08/2024	JAL	D

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
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Wet Chemistry (Continued)**Batch: B240816 (Continued)**

Matrix Spike (B240816-MS5) TKN	Source ID: RW00055-03		105	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS6) TKN	Source ID: RW00055-04		103	80-120			03/08/2024	JAL	D
Matrix Spike (B240816-MS7) TKN	Source ID: RW00055-06		102	80-120			03/08/2024	JAL	D
Matrix Spike Dup (B240816-MSD1) TKN	Source ID: BB03631-02		114	80-120	2.56	20	03/08/2024	JAL	D
Matrix Spike Dup (B240816-MSD2) TKN	Source ID: BB03638-01		115	80-120	2.66	20	03/08/2024	JAL	D
Matrix Spike Dup (B240816-MSD3) TKN	Source ID: LS01875-05		114	80-120	2.43	20	03/08/2024	JAL	D

Dissolved Wet Chemistry**Batch: B240685**

Blank (B240685-BLK1) Orthophosphate, as P		<0.003	mg/L				02/27/2024	RKT	U
LCS (B240685-BS1) Orthophosphate, as P			96.3	90-110			02/27/2024	RKT	
Duplicate (B240685-DUP1) Orthophosphate, as P	Source ID: LS01873-02				0.0687	10	02/27/2024	RKT	D
Duplicate (B240685-DUP3) Orthophosphate, as P	Source ID: RW00054-07RE1				0.433	10	02/27/2024	RKT	D
Matrix Spike (B240685-MS1) Orthophosphate, as P	Source ID: LS01873-02		98.4	90-110			02/27/2024	RKT	D
Matrix Spike (B240685-MS3) Orthophosphate, as P	Source ID: RW00054-07RE1		101	90-110			02/27/2024	RKT	D
Matrix Spike Dup (B240685-MSD1) Orthophosphate, as P	Source ID: LS01873-02		98.5	90-110	0.0349	10	02/27/2024	RKT	D
Matrix Spike Dup (B240685-MSD3) Orthophosphate, as P	Source ID: RW00054-07RE1		101	90-110	0.0489	10	02/27/2024	RKT	D

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B240695									
Blank (B240695-BLK1)									
Calcium	<0.04	mg/L					03/01/2024	AMO	U
Magnesium	<80	ug/L					03/01/2024	AMO	U
Phosphorus as P	<0.012	mg/L					03/01/2024	AMO	U
LCS (B240695-BS1)									
Calcium			102	85-115			03/01/2024	AMO	
Magnesium			101	85-115			03/01/2024	AMO	
Phosphorus as P			108	85-115			03/01/2024	AMO	
Duplicate (B240695-DUP1) Source ID: AC00337-02									
Calcium					0.727	20	03/01/2024	AMO	
Magnesium					0.793	20	03/01/2024	AMO	
Phosphorus as P					0.100	20	03/01/2024	AMO	
Matrix Spike (B240695-MS1) Source ID: AC00337-02									
Calcium			102	70-130			03/01/2024	AMO	
Magnesium			99.6	70-130			03/01/2024	AMO	
Phosphorus as P			112	70-130			03/01/2024	AMO	
Matrix Spike Dup (B240695-MSD1) Source ID: AC00337-02									
Calcium			101	70-130	0.172	20	03/01/2024	AMO	
Magnesium			99.4	70-130	0.180	20	03/01/2024	AMO	
Phosphorus as P			113	70-130	0.221	20	03/01/2024	AMO	
Batch: B240750									
Blank (B240750-BLK1)									
Arsenic	<0.070	ug/L					03/03/2024	DMW	U
Cadmium	<0.010	ug/L					03/03/2024	DMW	U
Lead	<0.010	ug/L					03/03/2024	DMW	U
LCS (B240750-BS1)									
Arsenic			102	85-115			03/03/2024	DMW	
Cadmium			105	85-115			03/03/2024	DMW	
Lead			107	85-115			03/03/2024	DMW	
Duplicate (B240750-DUP1) Source ID: AC00336-01									
Arsenic					1.36	20	03/03/2024	DMW	
Cadmium					9.29	20	03/03/2024	DMW	
Lead					0.499	20	03/03/2024	DMW	
Matrix Spike (B240750-MS1) Source ID: AC00336-01									
Arsenic			98.2	70-130			03/03/2024	DMW	
Cadmium			100	70-130			03/03/2024	DMW	
Lead			96.4	70-130			03/03/2024	DMW	
Matrix Spike Dup (B240750-MSD1) Source ID: AC00336-01									
Arsenic			98.3	70-130	0.110	20	03/03/2024	DMW	
Cadmium			103	70-130	3.09	20	03/03/2024	DMW	
Lead			97.5	70-130	0.693	20	03/03/2024	DMW	

Revised Report



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B240817									
Blank (B240817-BLK1)									
Mercury	<0.01	ug/L					03/08/2024	SAS	U
LCS (B240817-BS1)									
Mercury			102	85-115			03/08/2024	SAS	
Duplicate (B240817-DUP1) Source ID: AC00336-01									
Mercury					1.32	20	03/08/2024	SAS	
Duplicate (B240817-DUP2) Source ID: BB03624-03									
Mercury					NR	20	03/08/2024	SAS	
Matrix Spike (B240817-MS1) Source ID: AC00336-01									
Mercury			99.4	70-130			03/08/2024	SAS	
Matrix Spike (B240817-MS2) Source ID: BB03624-03									
Mercury			106	70-130			03/08/2024	SAS	
Matrix Spike Dup (B240817-MSD1) Source ID: AC00336-01									
Mercury			98.6	70-130	0.699	20	03/08/2024	SAS	
Matrix Spike Dup (B240817-MSD2) Source ID: BB03624-03									
Mercury			107	70-130	0.600	20	03/08/2024	SAS	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B240802									
Blank (B240802-BLK1)									
Copper	<0.15	ug/L					03/08/2024	DMW	U
Zinc	<0.50	ug/L					03/08/2024	DMW	U
LCS (B240802-BS1)									
Copper			91.8	85-115			03/08/2024	DMW	
Zinc			93.3	85-115			03/08/2024	DMW	
Duplicate (B240802-DUP1) Source ID: AC00337-03									
Copper					1.42	10	03/08/2024	DMW	
Zinc					1.17	10	03/08/2024	DMW	
Matrix Spike (B240802-MS1) Source ID: AC00337-03									
Copper			90.6	70-130			03/08/2024	DMW	
Zinc			89.1	70-130			03/08/2024	DMW	
Matrix Spike Dup (B240802-MSD1) Source ID: AC00337-03									
Copper			89.4	70-130	0.854	10	03/08/2024	DMW	
Zinc			86.0	70-130	1.20	10	03/08/2024	DMW	
Batch: B241178									
Blank (B241178-BLK1)									
Cadmium	<0.010	ug/L					04/04/2024	DMW	U
Lead	<0.0090	ug/L					04/04/2024	DMW	U
LCS (B241178-BS1)									
Cadmium			99.9	85-115			04/04/2024	DMW	
Lead			99.4	85-115			04/04/2024	DMW	
Duplicate (B241178-DUP1) Source ID: AC00340-01									
Cadmium					NR	10	04/04/2024	DMW	U
Lead					2.01	10	04/04/2024	DMW	
Matrix Spike (B241178-MS1) Source ID: AC00340-01									
Cadmium			102	70-130			04/04/2024	DMW	
Lead			98.4	70-130			04/04/2024	DMW	
Matrix Spike Dup (B241178-MSD1) Source ID: AC00340-01									
Cadmium			102	70-130	0.490	10	04/04/2024	DMW	
Lead			98.3	70-130	0.146	10	04/04/2024	DMW	

Revised Report



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Water Quality Laboratory
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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Janet Finegan-Kelly
Water Quality Laboratory Manager


Stephen Quintero or Azubike Emenari
QA/QC Coordinator

Ada County Highway District

Attn: Steven Turner
 3775 Adams Street
 Garden City, Idaho 83714-6418
 Tel. (208) 387-6269
 Fax (208) 387-6391
 Purchase Order:
 Project:
 Sampler(s):

63065628

Stormwater-PI

Kristin Clushalm
 Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 246.2	E. Coli - IDEXX-Gallert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ - D	Total Contaminants
✓ AC0033601	2/26/24	2/26/24	1004	1620	240226-206-WC 7.0°C & 8.1°C	ST	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristin Clushalm	2/26/24 2:58	Steve 2-27-24 07:05	



Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 801.316.9859

Prepared for: Ada County Highway District
Project Title: NPDES Phase I Stormwater Support WY 2024
Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for March 28, 2024
Date: June 20, 2024
To: Monica Lowe
Cc: Steven Turner
Kristen Chisholm
From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

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 10, 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.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES) Permit, effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2024 (October 1, 2023, through September 30, 2024). The following storm event report summarizes stormwater sampling results from the March 28, 2024, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2024 Phase I Stormwater Outfall Monitoring. When samples are qualified, additional samples will be attempted from subsequent storms to collect unqualified samples.

Table 2-1. WY 2024 Samples Collected					
Date	Lucky	Whitewater	Main	Americana	AS_6
October 10, 2023	G, C ^{1,2}	G	--	G, C ³	--
November 19, 2023	G, C	G, C	G, C	G ⁴ , C	G, C
February 1, 2024	G ⁵ , C	G ⁵ , C ⁶	G ⁵ , C	G ⁵ , C	G ⁵ , C
February 26, 2024	G, C	G, C	G, C ⁷	G, C	G, C
March 28, 2024	--	C	G, C	G	G
Unqualified Samples:	3G, 3C	3G, 3C	3G, 3C	3G, 3C	3G, 3C
Samples Remaining:	0G, 0C	0G, 0C	0G, 0C	0G, 0C	0G, 0C

Notes:

-- = no samples taken

C = composite sample

G = grab sample

¹ Composite samples qualified due to lack of representativeness (50%–75%).

² Incomplete water quality analysis due to low composite sample volume.

³ Composite samples qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

⁴ Incomplete field parameter collection on the grab sample data form due to field error.

⁵ E. coli sample qualified due to exceeded hold time.

⁶ Composite sample rejected due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented more than 10% of the composite volume.

⁷ Composite sample qualified due to automatic sampler triggering prior to storm event runoff. The subsamples taken prior to the event represented less than 10% of the composite volume.

Section 3: Storm Event Summary

The March 28, 2024, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from March 28, 2024, is included in Attachment A for reference.

Wednesday, March 27, 2024 to Thursday, March 28, 2024

- On the morning of March 27, the National Weather Service issued a forecast of rain shadowing and light rain in the Boise area, starting March 27 at 1800 until March 28 at 0300. Rain was predicted to increase until March 28, 2024 at 1000. The chance of precipitation was 90%, with more than 0.1 inches of precipitation forecasted.
- Setup was accomplished in the afternoon of March 27. An expected precipitation depth of 0.11 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.
- Moderate rain first started at approximately March 27 at 1901 and ended March 28 at 1249.
- Precipitation totals ranged between 0.53 and 0.59 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary.

Hydrographs for the Whitewater, Main, Americana and AS_6 sites showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Whitewater and Main monitoring stations were set up on March 27, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programmed into the Whitewater and Americana flowmeters. A site-specific velocity cutoff value was programmed into Main and AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

A two-member team mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on March 28 around 0131. Grab samples for Main, Americana, and AS_6 was submitted to the West Boise Water Quality Lab (WQL) at 0816 on March 28.

Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at the Main monitoring station and submitted to the WQL at 1134 on March 28. The composite sample at Whitewater monitoring station was submitted at 1314 on March 28 to the WQL.

Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. Laboratory analytical reports are included in Attachment D.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the March 28, 2024, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Main monitoring station. A field blank composite sample was collected from the Americana monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples			
Sample ID	Sample Type	Parent Sample	Conclusions
240328-12-001	Field blank	Main grab	No <i>E. coli</i> detection was reported in the field blank.
240328-12-101	Field duplicate	Main grab	Relative percent difference was within the acceptable range.
240328-14-002	Field blank composite	None	No composite parameter detection was reported on the field blank composite.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. Performance criteria for analytical and non-analytical data was met for this storm event.

Section 5: Notes and Recommendations

Whitewater

At Whitewater, composite sample bottle 3 had a power failed error message from 0405 until 0407 on March 28, due to the battery on the sampler running low. The error message was present for the last four subsamples in bottle 3. The battery was replaced prior to installing bottle 4, resolving the error message.

Data Tables



TAB-1

Table 1. Sampling and Flow Summary

	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	NO	NO	YES	YES	YES
Composite samples collected and submitted?	NO	YES	YES	NO	NO
Trigger volume (ft ³)	--	800 cf	3411 gal	--	--
Velocity cutoff (fps)	--	--	--	--	--
Sampler enable condition (in)	--	Level > 3.3 "	Level > 1.84 "	--	--
Runoff start time	--	1919 ¹	1911 ¹	1901 ¹	1930 ¹
Grab sample collection time	--	--	0137	0159	0219
Composite sample stop time	--	1133	0739	--	--
Runoff stop time	--	1249 ²	0817 ²	0928 ²	1013 ²
Volume of discharge sampled (ft ³)	--	127,090	37,197	--	--
Total runoff volume (ft ³)	--	154,801	48,613	372,974	37,320
Percent of storm flow sampled (%)	--	82%	77%	--	--
Composite sample duration (hrs)	--	13	11	--	--
Storm Precipitation (in)	0.53	0.59	0.53	0.53/0.56	0.53/0.56
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	--	159	70	--	--
Number of composite bottles filled	--	8	3	--	--
Composite sample volume (Approx.; ml)	--	88,300 ml	40,500 ml	--	--

Notes:

-- = No data.

¹ Storm runoff started on 3/27/2024.

² Storm runoff ended on 3/28/2024.

Table 2. Field and Analytical Data Summary																											
Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				E. coli mpn/100 mL	Sample ID Composite	Analytical Parameters																		
			Dissolved Oxygen	pH	Conductivity	Temperature			BOD ₅	COD	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C			mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	3/28/2024	240328-03-WG	--	--	--	--	--	240328-03-WC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Whitewater	3/28/2024	240328-11-WG	--	--	--	--	--	240328-11-WC	8.20	84.0	31.9	26.2	131	76.0	0.318	0.131	0.236	0.277	1.63	2.0	<0.0100	0.074	1.9	0.097	5.8	0.0151	9.80
Main	3/28/2024	240328-12-WG	10.02	7.82	116.08	10.91	21.6	240328-12-WC	5.03	104	12.6	24.6	91.7	44.2	0.145	0.0494	0.293	0.151	1.18	1.1	<0.0100	0.071	2.3	0.068	5.9	0.0171	14.7
Americana	3/28/2024	240328-14-WG	10.57	7.28	255.40	9.79	365.4	240328-14-WC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AS_6	3/28/2024	240328-206-WG	9.92	7.60	108.59	7.74	387.3	240328-206-WC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
 -- = No data.

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	3/28/2024	--	--	--	--	--
Whitewater	3/28/2024	1266	3.07	2.28	2.68	15.7
Main	3/28/2024	278.2	0.440	0.889	0.458	3.58
Americana	3/28/2024	--	--	--	--	--
AS_6	3/28/2024	--	--	--	--	--

Notes:

-- = No data.

Table 4. QC Sample Summary																							
Date	Parent Sample	Sample ID	Type	E. coli	BOD ₅	COD	Hardness as CaCO3	Turbidity	TSS	TDS	Total Phosphorus	Dissolved Orthophosphate	Ammonia	Nitrate + Nitrite (N)	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
				mpn/100 mL	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
3/28/2024	240328-12-WG	240328-12-001	Field Blank	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/28/2024	240328-12-WG	240328-12-101	Field Duplicate	17.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calculated parent/duplicate RPD				5%	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Allowable RPD				40%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
3/28/2024	--	240328-14-002	Field Blank Composite	--	<2.00	<7.00	<0.100	<0.3	<0.900	<20.0	<0.0120	<3.00E-3	<0.0450	<0.0250	<0.100	<0.0700	<0.0100	<0.0100	<0.150	<9.00E-3	<0.0100	<0.0100	<0.500

Notes:
-- = No data.

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 03/27/2024	Time: 8:10 AM	Initials: ST
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Maybe

Past 72 hr Precip	0.08" at airport
Date and time of expected event	3/28/24 @ 3:00 am
Expected amount of precipitation	0.16"
Percent chance of precipitation	94%
Percent chance of >0.10" over 12 hours	90%

NWS Update

Spoke with Les from NWS and he said the main band of the rain will start around 3:00 AM with some light sprinkles around 6:00 pm on 3/27/24 resulting from rain shadowing. The total rain from 6:00 PM (3/27) – 3:00 AM (3/28) will be 0.02". There will be constant showers until 10:00 AM and there may be some light sprinkles till 12:00 PM. Theres a 90% chance we will receive over 0.1" of rain.

<u>Targeted Station & Samples</u>					
Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☐ Grab	☐ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab
☐ Composite	☒ Composite	☒ Composite	☐ Composite	☐ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday

☐ Waiting on Antecedent Dry Period – Expires:

☐ Equipment Concerns:

☐ Other:

Text Forecast

NWS Forecast for: 2 Miles NNW Garden City ID
 Issued by: National Weather Service Boise, ID
 Last Update: 3:29 am MST Mar 27, 2024

Today: Scattered showers after noon. Mostly cloudy, with a high near 58. Southeast wind 7 to 14 mph. Chance of precipitation is 30%.

Tonight: Showers. Low around 39. East southeast wind 6 to 13 mph. Chance of precipitation is 90%. New precipitation amounts between a tenth and quarter of an inch possible.

Thursday: Showers likely, with thunderstorms also possible after noon. Mostly cloudy, with a high near 54. Calm wind becoming west 5 to 8 mph in the afternoon. Chance of precipitation is 70%.

Thursday Night: A 20 percent chance of showers before midnight. Mostly cloudy, with a low around 35. West southwest wind around 6 mph becoming east southeast after midnight.

Friday: A 20 percent chance of showers after noon. Partly sunny, with a high near 55. East southeast wind 3 to 7 mph.

Friday Night: Mostly cloudy, with a low around 34.

Saturday: Partly sunny, with a high near 59.

Saturday Night: A 20 percent chance of showers after midnight. Partly cloudy, with a low around 35.
Sunday: A 30 percent chance of showers, mainly before noon. Mostly sunny, with a high near 60.
Sunday Night: Mostly clear, with a low around 34.
Monday: Sunny, with a high near 63.
Monday Night: Mostly clear, with a low around 38.
Tuesday: Sunny, with a high near 71.

Forecast Discussion

Area Forecast Discussion

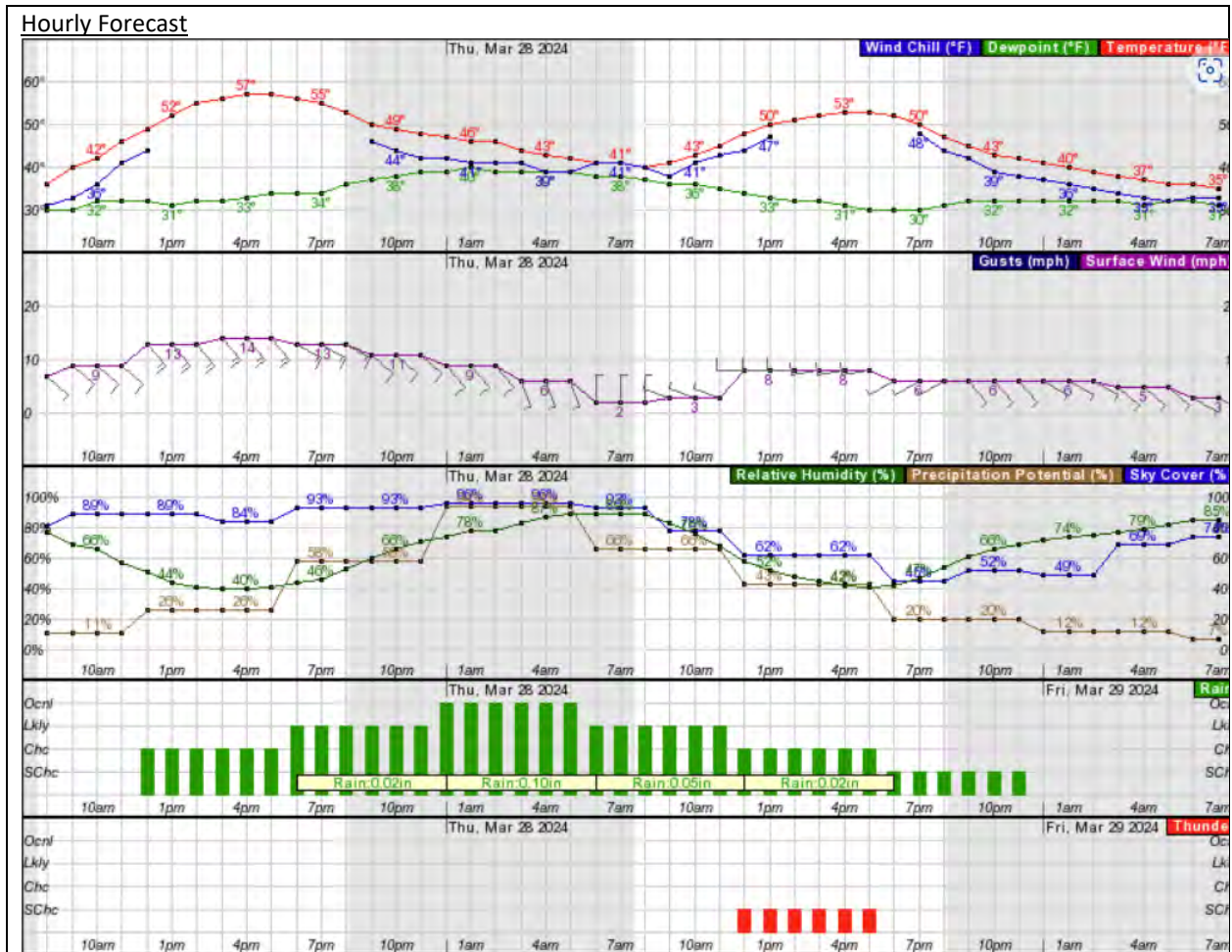
National Weather Service Boise ID
356 AM MDT Wed Mar 27 2024

.SHORT TERM...Today through Friday night...A warm frontal passage this morning will open up into moist southwest aloft this afternoon. Precipitation will initiate over southeast Oregon early in the afternoon, spreading into southwest Idaho by early evening. While the thunderstorm threat today is less than 15% an overlap in daytime heating and increasing instability aloft could support a strike/flash over portions of SE Oregon, mainly Harney/Malheur counties. The increased flow aloft and deep Pacific low will bring breezy conditions today, the strongest winds across southeast Oregon. **Wednesday night is wet across the region as a broad upper low approaches the Pac NW coast.** The mountains of e-central Oregon and w-central Idaho see the focus of heaviest precipitation through Thursday morning where liquid totals of 0.50 to 1.00 inch are expected. Snow levels through Wednesday night will run 5000 to 6000 kft dropping to 3500 to 5000 ft Thursday. Total accumulation of 5 to 10 inches is expected above 6000 ft with up to 2 inches in mountain valleys above 4500 feet. **Lower elevations that stay dry into Wednesday evening will see precipitation fill in overnight with the passage of a cold front. Lower valleys are likely to see 0.10 to 0.20 inch of rain.** The main low will reach the WA coast on Thursday, the accompanying colder air aloft and daytime heating supporting a continued chance of showers and slight chance of thunderstorms. The shower threat retreats to the mountains Thursday night, expanding again on Friday with a 20% chance in the valleys and 40 to 70 percent chance in the mountains.

.LONG TERM...Saturday through Wednesday...The closed upper level low will move to our southwest on Saturday, becoming a positively tilted upper level trough that will keep temperatures cool through the weekend. Lingering moisture with this trough will also allow for a slight chance of precipitation (20-30% chance) over high terrain and near the Nevada border on Saturday and Sunday. Temperatures will be slightly below normal, with snow levels right around 4000-5000 feet. Any snow accumulations will be minimal, with higher elevations in the mountains seeing anywhere from 1-3 inches by Sunday night. This low will begin to move out on Monday, with a deep ridge building in over the region late Monday into Tuesday, bringing above normal temperatures and dry conditions through Wednesday. Tuesday looks to be the warmest day, with temperatures in the valleys reaching the upper 60s and low 70s.

Good model agreement exists with this pattern through next week, with only slight variation in the deterministic model's evolution of the closed low. This accounts for the forecast uncertainty in precipitation this weekend, although all ensembles and deterministic solutions show light precipitation

in the region.



Storm Event QA/QC Checklist – Phase I

STORM DATE		3/28/24								
A. Event and Data Completeness		Yes	No	N/A	Notes					
1. Field data sheets filled out completely and clearly		X								
2. Field parameters reviewed, and any problems/issues addressed		X								
3. All samples collected as specified		X								
4. All samples delivered to lab promptly (review chain of custody rpts)		X								
5. Inconsistencies/clarifications discussed with sampling team member				X						
6. All analytical reports from lab received		X								
B. Validation and Verification Methods		Yes	No	N/A	Notes					
1. Outliers and unexpected values discussed with lab				X						
2. Appropriate analytical methods used		X								
3. All lab QA samples were within method acceptance criteria		X								
4. All samples reviewed and data qualifiers assigned if needed		X								
5. Data quality objective achieved		X								
C. Specific Storm and Sample QA/QC Criteria		Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)		0.01	0.01	0.00	0.00/0.02	0.00/0.02	< 0.11" in 72 hrs	X		
2. Precipitation (inches)		0.53	0.59	0.53	0.53/0.5	0.53/0.56	> 0.10"	X		
3. Sampled amount (% of total run-off)		—	82%	77%	—	—	>= 75% or >= 6 hrs: no qualifier			
4. Composite sample duration (hours)		—	13	11	—	—	>= 50% and <75%: qualify	X		
							< 50%: reject			
4. Ecoli sample holding time (hours)		—	—	7.0	7.0	6.5	<=8 hrs: no qualifier	X		
							>8 and <=16 hrs.: qualify			
							>16 hrs.: reject			
5. Filtering of samples for dissolved parameter analysis (hours)		—	2.5	5.0	—	—	<= 24 hrs: no qualifier	X		
							> 24 hrs.: reject			
D. Notes										

Reviewed by Steven Turner

Date 5/16/24

Approved by

Monica Rowe

Date

5/17/24

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.

Step 2. Enter expected precipitation depth (in) in blue cell.

Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.11
Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft ³)	Trigger Vol (ft ³)
Lucky	105	0.157	6582.5	387
Whitewater	498	0.069	13621.3	801
Main	79	0.246	7760.0	456
Main Alt	60	0.200	4791.6	282
Americana	875	0.144	50311.8	2960
AS_6	204	0.046	3747.0	220
State	34	0.160	2172.2	128

Notes:

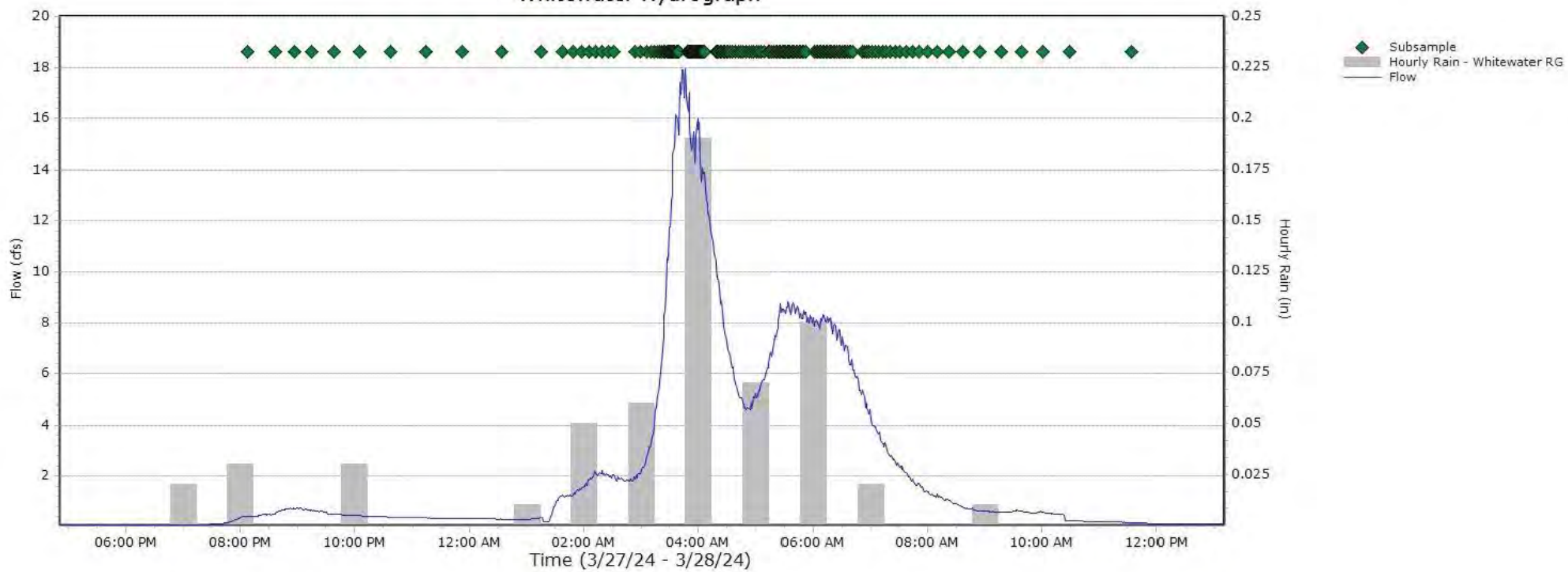
Calculated RC = Average (precip (ft) / [volume (ft³) x area (ft²)])

Where precip (ft) is the measured amount from local rain guage, and volume (ft³) is the measured discharge, and area (ft²) is the watershed area

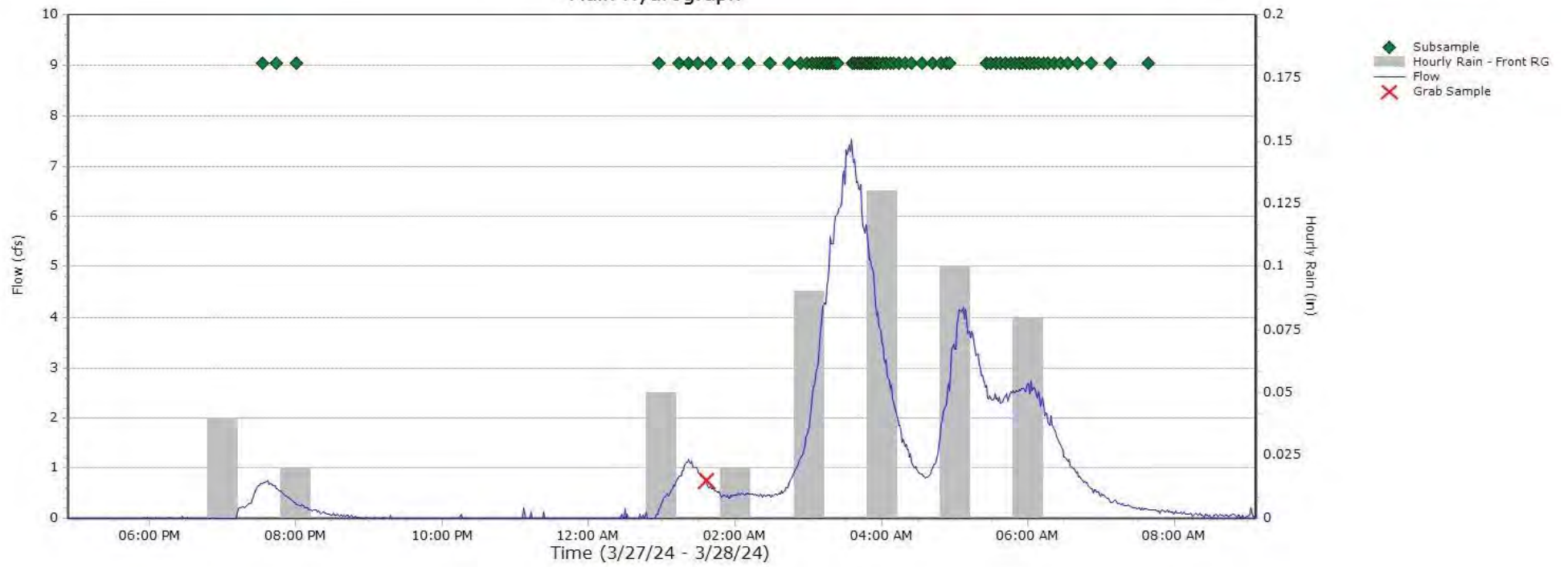
Expected volume (ft³) = RC x expected precip (ft) x area (ft²)

Attachment B: Storm Event Hydrographs

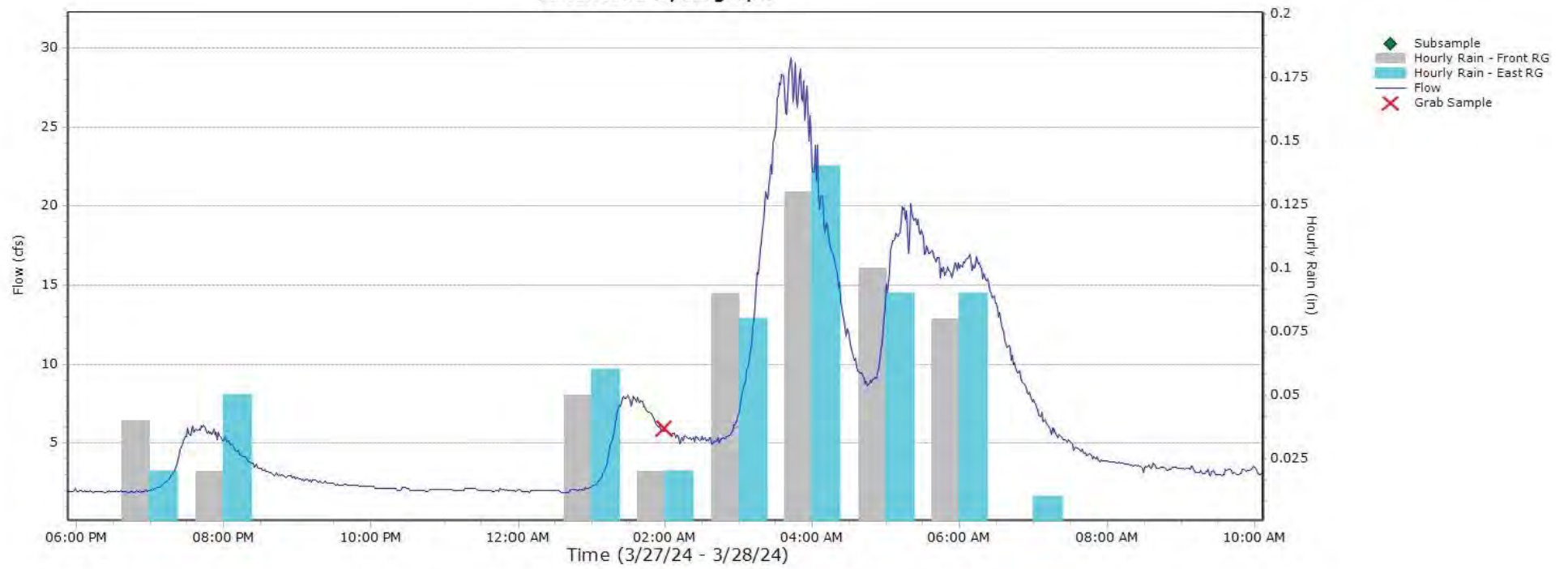
Whitewater Hydrograph



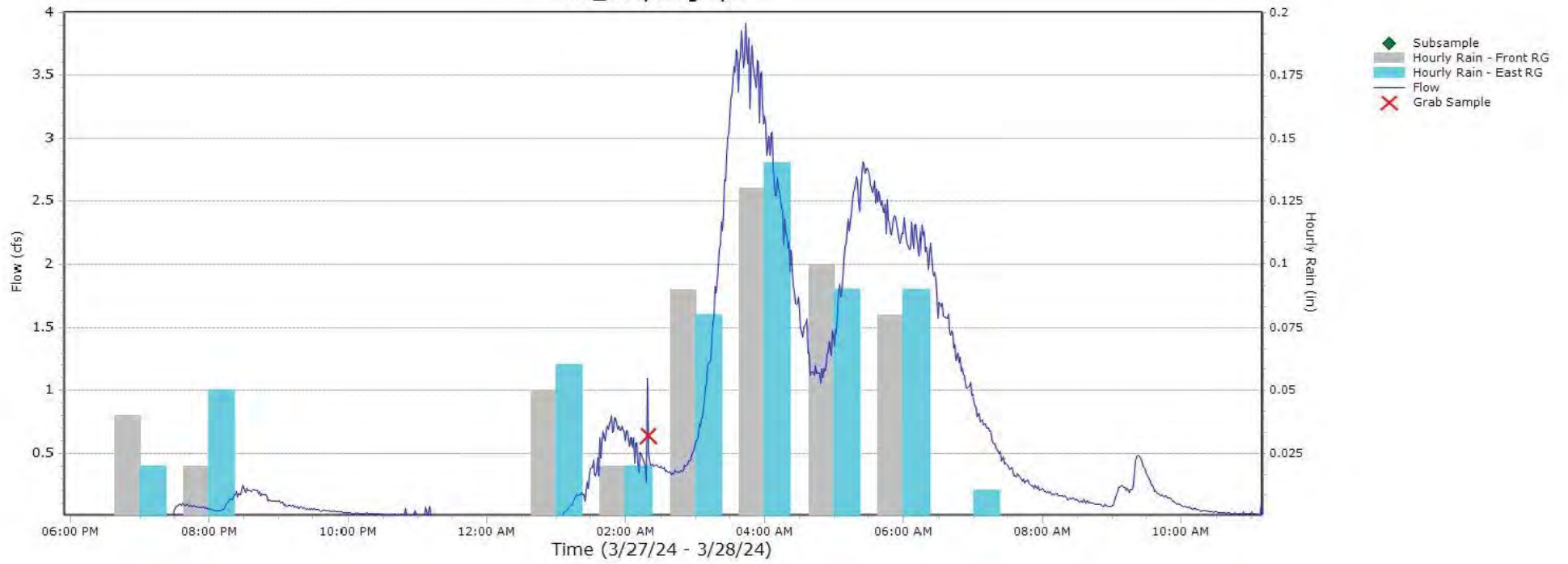
Main Hydrograph



Americana Hydrograph



AS_6 Hydrograph



Attachment C: Field Forms

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

TATION: Whitewater

SET UP

Personnel: KC, ST

Date/Time

On-Site: 3/27/24 1315

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1315	2.21	0.07	0.25	—
Enable Condition:		3.3		
Hysteresis:		1		
Flow Pulse Interval:		800cf		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 3/27/24 1327
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: ST

Date/Time

On-Site: 3/29/24 1209

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
12:09	2.13	0.09	0.33	—
Downloaded to:		Stevens USB		

On-Site

- ☒ ~~Replace flowmeter battery~~
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 3/29 1210
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

STATION: Whitewater
 Personnel: ST, KC

Composite Sample Collection

Bottle 1 of 8
 Date/Time On-Site: 3/28 2:35

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240328-11-WC</u>
Approx Sample Volume (mL):	<u>9500 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Tan Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>3/27/24 2007</u>	<u>SUCCESS</u>	13	<u>0148</u>	<u>SUCCESS</u>
2	<u>2036</u>		14	<u>0157</u>	
3	<u>2056</u>		15	<u>0205</u>	
4	<u>2115</u>		16	<u>0212</u>	
5	<u>2138</u>		17	<u>0219</u>	
6	<u>2206</u>		18	<u>0225</u>	
7	<u>2238</u>		19	<u>0231</u>	
8	<u>2313</u>		20	<u>0238</u>	<u>Skipped</u>
9	<u>2352</u>		21		
10	<u>3/28/24 0033</u>		22		
11	<u>0115</u>		23		
12	<u>0137</u>		24		

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>2:45 3/28 3/28</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: KC, ST

Bottle 2 of 8
 Date/Time On-Site: 3/28/24 0345

☒ Halt sampler program
☐ Put lid on sample bottle; label sample bottle
Sample ID: <u>240328-11</u> -WC
Approx Sample Volume (mL): <u>1400 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>gray</u>
QA/QC Sample ID: <u> </u> -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>3/28/24 0253</u>	<u>Success</u>	13	<u>3/28/24 0329</u>	<u>Success</u>
2	<u>0259</u>		14	<u>0330</u>	
3	<u>0305</u>		15	<u>0332</u>	
4	<u>0310</u>		16	<u>0333</u>	
5	<u>0313</u>		17	<u>0333</u>	
6	<u>0317</u>		18	<u>0334</u>	
7	<u>0319</u>		19	<u>0335</u>	
8	<u>0321</u>		20	<u>0336</u>	
9	<u>0323</u>		21	<u>0337</u>	
10	<u>0325</u>		22	<u>0338</u>	
11	<u>0326</u>		23	<u>0339</u>	
12	<u>0328</u>		24	<u>0340</u>	

Comments:

Date/Time Off-Site: 3/28/24 0350

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>0347 3/28</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: VC: 88

Bottle 3 of 8
 Date/Time On-Site: 3/28/24 415

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>3 240328 - 11</u> -WC
Approx Sample Volume (mL): <u>11,000 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Gray</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>3/28/24 0347</u>	<u>Success</u>	13	<u>3/28/24 357</u>	<u>Success</u>
2	<u>0348</u>		14	<u>358</u>	
3	<u>0349</u>		15	<u>359</u>	
4	<u>350</u>		16	<u>400</u>	
5	<u>351</u>		17	<u>401</u>	
6	<u>352</u>		18	<u>402</u>	
7	<u>352</u>		19	<u>403</u>	
8	<u>353</u>		20	<u>404</u>	
9	<u>354</u>		21	<u>405</u>	<u>Power Failed</u>
10	<u>355</u>		22	<u>406</u>	
11	<u>356</u>		23	<u>406</u>	
12	<u>356</u>		24	<u>407</u>	

Comments:

Date/Time Off-Site: 3/28/24 0420

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>3/28/24 418</u> ☐ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: LC 85

Bottle 4 of 8
 Date/Time On-Site: 3/28/24 434

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240528-11</u> -WC
Approx Sample Volume (mL): <u>13250 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Gray</u>
QA/QC Sample ID: <u>-103</u> (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>3/28/24 410</u>	<u>Success</u>	13	<u>439</u>	<u>Success</u>
2	<u>420</u>		14	<u>442</u>	
3	<u>421</u>		15	<u>445</u>	
4	<u>422</u>		16	<u>447</u>	
5	<u>424</u>		17	<u>450</u>	
6	<u>426-24</u>		18	<u>453</u>	
7	<u>428</u>		19	<u>456</u>	
8	<u>429</u>		20	<u>458</u>	
9	<u>431</u>		21	<u>501</u>	
10	<u>433</u>		22	<u>504</u>	
11	<u>435</u>		23	<u>506</u>	
12	<u>437</u>	<u>Skipped</u>	24	<u>509</u>	

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>3/28 512</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: 100328-11
 Personnel: CC, ST

Bottle 5 of 8
 Date/Time On-Site: 3/28/24 0555

☒	Halt sampler program
☒	Put lid on sample bottle; label sample bottle
Sample ID:	240328-11 -WC
Approx Sample Volume (mL):	13250
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Gray
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/28/24 513	Success	13	3/28/24 534	Success
2	515		14	535	
3	517		15	537	
4	519		16	538	
5	521		17	540	
6	522		18	541	
7	524		19	543	
8	526		20	545	
9	527		21	546	
10	529		22	548	
11	531		23	549	
12	532		24	551	

Comments:

If sampling is complete:

- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☒ Keep flowmeter running
- ☒ Install new 15L bottle; add ice
- ☒ Restart program from beginning
- Date/Time Restarted: 3/28/24 602
- ☒ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
 Personnel: VC, ST

Bottle 6 of 8

Date/Time On-Site: 3/28/24

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240328-11</u> -WC
Approx Sample Volume (mL): <u>13250</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>gray</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/28/24 1001	Success	13	3/28/24 1021	Success
2	1002		14	1022	
3	1004		15	1024	
4	1006		16	1026	
5	1008		17	1027	
6	1009		18	1029	
7	1011		19	1031	
8	1012		20	1033	
9	1014		21	1035	
10	1016		22	1037	
11	1017		23	1039	
12	1019		24	1041	

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>3/28/24 1049</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: White Sulphur
 Personnel: KC, ST

Bottle 7 of 8
 Date/Time On-Site: 3/28/24 1025

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	240328-11 -WC
Approx Sample Volume (mL):	13250
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Tan
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/28/24 650	Success	13	3/28/24 737	Success
2	653		14	743	
3	656		15	751	
4	658		16	759	
5	701		17	810	
6	705		18	821	
7	708		19	836	
8	712		20	855	
9	716		21	916	
10	721		22	938	
11	725		23	1001	
12	731		24	1029	

Comments:

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>3/28/24 1033</u> ☒ Verify running
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Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Whitewater
Personnel: PCST

Bottle 8 of 8

Date/Time On-Site: _____

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240328-11</u> -WC
Approx Sample Volume (mL): <u>800 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Clear</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Tan</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>3/28/24 1133</u>	<u>Success</u>	13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete: ☒ Power off sampler, if separate from flowmeter ☒ Keep flowmeter running ☒ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

TATION: Main

SET UP

Personnel: KC, ST

Date/Time
On-Site: 3/27/24 12:37

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1237	6.84	0.00	0.00	12.8
Enable Condition or Velocity Cutoff:			1.84	
Deadband:			1	
Trigger Volume:			341	

- ☒ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

Replaced deadband on flowmeter -

Offsite 3/27/24 1300

SHUT DOWN

Personnel: ST

Date/Time
On-Site: 3/29/24 12:22

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
12:22	7.45	0.00	0.00	-	12.6
Downloaded to:		Stevens USB			

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Composite Sample Collection

STATION: Main
 Personnel: ST, KC

Bottle 1 of 3
 Date/Time On-Site: 3/28/24 1:30

☒ Halt sampler program		
☒ Put lid on sample bottle; label sample bottle		
Sample ID:	<u>240528-12</u>	-WC
Approx Sample Volume (mL):	<u>4000 mL</u>	
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>	
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>Gray</u>	
QA/QC Sample ID:		-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/27/24 19:53	Success	13	3/28/24 02:53	Success
2	19:48		14	02:59	
3	20:01		15	03:03	
4	3/28 00:58		16	03:06	
5	01:14		17	03:09	
6	01:22		18	03:12	
7	01:30		19	03:14	
8	01:40		20	03:16	
9	01:55		21	03:18	
10	02:12		22	03:20	
11	02:29		23	03:22	
12	02:44		24	03:24	

Comments:

If sampling is complete:

- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):

- ☒ Keep flowmeter running
- ☒ Install new 15L bottle, add ice
- ☒ Restart program from beginning

Date/Time Restarted: 3/28/24 03:35

- ☒ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: Main

Personnel: KLST

Date/Time On-Site: 3/28/24 0426

Bottle 2 of 3

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	<u>240328-12</u> -WC
Approx Sample Volume (mL):	<u>14000 mL</u>
Clarity (ex. Clear, Cloudy, Silty):	<u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black):	<u>gray</u>
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	<u>3/28/24 0336</u>	<u>Success</u>	13	<u>401</u>	<u>Success</u>
2	<u>338</u>		14	<u>404</u>	
3	<u>340</u>		15	<u>407</u>	
4	<u>342</u>		16	<u>410</u>	
5	<u>344</u>		17	<u>414</u>	
6	<u>346</u>		18	<u>419</u>	
7	<u>348</u>		19	<u>425</u>	
8	<u>350</u>		20	<u>433</u>	
9	<u>352</u>		21	<u>442</u>	
10	<u>354</u>		22	<u>449</u>	
11	<u>356</u>		23	<u>453</u>	
12	<u>358</u>		24	<u>456</u>	

Comments:

Date/Time Off-Site: 3/28 17:26

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning Date/Time Restarted: <u>3/28 523</u> ☒ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

STATION: Main Composite Sample Collection Bottle 5 of 3
 Personnel: ST, KC Date/Time On-Site: 3/28/24 750

☒ Halt sampler program
☒ Put lid on sample bottle; label sample bottle
Sample ID: <u>240328-12</u> -WC
Approx Sample Volume (mL): <u>12500 mL</u>
Clarity (ex. Clear, Cloudy, Silty): <u>Cloudy</u>
Color (ex. Clear, Gray, Tan, Brown, Black): <u>Gray</u>
QA/QC Sample ID: _____ -103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/28/24 526	Success 609 ⁴	13	3/28/24 609	Success
2	530		14	613	
3	534		15	617	
4	538		16	622	
5	542		17	627	
6	546		18	633	
7	550		19	641	
8	553		20	652	
9	556		21	708	
10	559		22	739	
11	602		23		
12	605		24		

Comments:

Date/Time Off-Site: 3/28/24 755

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☒ Keep flowmeter running ☒ Install new 15L bottle; add ice ☒ Restart program from beginning - Date/Time Restarted: <u>3/28/24 755</u> ☐ Verify running
--	---

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Mein

Personnel: KC, ST Date/Time On-Site: 3/28/24 1.31

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1.31	6.16	394.17 GPM	1.21	12.9	—	—

Grab Information					
	Sample ID		Date	Time	Labeled?
Site E.Coli	240328-12	-WG	3/28/24	0137	☒
Field Duplicate E.Coli	240328-12	-101	3/28/24	0138	☒
Field Blank E.Coli	240328-12	-001	3/28/24	0141	☒

*Note: time on bottle for QC samples is 1200 -

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	0141	10.91	10.02	7.82	116.08

Sampler Current Status	
First Subsample Date/Time	3/27/24 1933
Last Subsample Date/Time	3/28/24 0130
# of Subsamples taken	7

Comments:

Set Up/ Shut Down Form – ISCO (Whitewater, Americana, State)

STATION: Americana

SET UP

Personnel: ST, KC

Date/Time: 3/27/24 3:10 PM ST

On-Site: 16:10
15

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
16:12	5.99	1.99	2.200	12.29
Enable Condition:				
Hysteresis:				
Flow Pulse Interval:				

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☐ Set sampler program parameters
- ☐ Check date/time on sampler
- ☐ Verify all cable and tubing connections
- ☐ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 16:14 3/27/24
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☐ ~~Enable Sampler: On Trigger, and set Sampler Enable equation~~
- ☐ ~~Set Sampler Pacing to Flow Paced, and set trigger volume~~

Comments: Installed & Blank composite. Set up flowmeter only. No composite needed.

offsite: 3/27/24 15:23

SHUT DOWN

Personnel: ST

Date/Time: 3/29/24 12:35

On-Site: 12:35

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
12:36	6.52	2.35	2.299	12.07
Downloaded to: <u>Stevens USB</u>				

On-Site

- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 3/29 12:36
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Americana Bottle 1 of 1

Personnel: _____ Date/Time On-Site: _____

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	240328-14-002-103- blank (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments: QC Blank filed at 3/27/24 1510-1514. Removed at 10:08

If sampling is complete: ☐ Power off sampler, if separate from flowmeter ☐ Keep flowmeter running ☐ Add ice to sample transport cooler	If continuing sampling (sample bottle change-out): ☐ Keep flowmeter running ☐ Install new 15L bottle; add ice ☐ Restart program from beginning Date/Time Restarted: _____ ☐ Verify running
--	--

Liquid Height vs. Approximate Sample Volume Conversion Chart									
Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Grab Sample Data Form

STATION: Americana

Personnel: KCST Date/Time On-Site: 3/28/14 0153

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0156	9.94	6.33	3.368	12.16	—	—

Grab Information					
	Sample ID		Date	Time	Labeled?
Site E.Coli	240328-14	-WG	3/28/24	0159	☒
Field Duplicate E.Coli		-101			☐
Field Blank E.Coli		-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP08 ^{ve} 9	0102	9.79	10.57	7.28	255.40

Sampler Current Status	
First Subsample Date/Time	—
Last Subsample Date/Time	—
# of Subsamples taken	—

Comments: Not collecting composite sample for this set.

Set Up/ Shut Down Form – HACH (Lucky, Main, AS_6)

STATION: AS-6

SET UP

Personnel: KC, ST

Date/Time
On-Site: 3/27/24 1444

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1449	0.00	0.00	0.00	12.4
Enable Condition or Velocity Cutoff:				—
Deadband:				—
Trigger Volume:				—

- ☒ Install batteries on flowmeter and sampler
- ☐ Perform decon. cycle
- ☐ Install 15L sample bottle, with ice
- ☐ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☐ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

Set up flowmeter only. No composite for this site.

offsite: 1451

SHUT DOWN

Personnel: ST

Date/Time
On-Site: 3/29/24 13:29

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
13:29	0.000	0.000	0.000	39.608	12.4
Downloaded to:				<u>Rugged</u>	

If flow monitoring is complete:

- ☒ Halt program on flowmeter
- ☒ Download flowmeter data
- ☒ Remove flowmeter battery

If continuing to monitor flow:

- ☐ Replace flowmeter battery
- ☐ Reset logging interval to 15 minutes
- ☐ Change velocity cutoff to 0.02 fps
- ☐ Start program
- ☐ Verify running

Comments:

Grab Sample Data Form

STATION: AS-6

Personnel: KC, ST Date/Time On-Site: 3/28/24 0210

Flow Meter Current Status					
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Rainfall (in) (Whitewater Only)
0214	6.710	0.46	0.69	12.3	—

Grab Information				
	Sample ID	Date	Time	Labeled?
Site <i>E.Coli</i>	240328-206-WG	3/28/24	2:19	☒
Field Duplicate <i>E.Coli</i>	-101			☐
Field Blank <i>E.Coli</i>	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP009	2:25	7.74	9.92	7.60	108.59

Sampler Current Status	
First Subsample Date/Time	—
Last Subsample Date/Time	—
# of Subsamples taken	—

Comments: No composite taken at this site.

Date/Time Off-Site: 3/28/24 2:26

Attachment D: Storm Event Analytical Reports

Report Date: 05/02/2024 14:28



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00338-01	ACST1B	240328-12-WG	Water		03/28/2024	03/28/2024
AC00338-02	ACST1B	240328-12-101	Water		03/28/2024	03/28/2024
AC00338-03	ACST1B	240328-12-001	Water		03/28/2024	03/28/2024
AC00338-04	ACST1B	240328-14-WG	Water		03/28/2024	03/28/2024

Report Date: 05/02/2024 14:28



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B

Date/Time Collected: 03/28/2024 01:37

Lab Number: AC00338-01

Sample Type: Grab

Location Description: 240328-12-WG

Sample Collector: S.T

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL				Initials	Qualifier
Microbiology										
E. Coli	B241140	21.6MPN/100 mL		1.0	1.0	IDEXX - Colilert	03/28/24 08:46	3/29/24 10:00	KMR	
Net Chemistry										
Chlorine Screen	B241146	Absent				SM 4500-CL G-2000 mod	03/28/24	3/28/24 8:26	ALM	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML

Report Date: 05/02/2024 14:28



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 03/28/2024 12:00
Lab Number: AC00338-02
Sample Type: Grab

Location Description: 240328-12-101
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Prepared	Analyzed	Analyst	
				MDL *	MDL				Reference	Initials
Microbiology										
E. Coli	B241140	17.3MPN/100 mL		1.0	1.0	IDEXX - Colilert	03/28/24 08:46	3/29/24 10:00	KMR	
Wet Chemistry										
Chlorine Screen	B241146	Absent				SM 4500-CL G-2000 mod	03/28/24	3/28/24 8:26	ALM	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 05/02/2024 14:28



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	240328-12-001
Date/Time Collected:	03/28/2024 12:00		
Lab Number:	AC00338-03	Sample Collector:	S.T
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method	Reference	Prepared	Analyzed	Analyst	
				MDL *	MDL					Initials	Qualifier
Microbiology											
E. Coli	B241140	<1.0MPN/100 mL		1.0	1.0	IDEXX - Collert		03/28/24 08:46	3/29/24 10:00	KMR	U
Net Chemistry											
Chlorine Screen	B241146	Absent				SM 4500-CL G-2000 mod		03/28/24	3/28/24 8:26	ALM	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B, was corrected for dilution, dry weight, or method-defined ML.

Report Date: 05/02/2024 14:28



Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location: ACST1B
Date/Time Collected: 03/28/2024 01:59
Lab Number: AC00338-04
Sample Type: Grab

Location Description: 240328-14-WG
Sample Collector: S.T
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B241140	365.4 MPN/100 mL		1.0	1.0	IDEXX - Colilert	03/28/24 08:46	3/29/24 10:00	KMR	
Wet Chemistry										
Chlorine Screen	B241146	Absent				SM 4500-CL G-2000 mod	03/28/24	3/28/24 8:26	ALM	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B241140									
Blank (B241140-BLK1)									
E. Coli	Absent						03/29/2024	KMR	
LCS (B241140-BS1)									
E. Coli				Present			03/29/2024	KMR	
Duplicate (B241140-DUP1) Source ID: LS01907-10									
E. Coli					Pass	128	03/29/2024	KMR	

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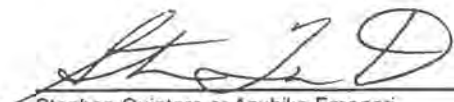
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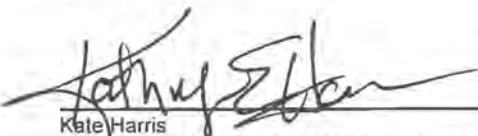
Notes and Definitions

Item	Definition
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Stephen Quintero or Azubike Emenari
QA/QC Coordinator


Kate Harris
Interim Water Quality Laboratory Manager

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418

Tel. (208) 387-6269

Fax (208) 387-6391

Purchase Order:

63065628

Project:

Stormwater-PI

Sampler(s):

Kristen Chislholm
Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
00338-01	3/28/24		0137		240328-12-WG	ST	X	X											X					1
-02	3/28/24		1200		240328-12-101	ST	X	X											X					1
-03	3/28/24		1200		240328-12-001	ST	X	X											X					1
-04	3/28/24		0159		240328-14-WG	ST	X	X											X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<i>Kristen Chislholm</i>	3/28/24 0814	<i>Steven Turner</i> 3/28/24 0816	

Report Date: 05/02/2024 14:28



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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00339-01	ACST1B	240328-206-WG	Water		03/28/2024	03/28/2024

Report Date: 05/02/2024 14:28



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Analysis Report

Location: ACST1B

Date/Time Collected: 03/28/2024 02:19

Lab Number: AC00339-01

Sample Type: Grab

Location Description: 240328-206-WG

Sample Collector: S.T

Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted Method		Analysis Method		Prepared	Analyzed	Analyst	
				MDL *	MDL	Reference				Initials	Qualifier
Microbiology											
E. Coli	B241140	387.3 MPN/100 mL		1.0	1.0	IDEXX - Colilert		03/28/24 08:46	3/29/24 10:00	KMR	
Net Chemistry											
Chlorine Screen	B241146	Absent				SM 4500-CL G-2000 mod		03/28/24	3/28/24 8:26	ALM	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B241140									
Blank (B241140-BLK1)									
E. Coli	Absent						03/29/2024	KMR	
LCS (B241140-BS1)									
E. Coli				Present			03/29/2024	KMR	
Duplicate (B241140-DUP1) Source ID: LS01907-10									
E. Coli					Pass	128	03/29/2024	KMR	



Notes and Definitions

Item	Definition
No notes entered.	

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


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QA/QC Coordinator


Kate Harris
Interim Water Quality Laboratory Manager

Ada County Highway District

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Purchase Order:
Project:
Sampler(s):

63065628

Stormwater-PI

Kristen Christensen
Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
00339-01	3/28/24		0219		240328-206-WG	ST	X	X																1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristen Christensen	3/28/24 0814	River 3/28/24 0814	

AC00339 Ar AD339

Report Date: 05/02/2024 14:36



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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00341-01	ACST1C	240328-11-WC	Water		03/28/2024	03/28/2024

Report Date: 05/02/2024 14:36



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Analysis Report

Location:	ACST1C	Location Description:	240328-11-WC
Date/Time Collected:	03/27/2024 20:07 - 03/28/2024 11:33		
Lab Number:	AC00341-01	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted Method MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B241161	0.236	mg/L	0.0450	0.0450	Timberline Ammonia-001	03/29/24	3/29/24 11:19	ALN	
IOD5	B241168	8.20	mg/L	2.00	2.00	SM 5210 B-2016	03/29/24	4/3/24 9:59	ALM	
Chloride	B241409	14.9	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	04/18/24	4/18/24 15:37	SMC	
IOD	B241167	84.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/29/24	3/29/24 9:37	RKT	
Nitrate-Nitrite, as N	B241189	0.277	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	04/01/24	4/1/24 14:29	JAL	
TKN	B241263	1.63	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	04/04/24	4/5/24 12:53	EDM	
Total Dissolved Solids	B241163	76.0	mg/L	20.0	20.0	SM 2540 C-2015	03/28/24	3/30/24 15:18	BAK	
Total Suspended Solids	B241172	131	mg/L	0.900	0.900	SM 2540 D-2015	03/29/24	3/29/24 10:10	SMC	
Turbidity	B241159	26.2	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	03/28/24	3/28/24 14:35	LRF	
Dissolved Wet Chemistry										
Orthophosphate, as P	B241173	0.131	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/29/24	3/29/24 13:02	JAL	
Total Metals										
Mercury	B241233	0.0151	ug/L	0.0100	0.0100	EPA 245.1	04/04/24	4/5/24 7:58	SAS	
Arsenic	B241177	2.0	ug/L	0.070	0.070	EPA 200.8	04/13/24	4/14/24 17:54	DMW	
Cadmium	B241177	0.074	ug/L	0.010	0.010	EPA 200.8	04/13/24	4/14/24 17:54	DMW	
Calcium	B241226	7.94	mg/L	0.0400	0.0400	EPA 200.7	04/03/24	4/11/24 17:34	EDM	
Lead	B241177	5.8	ug/L	0.010	0.010	EPA 200.8	04/13/24	4/14/24 17:54	DMW	
Magnesium	B241226	2930	ug/L	80.0	80.0	EPA 200.7	04/03/24	4/11/24 17:34	EDM	
Phosphorus as P	B241226	0.318	mg/L	0.0120	0.0120	EPA 200.7	04/03/24	4/11/24 17:34	EDM	
Hardness	B241226	31.9	mg/L	0.100	0.100	SM 2340 B-2011	04/03/24	4/11/24 17:34	EDM	
Dissolved Metals										
Cadmium	B241178	<0.0100	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 16:00	DMW	U
Copper	B241178	1.9	ug/L	0.15	0.15	EPA 200.8	04/04/24	4/4/24 16:00	DMW	
Lead	B241178	0.097	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 16:00	DMW	
Zinc	B241178	9.8	ug/L	0.50	0.50	EPA 200.8	04/04/24	4/4/24 16:00	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B, was corrected for dilution, dry weight, or method-defined ML.

Report Date: 05/02/2024 14:36



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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B241159									
Blank (B241159-BLK1)									
Turbidity	<0.3	NTU					03/28/2024	LRF	U
LCS (B241159-BS1)									
Turbidity			102	90-110			03/28/2024	LRF	
Duplicate (B241159-DUP1) Source ID: AC00340-01									
Turbidity					0.809	25	03/28/2024	LRF	
Batch: B241161									
Blank (B241161-BLK1)									
Ammonia, as N	<0.045	mg/L					03/29/2024	ALN	U
Blank (B241161-BLK2)									
Ammonia, as N	<0.045	mg/L					03/29/2024	ALN	U
LCS (B241161-BS1)									
Ammonia, as N			99.1	87-104			03/29/2024	ALN	
Duplicate (B241161-DUP1) Source ID: WB03028-08									
Ammonia, as N					0.615	20	03/29/2024	ALN	D
Matrix Spike (B241161-MS1) Source ID: WB03028-08									
Ammonia, as N			101	84-115			03/29/2024	ALN	D
Matrix Spike (B241161-MS2) Source ID: EP00320-01									
Ammonia, as N			101	84-115			03/29/2024	ALN	
Matrix Spike (B241161-MS3) Source ID: AC00341-01									
Ammonia, as N			102	84-115			03/29/2024	ALN	
Matrix Spike Dup (B241161-MSD1) Source ID: WB03028-08									
Ammonia, as N			99.6	84-115	0.840	20	03/29/2024	ALN	D
Batch: B241163									
Blank (B241163-BLK1)									
Total Dissolved Solids	<20	mg/L					03/30/2024	BAK	U
LCS (B241163-BS1)									
Total Dissolved Solids			99.3	90-110			03/30/2024	BAK	
Duplicate (B241163-DUP1) Source ID: RW00064-08									
Total Dissolved Solids					7.62	10	03/30/2024	BAK	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Net Chemistry (Continued)									
Batch: B241167									
Blank (B241167-BLK1)									
COD	<7	mg/L					03/29/2024	RKT	U
LCS (B241167-BS1)									
COD			98.3	90-110			03/29/2024	RKT	
Duplicate (B241167-DUP1)	Source ID: AC00341-01								
COD					3.64	10	03/29/2024	RKT	
Batch: B241168									
Blank (B241168-BLK1)									
BOD5	<2	mg/L					04/03/2024	ALM	U
LCS (B241168-BS1)									
BOD5			103	84.6-115.4			04/03/2024	ALM	
LCS (B241168-BS2)									
BOD5			106	84.6-115.4			04/03/2024	ALM	
Duplicate (B241168-DUP1)	Source ID: LS01908-02								
BOD5					3.16	30	04/03/2024	ALM	
Batch: B241172									
Blank (B241172-BLK1)									
Total Suspended Solids	<0.9	mg/L					03/29/2024	SMC	U
LCS (B241172-BS1)									
Total Suspended Solids			91.2	90-110			03/29/2024	SMC	
Duplicate (B241172-DUP1)	Source ID: LS01908-02								
Total Suspended Solids					0.951	20	03/29/2024	SMC	
Batch: B241189									
Blank (B241189-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					04/01/2024	JAL	U
LCS (B241189-BS1)									
Nitrate-Nitrite, as N			96.2	90-110			04/01/2024	JAL	
Duplicate (B241189-DUP1)	Source ID: AC00340-01								
Nitrate-Nitrite, as N					2.37	10	04/01/2024	JAL	
Matrix Spike (B241189-MS1)	Source ID: AC00340-01								
Nitrate-Nitrite, as N			97.6	90-110			04/01/2024	JAL	
Matrix Spike Dup (B241189-MSD1)	Source ID: AC00340-01								
Nitrate-Nitrite, as N			96.8	90-110	0.678	10	04/01/2024	JAL	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier		
Wet Chemistry (Continued)											
Batch: B241263											
Blank (B241263-BLK1) TKN	<0.1	mg/L					04/05/2024	EDM	U		
Blank (B241263-BLK2) TKN	<0.1	mg/L					04/05/2024	EDM	U		
LCS (B241263-BS1) TKN			98.7	80-120			04/05/2024	EDM			
LCS (B241263-BS2) TKN			95.9	80-120			04/05/2024	EDM			
Duplicate (B241263-DUP1) TKN	Source ID: AC00341-01				4.82	20	04/05/2024	EDM			
Duplicate (B241263-DUP2) TKN	Source ID: RW00065-02				0.416	20	04/05/2024	EDM	D		
Duplicate (B241263-DUP3) TKN	Source ID: RW00065-07				3.97	20	04/05/2024	EDM	D		
Matrix Spike (B241263-MS1) TKN	Source ID: AC00341-01				102	80-120	04/05/2024	EDM			
Matrix Spike (B241263-MS2) TKN	Source ID: RW00065-02				101	80-120	04/05/2024	EDM	D		
Matrix Spike (B241263-MS3) TKN	Source ID: RW00065-07				88.7	80-120	04/05/2024	EDM	D		
Matrix Spike Dup (B241263-MSD1) TKN	Source ID: AC00341-01				97.7	80-120	3.03	20	04/05/2024	EDM	
Matrix Spike Dup (B241263-MSD2) TKN	Source ID: RW00065-02				98.7	80-120	1.20	20	04/05/2024	EDM	D
Matrix Spike Dup (B241263-MSD3) TKN	Source ID: RW00065-07				95.8	80-120	3.01	20	04/05/2024	EDM	D
Batch: B241409											
Blank (B241409-BLK1) Chloride	<0.015	mg/L					04/18/2024	SMC	U		
Blank (B241409-BLK2) Chloride	<0.015	mg/L					04/19/2024	SMC	U		
Blank (B241409-BLK3) Chloride	<0.015	mg/L					04/19/2024	SMC	U		
LCS (B241409-BS1) Chloride			96.8	90-110			04/18/2024	SMC			
LCS (B241409-BS2) Chloride			96.2	90-110			04/18/2024	SMC			
LCS (B241409-BS3) Chloride			96.3	90-110			04/19/2024	SMC			



Quality Control Report
Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Vet Chemistry (Continued)									
Batch: B241409 (Continued)									
Duplicate (B241409-DUP1) Chloride	Source ID: AC00340-01				0.0752	10	04/18/2024	SMC	
Duplicate (B241409-DUP2) Chloride	Source ID: RW00065-13				0.328	10	04/18/2024	SMC	D
Duplicate (B241409-DUP4) Chloride	Source ID: RW00069-11				0.239	10	04/19/2024	SMC	
Duplicate (B241409-DUP5) Chloride	Source ID: RW00070-08				0.923	10	04/19/2024	SMC	D
Duplicate (B241409-DUP6) Chloride	Source ID: RW00067-10RE1				0.341	10	04/20/2024	SMC	D
Matrix Spike (B241409-MS1) Chloride	Source ID: AC00340-01		97.9	90-110			04/18/2024	SMC	
Matrix Spike (B241409-MS2) Chloride	Source ID: RW00065-13		96.8	90-110			04/18/2024	SMC	D
Matrix Spike (B241409-MS4) Chloride	Source ID: RW00069-11		98.8	90-110			04/19/2024	SMC	
Matrix Spike (B241409-MS5) Chloride	Source ID: RW00070-08		98.2	90-110			04/19/2024	SMC	D
Matrix Spike (B241409-MS6) Chloride	Source ID: RW00067-10RE1		95.5	90-110			04/20/2024	SMC	D
Matrix Spike Dup (B241409-MSD1) Chloride	Source ID: AC00340-01		97.9	90-110	0.0119	10	04/18/2024	SMC	
Matrix Spike Dup (B241409-MSD2) Chloride	Source ID: RW00065-13		97.0	90-110	0.105	10	04/19/2024	SMC	D
Matrix Spike Dup (B241409-MSD4) Chloride	Source ID: RW00069-11		99.6	90-110	0.708	10	04/19/2024	SMC	
Matrix Spike Dup (B241409-MSD5) Chloride	Source ID: RW00070-08		98.8	90-110	0.380	10	04/19/2024	SMC	D
Matrix Spike Dup (B241409-MSD6) Chloride	Source ID: RW00067-10RE1		96.6	90-110	0.595	10	04/20/2024	SMC	D

Report Date: 05/02/2024 14:36



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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier		
Dissolved Wet Chemistry											
Batch: B241173											
Blank (B241173-BLK1) Orthophosphate, as P	<0.003	mg/L					03/29/2024	JAL	U		
Blank (B241173-BLK2) Orthophosphate, as P	<0.003	mg/L					03/29/2024	JAL	U		
LCS (B241173-BS1) Orthophosphate, as P			97.4	90-110			03/29/2024	JAL			
LCS (B241173-BS2) Orthophosphate, as P			98.8	90-110			03/29/2024	JAL			
Duplicate (B241173-DUP1) Orthophosphate, as P	Source ID: AC00340-01				0.151	10	03/29/2024	JAL			
Duplicate (B241173-DUP2) Orthophosphate, as P	Source ID: RW00064-08				0.870	10	03/29/2024	JAL	D		
Duplicate (B241173-DUP3) Orthophosphate, as P	Source ID: WB03032-06				0.481	10	03/29/2024	JAL	D		
Matrix Spike (B241173-MS1) Orthophosphate, as P	Source ID: AC00340-01				99.1	90-110	03/29/2024	JAL			
Matrix Spike (B241173-MS2) Orthophosphate, as P	Source ID: RW00064-08				99.9	90-110	03/29/2024	JAL	D		
Matrix Spike (B241173-MS3) Orthophosphate, as P	Source ID: WB03032-06				99.8	90-110	03/29/2024	JAL	D		
Matrix Spike Dup (B241173-MSD1) Orthophosphate, as P	Source ID: AC00340-01				98.4	90-110	0.459	10	03/29/2024	JAL	
Matrix Spike Dup (B241173-MSD2) Orthophosphate, as P	Source ID: RW00064-08				101	90-110	0.438	10	03/29/2024	JAL	D
Matrix Spike Dup (B241173-MSD3) Orthophosphate, as P	Source ID: WB03032-06				101	90-110	0.301	10	03/29/2024	JAL	D

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Quality Control Report
Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B241177									
Blank (B241177-BLK1)									
Arsenic	<0.070	ug/L					04/14/2024	DMW	U
Cadmium	<0.010	ug/L					04/14/2024	DMW	U
Lead	<0.010	ug/L					04/14/2024	DMW	U
LCS (B241177-BS1)									
Arsenic			101	85-115			04/14/2024	DMW	
Cadmium			102	85-115			04/14/2024	DMW	
Lead			103	85-115			04/14/2024	DMW	
Duplicate (B241177-DUP1) Source ID: ES00308-04									
Arsenic					1.20	20	04/14/2024	DMW	
Cadmium					NR	20	04/14/2024	DMW	U
Lead					0.466	20	04/14/2024	DMW	
Matrix Spike (B241177-MS1) Source ID: ES00308-04									
Arsenic			100	70-130			04/14/2024	DMW	
Cadmium			101	70-130			04/14/2024	DMW	
Lead			101	70-130			04/14/2024	DMW	
Matrix Spike Dup (B241177-MSD1) Source ID: ES00308-04									
Arsenic			101	70-130	0.462	20	04/14/2024	DMW	
Cadmium			102	70-130	1.01	20	04/14/2024	DMW	
Lead			101	70-130	0.120	20	04/14/2024	DMW	
Batch: B241226									
Blank (B241226-BLK1)									
Calcium	<0.04	mg/L					04/11/2024	EDM	U
Magnesium	<80	ug/L					04/11/2024	EDM	U
Phosphorus as P	<0.012	mg/L					04/11/2024	EDM	U
LCS (B241226-BS1)									
Calcium			98.9	85-115			04/11/2024	EDM	
Magnesium			101	85-115			04/11/2024	EDM	
Phosphorus as P			102	85-115			04/11/2024	EDM	
Duplicate (B241226-DUP1) Source ID: AC00341-01									
Calcium					1.81	20	04/11/2024	EDM	
Magnesium					1.16	20	04/11/2024	EDM	
Phosphorus as P					2.27	20	04/11/2024	EDM	
Matrix Spike (B241226-MS1) Source ID: AC00341-01									
Calcium			100	70-130			04/11/2024	EDM	
Magnesium			102	70-130			04/11/2024	EDM	
Phosphorus as P			101	70-130			04/11/2024	EDM	
Matrix Spike Dup (B241226-MSD1) Source ID: AC00341-01									
Calcium			102	70-130	1.34	20	04/11/2024	EDM	
Magnesium			103	70-130	0.658	20	04/11/2024	EDM	
Phosphorus as P			103	70-130	1.62	20	04/11/2024	EDM	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B241233									
Blank (B241233-BLK1)									
Mercury	<0.01	ug/L					04/05/2024	SAS	U
LCS (B241233-BS1)									
Mercury			104	85-115			04/05/2024	SAS	
Duplicate (B241233-DUP1) Source ID: AC00340-01									
Mercury					47.0	20	04/05/2024	SAS	QC-02
Duplicate (B241233-DUP2) Source ID: BB03721-01									
Mercury					NR	20	04/05/2024	SAS	U
Matrix Spike (B241233-MS1) Source ID: AC00340-01									
Mercury			97.8	70-130			04/05/2024	SAS	
Matrix Spike (B241233-MS2) Source ID: BB03721-01									
Mercury			101	70-130			04/05/2024	SAS	
Matrix Spike (B241233-MS3) Source ID: EP00317-02RE1									
Mercury			75.9	70-130			04/05/2024	SAS	D
Matrix Spike Dup (B241233-MSD1) Source ID: AC00340-01									
Mercury			91.3	70-130	5.80	20	04/05/2024	SAS	
Matrix Spike Dup (B241233-MSD2) Source ID: BB03721-01									
Mercury			102	70-130	1.06	20	04/05/2024	SAS	



Quality Control Report
Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B241178									
Blank (B241178-BLK1)									
Cadmium	<0.010	ug/L					04/04/2024	DMW	U
Copper	<0.15	ug/L					04/04/2024	DMW	U
Lead	<0.0090	ug/L					04/04/2024	DMW	U
Zinc	<0.50	ug/L					04/04/2024	DMW	U
LCS (B241178-BS1)									
Cadmium			99.9	85-115			04/04/2024	DMW	
Copper			93.2	85-115			04/04/2024	DMW	
Lead			99.4	85-115			04/04/2024	DMW	
Zinc			94.5	85-115			04/04/2024	DMW	
Duplicate (B241178-DUP1) Source ID: AC00340-01									
Cadmium					NR	10	04/04/2024	DMW	U
Copper					0.527	10	04/04/2024	DMW	
Lead					2.01	10	04/04/2024	DMW	
Zinc					1.59	10	04/04/2024	DMW	
Matrix Spike (B241178-MS1) Source ID: AC00340-01									
Cadmium			102	70-130			04/04/2024	DMW	
Copper			91.6	70-130			04/04/2024	DMW	
Lead			98.4	70-130			04/04/2024	DMW	
Zinc			91.2	70-130			04/04/2024	DMW	
Matrix Spike Dup (B241178-MSD1) Source ID: AC00340-01									
Cadmium			102	70-130	0.490	10	04/04/2024	DMW	
Copper			91.9	70-130	0.188	10	04/04/2024	DMW	
Lead			98.3	70-130	0.146	10	04/04/2024	DMW	
Zinc			89.8	70-130	0.970	10	04/04/2024	DMW	

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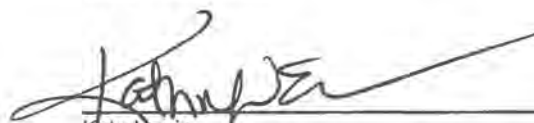
Notes and Definitions

Item	Definition
D	Data reported from a dilution
QC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Stephen Quintero or Azubike Emenari
QA/QC Coordinator


Kate Harris
Interim Water Quality Laboratory Manager

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order:
Project:
Sampler(s):

63065628

Stormwater-PI

Kristen Chusholm
Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix	Type	BOD ₅ - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Confirm Chlorides EPA 300.0	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ - D	Total Containers
AC00341-01	3/27/24	3/28/24	2007	1133	240328-11-WC	KC	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
<u>Kristen Chusholm</u>	3/28/24 1314	<u>[Signature]</u> 3/28/24 1314	

AC00341

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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00340-01	ACST1C	240328-12-WC	Water		03/28/2024	03/28/2024
AC00340-02	ACST1C	240328-14-002	Water		03/28/2024	03/28/2024

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Analysis Report

Location:	ACST1C	Location Description:	240328-12-WC
Date/Time Collected:	03/27/2024 19:33 - 03/28/2024 07:39		
Lab Number:	AC00340-01	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Net Chemistry										
Ammonia, as N	B241161	0.293	mg/L	0.0450	0.0450	Timberline Ammonia-001	03/29/24	3/29/24 11:29	ALN	
BOD5	B241168	5.03	mg/L	2.00	2.00	SM 5210 B-2016	03/29/24	4/3/24 10:05	ALM	
Chloride	B241409	5.19	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	04/18/24	4/18/24 13:51	SMC	
COD	B241167	104	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/29/24	3/29/24 9:37	RKT	
Nitrate-Nitrite, as N	B241189	0.151	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	04/01/24	4/1/24 14:23	JAL	
TKN	B241263	1.18	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	04/04/24	4/5/24 12:51	EDM	
Total Dissolved Solids	B241163	44.2	mg/L	20.0	20.0	SM 2540 C-2015	03/28/24	3/30/24 15:17	BAK	
Total Suspended Solids	B241172	91.7	mg/L	0.900	0.900	SM 2540 D-2015	03/29/24	3/29/24 10:11	SMC	
Turbidity	B241159	24.6	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	03/28/24	3/28/24 14:17	LRF	
Dissolved Wet Chemistry										
Orthophosphate, as P	B241173	0.0494	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/29/24	3/29/24 12:56	JAL	
Total Metals										
Mercury	B241233	0.0171	ug/L	0.0100	0.0100	EPA 245.1	04/04/24	4/5/24 7:41	SAS	
Arsenic	B241177	1.1	ug/L	0.070	0.070	EPA 200.8	04/13/24	4/14/24 17:49	DMW	
Cadmium	B241177	0.071	ug/L	0.010	0.010	EPA 200.8	04/13/24	4/14/24 17:49	DMW	
Calcium	B241226	2.99	mg/L	0.0400	0.0400	EPA 200.7	04/03/24	4/11/24 17:24	EDM	
Lead	B241177	5.9	ug/L	0.010	0.010	EPA 200.8	04/13/24	4/14/24 17:49	DMW	
Magnesium	B241226	1260	ug/L	80.0	80.0	EPA 200.7	04/03/24	4/11/24 17:24	EDM	
Phosphorus as P	B241226	0.145	mg/L	0.0120	0.0120	EPA 200.7	04/03/24	4/11/24 17:24	EDM	
Hardness	B241226	12.6	mg/L	0.100	0.100	SM 2340 B-2011	04/03/24	4/11/24 17:24	EDM	
Dissolved Metals										
Cadmium	B241178	<0.0100	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 15:50	DMW	U
Copper	B241178	2.3	ug/L	0.15	0.15	EPA 200.8	04/04/24	4/4/24 15:50	DMW	
Lead	B241178	0.068	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 15:50	DMW	
Zinc	B241178	14.7	ug/L	0.50	0.50	EPA 200.8	04/04/24	4/4/24 15:50	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Analysis Report

Location: ACST1C
Date/Time Collected: 03/28/2024 12:00
Lab Number: AC00340-02
Sample Type: Composite

Location Description: 240328-14-002
Sample Collector: K.C
Sample Matrix: Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B241161	<0.0450	mg/L	0.0450	0.0450	Timberline Ammonia-001	03/29/24	3/29/24 11:26	ALN	U
BOD5	B241168	<2.00	mg/L	2.00	2.00	SM 5210 B-2016	03/29/24	4/3/24 10:05	ALM	U
Chloride	B241409	<0.0150	mg/L	0.0150	0.0150	EPA 300.0, Rev. 2.1 (1993)	04/18/24	4/18/24 17:23	SMC	U
COD	B241167	<7.00	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/29/24	3/29/24 9:37	RKT	U
Nitrate-Nitrite, as N	B241189	<0.0250	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	04/01/24	4/1/24 14:28	JAL	U
TKN	B241263	<0.100	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	04/04/24	4/5/24 12:52	EDM	U
Total Dissolved Solids	B241163	<20.0	mg/L	20.0	20.0	SM 2540 C-2015	03/28/24	3/30/24 15:18	BAK	U
Total Suspended Solids	B241172	<0.900	mg/L	0.900	0.900	SM 2540 D-2015	03/29/24	3/29/24 9:42	SMC	U
Turbidity	B241159	<0.3	NTU	0.3	0.3	EPA 180.1, Rev. 2.0 (1993)	03/28/24	3/28/24 14:43	LRF	U
Dissolved Wet Chemistry										
Orthophosphate, as P	B241173	<3.00E-3	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/29/24	3/29/24 13:01	JAL	U
Total Metals										
Mercury	B241233	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	04/04/24	4/5/24 7:54	SAS	U
Arsenic	B241177	<0.0700	ug/L	0.070	0.070	EPA 200.8	04/13/24	4/14/24 17:51	DMW	U
Cadmium	B241177	<0.0100	ug/L	0.010	0.010	EPA 200.8	04/13/24	4/14/24 17:51	DMW	U
Calcium	B241226	<0.0400	mg/L	0.0400	0.0400	EPA 200.7	04/03/24	4/11/24 17:31	EDM	U
Lead	B241177	<0.0100	ug/L	0.010	0.010	EPA 200.8	04/13/24	4/14/24 17:51	DMW	U
Magnesium	B241226	<80.0	ug/L	80.0	80.0	EPA 200.7	04/03/24	4/11/24 17:31	EDM	U
Phosphorus as P	B241226	<0.0120	mg/L	0.0120	0.0120	EPA 200.7	04/03/24	4/11/24 17:31	EDM	U
Hardness	B241226	<0.100	mg/L	0.100	0.100	SM 2340 B-2011	04/03/24	4/11/24 17:31	EDM	U
Dissolved Metals										
Cadmium	B241178	<0.0100	ug/L	0.010	0.010	EPA 200.8	04/04/24	4/4/24 15:47	DMW	U
Copper	B241178	<0.150	ug/L	0.15	0.15	EPA 200.8	04/04/24	4/4/24 15:47	DMW	U
Lead	B241178	<9.00E-3	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/04/24	4/4/24 15:47	DMW	U
Zinc	B241178	<0.500	ug/L	0.50	0.50	EPA 200.8	04/04/24	4/4/24 15:47	DMW	U

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.



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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Vet Chemistry									
Batch: B241159									
Blank (B241159-BLK1)									
Turbidity	<0.3	NTU					03/28/2024	LRF	U
LCS (B241159-BS1)									
Turbidity			102	90-110			03/28/2024	LRF	
Duplicate (B241159-DUP1) Source ID: AC00340-01									
Turbidity					0.809	25	03/28/2024	LRF	
Batch: B241161									
Blank (B241161-BLK1)									
Ammonia, as N	<0.045	mg/L					03/29/2024	ALN	U
Blank (B241161-BLK2)									
Ammonia, as N	<0.045	mg/L					03/29/2024	ALN	U
LCS (B241161-BS1)									
Ammonia, as N			99.1	87-104			03/29/2024	ALN	
Duplicate (B241161-DUP1) Source ID: WB03028-08									
Ammonia, as N					0.615	20	03/29/2024	ALN	D
Matrix Spike (B241161-MS1) Source ID: WB03028-08									
Ammonia, as N			101	84-115			03/29/2024	ALN	D
Matrix Spike (B241161-MS2) Source ID: EP00320-01									
Ammonia, as N			101	84-115			03/29/2024	ALN	
Matrix Spike (B241161-MS3) Source ID: AC00341-01									
Ammonia, as N			102	84-115			03/29/2024	ALN	
Matrix Spike Dup (B241161-MSD1) Source ID: WB03028-08									
Ammonia, as N			99.6	84-115	0.840	20	03/29/2024	ALN	D
Batch: B241163									
Blank (B241163-BLK1)									
Total Dissolved Solids	<20	mg/L					03/30/2024	BAK	U
LCS (B241163-BS1)									
Total Dissolved Solids			99.3	90-110			03/30/2024	BAK	
Duplicate (B241163-DUP1) Source ID: RW00064-08									
Total Dissolved Solids					7.62	10	03/30/2024	BAK	

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Quality Control Report

(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B241167									
Blank (B241167-BLK1)									
COD	<7	mg/L					03/29/2024	RKT	U
LCS (B241167-BS1)									
COD			98.3	90-110			03/29/2024	RKT	
Duplicate (B241167-DUP1)	Source ID: AC00341-01								
COD					3.64	10	03/29/2024	RKT	
Batch: B241168									
Blank (B241168-BLK1)									
BOD5	<2	mg/L					04/03/2024	ALM	U
LCS (B241168-BS1)									
BOD5			103	84.6-115.4			04/03/2024	ALM	
LCS (B241168-BS2)									
BOD5			106	84.6-115.4			04/03/2024	ALM	
Duplicate (B241168-DUP1)	Source ID: LS01908-02								
BOD5					3.16	30	04/03/2024	ALM	
Batch: B241172									
Blank (B241172-BLK1)									
Total Suspended Solids	<0.9	mg/L					03/29/2024	SMC	U
LCS (B241172-BS1)									
Total Suspended Solids			91.2	90-110			03/29/2024	SMC	
Duplicate (B241172-DUP1)	Source ID: LS01908-02								
Total Suspended Solids					0.951	20	03/29/2024	SMC	
Batch: B241189									
Blank (B241189-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					04/01/2024	JAL	U
LCS (B241189-BS1)									
Nitrate-Nitrite, as N			96.2	90-110			04/01/2024	JAL	
Duplicate (B241189-DUP1)	Source ID: AC00340-01								
Nitrate-Nitrite, as N					2.37	10	04/01/2024	JAL	
Matrix Spike (B241189-MS1)	Source ID: AC00340-01								
Nitrate-Nitrite, as N			97.6	90-110			04/01/2024	JAL	
Matrix Spike Dup (B241189-MSD1)	Source ID: AC00340-01								
Nitrate-Nitrite, as N			96.8	90-110	0.678	10	04/01/2024	JAL	

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Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Net Chemistry (Continued)									
Batch: B241263									
Blank (B241263-BLK1)									
TKN	<0.1	mg/L					04/05/2024	EDM	U
Blank (B241263-BLK2)									
TKN	<0.1	mg/L					04/05/2024	EDM	U
LCS (B241263-BS1)									
TKN			98.7	80-120			04/05/2024	EDM	
LCS (B241263-BS2)									
TKN			95.9	80-120			04/05/2024	EDM	
Duplicate (B241263-DUP1)	Source ID: AC00341-01								
TKN					4.82	20	04/05/2024	EDM	
Duplicate (B241263-DUP2)	Source ID: RW00065-02								
TKN					0.416	20	04/05/2024	EDM	D
Duplicate (B241263-DUP3)	Source ID: RW00065-07								
TKN					3.97	20	04/05/2024	EDM	D
Matrix Spike (B241263-MS1)	Source ID: AC00341-01								
TKN			102	80-120			04/05/2024	EDM	
Matrix Spike (B241263-MS2)	Source ID: RW00065-02								
TKN			101	80-120			04/05/2024	EDM	D
Matrix Spike (B241263-MS3)	Source ID: RW00065-07								
TKN			88.7	80-120			04/05/2024	EDM	D
Matrix Spike Dup (B241263-MSD1)	Source ID: AC00341-01								
TKN			97.7	80-120	3.03	20	04/05/2024	EDM	
Matrix Spike Dup (B241263-MSD2)	Source ID: RW00065-02								
TKN			98.7	80-120	1.20	20	04/05/2024	EDM	D
Matrix Spike Dup (B241263-MSD3)	Source ID: RW00065-07								
TKN			95.8	80-120	3.01	20	04/05/2024	EDM	D
Batch: B241409									
Blank (B241409-BLK1)									
Chloride	<0.015	mg/L					04/18/2024	SMC	U
Blank (B241409-BLK2)									
Chloride	<0.015	mg/L					04/19/2024	SMC	U
Blank (B241409-BLK3)									
Chloride	<0.015	mg/L					04/19/2024	SMC	U
LCS (B241409-BS1)									
Chloride			96.8	90-110			04/18/2024	SMC	
LCS (B241409-BS2)									
Chloride			96.2	90-110			04/18/2024	SMC	
LCS (B241409-BS3)									
Chloride			96.3	90-110			04/19/2024	SMC	

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(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B241409 (Continued)									
Duplicate (B241409-DUP1) Chloride	Source ID: AC00340-01				0.0752	10	04/18/2024	SMC	
Duplicate (B241409-DUP2) Chloride	Source ID: RW00065-13				0.328	10	04/18/2024	SMC	D
Duplicate (B241409-DUP4) Chloride	Source ID: RW00069-11				0.239	10	04/19/2024	SMC	
Duplicate (B241409-DUP5) Chloride	Source ID: RW00070-08				0.923	10	04/19/2024	SMC	D
Duplicate (B241409-DUP6) Chloride	Source ID: RW00067-10RE1				0.341	10	04/20/2024	SMC	D
Matrix Spike (B241409-MS1) Chloride	Source ID: AC00340-01		97.9	90-110			04/18/2024	SMC	
Matrix Spike (B241409-MS2) Chloride	Source ID: RW00065-13		96.8	90-110			04/18/2024	SMC	D
Matrix Spike (B241409-MS4) Chloride	Source ID: RW00069-11		98.8	90-110			04/19/2024	SMC	
Matrix Spike (B241409-MS5) Chloride	Source ID: RW00070-08		98.2	90-110			04/19/2024	SMC	D
Matrix Spike (B241409-MS6) Chloride	Source ID: RW00067-10RE1		95.5	90-110			04/20/2024	SMC	D
Matrix Spike Dup (B241409-MSD1) Chloride	Source ID: AC00340-01		97.9	90-110	0.0119	10	04/18/2024	SMC	
Matrix Spike Dup (B241409-MSD2) Chloride	Source ID: RW00065-13		97.0	90-110	0.105	10	04/19/2024	SMC	D
Matrix Spike Dup (B241409-MSD4) Chloride	Source ID: RW00069-11		99.6	90-110	0.708	10	04/19/2024	SMC	
Matrix Spike Dup (B241409-MSD5) Chloride	Source ID: RW00070-08		98.8	90-110	0.380	10	04/19/2024	SMC	D
Matrix Spike Dup (B241409-MSD6) Chloride	Source ID: RW00067-10RE1		96.6	90-110	0.595	10	04/20/2024	SMC	D

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Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier		
Dissolved Wet Chemistry											
Batch: B241173											
Blank (B241173-BLK1) Orthophosphate, as P	<0.003	mg/L					03/29/2024	JAL	U		
Blank (B241173-BLK2) Orthophosphate, as P	<0.003	mg/L					03/29/2024	JAL	U		
LCS (B241173-BS1) Orthophosphate, as P			97.4	90-110			03/29/2024	JAL			
LCS (B241173-BS2) Orthophosphate, as P			98.8	90-110			03/29/2024	JAL			
Duplicate (B241173-DUP1) Orthophosphate, as P	Source ID: AC00340-01				0.151	10	03/29/2024	JAL			
Duplicate (B241173-DUP2) Orthophosphate, as P	Source ID: RW00064-08				0.870	10	03/29/2024	JAL	D		
Duplicate (B241173-DUP3) Orthophosphate, as P	Source ID: WB03032-06				0.481	10	03/29/2024	JAL	D		
Matrix Spike (B241173-MS1) Orthophosphate, as P	Source ID: AC00340-01				99.1	90-110	03/29/2024	JAL			
Matrix Spike (B241173-MS2) Orthophosphate, as P	Source ID: RW00064-08				99.9	90-110	03/29/2024	JAL	D		
Matrix Spike (B241173-MS3) Orthophosphate, as P	Source ID: WB03032-06				99.8	90-110	03/29/2024	JAL	D		
Matrix Spike Dup (B241173-MSD1) Orthophosphate, as P	Source ID: AC00340-01				98.4	90-110	0.459	10	03/29/2024	JAL	
Matrix Spike Dup (B241173-MSD2) Orthophosphate, as P	Source ID: RW00064-08				101	90-110	0.438	10	03/29/2024	JAL	D
Matrix Spike Dup (B241173-MSD3) Orthophosphate, as P	Source ID: WB03032-06				101	90-110	0.301	10	03/29/2024	JAL	D

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(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B241177									
Blank (B241177-BLK1)									
Arsenic	<0.070	ug/L					04/14/2024	DMW	U
Cadmium	<0.010	ug/L					04/14/2024	DMW	U
Lead	<0.010	ug/L					04/14/2024	DMW	U
LCS (B241177-BS1)									
Arsenic			101	85-115			04/14/2024	DMW	
Cadmium			102	85-115			04/14/2024	DMW	
Lead			103	85-115			04/14/2024	DMW	
Duplicate (B241177-DUP1) Source ID: ES00308-04									
Arsenic					1.20	20	04/14/2024	DMW	
Cadmium					NR	20	04/14/2024	DMW	U
Lead					0.466	20	04/14/2024	DMW	
Matrix Spike (B241177-MS1) Source ID: ES00308-04									
Arsenic			100	70-130			04/14/2024	DMW	
Cadmium			101	70-130			04/14/2024	DMW	
Lead			101	70-130			04/14/2024	DMW	
Matrix Spike Dup (B241177-MSD1) Source ID: ES00308-04									
Arsenic			101	70-130	0.462	20	04/14/2024	DMW	
Cadmium			102	70-130	1.01	20	04/14/2024	DMW	
Lead			101	70-130	0.120	20	04/14/2024	DMW	
Batch: B241226									
Blank (B241226-BLK1)									
Calcium	<0.04	mg/L					04/11/2024	EDM	U
Magnesium	<80	ug/L					04/11/2024	EDM	U
Phosphorus as P	<0.012	mg/L					04/11/2024	EDM	U
LCS (B241226-BS1)									
Calcium			98.9	85-115			04/11/2024	EDM	
Magnesium			101	85-115			04/11/2024	EDM	
Phosphorus as P			102	85-115			04/11/2024	EDM	
Duplicate (B241226-DUP1) Source ID: AC00341-01									
Calcium					1.81	20	04/11/2024	EDM	
Magnesium					1.16	20	04/11/2024	EDM	
Phosphorus as P					2.27	20	04/11/2024	EDM	
Matrix Spike (B241226-MS1) Source ID: AC00341-01									
Calcium			100	70-130			04/11/2024	EDM	
Magnesium			102	70-130			04/11/2024	EDM	
Phosphorus as P			101	70-130			04/11/2024	EDM	
Matrix Spike Dup (B241226-MSD1) Source ID: AC00341-01									
Calcium			102	70-130	1.34	20	04/11/2024	EDM	
Magnesium			103	70-130	0.658	20	04/11/2024	EDM	
Phosphorus as P			103	70-130	1.62	20	04/11/2024	EDM	



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Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B241233									
Blank (B241233-BLK1)									
Mercury	<0.01	ug/L					04/05/2024	SAS	U
LCS (B241233-BS1)									
Mercury			104	85-115			04/05/2024	SAS	
Duplicate (B241233-DUP1) Source ID: AC00340-01									
Mercury					47.0	20	04/05/2024	SAS	QC-02
Duplicate (B241233-DUP2) Source ID: BB03721-01									
Mercury					NR	20	04/05/2024	SAS	U
Matrix Spike (B241233-MS1) Source ID: AC00340-01									
Mercury			97.8	70-130			04/05/2024	SAS	
Matrix Spike (B241233-MS2) Source ID: BB03721-01									
Mercury			101	70-130			04/05/2024	SAS	
Matrix Spike (B241233-MS3) Source ID: EP00317-02RE1									
Mercury			75.9	70-130			04/05/2024	SAS	D
Matrix Spike Dup (B241233-MSD1) Source ID: AC00340-01									
Mercury			91.3	70-130	5.80	20	04/05/2024	SAS	
Matrix Spike Dup (B241233-MSD2) Source ID: BB03721-01									
Mercury			102	70-130	1.06	20	04/05/2024	SAS	

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(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B241178									
Blank (B241178-BLK1)									
Cadmium	<0.010	ug/L					04/04/2024	DMW	U
Copper	<0.15	ug/L					04/04/2024	DMW	U
Lead	<0.0090	ug/L					04/04/2024	DMW	U
Zinc	<0.50	ug/L					04/04/2024	DMW	U
LCS (B241178-BS1)									
Cadmium			99.9	85-115			04/04/2024	DMW	
Copper			93.2	85-115			04/04/2024	DMW	
Lead			99.4	85-115			04/04/2024	DMW	
Zinc			94.5	85-115			04/04/2024	DMW	
Duplicate (B241178-DUP1) Source ID: AC00340-01									
Cadmium					NR	10	04/04/2024	DMW	U
Copper					0.527	10	04/04/2024	DMW	
Lead					2.01	10	04/04/2024	DMW	
Zinc					1.59	10	04/04/2024	DMW	
Matrix Spike (B241178-MS1) Source ID: AC00340-01									
Cadmium			102	70-130			04/04/2024	DMW	
Copper			91.6	70-130			04/04/2024	DMW	
Lead			98.4	70-130			04/04/2024	DMW	
Zinc			91.2	70-130			04/04/2024	DMW	
Matrix Spike Dup (B241178-MSD1) Source ID: AC00340-01									
Cadmium			102	70-130	0.490	10	04/04/2024	DMW	
Copper			91.9	70-130	0.188	10	04/04/2024	DMW	
Lead			98.3	70-130	0.146	10	04/04/2024	DMW	
Zinc			89.8	70-130	0.970	10	04/04/2024	DMW	

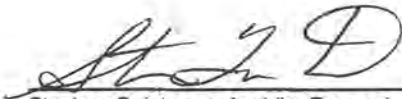


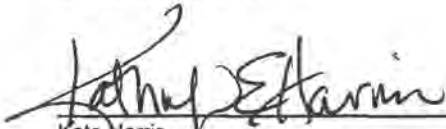
Notes and Definitions

Item	Definition
	Data reported from a dilution
IC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846


Stephen Quintero or Azubike Emenari
QA/QC Coordinator


Kate Harris
Interim Water Quality Laboratory Manager

Ada County Highway District

Attn: Steven Turner
3775 Adams Street
Garden City, Idaho 83714-6418
Tel. (208) 387-6269
Fax (208) 387-6391
Purchase Order:
Project:
Sampler(s):

63065628
Stormwater-PI
Kristen Chisholm
#Steven Turner

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Water	Grab	Composite	BOD ₅ - SM 5210	COD - Hach 8000	TSS - SM 2540	TDS - SM 2540	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E-Gel - EPA 200.0	Chlorides - EPA 200.0	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO ₃ +NO ₂ - EPA 353.2	NH ₃ - SM 4500 NH ₃ -D	Total Containers
00340-01	3/27/24	3/28/24	1933	0739	23 240328-12-WC	KC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3
↓ -02		3/23/24		1200	240328-14- WE 002	KC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristen Chisholm	3/28/24 1130	Steven Turner 3/28/24 1134	

Attachment N: Americana Subwatershed Monitoring Summary WY 2024

Americana Subwatershed Monitoring Summary Report

Water Year 2024

Prepared by
Brown and Caldwell

Prepared for
Ada County Highway District
December 19, 2024



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 September 12, 2024. 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.

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Section 1: Introduction

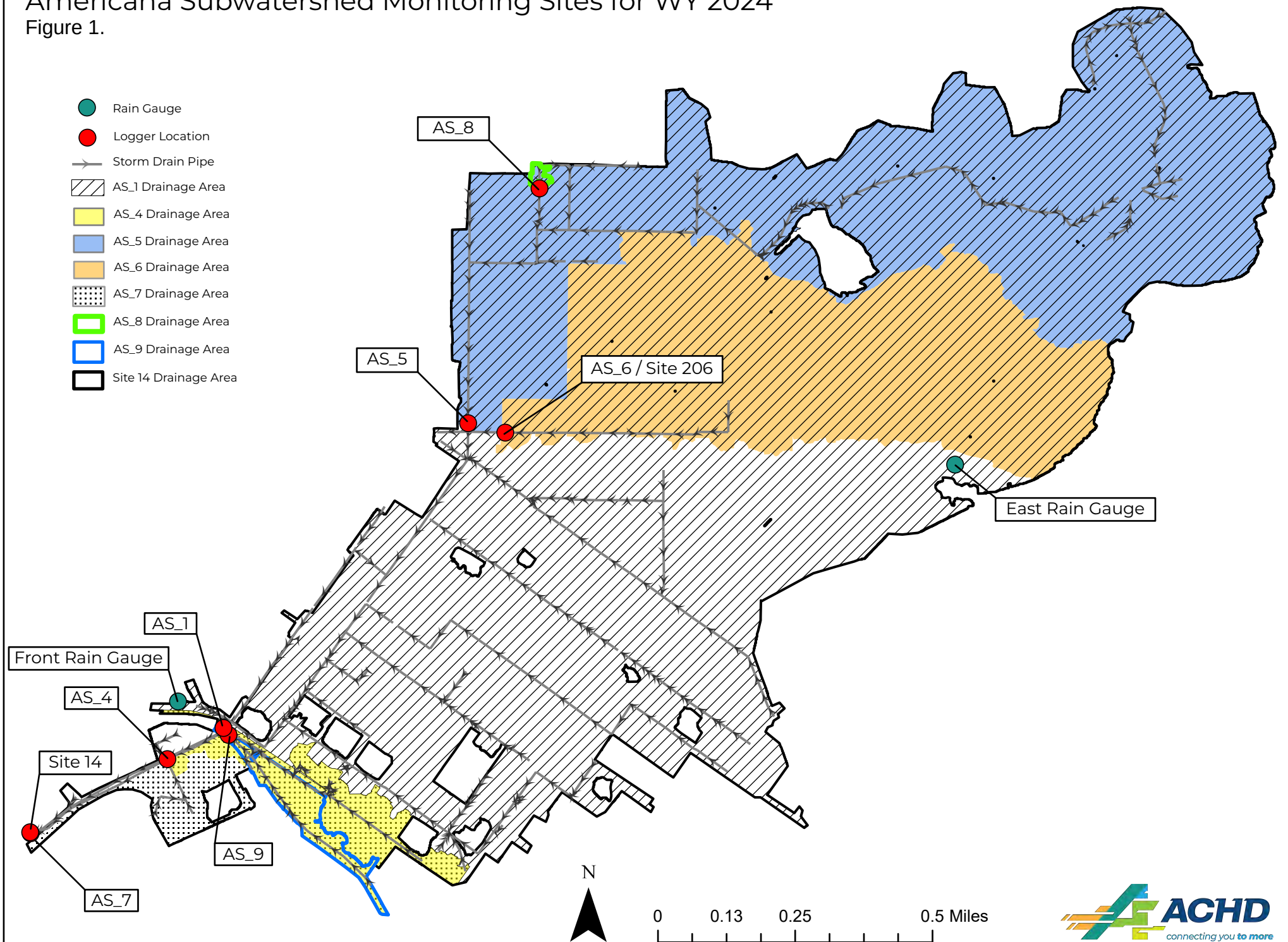
Ada County Highway District, Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a National Pollutant Discharge Elimination System Phase I Permit #IDS-027561 (Permit) on October 1, 2021. The Permit 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) 2024 (October 1, 2023–September 30, 2024).

In WY 2024, 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 six 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.

Americana Subwatershed Monitoring Sites for WY 2024

Figure 1.



Section 2: Monitoring Sites, Equipment, and Sample Types

Data was collected at the following monitoring sites during WY 2024: AS_1, AS_4, 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. Midway through WY 2023, the AS_5 and AS_6 logger sites were discontinued.

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 set up 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 AS_5. 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_9 representing the upstream portion of the AS_4 subwatershed.

The AS_6 logger site was discontinued in the second quarter of WY 2023; however, Site 206 still collects flow and water quality data during targeted storm events.

AS_1, AS_4, 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.

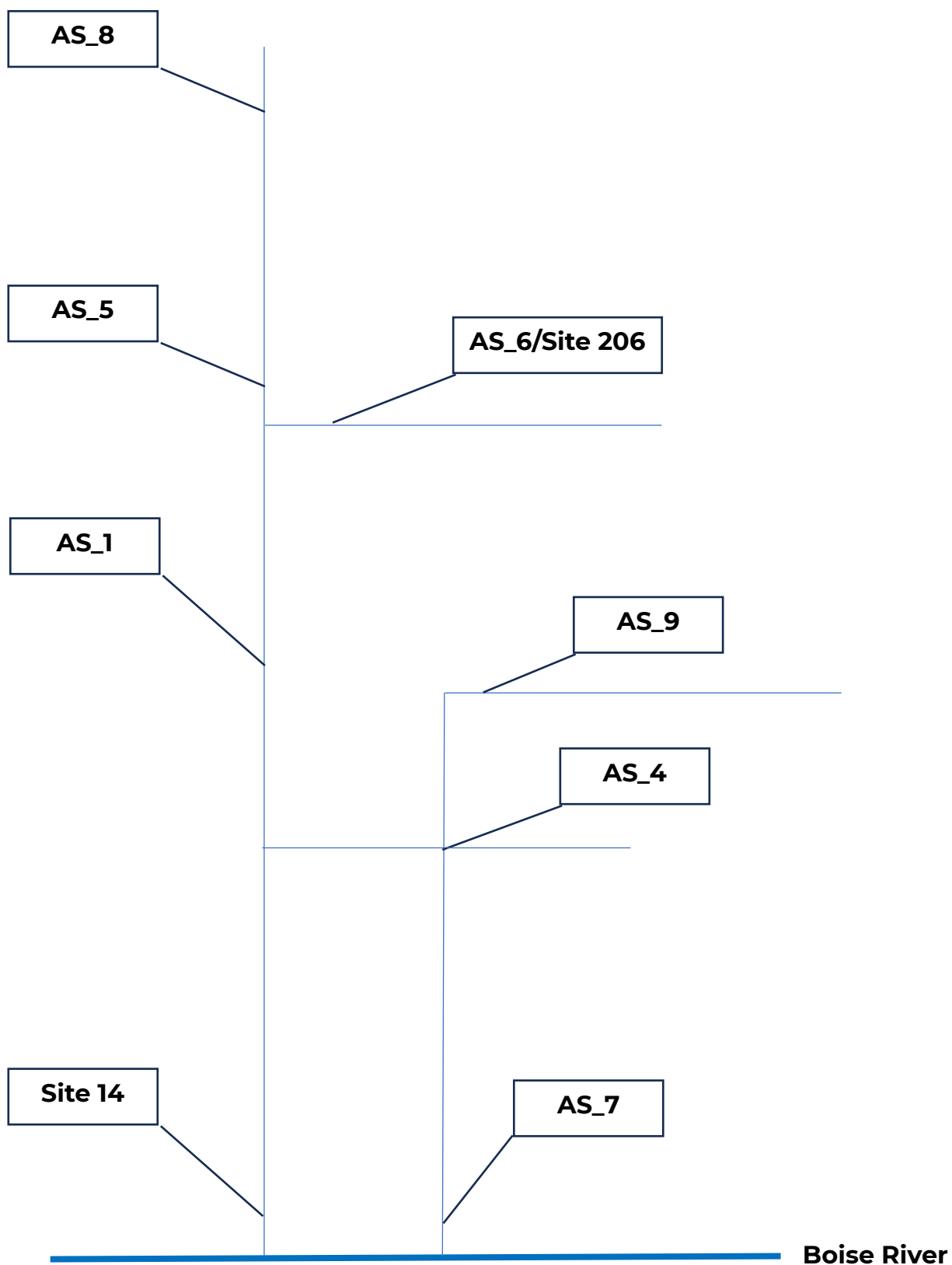


Figure 2. Conceptual Layout of Monitoring Sites

2.1 Water Quality Sample Types

The sample types collected during WY 2024 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 wet weather discharges using a swing sampler. The grab samples were submitted to the Boise City Public Works Water Quality Laboratory (WQL) 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 WQL 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 (TDS); total phosphorus (TP); orthophosphate as P; ammonia, as N; nitrate + nitrite, as N; total Kjeldahl nitrogen (TKN); total arsenic; dissolved and total cadmium; dissolved copper; dissolved and total lead; 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 2024 data.

3.1 Water Level Monitoring Results

For WY 2024, water level data from six monitoring sites (AS_1, AS_4, 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 2024. 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.
- Reoccurring water level spikes were observed at AS_7 between 2330 and 0900. Similar spikes were observed in the second and third quarters of WY 2023. Therefore, AS_7 water level spikes were omitted from WY 2024 quarterly summaries, unless the AS_7 water level spike aligned with another site(s). An investigation on the source of level spikes at AS_7 is ongoing.
- Concurrent water level increases and decreases were observed at AS_1 and AS_4 but not in AS_9. Using the conceptual pipe layout in Figure 2 as a reference, it becomes apparent that there must be a different pipe connection farther in the AS_4 subcatchment area causing water

level anomalies. An investigation to confirm the location of the pipe in the AS_4 subcatchment area is ongoing.

- Based on historical Google Earth imagery, significant building and road construction activities have been observed in the AS_4 subwatershed area.
- An extended period of non-stormwater flow originating from AS_1 subcatchment (which includes downtown Boise) occurred on November 22, 2023, through November 27, 2023 (approx. 6 days).
- An extended period of non-stormwater flow originating from AS_8 subcatchment occurred on February 8, 2023, through February 13 (approx. 6 days). The non-stormwater source is likely snow melt in Hull's Gulch. A non-extended, non-stormwater discharge originating from AS_8 occurred once on February 26, 2024.
- Non-stormwater discharge originated from the AS_1 subcatchment 50 times, with the most anomalies generally occurring in the third quarter (36 percent)
- Non-stormwater discharge originated from AS_4 subcatchment 40 times, with the most anomalies generally occurring in the fourth quarter (38 percent)
- No anomalies were found at Site 14 and AS_9.

3.2 Water Quality Monitoring Results

During WY 2024, 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 five 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
10/10/23	Grab, composite ¹	–
11/19/23	Grab ² , composite	Grab, composite
02/01/24	Grab ³ , composite	Grab ³ , composite
02/26/24	Grab, composite	Grab, composite
03/28/24	Grab	Grab

– No data

¹ Composite sample qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

² Incomplete field parameter collection on the grab sample data form due to field error.

³ E. coli sample qualified due to exceeded hold time.

3.2.1 Grab Samples

Paired grab samples were collected from Site 14 and Site 206 on November 19, 2023; February 26, 2024; and March 28, 2024. *E. coli* and temperature results were compared from the samples collected on November 19, 2023. On February 26, 2024, and March 28, 2024, the samples were analyzed for *E. coli*, temperature, pH, dissolved oxygen, and conductivity. Notable conclusions from each storm event are provided below.

November 19, 2023

- *E. coli* at Site 206 was approximately one time higher than at Site 14.
- Field parameters (pH, dissolved oxygen, and conductivity) were not collected for Site 14 during sampling event due to field error.

February 26, 2024

- *E. coli* at Site 14 was approximately two times higher than at Site 206.
- Specific conductivity at Site 14 was nearly four times higher than Site 206.

March 28, 2024

- *E. coli* at Site 206 was approximately one time higher than at Site 14.
- Specific conductivity at Site 14 was two times higher than at Site 206

3.2.2 Composite Samples

Paired composite samples were collected from Site 14 and Site 206 on November 19, 2023; February 1, 2024; and February 26, 2024.

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 were calculated for both Site 206 and Site 14 from each storm event (Figures 7, 8, and 9). The graphs include a vertical orange line indicating the value for the percent of discharge. Constituent loads that exceed the orange line are disproportionately high. Noteworthy outcomes from each paired storm event are presented below.

November 19, 2023

- Load contributions from Site 206 were disproportionately high for all constituents except for the following parameters: hardness as CaCO₃; nitrate + nitrite, as N; total arsenic; total cadmium; and total mercury.
- The percent pollutant load from Site 206 was approximately 5.5 times higher than the percent of discharge volume for dissolved lead.
- The percent pollutant load from Site 206 was between 3.5 to 4.0 times higher than the percent discharge volume for the following parameters: BOD₅ and orthophosphate as P.

- 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: total phosphorus and COD.
- 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: TKN and dissolved zinc.
- 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: TDS, dissolved copper, and total lead.

February 1, 2024

- Load contributions from Site 206 were disproportionately high for all constituents except for the following parameters: hardness as CaCO_3 ; TDS; ammonia, as N; nitrate + nitrite, as N; total arsenic; dissolved cadmium; and dissolved zinc.
- The percent pollutant load from Site 206 was approximately 3 times higher than the percent of discharge volume for 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: total phosphorus and orthophosphate as P.
- 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: BOD_5 , COD, TKN, total lead, and total mercury.

February 26, 2024

- Load contributions from Site 206 were disproportionately high for all constituents except for the following parameters: hardness as CaCO_3 ; TDS, nitrate + nitrite, as N; total arsenic; dissolved cadmium; total cadmium; and dissolved zinc.
- The percent pollutant load from Site 206 was approximately 3.5 times higher than the percent of discharge volume for dissolved lead.
- The percent pollutant load from Site 206 was approximately 2.5 times higher than the percent of discharge volume for orthophosphate as P.
- 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: total phosphorus, TKN, and total lead.

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	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	9/15/2023	Logger installed downstream of manhole with conduit facing downstream
												ISCO 2150 Flowmeter (FL-21)	10/25/2019	1/24/2020	
												HOBO Logger (SN:20029102)	9/15/2023	11/7/2023	
												HOBO Logger (SN:20029105)	11/7/2023	NA	
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	AS_4	43°37'4.63"N 116°13'0.20"W	J5567	35568	29	23	42	concrete	0.015	0.0001	NA	HOBO Logger (SN:20029101)	8/10/2018	3/7/2024	Large pipe upstream of manhole (north) with conduit perpendicular to flow
											2.7	ISCO 2150 Flowmeter (FL-21)	7/10/2020	3/5/2021	Water level at installation: 2.7 inches
											2	HOBO Logger (SN:20029102)	3/7/2024	4/2/2024	Water level at installation: 2.0 inches
											3	HOBO Logger (SN:21904490)	4/2/2024	NA	Water level at installation: 3.0 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 HOB0 logger
												Hach Flowmeter (FL-18)	3/4/2020	4/18/2024	
												Hach Sampler (SA-11)	1/23/2020	10/9/2020	Installed upstream of vault, has smaller drainage area than HOB0 logger
												Hach Sampler (SA-13)	10/9/2020	12/10/2021	
												Hach Sampler (SA-09)	12/10/2021	4/18/2024	
												ISCO Signature Flowmeter (FL-31)	9/18/2024	NA	
												ISCO 6712 Sampler (SA-17)	9/18/2024	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 (SN:20029109)	2/24/2023	4/2/2024	
												HOBO logger (SN:21904491)	4/2/2024	NA	

Table 2. Field and Analytical Data Summary																												
Sample Date	Monitoring Station	Sample ID Grab	Field Parameters				Analytical Parameters																					
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	Sample ID Composite	BOD ₅	COD	Chloride	Hardness as CaCO ₃	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	µS/cm	C	MPN/100 mL		mg/L	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
10/10/2023	Site 14	231010-14-WG	8.40	6.53	247.08	16.78	129.6	231010-14-WC	19.7 ^{2j}	77.0 ^{2j}	--	<0.100 ^{2j}	33.6 ^{2j}	23.6 ^{2j}	236 ^{2j}	0.308 ^{2j}	0.169 ^{2j}	0.353 ^{2j}	0.930 ^{2j}	1.44 ^{2j}	5.5 ^{2j}	0.021 ^{2j}	0.072 ^{2j}	8.2 ^{2j}	0.095 ^{2j}	2.4 ^{2j}	< 0.0100 ^{2j}	22.0 ^{2j}
11/19/2023	Site 14	231119-14-WG	_ ^{3j}	_ ^{3j}	_ ^{3j}	14.16	1340.0	231119-14-WC	36.5	94.0	--	57.8	15.0	21.7	153	0.504	0.402	0.454	0.614	1.27	2.1	0.022	0.061	4.0 ¹	0.11	1.9	< 0.0100	27.2
	Site 206	231119-206-WG	9.44	7.18	184.28	9.04	1732.9	231119-206-WC	162	329	--	43.3	21.1	28.7	263	2.06	1.71	0.563	0.136	3.17	1.7	0.029	0.059	8.5	0.93	3.3	< 0.0100	61.8
2/1/2024	Site 14	240201-14-WG	10.05	7.73	552.2	8.34	65.0 ^{4j}	240201-14-WC	6.98	55.0	64.1	93.3	89.6	50.7	224	0.213	0.116	0.193	0.905	1.05	3.4	0.016	0.063	3.4 ¹	0.090	4.2	< 0.0100	17.3
	Site 206	240201-206-WG	9.33	8.03	542.9	5.55	290.9 ^{4j}	240201-206-WC	11.6	108	14.5	16.8	143	70.3	116	0.464	0.285	0.159	0.191	1.83	3.0	0.013	0.077	4.5	0.29	6.7	0.0168	10.5
2/26/2024	Site 14	240226-14-WG	10.54	7.53	470.55	8.74	125.9	240226-14-WC	12.6	85.0	56.1	102	51.1	54.3	214	0.276	0.106	0.496	0.940	1.47	3.3	0.021	0.097	4.0 ¹	0.063	3.9	0.0148	24.3
	Site 206	240226-206-WG	9.39	7.44	124.28	6.49	53.7	240226-206-WC	17.7	122	9.39	22.2	75.5	75.8	85.8	0.570	0.289	0.522	0.278	2.43	2.2	0.016	0.087	5.0	0.26	6.3	0.0183	20.2
3/28/2024	Site 14	240328-14-WG	10.57	7.28	255.40	9.79	365.4	240328-14-WC	-	-	--	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Site 206	240328-206-WG	9.92	7.60	108.59	7.74	387.3	240328-206-WC	-	-	--	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- No data

¹ Analytical parameter is qualified due to being less than five times the value detected in the rinsate blank. See Table 6 in the WY 2024 Stormwater Outfall Monitoring Summary for rinsate blank results.

^{2j} Data qualified due to lack of representativeness (50%–75%) of the calculated flow volume.

^{3j} Incomplete field parameter collection on the grab sample form due to field error.

^{4j} E. coli sample qualified due to exceeded hold time.

Table 3. Event Pollutant Loading Estimates in Pounds																				
Event Date	BOD ₅		COD		Hardness as CaCO3		Turbidity		TSS		TDS		Total Phosphorus		Orthophosphate as P		Ammonia as N		Nitrate + Nitrite as N	
	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
11/19/2023	723	215	1861	436	1144	57.3	0.0	0.0	430	38.0	3029	348	10.0	2.73	7.96	2.26	8.99	0.746	12.2	0.180
2/1/2024	114	11.5	895	107	1518	16.7	0.0	0.0	825	69.8	3644	115	3.46	0.461	1.89	0.283	3.14	0.158	14.7	0.190
2/26/2024	110	6.02	743	41.5	891	7.55	0.0	0.0	474	25.8	1870	29.2	2.41	0.194	0.926	0.098	4.33	0.177	8.21	0.0945

Table 3. Event Pollutant Loading Estimates in Pounds																		
Event Date	TKN		Arsenic, total		Cadmium, dissolved		Cadmium, total		Copper, dissolved		Lead, dissolved		Lead, total		Mercury, total		Zinc, dissolved	
	mg/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
	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
11/19/2023	25.1	4.20	0.0416	0.00225	0.000436	0.0000384	0.00121	0.0000781	0.0792	0.0113	0.00218	0.00123	0.0376	0.00437	0.000198	0.0000132	0.538	0.0818
2/1/2024	17.1	1.82	0.0553	0.00298	0.000260	0.0000129	0.00102	0.0000765	0.0553	0.00447	0.00146	0.000288	0.0683	0.00665	0.000163	0.0000167	0.281	0.0104
2/26/2024	12.8	0.826	0.0288	0.000748	0.000183	0.00000544	0.000848	0.0000296	0.0350	0.00170	0.000550	0.0000884	0.0341	0.00214	0.000129	0.00000622	0.212	0.00687

Figures

Figure 3. Americana Subwatershed Water Level WY 2024 October–November

Figure 4. Americana Subwatershed Water Level WY 2024 January–March

Figure 5. Americana Subwatershed Water Level WY 2024 April–June

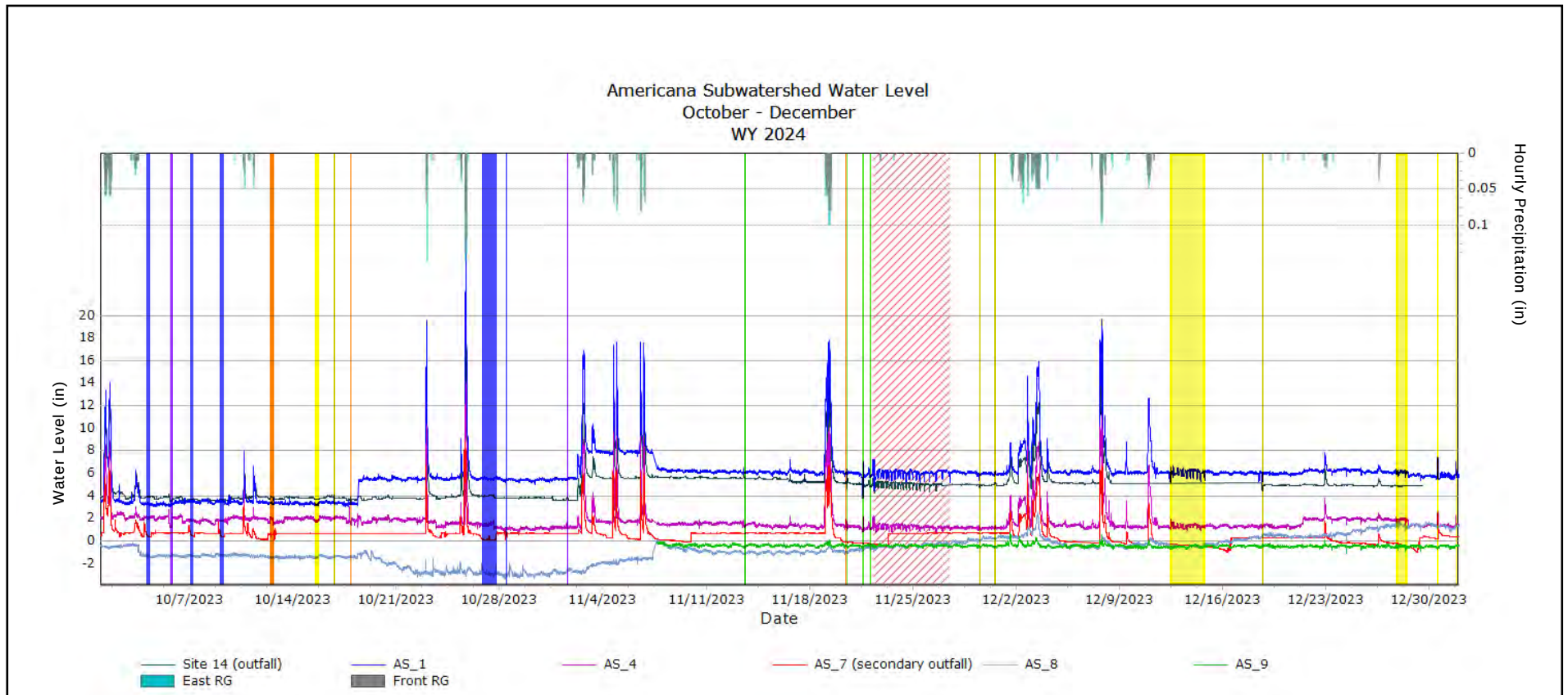
Figure 6. Americana Subwatershed Water Level WY 2024 July–September

Figure 7. Percent Contribution for Storm Event 11/19/2023

Figure 8. Percent Contribution for Storm Event 2/1/2024

Figure 9. Percent Contribution for Storm Event 2/26/2024

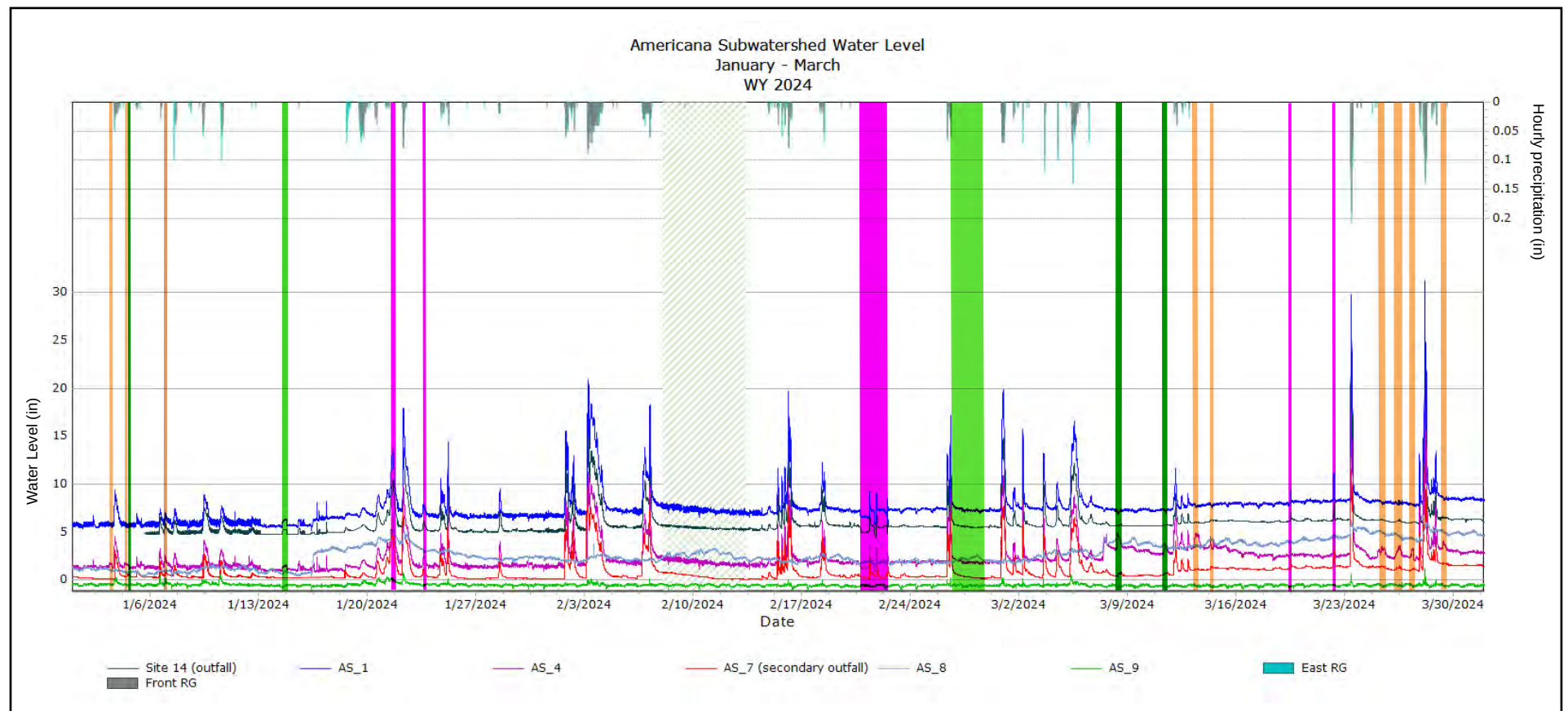
Americana Subwatershed Review WY24 Q1
Figure 3.



Americana Subwatershed Review WY24 Q1

Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	10/3/2023 23:00:00	10.5	AS_7	AS_7 Subcatchment
	10/5/2023 15:00:00	6.0	AS_4, Site 14	AS_4 Subcatchment
	10/6/2023 23:00:00	9.5	AS_7	AS_7 Subcatchment
	10/8/2023 23:00:00	10.0	AS_7	AS_7 Subcatchment
	10/12/2023 8:00:00	10.0	AS_4, AS_7, Site 14	AS_4 Subcatchment
	10/15/2023 10:00:00	10.0	AS_1, AS_4	AS_1 Subcatchment
	10/16/2023 18:30:00	2.0	AS_1, Site 14	AS_1 Subcatchment
	10/17/2023 20:30:00	3.0	AS_4	AS_4 Subcatchment
	10/26/2023 18:30:00	25.0	AS_7	AS_7 Subcatchment
	10/28/2023 8:00:00	5.0	AS_7	AS_7 Subcatchment
	11/1/2023 13:00:00	2.5	AS_4, Site 14	AS_4 Subcatchment
	11/13/2023 13:00:00	2.5	AS_1, AS_4, Site 14	AS_1 Subcatchment
	11/20/2023 9:00:00	4.0	AS_4	AS_4 Subcatchment
	11/20/2023 13:00:00	2.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	11/21/2023 13:00:00	4.5	AS_1, AS_4, Site 14	AS_1 Subcatchment
	11/22/2023 0:00:00	3.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	11/22/2023 7:00:00	127.0	AS_1, AS_4, Site 14 (elongated)	AS_1 Subcatchment
	11/29/2023 12:00:00	2.0	AS_1, Site 14	AS_1 Subcatchment
	11/30/2023 12:00:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	12/12/2023 8:00:00	60.0	AS_1, AS_4	AS_1 Subcatchment
	12/18/2023 15:00:00	2.5	AS_1, Site 14	AS_1 Subcatchment
	12/27/2023 15:30:00	22.5	AS_1, AS_4	AS_1 Subcatchment
	12/30/2023 13:00:00	2.0	AS_1, AS_4	AS_1 Subcatchment
	12/31/2023 18:00:00	2.5	AS_1, AS_4	AS_1 Subcatchment

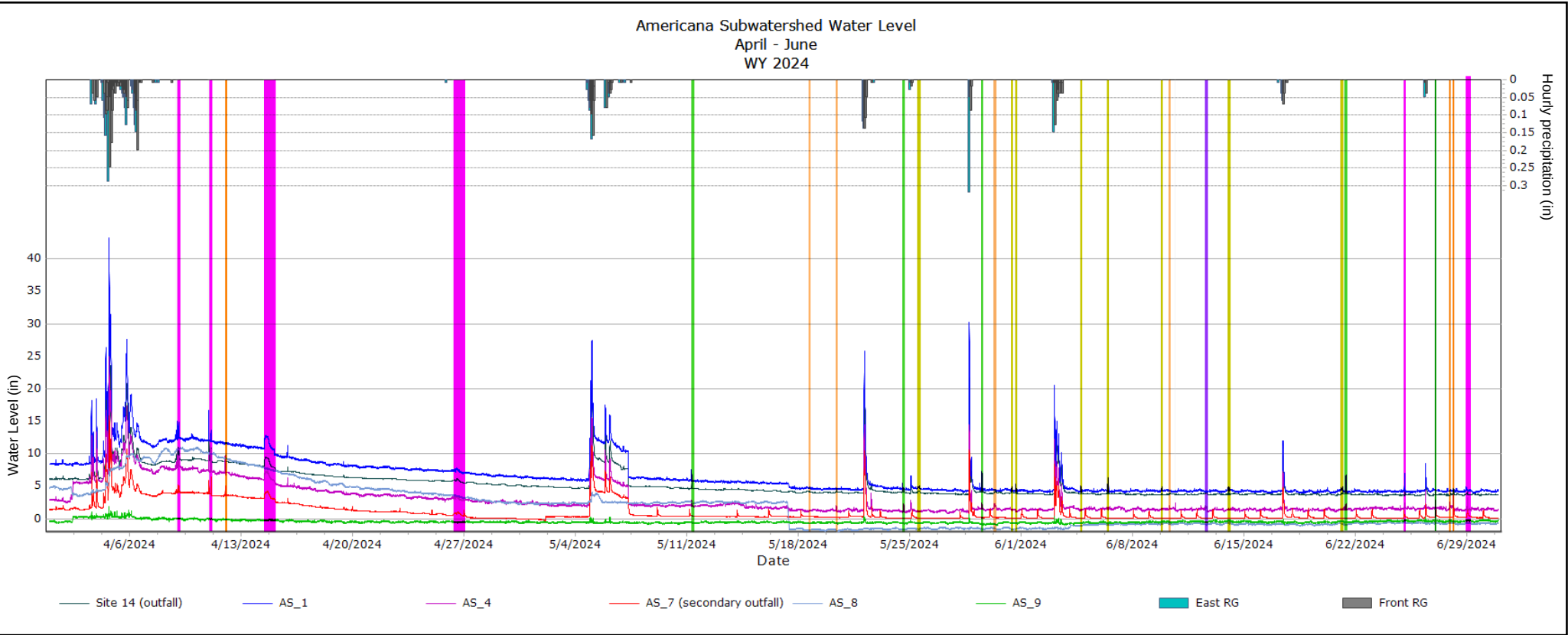
Americana Subwatershed Review WY24 Q2
Figure 4.



Americana Subwatershed Review WY24 Q2

Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	1/3/2024 9:00:00	5.0	AS_4	AS_4 Subcatchment
	1/4/2024 8:00:00	4.5	AS_4	AS_4 Subcatchment
	1/4/2024 12:30:00	5.0	AS_4, AS_7	AS_4 Subcatchment
	1/6/2024 22:00:00	5.0	AS_1, AS_4, AS_9, Site 14	AS_1 Subcatchment
	1/14/2024 13:00:00	7.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	1/21/2024 11:00:00	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	1/23/2024 13:00:00	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	2/8/2024 1:00:00	129.5	AS_8 (elongated)	Hull's Gulch
	2/20/2024 18:30:00	44.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	2/26/2024 18:00:00	47.5	AS_8	AS_8 Subcatchment
	3/8/2024 6:00:00	10.5	AS_4, AS_7	AS_4 Subcatchment
	3/11/2024 7:30:00	9.0	AS_4, AS_7	AS_4 Subcatchment
	3/13/2024 7:30:00	9.0	AS_4	AS_4 Subcatchment
	3/14/2024 7:30:00	7.0	AS_4	AS_4 Subcatchment
	3/19/2024 11:30:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	3/22/2024 5:30:00	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	3/25/2024 1:30:00	14.0	AS_4	AS_4 Subcatchment
	3/26/2024 4:30:00	13.0	AS_4	AS_4 Subcatchment
	3/27/2024 5:00:00	10.5	AS_4	AS_4 Subcatchment
	3/29/2024 5:00:00	10.5	AS_4	AS_4 Subcatchment

Americana Subwatershed Review WY24 Q3
Figure 5.

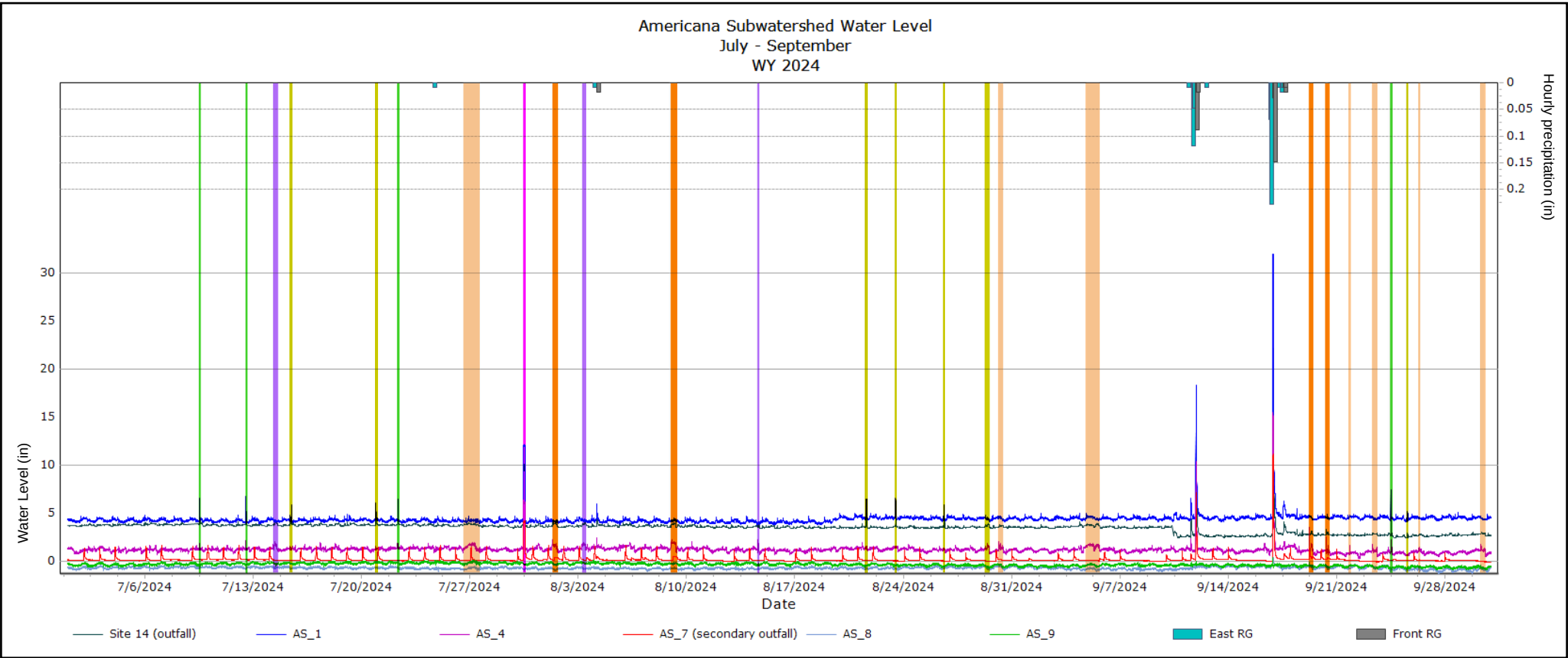


Note: Reoccurring water level spikes were observed at the AS_7 station. These spikes occur for an approximate duration of 4 hours between 2330 and 0900. The spikes have been omitted from this anomaly summary due to the uniformity of the spikes and similarity to spikes observed during WY 2023.

Americana Subwatershed Review WY24 Q3

Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	4/8/2024 22:00:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	4/10/2024 23:00:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	4/12/2024 0:30:00	2.0	AS_4, AS_7, Site 14	AS_4 Subcatchment
	4/14/2024 11:00:00	17.5	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	4/26/2024 7:00:00	19.5	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	5/11/2024 7:00:00	2.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	5/20/2024 9:00:00	3.0	AS_4	AS_4 Subcatchment
	5/24/2024 14:00:00	3.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	5/25/2024 13:00:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	5/29/2024 12:30:00	2.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	5/30/2024 7:00:00	5.0	AS_4	AS_4 Subcatchment
	5/31/2024 9:30:00	2.0	AS_1, Site 14	AS_1 Subcatchment
	5/31/2024 16:00:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	6/4/2024 18:00:00	2.5	AS_1, Site 14	AS_1 Subcatchment
	6/6/2024 10:30:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	6/9/2024 19:00:00	3.0	AS_1, Site 14	AS_1 Subcatchment
	6/10/2024 7:00:00	2.5	AS_4	AS_4 Subcatchment
	6/10/2024 16:00:00	2.5	AS_4	AS_4 Subcatchment
	6/12/2024 14:00:00	4.0	AS_4, Site 14	AS_4 Subcatchment
	6/13/2024 23:30:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	6/21/2024 1:00:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	6/21/2024 7:30:00	4.5	AS_1, AS_4, Site 14	AS_1 Subcatchment
	6/25/2024 0:30:00	3.5	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	6/27/2024 0:00:00	4.0	AS_4, AS_7	AS_4 Subcatchment
	6/27/2024 23:00:00	3.5	AS_4, AS_7, Site 14	AS_4 Subcatchment
	6/28/2024 4:00:00	2.5	AS_4, AS_7, Site 14	AS_4 Subcatchment
	6/29/2024 0:00:00	7.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment

Americana Subwatershed Review WY24 Q4
Figure 6.



Note: Reoccurring water level spikes were observed at the AS_7 station. These spikes occur for an approximate duration of 4 hours between 2330 and 0900. The spikes have been omitted from this anomaly summary due to the uniformity of the spikes and similarity to spikes observed during WY 2023.

Americana Subwatershed Review WY24 Q4

Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	7/9/2024 11:00:00	3.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	7/12/2024 12:00:00	2.0	AS_1, AS_4, Site 14	AS_1 Subcatchment
	7/14/2024 7:00:00	8.0	AS_4, Site 14	AS_4 Subcatchment
	7/15/2024 8:30:00	4.5	AS_1, Site 14	AS_1 Subcatchment
	7/20/2024 21:00:00	2.5	AS_1, Site 14	AS_1 Subcatchment
	7/22/2024 7:00:00	2.5	AS_1, AS_4, Site 14	AS_1 Subcatchment
	7/26/2024 13:00:00	28.5	AS_4	AS_4 Subcatchment
	7/30/2024 10:30:00	4.0	AS_1, AS_4, AS_7, Site 14	AS_1 Subcatchment
	8/1/2024 6:30:00	10.5	AS_4, AS_7, Site 14	AS_4 Subcatchment
	8/3/2024 5:30:00	6.5	AS_4, Site 14	AS_4 Subcatchment
	8/8/2024 21:30:00	12.5	AS_4, AS_7, Site 14	AS_4 Subcatchment
	8/14/2024 13:30:00	3.5	AS_4, Site 14	AS_4 Subcatchment
	8/21/2024 13:30:00	3.5	AS_1, Site 14	AS_1 Subcatchment
	8/23/2024 11:00:00	2.5	AS_1, Site 14	AS_1 Subcatchment
	8/26/2024 13:30:00	4.0	AS_1, Site 14	AS_1 Subcatchment
	8/29/2024 7:00:00	7.5	AS_4, Site 14	AS_4 Subcatchment
	8/30/2024 4:30:00	9.0	AS_4	AS_4 Subcatchment
	9/4/2024 19:30:00	22.0	AS_4	AS_4 Subcatchment
	9/19/2024 5:30:00	8.0	AS_4, AS_7, Site 14	AS_4 Subcatchment
	9/20/2024 7:30:00	6.0	AS_4, AS_7, Site 14	AS_4 Subcatchment
	9/21/2024 19:30:00	3.0	AS_4	AS_4 Subcatchment
	9/23/2024 7:30:00	8.5	AS_4	AS_4 Subcatchment
	9/24/2024 9:00:00	6.5	AS_1, AS_4, Site 14	AS_1 Subcatchment
	9/25/2024 12:00:00	5.5	AS_1, Site 14	AS_1 Subcatchment
	9/26/2024 7:00:00	5.5	AS_4	AS_4 Subcatchment
	9/30/2024 7:00:00	8.0	AS_4	AS_4 Subcatchment

Figure 7. Percent Contribution 11/19/2023

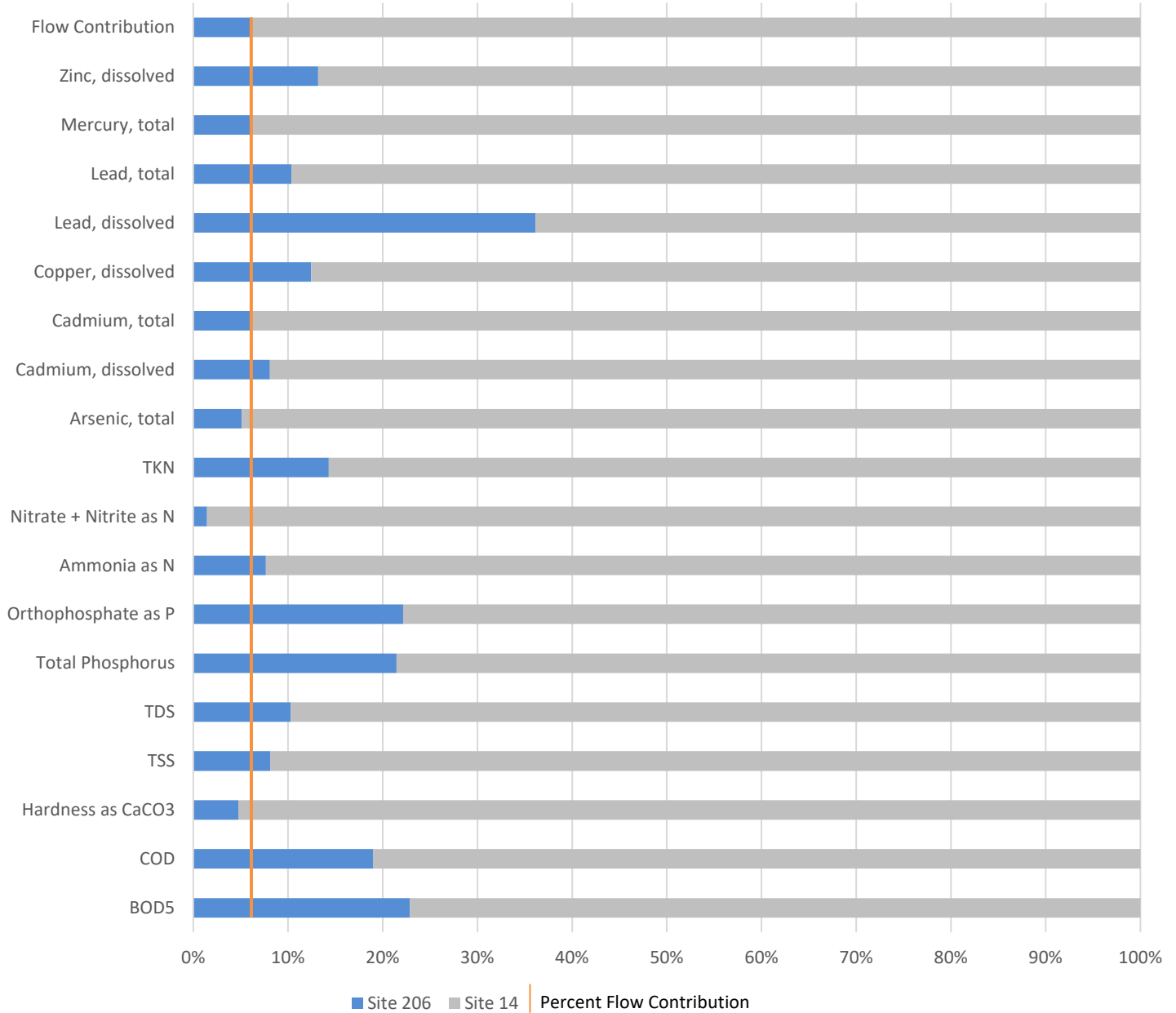


Figure 8. Percent Contribution 2/1/2024

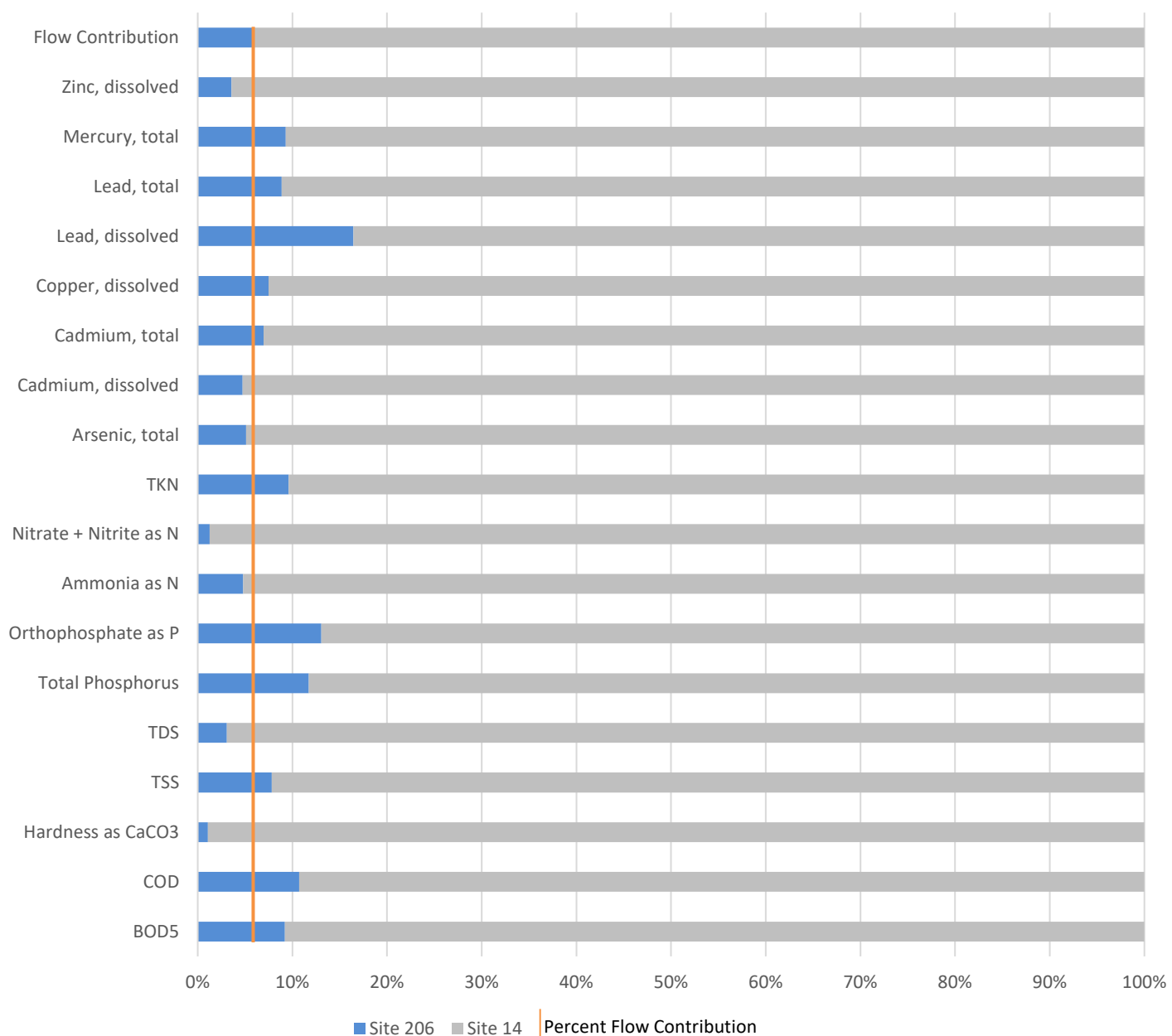
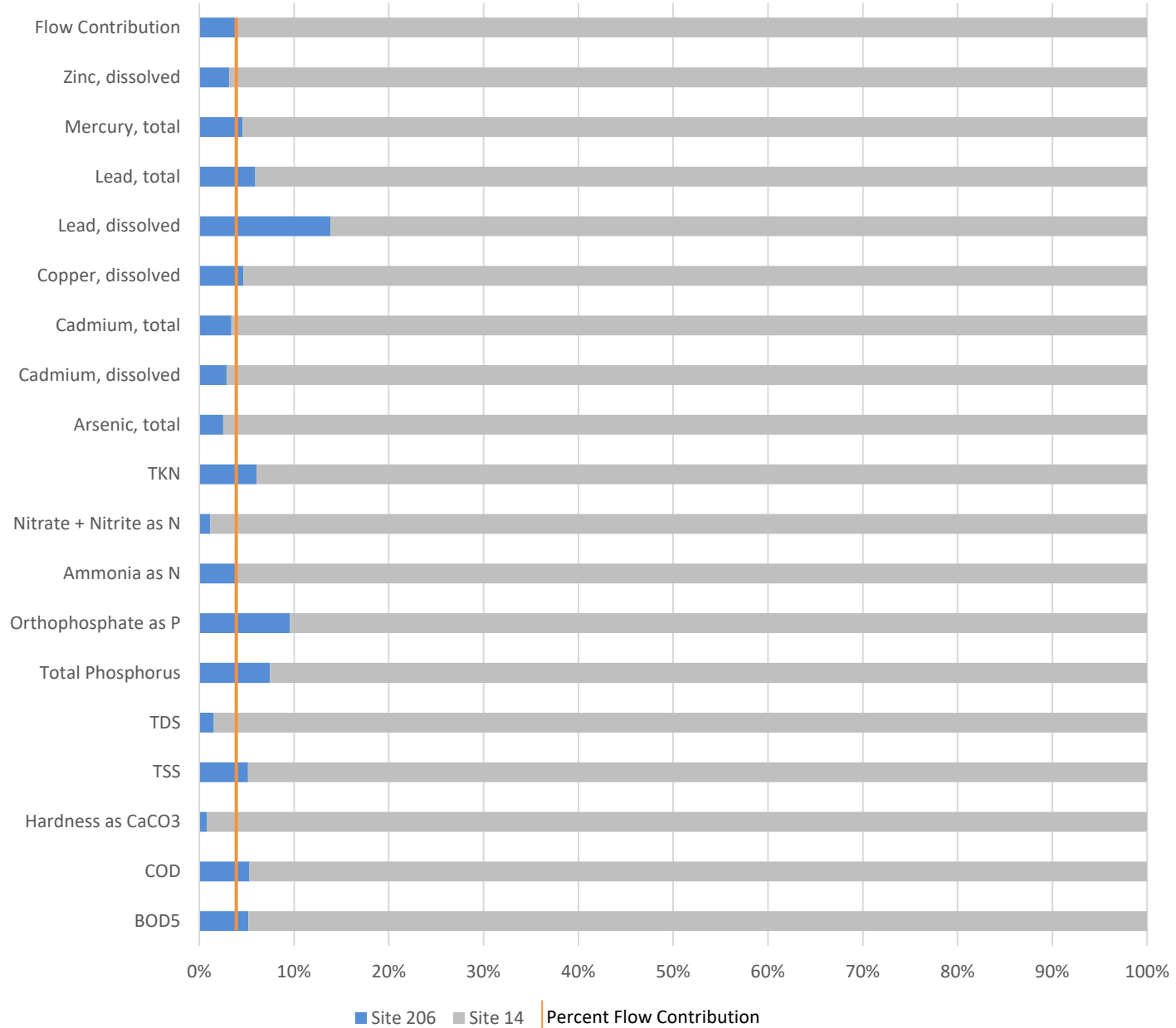


Figure 9. Percent Contribution 2/26/2024



Attachment O: Temperature Monitoring Summary WY 2024

Temperature Monitoring Summary WY 2024

Ada County Highway District

11/13/2024

Table of Contents

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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) 2024 (October 1, 2023 – September 20, 2024) 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 12 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 aqua Troll or smarTroll handheld instrument. Continuous measurements were taken at a specified interval by equipment that is installed at the outfall site. In WY 2024, 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.

Table 2-1. Temperature Monitored Outfalls				
Receiving Water	Assessment Unit	# of Temperature Monitored Outfalls	Outfall ID (Station Name)	Sample Type
Boise River	17050114SW011a_06	10	3n2e04_010 (Main)	Discrete and Continuous
			3n2e09_024 (Americana)	Discrete and Continuous
			3n2e09_025 (AS_7)	Continuous
			3n2e10_012	Discrete
			3n2e10_022	Discrete
			3n2e10_031	Discrete
			3n2e14_012	Discrete
			3n2e14_013	Discrete
			3n2e14_017	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 site.

Graphs of continuous temperature results are found in Figures 3-6. Figure 4 depicts continuous temperature collected only during selected storm events. The graphs from sites where temperature is recorded using an area-velocity sensor (Figures 3-5) display 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. Notable observations from these graphs are discussed below.

Throughout the summer months, AS_7 (Figure 5), is generally characterized by no dry weather flow except for almost daily level spikes recorded during early morning hours. According to the sensor manufacturer, accuracy of the area velocity sensor decreases at water levels below one inch. Therefore, it is difficult to discern the accuracy of the low flow data and distinguish between air and water temperature under these conditions. Therefore, all recorded temperature data from AS_7 has been included in the graph shown in Figure 5.

Data gaps in the temperature data shown in Figure 6, Plantation (4n2e30_012), indicate water was not present or the data was rejected due to sediment interference. Unlike the other graphs of continuous temperature results, water level data is not available at this monitoring site. Sediment was observed on the temperature logger in October 2023 during routine data downloads. The presence of sediment yielded results that water was present when it was observed the site was dry. During WY24, ACHD increased inspection frequency of the logger, noting changes in site conditions when present. The storm drain system was cleaned in February 2024 and inspected bimonthly for sediment build up throughout the water year. Sediment on the logger was observed again from the end of September 2024 through the beginning of November 2024, indicating more frequent maintenance is required. Additionally, data from WY23 showed water was present, based on the recorded temperature data, when rainfall was not recorded. Visual observations during WY24 of the watershed indicate sprinkler runoff as a source of this flow. From mid-May through the end of September, daily intermittent water temperature readings were recorded. Due to the daily occurrences of these readings, temperature in Figure 6 appears to be continuous despite being intermittent throughout each day.

Table 3-1. Discrete Temperature Results			
Outfall ID (Station Name)	Date	Weather	Temperature (C)
3n2e04_010 (Main)	11/19/2023	Wet Weather	10.54
	2/1/2024		6.3
	2/26/2024		9.53
	3/28/2024		10.91
3n2e09_024 (Americana)	12/14/2023	Dry Weather	14.31
	8/1/2024		20.82
3n2e09_024 (Americana)	10/10/2023	Wet Weather	16.78
	11/19/2023		14.16
	2/1/2024		8.34
	2/26/2024		8.74
	3/28/2024		9.79
3n2e10_012	2/14/2024	Dry Weather	8.76
	8/5/2024		15.94
3n2e10_022	3/15/2024	Dry Weather	14
	7/9/2024		18.36
3n2e10_031	6/24/2024	Dry Weather	15.04
3n2e14_012	1/31/2024	Dry Weather	15.04
3n2e14_013	1/31/2024	Dry Weather	14.62
	8/13/2024		16.12
3n2e14_017	12/17/2023	Dry Weather	15.33
	1/3/2024		13.54
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 – Americana

Figure 5. Continuous Temperature Results – AS_7

Figure 6. Continuous Temperature Results – Plantation

Figure 1

WY2024 Temperature Monitored Outfalls

Created: 11/19/2024



Figure 2

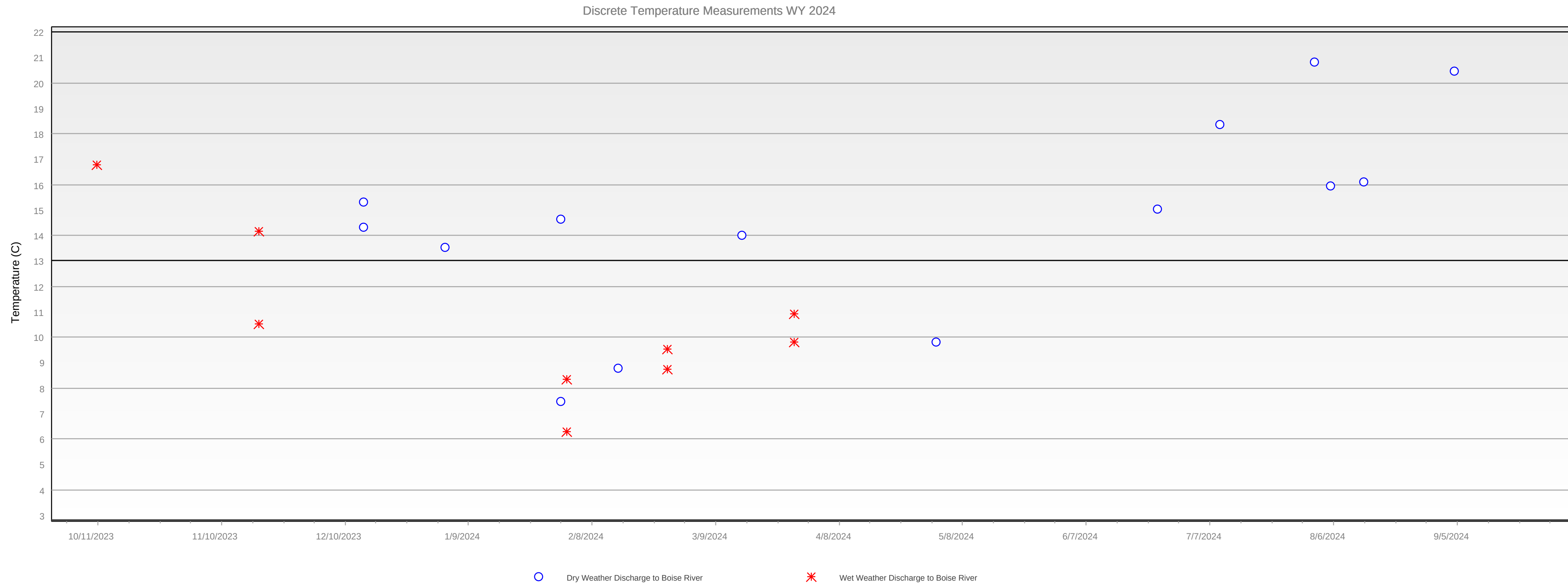


Figure 3

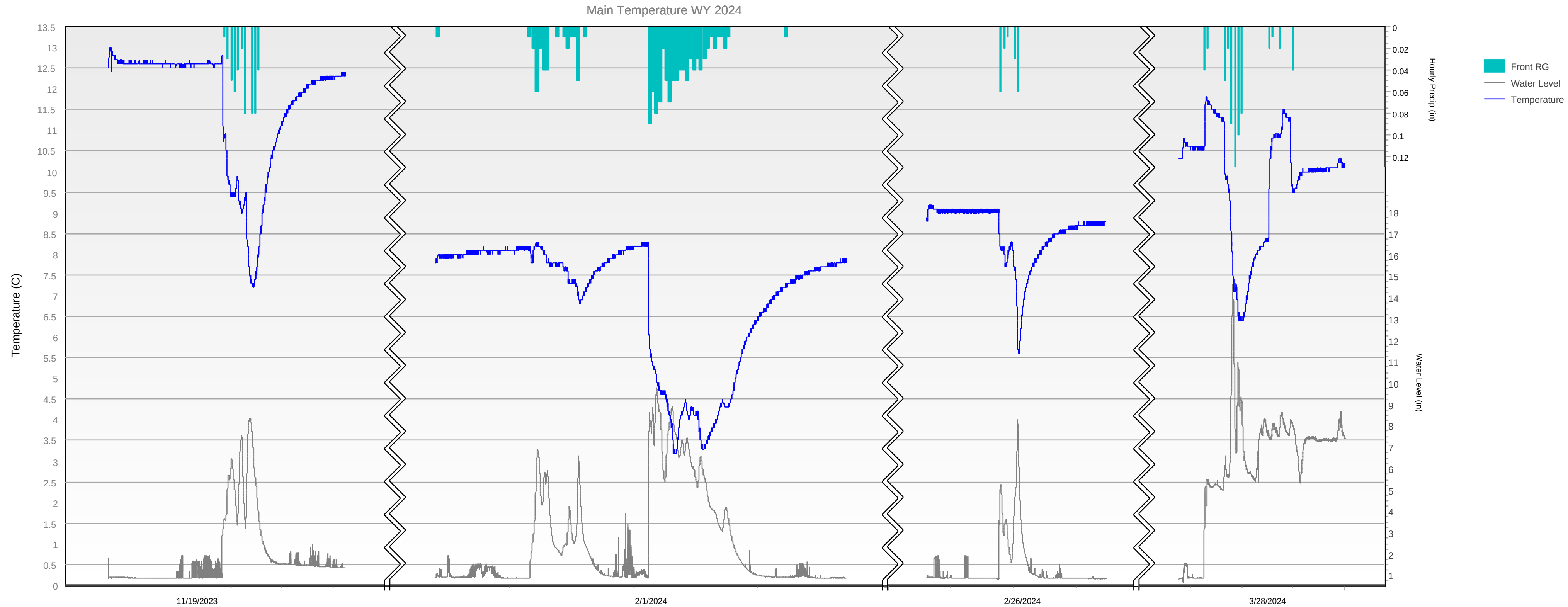


Figure 4

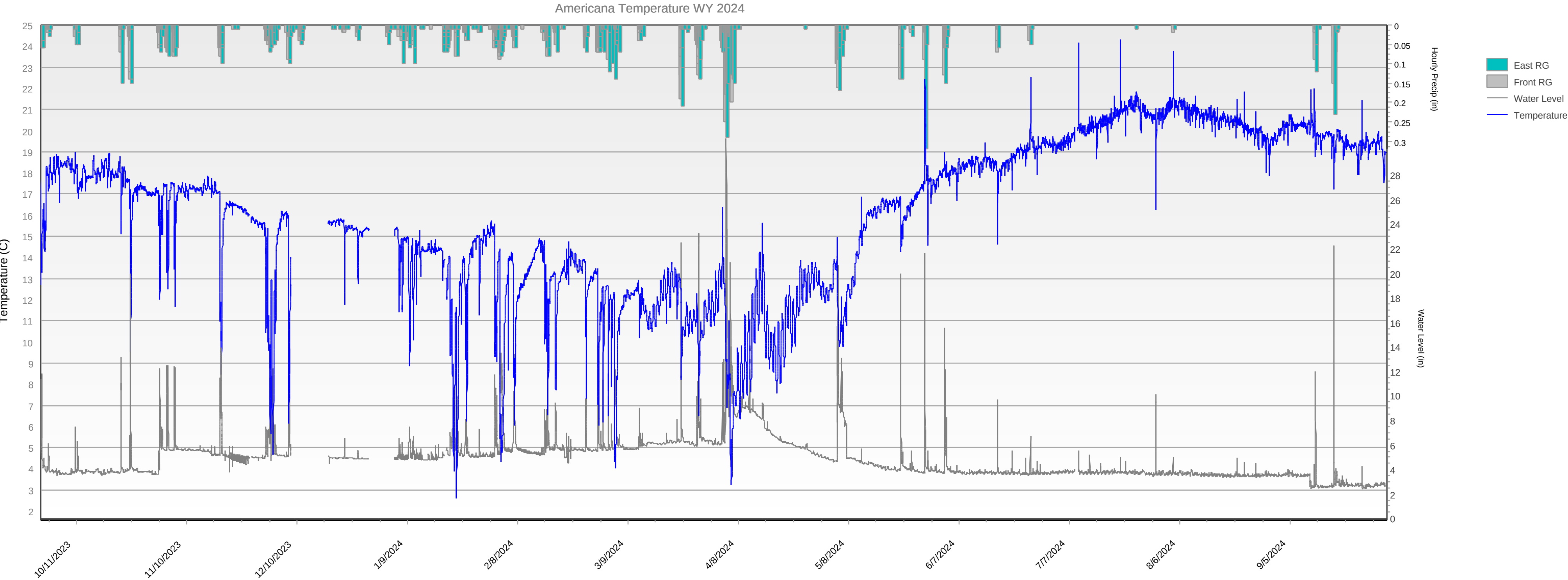


Figure 5

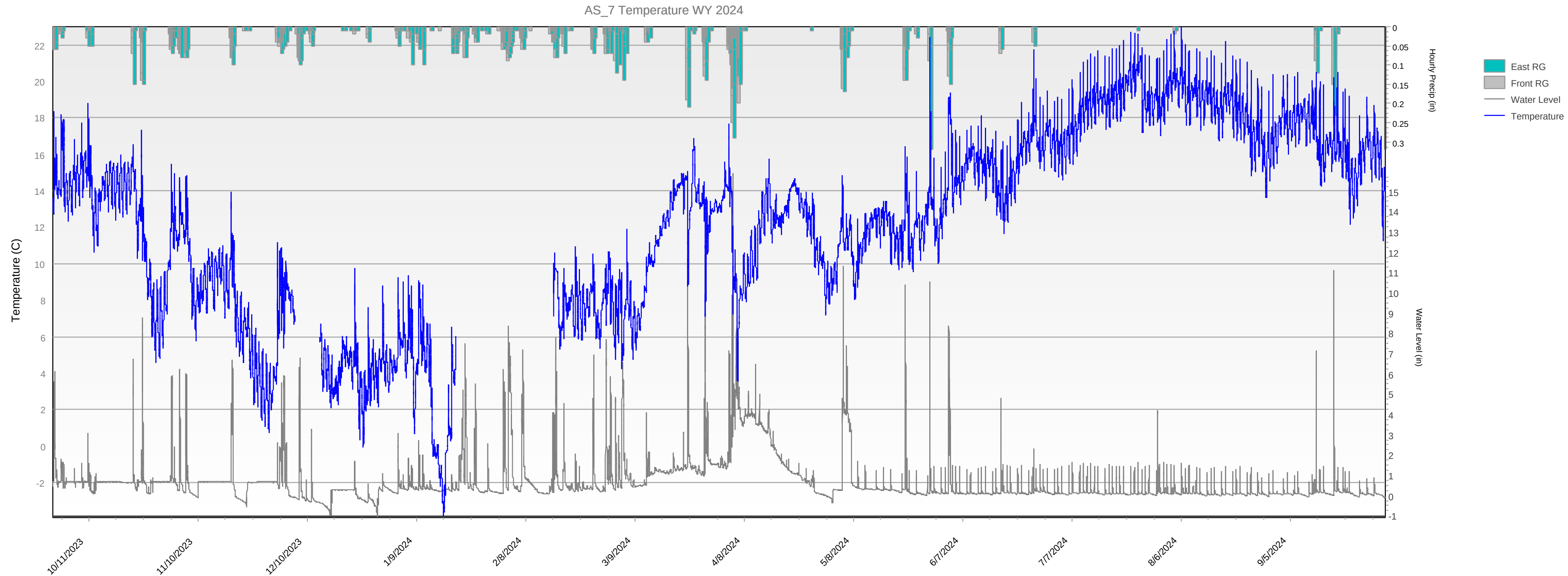


Figure 6

Plantation (4n2e30_012) WY 2024

