![Southeast Alaska Watershed Coalition logo. CONNECT - INFORM - PARTICIPATE]

Interim Performance Report

1. ADMINISTRATIVE INFORMATION

Recipient Project Manager: Rob Cadmus, rob@sawcak.org, 907-957-9818

Organization: Southeast Alaska Watershed Coalition

Project title: Developing a Southeast Alaska community-based stream temperature monitoring network

Agreement number: F16AP00643

Date of report: 12/26/17

Period of time covered by report: July 18, 2016 – Sept 30, 2017

2. PUPRPOSE AND OBJECTIVES

This project aims to coordinate a regional stream temperature monitoring network that addresses the need to monitor, study, and manage the effects of climate change on aquatic resources, particularly salmon, in Southeast Alaska. Prior to this project, stream temperature data was being collected throughout Southeast Alaska with no regional sampling plan, no coordination of site selection between organizations, no minimum standards, and no data storage/management between the many entities involved.

In coordinating a community-based network, the Southeast Alaska Watershed Coalition (SAWC) is targeting tribal, nonprofit, and other local entities, in addition to agencies that have traditionally participated in monitoring. Near and long-term products of the network, including methodologies, a white paper, and data, are aimed at resource managers, environmental program managers, and researchers in the region.

The goals of this project are to 1) establish a coordinated stream temperature monitoring network in Southeast Alaska, 2) Provide region-wide standard methodologies, 3) Arrest the potential loss of historical data, and 4) Engage community-based tribal and nonprofit organizations in climate change monitoring. Specific objectives that were proposed to meet the goals are listed in Table 1, along with how they have been addressed as of the end of the reporting period.

3. PROGRESS TO DATE

Key Accomplishments:

- The SAWC Science Director has engaged with over 30 tribal organizations, non-profit groups, business, and agencies throughout the region and garnered interest in and support for the network (Figure 1).
- SAWC has a catalog of temperature sites across the region and has been working with partners to submit data and metadata to repositories, and find partners willing to support key sites.
- The working group and steering committee have been meeting regularly, and accepted a set of minimum standards for stream temperature monitoring for the region, which have been communicated to potential partners, and approved a White Paper describing the management applications of stream temperature data.
- A stream temperature monitoring training workshop was held for community-based tribal and nonprofit groups in May, 2017, and another field training session was held in September, 2017.
- The White Paper describing the management applications of stream temperature data is completed, approved, and has been released to the public.
- In 2016, the SAWC Executive Director attended the Southeast Environmental Conference to share information about the new network and recruit partners. In 2017, the SAWC Science Director attended the Conference to update participants on the status of the network and engage with partners.
- The network will be leveraged and supported in the future by a recently funded Alaska Sea Grant project that proposes to integrate stream temperature data into salmon life cycle models to explore potential impacts of climate change on salmon productivity in the region.

Figure 1. SAWC Science Director working with members of the Chilkat Indian Village to install a stream temperature data logger, September 2017.

Table 1. Specific project objectives and progress as of the end of the reporting period.

Objectives	Status	Progress Description
1. (Goal 1) Convene working group and steering committees for bi-monthly teleconferences to inform development of the network.	Ongoing	Full steering committee and working group meetings have been held approximately every three months throughout the project period. These were held when there was a specific need for the group to meet, such as discussing and approving minimum standards, drafting and approving the White Paper, discussing data management, and the strategic sampling plan. In addition to these meetings, a relevant subset of the working group met more frequently on an as-needed basis to work on aspects of the network in more detail. Meeting dates are listed in the communication and outreach section.
2. (Goal 1) Implement action items identified by the freshwater temperature workgroup of the Southeast Alaska Climate Adaptation Workshop in April 2016.		Action items included identifying and accepting minimum data collection standards, identifying a network coordinator, developing a white paper on management relevance, and developing a strategic sampling plan. These are reflected in the other project goals.
3. (Goal 1) With committee input, develop a "white paper" describing the utility of stream temperature data for resource managers.	Near Completion	Led by Sue Mauger, the working group and steering committee have completed and approved a white paper describing management applications of stream temperature data, the current status of temperature data collection in the region, and components of a successful network. The white paper has been release to the public and distributed to relevant agencies and press outlets.
4. (Goal 1) Develop an Implementation Plan for the Southeast Alaska Stream Temperature Monitoring Network.	In Progress	An implementation plan is currently in draft form; further work is pending a completed strategic sampling plan. The implementation plan is being modeled after the "Implementation Plan for the Bristol Bay Regional Water Temperature Monitoring Network," which has guided that successful regional network.
5. (Goal 2) Adopt minimum stream temperature data collection standards for the region.	Complete	The working group chose to adopt the standards laid out in "Stream Temperature Data Collection Standards and Protocol for Alaska: Minimum standards to generate data useful for region-scale analyses" (Mauger et al., 2014). These standards had previously been vetted by agencies and found to be sufficient, are achievable by network participants without excessive expense or time burden, and are being used throughout the state. These standards have been communicated to network participants.
6. (Goal 2) Complete a Strategic Sampling Plan to prioritize monitoring site locations.	In Progress	Led by Michael Winfree, the steering committee and working group are developing a strategic sampling plan for the region. After much discussion, the target format of this

		plan has shifted from an idealized set of sites to be monitored into a review of the gap analysis currently being conducted and recommendations for the types of sites that are missing and should be targeted for monitoring in the near future. This assessment will also provide insights into which monitored watersheds may be duplicative of one another in terms of the watershed characteristics that they represent, and therefore, may be dropped in the future if there is no other pressing reason to continue monitoring. This shift reflected the realization that access and importance to local communities will likely be the primary determinants of the sustainability of a site. Thus, we shifted away from looking for sites that would perfectly fit a gap, regardless of location, to a recommendation of types sites that should be considered by communities as they plan future monitoring, as well as sites that are currently monitored and should continue to be supported.
7. (Goal 3) Establish and maintain a catalog of active monitoring sites, and integrate site data collection efforts with the Alaska Online Aquatic Temperature Site (WALCC project).	Near Completion	SAWC has compiled a list of actively monitored sites, along with responsible parties. We have strongly encouraged organizations to submit information to AKOATS and provided instructions on how to do so.
8. (Goal 3) Maintain SAWC's ten monitoring sites, and incorporate into the regional Network. (Year 1 completed, Year 2 in progress)	Ongoing	Previous SAWC Science Director, Scott Harris, maintained all loggers and downloaded data during August of 2016. Maintenance/download for year 2017 is in progress, with 4 sites reached so far. Metadata has been submitted to AKOATS, and data has been submitted to the Knowledge Network for Biocomplexity, which is serving as a data repository for all stream temperature data statewide.
9. (Goal 3) Collect and store temperature data from all sites in the network. (In progress)	Altered/ Ongoing	After discussions with the steering committee and working group, it was decided that SAWC is not an appropriate long-term home for the data and metadata. A more permanent and accessible repository, ideally one that is being used statewide, is more desirable. We are actively working with other stream temperature networks in the state to identify platforms that can fill this need. In addition to AKOATS, the SE AK GIS Library was identified as a more sustainable option that houses other hydrologic-related data for the southeast region, and it has funding from the Forest Service to handle the data. Additionally, networks statewide are beginning to contribute data to the Knowledge Network for Biocomplexity (KNB), and SAWC is encouraging partners to submit data to this repository as well. This effort is being led by the National Center for Ecological Analysis and Synthesis as part of their State of Alaska's Salmon and People program. KNB is aiming to have data submitted by the end of 2017.

10. (Goal 4) Recruit community-level partners (tribes, watershed councils, non-profits, municipal governments) to maintain prioritized sites.	Ongoing	Community partners have been recruited via individual conversations and broader outreach efforts, including via the Southeast Environmental Conference. To date, we have engaged with 15 Tribal organizations, 7 nonprofits/watershed councils, 2 businesses, 4 state agencies, and 5 federal agencies (See Table 2). A subset have become more actively involved in the network and are either currently monitoring or planning to monitor stream temperature at one or more sites.
11. (Goal 4) Conduct stream temperature monitoring training for community level partners.	Complete	SAWC partnered with the Chilkat Indian Village and Cook Inletkeeper to host a stream temperature monitoring methods workshop in Klukwan, AK in May 2017 (Figure 2). Additionally, the SAWC Science Director led a mini field training session at the Southeast Environmental Conference in Wrangell, AK in September, 2017.
12. (Goal 4) Provide technical assistance to community and agency partners to maintain critical long-term sites.	Ongoing	The Science Director has responded to many questions about methods, equipment, site selection, etc. from network partners. Additionally, she traveled to Klukwan, AK, to assist environmental program technicians for the Chilkat Indian Village with site selection and equipment installation. She has been actively engaging with potential partners to identify those willing to "adopt" some sites that are in danger of being dropped due to lack of funding for the original owners.

Table 2. Organizations that have been contacted and expressed interest in the network. Those in bold are more actively involved and either are already monitoring or plan to monitor stream temperature.

ORGANIZATION	TYPE
Kai Environmental	Business
Sustainable Growth Solutions	Business
National Park Service	Federal
NOAA (Alaska Pacific River Forecast Center)	Federal
US Forest Service	Federal
US Fish & Wildlife Service	Federal
US Geological Survey	Federal
Alaska Whale Foundation	Nonprofit
SAWC	Nonprofit
SE AK Conservation Council (SEACC)	Nonprofit
SEAK Fish Habitat Partnership (SEAKFHP)	Nonprofit
Sitka Sound Science Center	Nonprofit
Takshanuk Watershed Council	Nonprofit
The Nature Conservancy	Nonprofit
AK Dept. of Environmental Conservation	State
AK Dept. of Fish & Game	State
University of AK Fairbanks	State
University of AK Southeast	State
Central Council Tlingit and Haida Indian Tribes of Alaska (CCTHITA)	Tribal
Chilkat Indian Village	Tribal
Chilkoot Indian Village	Tribal
Craig Tribal Association	Tribal
Hoonah Indian Association	Tribal
Ketchikan Indian Community	Tribal
Klawock Cooperative Association	Tribal
Metlakatla Indian Community	Tribal
Organized Village of Kasaan	Tribal
Petersburg Indian Association	Tribal
Sitka Tribe of Alaska	Tribal
Skagway Traditional Council	Tribal
Village of Hydaburg	Tribal
Wrangell Cooperative Association	Tribal
Yakutat Tlingit Tribe	Tribal

Lessons Learned:

There has been a lot of interest in generating, sharing, and using stream temperature data on the part of agencies, university researchers, tribal organizations, and nonprofits in the region. Environmental program managers, researchers, and others understand that their efforts will be amplified by participating in the network and sharing their data. Additionally, these individuals have been very receptive to suggestions for minimum data collection standards and excited about training opportunities and the white paper on management applications. In short, interest and excitement have been high. However, getting individuals and organizations to participate in network-related activities that require additional work has been a challenge. For example, organizations have been slow to contribute data and metadata to repositories. The White Paper and other network documents have been developing slower than expected, in part because of slow feedback on the part of potential partners, although significant progress is being made. Our experience so far suggests that maintaining the network will likely require a dedicated coordinator to keep participants motivated and accountable to their agreements. Another issue that has come up with on-the-ground implementation is the somewhat arduous process that Tribal organizations have to go through to add the new monitoring activities to their work plans (most have been aiming to monitor using IGAP funds). To address this, we have been working with them to provide "plug-and-chug" text that can be readily incorporated into their Quality Assurance Project Plans. Many of our objectives, including identification of partners, creating a strategic sampling plan, establishing memorandum of understanding, and forming patterns of annual data submission and meetings, are meant to lay the ground work for a sustainable network that will last beyond the performance period of this grant.

Figure 2. SAWC partnered with the Chilkat Indian Village and Cook Inletkeeper to host a stream temperature monitoring methods workshop in Klukwan, AK in May 2017. The workshop built local capacity for the network and built commitment to maintain stream temperature monitoring sites.

4. PROJECT TIMELINE

The project is currently on track, with all proposed activities expected to be completed by the end date (Table 3). Outreach, recruitment, and training have been going well, with 32 entities reached. Additionally, we have completed key activities, including the approval of minimum data collection standards and in-person training sessions for partners. The White Paper was completed later than the proposed schedule due to slow turn-around time between drafts while waiting for comments from the Steering Committee and Working Group, but it has now been completed and distributed to key decision makers and the press.

Two activities – the Strategic Sampling Plan and data and metadata storage, are slightly behind the original timeline. The development of the Strategic Sampling Plan has involved an extended discussion with key partners about the form that the plan should take and important factors to consider, including site accessibility, long term maintenance of sites, and the unique watershed characteristics of Southeast Alaska. Further, the contractor leading the project had travel and other work commitments that were not initially anticipated. Although the plan has been slower to develop than originally proposed, we are pleased with the new direction that has resulted from discussions, and the contractor will be able to dedicate the needed time to the plan in the coming months. We anticipate having a draft for review by the full working group and steering committee near the end of 2017.

In our original proposal, SAWC was to host all of the stream temperature data and metadata, and submit the latter to AKOATS, beginning in summer 2017. As described in the progress regarding objective #9 (Table 1), it was decided that SAWC is not really the appropriate entity for this activity, especially into the future. To promote a more sustainable approach to data and metadata storage, we have been working to identify more permanent repositories and encourage partners to submit data on their own, and develop habits of submitting each year. As of the end of the reporting period, no new entities had updated their information in AKOATS, but outreach from AKOATS had just started. A similar situation exists with the KNB, whose outreach began with entities that already have information in AKOATS. The SAWC Science Director will be conducting more direct outreach with communities to encourage them to submit their information and provide any needed support. In the future, the network coordinator is likely to need to provide reminders and encouragement to network communities to continue to share their information, and some kind of accountability (e.g. checking in at an annual meeting), may provide additional motivation.

Table 3. Proposed and actual timetable of activities.

Activity	Purpose	Proposed Timeline	Actual Timeline
Working group and steering committee meetings	Inform network development and ensure design will ultimately meet the needs of key stakeholders	Bi-monthly throughout project	Approximately every three months for steering committee, as needed (see #1 in Table 1); more frequently for working group.
Maintain existing	Maintain, collect, and manage	August	August 2016, ongoing during fall

temperature sites	data from 10 SAWC sites	2016 and summer 2017	2017.
Participate in Southeast Alaska Environmental Conference	Recruit tribal participants and integrate efforts with Central Council of the Tlingit and Haida Indian Tribes of Alaska	September 2016	September 2016, September 2017
Develop White Paper	Describe management context and need for the development of a stream temperature network	December 2016	Completed September 2017
Data collection standards	Adopt minimum data collection standards for the region	December 2016	Nov 2016 (Working Group), approved by Steering Committee Jan 2017.
Strategic Sampling Plan	Based on key stakeholder and steering committee input, develop a sampling plan for selecting monitoring sites	March 2017	Not yet completed, draft expected by the end of 2017.
Update site catalog	Catalog all sites in the region and submit metadata to AKOATS	May 2017	Ongoing
Gap analysis	Identify site location gaps	May 2017	Not yet completed; this is being conducted as part of the Strategic Sampling Plan.
Recruit community participants	Based on the gap analysis, identify and recruit organizations to adopt sites (priority for community and tribal organizations)	Summer 2017	Summer 2017.
Site installation training	Train community participants in site installation, data collection, and data management	Summer 2017	May 2017, Sept 2017.
Site installation support	Support community participants in installing sites	Fall 2017	Fall 2017.
Site maintenance and data management support	Support site maintenance. Ensure all metadata is integrated into AKOATS	Spring and Summer 2018	Initiated (see Table 1, #7-9).
Sustainability plan	With steering committee, identify and act on long-term funding opportunities	Summer 2018	Planed for Summer of 2018.

5. COMMUNICATION AND OUTREACH

Communication and outreach activities have: 1) connected with and supported potential network partners, 2) raised the awareness of key players (agency, nonprofit, tribal, private sector, etc.) on the need and achievements of the Stream Temperature Monitoring Network, 3) communicated with the steering committee and working group, and 4) shared information about the network with the general public.

Through phone, email, and face-to-face meetings, SAWC's Science Director has stayed in contact with the individuals and organizations that are engaged in the Stream Temperature Monitoring Network. This has included ensuring the SAWC websites is kept up-to-date with relevant network information. SAWC connected with potential partners at the Southeast Environmental Conferences in 2016 in 2017 (Figure 3). This initial outreach was followed up with individual calls and meetings with potential partners, and invitations to the May, 2017 Stream Temperature Monitoring Training were sent to interested parties. This training was also advertised through SAWC's network and the Central Council of Tlingit and Haida Indian Tribes of Alaska's network. Follow-up information about the training was sent out via email to participants and those who were interested but unable to attend, and the information was also posted on SAWC's website.

Figure 3. SAWC's Science Director and Wrangell Project Coordinator conducting training on stream temperature monitoring at the 2017 Southeast Environmental Conference at Wrangell's Pat Creek.

The existence and aims of the network have been communicated to managers and decision-makers via updates at SEAKFHP meetings, at the Southeast Environmental Conference, and individually on as-needed and opportunistic bases. (See Table 4. for a list of managers and decision-makers who are involved in the project.) The site compilation has been shared with key individuals within the Forest Service and Alaska Department of Environmental Conservation. Further, The White Paper describing management applications of water temperature data has been shared directly with key managers and decision-makers in various organizations. We also disseminated the white paper through our network and list of interested and relevant individuals and organizations, as well as through a press release to local news organizations.

The Steering Committee and Working Group have been kept up to date via phone conference meetings (Table 5. Lists dates for meetings and workshops), updates have been sent out to the whole group following meetings, and these groups have been alerted via email of any important milestones.

To share information about the project with the general public, press releases about the initiation of the project were sent out, SAWC contributed to two radio stories, and SAWC's website and blog have been kept up-to-date with posts about progress (See Table 6. for links to important press and website posts).

In the next coming months, the most important outreach and communications we will be conducting is related to the development of the strategic sampling plan and implementation plan. Our communications will target network partners, the steering committee, and working group.

Table 4. Managers, administrators, decision-makers who SAWC has worked with to date as part of the project:

Jeff Nichols	Alaska Dept. of Fish and Game, Regional Fisheries Research Coordinator; as a Steering Committee Member Jeff has contributed to project direction and product development.
Emil Tucker	US Forest Service, Hydrologist and manager of stream temperature monitoring on the Tongass NF; as a key working group member, Emil has provided significant input on the project direction and products.
Patricia Warren	Chilkat Indian Village, Environmental Planner; Patricia helped to host a methods training workshop and has assisted with site selection and installation for her organization and outreach to other Tribal organizations.
Brock Tabor	Alaska Department of Environmental Conservation, Water Quality Standards Section Manager; as a member of the Steering Committee, Brock has contributed to project direction and product development.

Julianne Thompson   US Forest Service, Region 10 Watershed Program Manager; Julianne has provided input on project direction and its relationship to the Tongass National Forest, and supported the strategic sampling plan with data sources.

Sheila Jacobson   US Forest Service, Region 10 Forest Fish Program Manager; Sheila has provided input on project direction and its relationship to the Tongass National Forest.

Ian Johnson   Hoonah Indian Association Environmental Coordinator; Ian has participated in trainings, provided feedback on documents, and is leading HIA's monitoring effort.

Table 5. Coordination meetings and workshops

9/1/16   Working Group meeting held to go over project objectives, roles, and lay out project timelines.

11/30/16   Working Group meeting held to approve minimum standards, discuss white paper, strategic sampling plan, next steps.

1/17/17   Steering Committee + Working Group meeting held to review project goals and objectives, approve minimum standards, discuss the white paper and strategic sampling plan.

4/10/17   Steering Committee + Working Group meeting held to provide a project update and discuss the white paper and data management options.

5/2 – 5/5/17   Methods training workshop held in Klukwan, AK, with 22 participants representing 6 Tribal organizations, 3 nonprofits, 2 businesses, and 1 agency.

6/3/17   Follow-up conference call with training participants to discuss next steps needed to formalize the network, including goals to be included in strategic sampling plan.

7/26/17   Coordination meeting with key Forest Service individuals – Emil Tucker, Sheila Jacobson, Julianne Thompson.

8/9/17   Informal call with working group to go over issues related to the White Paper.

8/14/17   Coordination meeting with key UAS individuals – Eran Hood, Pat Dryer, Michael Winfree.

8/25/17   Coordination meeting with key Forest Service individuals – Emil Tucker, Sheila Jacobson – to discuss the future of FS monitoring sites.

9/6/17   Mini field methods training workshop held at the Southeast Environmental Conference with 8 participants representing 4 Tribal organizations and 2 nonprofits.

9/14/17   Steering Committee + Working Group meeting held to approve the White Paper, discuss data management, the strategic sampling plan, and formalization documents.

Table 6. Presentations, webinars, publications, reports, outreach (Facebook, twitter, papers, newsletters, etc.)

- Press release 8/8/16
- SAWC Executive Director spoke on KSTK radio news program 8/10/16
- Presentation at the Southeast Environmental Conference 9/23/16
- Presentation at the Southeast Alaska Fish Habitat Partnership steering committee meeting 12/2/16
- News article in KTOO 5/9/17 https://www.ktoo.org/2017/05/09/stream-temperature-monitoring-provide-insight-important-fish-populations/
- Blog post on SAWC website 5/26/17 http://www.alaskawatershedcoalition.org/southeast-alaska-stream-temperature-monitoring-network/
- Presentation at the Southeast Environmental Conference 9/6/17
- White Paper: Management Applications of Regional Freshwater Temperature Data for Southeast Alaska, October 2017. *See Attached*.

6. **Financial Report.**

A signed copy of SAWC's SF-425 Financial Report is attached. Table 7 outlines these expenditures and match resources as compared to the original budget.

Table 7. Budget Vs. Actual Expenditures as of 12-19-2017							
	Federal Share				*Recipient Share (Match)*		
	Budgeted	**Actual**	**Deviation in $**	**Deviation as %**	**Budgeted**	**Actual**	**Notes**
a. Personnel	$16,320	$19,536	-$3,216	-7%	*$22,100*	*$24,975*	Modest overspending a result of a need for coordination.
b. Fringe Benefits							
c. Travel	$9,000	$7,410	$1,590	3%	*$6,800*		Expenditures are lower than estimated, but actual travel conducted is on track with predicted.
d. Equipment	$2,280	$931	$1,349	3%	*$5,500*	*$8,474*	Underspending compensated by increased match.
e. Supplies	$300		$300	1%	*$21,000*	*$22,600*	
f. Contractual	$17,000	$15,000	$2,000	4%			Remaining $2,000 is obligated for Strategic Sampling Plan.
g. Construction							
h. Other							
i. Total Direct Charges	$44,900	$42,878	$2,022	4%	*$55,400*	*$56,049*	
j. Indirect Charges	$4,490	$4,288	$202	0%	*$3,000*		
k. Total	**$49,390**	**$47,166**	$2,224	5%	**$58,400**	**$56,049**	Full grant amount and match will be met within the next couple months.

7. SIGNATURE

12/20/2017

Rob Cadmus   Date
Executive Director
Southeast Alaska Watershed Coalition