PIT Tag Information System
Columbia Basin

Newsletter

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The PTAGIS Newsletter is published periodically by Pacific States Marine Fisheries Commission.

We welcome input from the PTAGIS community, so email us at ptagis_newsletter@ptagis.org with your story ideas.

If you have questions regarding the contents of this publication, or about the PTAGIS program, please contact PTAGIS Staff.

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A Fisheries Data Project of the Pacific States Marine Fisheries Commission

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REMINDER: SUPPORT FOR MINIMON FILE FORMAT ENDING

NICOLE TANCRETO (PTAGIS Portland Office)

We will be retiring the MiniMon file format at the end of 2022. This means that all interrogation data will need to be submitted using either the M4 or M5 file formats starting on January 2, 2023.

We released a new utility this year, called I5, that can be used to connect directly to transceivers to download stored data, create an M5 file from the data and submit the file to PTAGIS for processing. We also released a community version of M5 that can be used on Windows or Linux machines for real-time data collection. M5 has been tested and runs well on low-powered devices, such as a Raspberry Pi.

For those using PIFF, PIFF2 or MiniMon to format interrogation data for submission to PTAGIS, we recommend transitioning to using I5 as this time. I5 can be downloaded here, and two tutorial videos are available: I5 Tutorial and I5 v1.3.0 Update. Note, you can still use PIFF2 to submit data after the MiniMon file format is retired, but we recommend that you switch to I5 when possible.

For those using MiniMon for real-time data collection, we recommend transition to using M5 at this time. M5 consists of two main components: the M5 Monitor Service and the M5 Control Panel. The Monitor Service can be installed on 64-bit Windows or ARM64 Debian Linux and runs in the background to communicate with the devices and submit data files to PTAGIS. The Control Panel can only be installed on Windows and provides a user interface to configure and interact with the Monitor Service. It can communicate with a Monitor Service running on the same machine or a different machine, providing it can connect to that machine through a network address. A third component, called the M5 Terminal Utility, is also provided primarily to assist with troubleshooting device connections.

The M5 page provides links to download installers for the Windows and Linux versions of the M5 Monitor Service, along with the Windows installers for the M5 Control panel and the M5 Terminal Utility. The M5 help file provides extensive documentation on how to install, configure, and monitor M5.

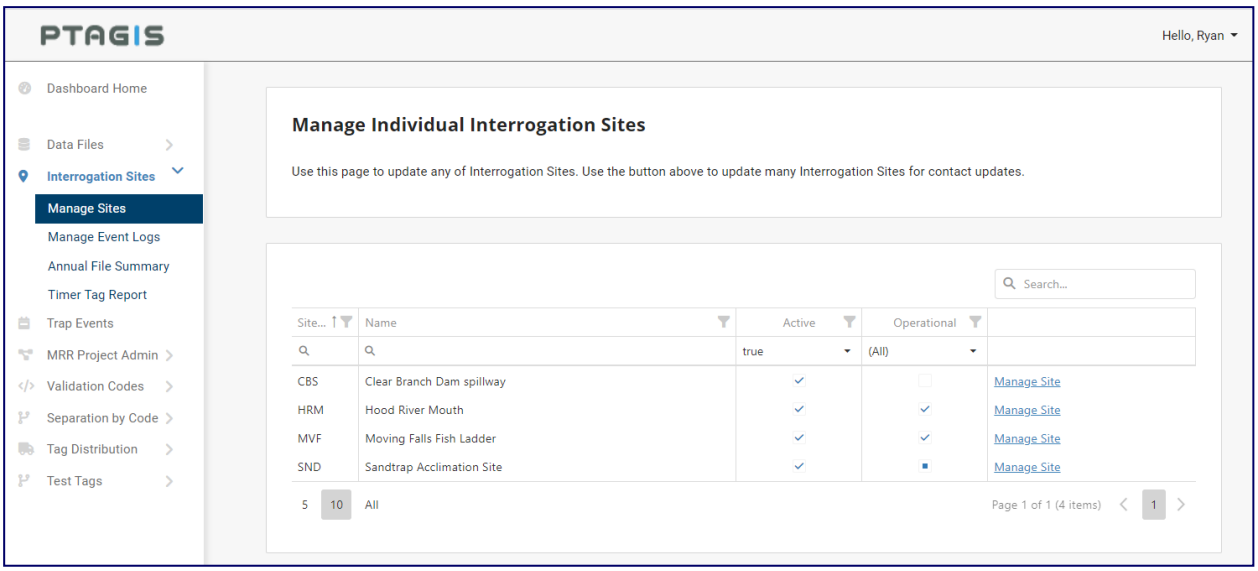
M5 has been running in production on Windows IPCs at most PTAGIS-maintained sites since fall of 2021. The Linux version of the M5 Monitor Service has been tested extensively on a Raspberry Pi running a standard version of Raspberry Pi OS (previously called Raspbian) in the Kennewick lab and at a few USFWS sites, but has not been tested on any other versions of Linux. Please contact us if you have any questions about installing and running any of the M5 components on Windows or Linux. We are eager to work with any users interested in getting M5 set up in the field.

If you anticipate that you will not be able to move away from using the MiniMon file format to submit interrogation data by January 2, 2023, please contact us

New Tools to Manage Interrogation Site Metadata and Notifications

Nicole Tancreto (PTAGIS Portland Office)

We recently released a suite of new tools available on the PTAGIS website to interrogation site Data Stewards and Primary Contacts. When a data steward or primary contact logs in to the website and navigates to Interrogation Sites > Manage Sites they will see a list of the sites for which they are responsible.



Clicking the Manage Site link takes you to the page for that site where different sections of the site metadata can be edited one at a time. Some metadata will be updated immediately while others will be submitted as a request for PTAGIS staff to review before implementing. The following sections of interrogation site metadata are currently available for updates.

Operations

The Operations section allows you to decommission an interrogation site that has been permanently removed. You can also update the operational status of a currently active site, indicating whether or not it is currently operating and collecting data.

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New Tools to Manage Interrogation Site Metadata and Notifications

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Configuration Diagram

The Diagram section allows you to upload a new version of a diagram for the current configuration of the site (or an earlier configuration). Earlier this year the IPTDS Subcommittee released new guidelines for site diagrams and this is where you can submit those new diagrams for review and eventual posting on the site metadata page.

CONFIGURATION DIAGRAM

Update Diagram

Select Configuration Number: 110

Start Date: 8/30/2012 **End Date:** ----

Antenna Group	Transceiver ID	Antenna ID
UPSTREAM ARRAY	01	01
		02
MIDDLE ARRAY		03
		04
DOWNSTREAM ARRAY		05
		06

Site Configuration Diagrams:

ACM Configuration 110

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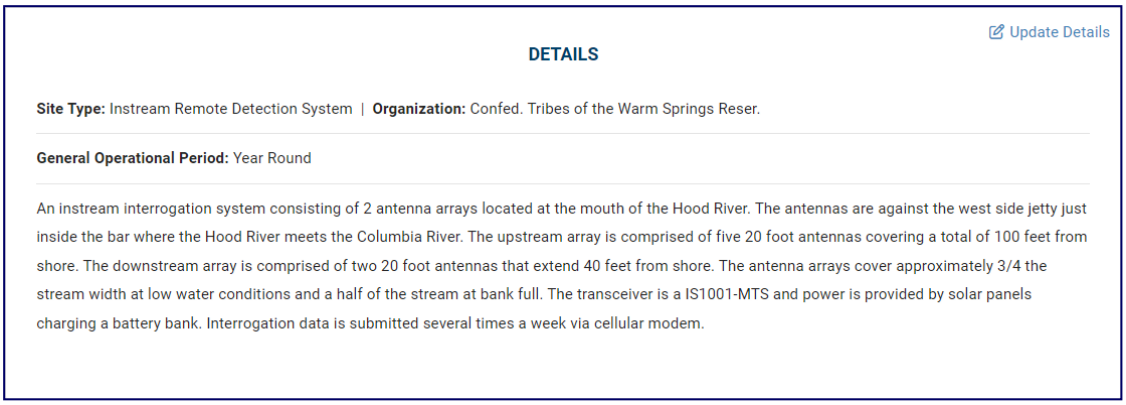
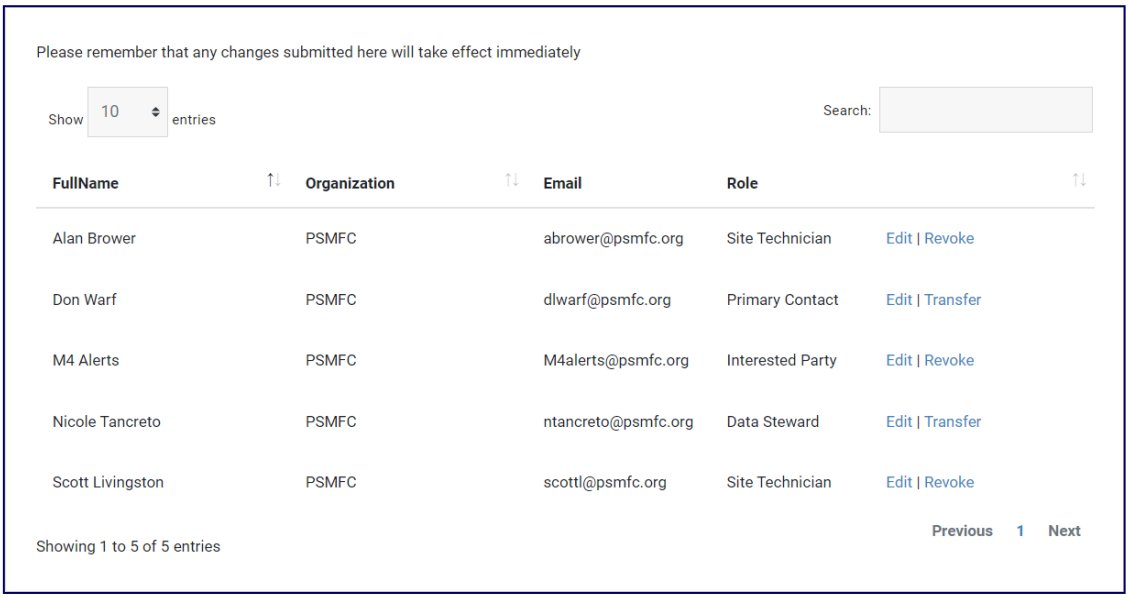
Details

The Details section allows you to update the organization responsible for site operations, the general operational period, or the site description.



Contacts

The Contacts section allows you to update the contacts associated with an interrogation site. You can transfer the Primary Contact or Data Steward to another person and add or remove Site Technicians and Interested Parties. The Primary Contact is the person ultimately responsible for day-to-day operations and the Data Steward is the person ultimately responsible for data management and submissions. Site Technicians can submit data, but cannot change any metadata. Interested Parties are able to receive notifications when new event logs are posted, when a data file submission is rejected, and/or opt in to the submission notifications (see next section for more on what those are).



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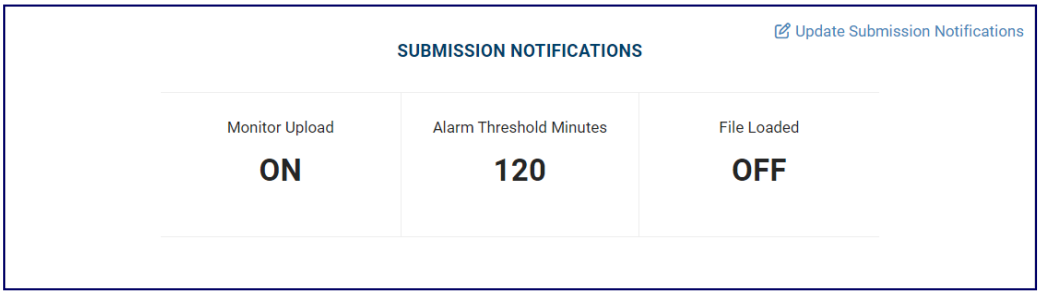
Submission Notifications

The Submission Notifications section allows you to enable or disable notifications about data submissions to PTAGIS. There are two types of notifications: **Monitor Upload** and **File Loaded**. The **Monitor Upload** notification is used for sites where data submissions are automated. It will send an email if a file HAS NOT been received from that site within the last **Alarm Threshold**. The **File Loaded** notification is used for sites where data is submitted manually. It will send a notification every time a file is loaded successfully. Each site contact can be opted in to our opted out of these email notifications.



Photos

The Photos section allows you to upload photos of the site to show more context about layout.

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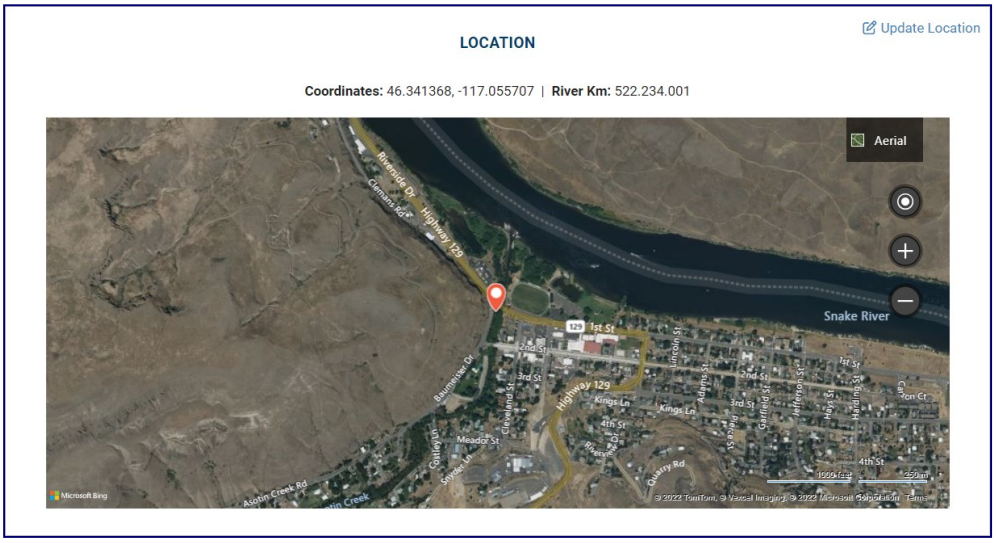
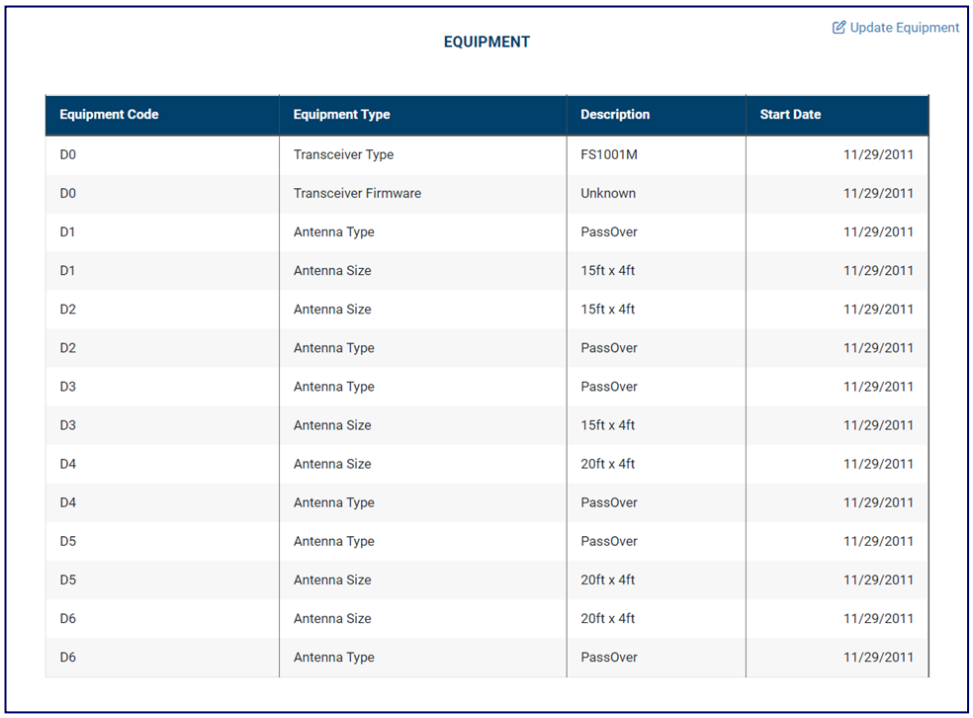
Location

The Location section allows you to update the location of a site, if it has been moved within the same river.



Equipment

The Equipment section allows you to update the type of equipment in use at the site. For example, if you replace an old mux with a newer type of transceiver, you can update that information here. You can also update information about transceiver firmware, antenna type and antenna size.



Equipment Code	Equipment Type	Description	Start Date
D0	Transceiver Type	FS1001M	11/29/2011
D0	Transceiver Firmware	Unknown	11/29/2011
D1	Antenna Type	PassOver	11/29/2011
D1	Antenna Size	15ft x 4ft	11/29/2011
D2	Antenna Size	15ft x 4ft	11/29/2011
D2	Antenna Type	PassOver	11/29/2011
D3	Antenna Type	PassOver	11/29/2011
D3	Antenna Size	15ft x 4ft	11/29/2011
D4	Antenna Size	20ft x 4ft	11/29/2011
D4	Antenna Type	PassOver	11/29/2011
D5	Antenna Type	PassOver	11/29/2011
D5	Antenna Size	20ft x 4ft	11/29/2011
D6	Antenna Size	20ft x 4ft	11/29/2011
D6	Antenna Type	PassOver	11/29/2011

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New Interrogation Site Configuration Diagram Guidelines

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Site Configuration

The Configuration section, which is still in development, will allow you to update the metadata related to how the antennas are arranged at the site. If new antennas are added, existing antennas are removed, or antenna IDs changed for any reason, then the site configuration section will allow you to update that information and create a new configuration for the site.

IPTDS Subcommittee August 2022 Meeting

NICOLE TANCRETO (PTAGIS Portland Office)

The IPTDS Subcommittee held a meeting on August 31, 2022. The meeting notes have been published and are available to view in the PTAGIS Document Library.

The meeting opened with attendees sharing information about activities and plans related to managing or installing interrogation sites within their organizations. Kyle Meier presented information on Biomark's research and development pipeline, novel uses of PIT tag detection equipment, and information on how they use virtual timer tags and other transceiver diagnostic information to determine if a site or antenna has been operational in a 24-hour period.

John Tenney presented updates on PTAGIS activities including updates to I5 and M5 software, potential security issues with Raspberry Pi deployments, and site metadata management features in development for the PTAGIS website. He also showed some prototype operational metadata reports that could be provided to site stewards.

The meeting resulted in several action items:

- SOP for deploying Raspberry Pi for interrogation sites
- Completion of online interrogation site metadata management tools
- Creation of Timer Tag and Noise reports for instream sites
- Next meeting tentatively scheduled for January 2023

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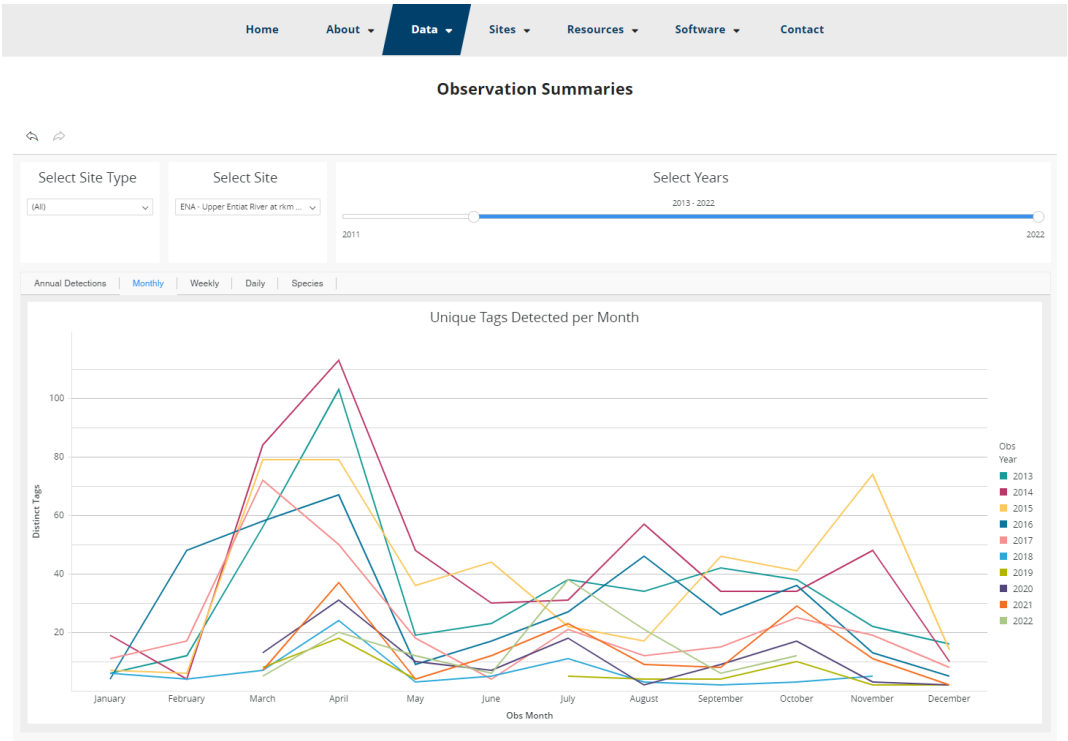
New Observation Summaries Report Available

Nicole Tancreto (PTAGIS Portland Office)

A new report, called Observation Summaries, has been published under the Data menu. This report shows summary counts of unique tags detected at a single interrogation site by year. It is similar to the Annual Detection Summaries report that was on the old PTAGIS website. You can select a site and a range of years to see the counts of tags detected by year. It also shows monthly, weekly and daily counts per year, along with species counts.

Please don't hesitate to contact us if you have any questions or suggestions for additional reports.



PIT Tag Workshop Scheduled for 2024

Nicole Tancreto (PTAGIS Portland Office)

PTAGIS and the PIT Tag Steering Committee still plan to host the next PIT Tag Workshop in early **2024**. Budgeting issues and COVID concerns unfortunately prevented us from scheduling this overdue event any sooner. The overwhelmingly positive feedback we received from previous workshops obligated us to host the next workshop as an in-person event at a high-capacity venue. We'll make an official announcement early next year once the next PTAGIS budget is approved. Please don't hesitate to contact us if you have any questions or concerns in the meantime.

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PTAGIS Field Operations & Maintenance Summary for 2022

Scott Livingston (PTAGIS Kennewick Office)

O&M Summary

The PSMFC PTAGIS Kennewick office is responsible for ensuring the PIT tag detection systems in mainstem juvenile fish bypass facilities and adult fish ladders are functioning at peak performance while those passage systems are in operation. The Kennewick office also monitors and cooperatively maintains Separation by Code hardware at nine of those facilities, allowing researchers to selectively separate PIT-tagged fish as they move through passage facilities. The Kennewick staff continues to provide technical assistance for multiple other projects involving the installation or development of new detection systems.

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Juvenile fish bypass facilities (JFF) on the Snake and Columbia Rivers began operating in March and April. Detection efficiency rates for 2022 were the same as previous year's rates of greater than 99%. The single antenna in the Bonneville Corner Collector (BCC) is the exception, with an estimated efficiency rate around 75% based on NOAA live fish testing using 12mm tags. BCC detected 98,230 individual PIT tags in 2022.

Separation by Code diversion efficiency rates remained high in 2022 with diversion efficiency above 97% for all gates.

Adult Ladder Efficiency also remained high in dam-to-dam comparisons for 2022. All sites maintained an approximate 98% to 99% detection efficiency over a 12-month rolling report period.

Update: Slide-Gate Cylinder Replacement Prototype Performance

The electric actuators operating the Lower Monumental Dam JFF A and B diversion gates continue to be maintenance free. There were no reported instances of failure or inefficient operation during the 2022 out-migration period. Personnel at other Snake River dams with Separation by Code systems are also considering the electric actuator upgrade as the replacement to the antiquated pneumatic cylinders.

New Electric Cylinder at LMJ A-B-Side gate.

Update: Lower Granite Spillway Project 2022

On April 3, 2022, the spill gates were opened at 0003 hours operating under the Flex Spill pattern schedule. The Lower Granite Spillway (GRS) PIT tag detection system continues to detect tags at an exceptional rate. All 11 antennas exceeded detection rate expectations throughout the duration of the spill. The spill season ended on September 1st, although the OGEE is periodically opened, then closed for various reasons. As of Nov. 3rd, 2022, nearly 195,500 PIT tags have been detected at the site.

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In November of 2021, the entire GRS transceiver system was upgraded to a new synchronization schema. This upgrade will allow a faulty transceiver to be replaced without disrupting the operation of other transceivers.

Construction of the work barge access platform has not yet been completed, though most of the components have been procured. This platform will allow for safe access to personnel for working on antennas installed at GRS.

PSMFC-Kennewick staff continue to provide daily monitoring of the GRS PIT tag detection system performance and supporting infrastructure.

Update: Bonneville Cascades Island Ladder (BO2)

PTAGIS O&M finalized installation of new BO2 antennas near the Upstream Migrant Transportation (UMT) channel in the Cascades Island fish ladder earlier this year. The old antennas were taken off line and the new antennas placed into production data collection on March 9, 2022. In addition to the UMT antennas, two antennas were installed on both sides of the counting station window. The passage through the counting window is seldom used and is currently not an active passage, but those antennas can be activated if needed.

The two UMT antennas have detected 2,100 tags so far this year and the detection efficiency exceeds that of the lower ladder legacy antennas.

UMT antenna at BO2.

Counting window antenna at BO2.

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Update: Data Collection Platform (DCP) Upgrades

In February 2022, PTAGIS Kennewick staff completed the DCP upgrades at all 30 of the PTAGIS managed interrogation sites.

The new DCP platform include:

- Industrial grade, panel mounted computers.
- Windows 10 Enterprise LTSC (Long Term Service Contract) operating system.
- Serial (fiber optic connections) to Ethernet (STE) converters.
- High-Capacity Lithium battery backup systems with Mod-Bus–TCP protocol which allows for communication to the SCADA monitoring service.
- M5 data collection software at sites without separation by code. Lower Monumental Dam JFF is the first site with separation by code to have an upgraded DCP and is currently running M5. The remaining sites with separation by code will continue to run M4 until they are upgraded in outgoing years.

Additional Projects and Activities

BO4 ladder remodel. The Bonneville Dam Washington Shore upper ladder is currently being redesigned to improve fish passage in the area of the existing PIT tag antennas. PTAGIS staff provided a PIT tag design packet along with technical support to the US Army Corps of Engineers (USACE) Project Design Team (PDT).

Mill Creek Dam ladder antennas. Staff provided conceptual drawings to assist the USACE Walla Walla District with the integration of PIT tag antennas in the fishway. Other agencies will be installing the antennas and detection equipment.

Castile Falls expansion. Staff will deliver a report to the Yakama Indian Nation (YIN) on feasibility of installing an instream antenna directly upstream of the intake to the Castile Falls fish ladder (CFF) on the Klickitat river.

Easton Dam design. Staff provided the Bureau of Reclamation (BOR) a complete PIT tag detection system design package.

Cle Elum Dam design. Started the PIT tag detection system design for the BOR.

Clear Creek Dam design. Started the PIT tag detection system design for the BOR.

Klickitat Hatchery design. Completed phase 1 of design for the YIN.

Thin body antenna design. Designed a new-technology thin body antenna using water resistant cable.

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Bonneville Ice and Trash Sluice Way – Radio Frequency Interference Monitoring.

Bonneville Dam PH1 Radio Frequency Interference Monitoring Station

In October 2022, an interference monitoring station was installed at Bonneville Dam on the Powerhouse 1 forebay deck. Interference monitoring is standard procedure for the PTAGIS project when evaluating potential PIT tag interrogation locations. These monitoring stations can help detect any in-band emissions that could potentially interfere with PIT tag detection efficiencies prior to the installation. Recent review of the data shows little to no interference at this time, in this location. Interference monitoring will likely continue for the rest of the 2022 calendar year.

The Bonneville Ice and Trash forebay slot 3B is a likely location for the installation of PIT tag antennas. PTAGIS Kennewick staff have provided a complete PIT tag system design package to the USACE PDT which is currently under review.

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