2022 Annual Report

Candidate Conservation Agreements:

Texas Hornshell Mussel (*Popenaias popeii*) and Other Covered Species

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DEPARTMENT OF THE INTERIOR

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BUREAU OF LAND MANAGEMENT

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SUMMARY

The Center of Excellence (CEHMM) and the New Mexico State Land Office (SLO) administer sister Candidate Conservation Agreements for the Texas hornshell mussel (hornshell or THM) and other covered species in cooperation with the Bureau of Land Management (BLM) and the United States Fish and Wildlife Service ("Service"). CEHMM administers a Candidate Conservation Agreement (CCA) for federal land and a Candidate Conservation Agreement with Assurances (CCAA) for non-federal and non-state lands. The SLO administers a CCAA for state trust lands. The conservation agreements are very similar, and they are referred to collectively as the CCA/As. CEHMM and SLO jointly implement the CCA/As in cooperation with the BLM and the Service. This annual report describes the conservation activities and accomplishments for the CCA/As in 2022.

There are 103 Participants enrolled in the CCA/As through Certificates of Inclusion (CIs) or Certificates of Participation (CPs). Fifty Participants are enrolled in multiple conservation agreements. To date, Participants have enrolled a total of 890,182.06 acres in the CCA/As.

In 2022, Participants contributed $395,274 with $143,398 remaining in accounts receivable to support program administration, species research, and conservation work through the CCA/As, bringing the total revenue contributed by CCA/A Participants over the duration of the agreements to $4,840,169. All of the funding contributed during 2022 came exclusively from industry Habitat Conservation Fees. The Habitat Conservation Fees came from 364.66 acres of new surface disturbances on federal, non-federal, and non-state lands, and 188.55 acres on state trust land, with combined total new surface disturbances in 2022 of 553.21 acres.

Total expenditures for the program's administration, implementation, and staffing needs were $273,177 in 2022 and $1,397,972 over the life of the agreements. SLO's costs for administering its CCAA are absorbed by the agency.

During 2022, the joint Executive Committee (EC) did not approve additional funds to go towards habitat and research projects. Rather, the EC elected to carry over funds remaining from 2021, allocating $164,558.92 in remaining funds for research and habitat projects in 2022.

The occurrence of low flow events in past years prompted CEHMM to start monitoring the Black and Delaware rivers on a routine basis. CEHMM personnel conducted field monitoring for the Delaware River 36 times and the Black River 47 times in 2022.

During the 2022 calendar year, the Implementation Committee held three conference calls to discuss project priorities, grant opportunities, projects, and emergency response actions for the hornshell. The Executive Committee held three video meetings in 2022 to discuss funding levels, to determine which proposed projects to fund, and to discuss program priorities.

I. INTRODUCTION

This joint report to the Service describes the activities conducted in 2022 under the three sister Candidate Conservation Agreements for the THM and other covered species. CEHMM administers a CCA for federal land and a CCAA for non-federal and non-state (i.e., private) lands. The SLO administers a CCAA for state trust land. The three conservation agreements are referred to collectively herein as the "CCA/As." CEHMM and SLO jointly implement the CCA/As in cooperation with the BLM and the Service through a common governance structure. Figure 1 shows the CCA/A boundary, CCA/A management zones, and land ownership. Additional details about the CCA/As are available in the 2018 annual report and in the agreements themselves, which can be accessed at:

https://www.cehmm.org/texas-hornshell-mussel-reports
https://www.fws.gov/southwest/es/documents/R2ES/TxHornshell_CCAA_NMCPL_v3_FR2980.pdf.

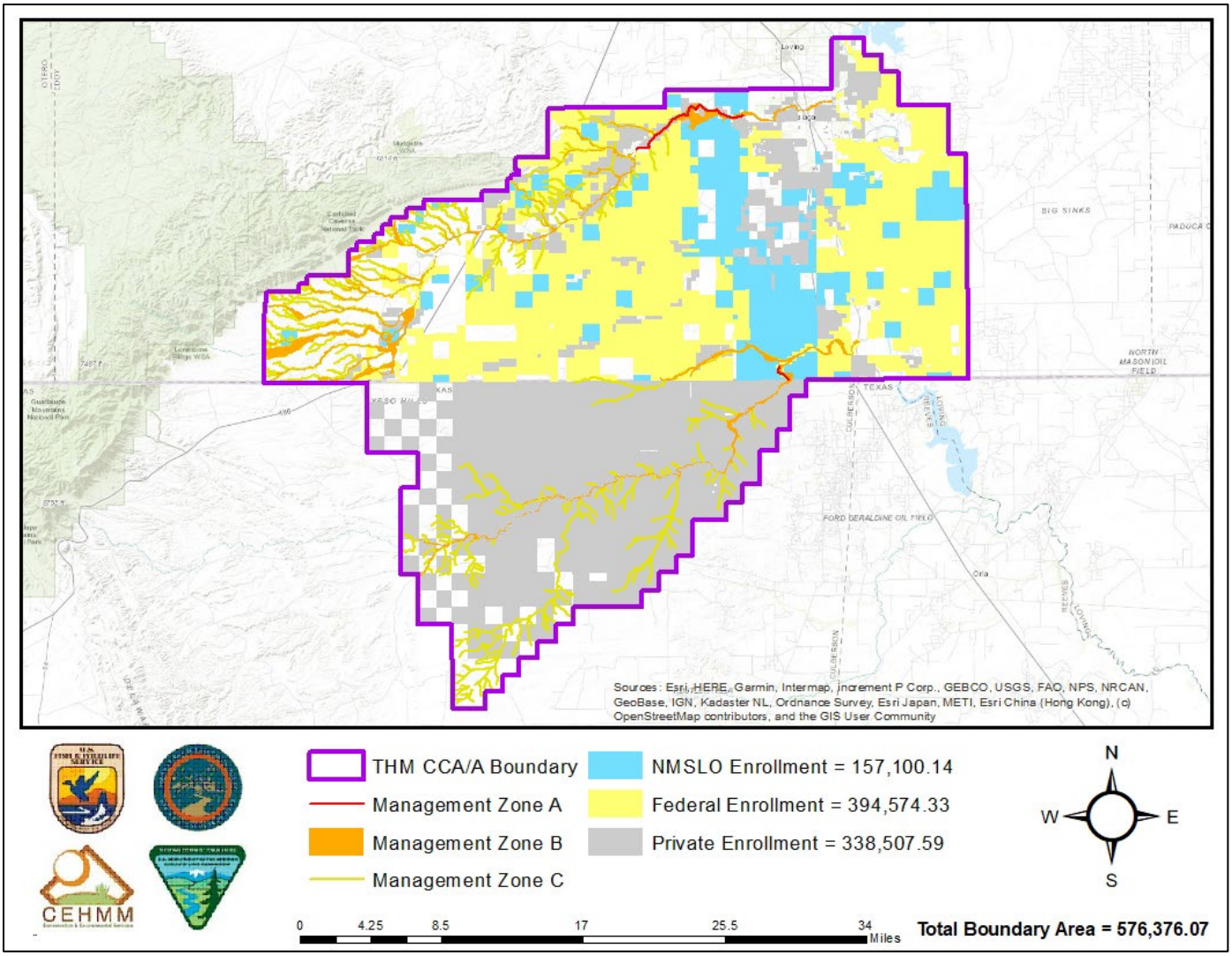


Figure 1. CCA/A Boundary, CCA/A Management Zones, and Land Ownership.

II. 2022 ENROLLMENT, PARTICIPANT CONTRIBUTIONS, AND FUNDING ALLOCATIONS

CEHMM and SLO have issued a combined total of 103 CIs in the CCAAs for non-federal land or CPs for the CCAs for federal land. Fifty participants are enrolled in multiple Candidate Conservation Agreements.

CCA/A Participant and parcel acreage enrollment data for 2022 is shown in Table 1. SLO administered 28 CIs and CEHMM administered 42 CIs and 33 CPs. SLO had 157,100.14 acres of state trust land enrolled in its CCAA in 2022. CEHMM had 338,507.59 acres of private land enrolled in its CCAA and 394,574.33 acres of federal land enrolled in its CCA. Fifty participants are enrolled in multiple Candidate Conservation Agreements because they have a combination of land ownership types. The total amount of land enrolled in CCA/As in 2022 was 890,182.06 acres, which has remained relatively consistent throughout the five reporting years of the conservation agreements (Figure 2). Annual acreage can vary since the Participants that opted for "All Activities Enrollment" can add or remove enrolled acreage based on their current activities. The same acres can also be enrolled more than once by different Participants that are using the land for different activities; the totals therefore reflect multiple enrollments of the same parcels.

Table 1: CCA/A Enrollment in 2022.

	No. CIs	No. CPs	Acres Enrolled in CCA	Acres Enrolled in CCAA
CEHMM	42	33	394,574.33	338,507.59
SLO	28	N/A	N/A	157,100.14
TOTAL:	**70**	**33**	**394,574.33**	**495,607.73**

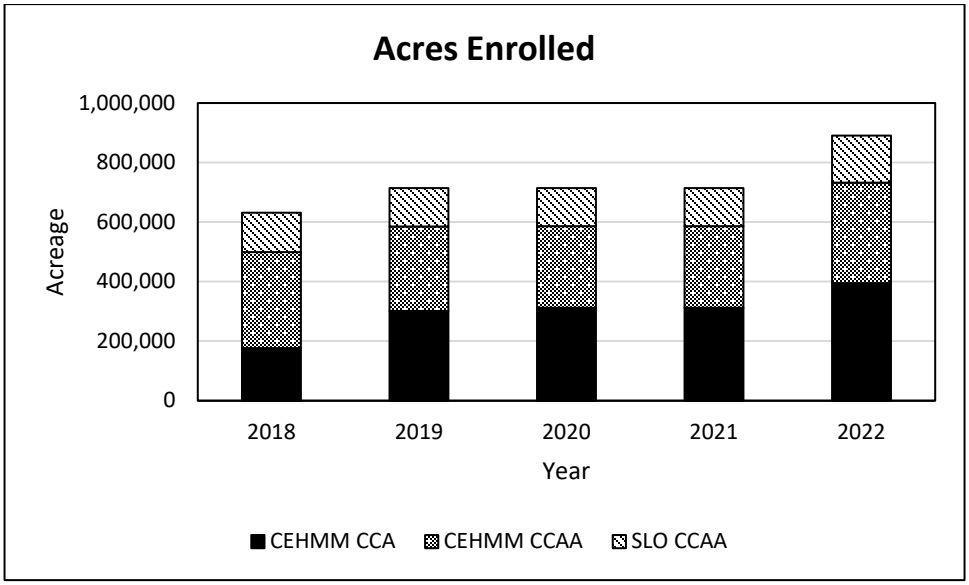


Figure 2. Acres Enrolled in Candidate Conservation Agreements from 2018 to 2022.

In 2022, Participants contributed $395,274 with $143,398 remaining in accounts receivable through Habitat Conservation Fees to support program administration, species research, and conservation work through the CCA/As, bringing total contributions by CCA/A Participants to $4,840,169 over the duration of the agreements. Annual contributions were higher in 2018-2020 due to the Enrollment Fee payments in the first three years of the

CCA/A (Figure 3) (Appendix A). All of the funding contributed during 2022 came exclusively from industry Habitat Conservation Fees generated from 364.66 acres of new surface disturbances on federal, non-federal, and non-state lands, and 188.55 acres on state trust land, with a combined total of new surface disturbances in 2022 of 553.21 acres.

Funding Expenditures and Allocations

In 2022, SLO CCAA participants contributed $161,475 through Habitat Conservation Fees. From the total funds contributed under the SLO CCAA, $17,942 was used for CEHMM's administrative overhead and $34,480 was used to provide implementation assistance to SLO. SLO's cost for administering its CCAA are absorbed by the agency. In 2022, participants in the CEHMM CCA/A contributed $233,800 through Habitat Conservation Fees. From the total funds contributed under the CEHMM CCA/A $25,978 was used for CEHMMs overhead and $238,697 was used for the program implementation. Total expenditures for program implementation, were $273,177 in 2022 and $1,397,972 over the life of the agreements.

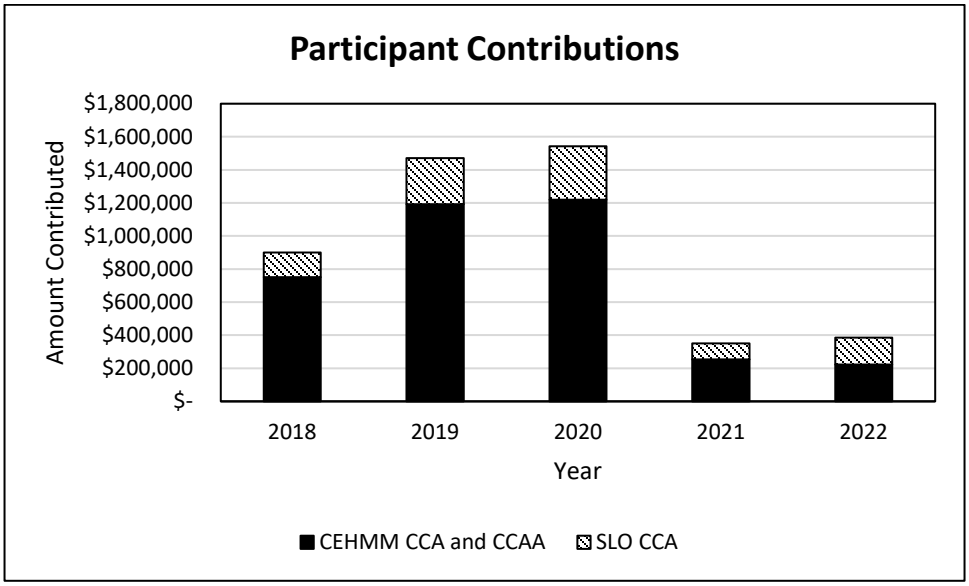


Figure 3. Participant Contributions to CCA/A Program from 2018 to 2022.

III. 2022 COMMITTEE ACTIVITIES

CCA/A Coordinating Committee (CCAACC)

The CCAACC is an informal committee that was formed by CEHMM and SLO pursuant to the terms of their Memorandum of Agreement, to provide a mechanism for coordinating joint administration of the CCA/As. The CCAACC did not meet during 2022, but members participated in the Instream Flow Technical Working Group.

Joint Executive Committee

The joint Executive Committee held three joint conference calls in 2022 to determine project funding priorities and allocations. The Executive Committee members in 2022 were as follows:

CEHMM CCAA: Chuck Hayes/Tim Ludwick (Service) and Emily Wirth (CEHMM)

CEHMM CCA: Chuck Hayes/Tim Ludwick, Emily Wirth, and Ty Allen (BLM)

SLO CCAA: Chuck Hayes/Tim Ludwick and Lisa Henne (SLO)

The Executive Committee discussed the following items at their meetings:

- Program budget and expenditures
- Program priorities and funding allocations for projects and research
- Project Proposals
- Progress on the design of an Instream Flow Program
- Progress on determining a revised minimum flow

The joint Executive Committee made the following decisions in 2022:

1. Due to COVID-related delays that impacted the research projects to determine flow requirements for the hornshell, CEHMM and SLO requested an extension of time from the Service to determine the revised minimum flow for the Black River. The Service approved the request on December 2, 2022. The new deadline is October 2024.
2. The 2022 habitat project funding allocations are as follows:
    - The EC did not approve additional funding to go towards habitat or research projects. Rather, the EC elected to carry over remaining funds from 2021, allocating $164,558.92 in remaining funds for research and habitat projects in 2022.
    - $149,987 was allocated to a research project titled "Design and Implementation of a Population Monitoring Program for Texas Hornshell in the Black River, NM," submitted by David Berg of Miami University, Daniel Trujillo of the New Mexico Department of Game and Fish (NMDGF), and Kantaro Inoue of Shedd Aquarium.
    - $77,005.00 was allocated for stream gage maintenance.

Stakeholder Committee

The Stakeholder Committee included the following representatives in 2022:

Agriculture and Ranching: Alisa Ogden

Oil and Gas: Kegan Boyer (Chevron), Veronica Rapp (Oxy), and Greg Boans (Murchison)

Midstream: No representative

Carlsbad Irrigation District: Coley Burgess

Water Withdrawers: Jim Davis (Landowner) and Dave Anderson (Select)

Eddy County: No representative

Interstate Stream Commission: Frank Scott

SLO: Camilla Romero (non-voting, support)

CEHMM: Matt Ramey (non-voting, support)

The Stakeholder Committee discussed the following items at their meeting:

- Habitat Conservation Plan
- CCA/A projects
- Funding
- Committee operating procedures
- Discussion and review

Implementation Committee

The Implementation Committee ("IC") held three conference calls in 2022 to determine project priorities, project review, CCA/A updates, and the Habitat Conservation Plan (HCP). The IC members in 2022 were as follows:

Service: Sarah Yates

BLM: Cassie Brooks

CEHMM: Matthew Ramey

SLO: Elaine Heltman (alternates Camilla Romero and Kyle Rose)

NMDGF: Daniel Trujillo (alternate Joanna Hatt)

The IC discussed the following topics:

- CCA/A Updates
- Black and Delaware river status
- Landscape monitoring and conservation concerns
- Habitat Conservation Plan
- Request for proposals, determination of priorities, and the development of ranking criteria
- Project/grant review and funding

The IC was kept apprised of the following CEHMM activities and occurrences:

- CCA/A program updates
- Flow status for both the Black and Delaware rivers, which incorporated hydrographs of all United States Geological Survey (USGS) gages, flows in relation to the 9.3 cfs (cubic feet per second) set by the CCA/As, and bi-weekly monitoring sites on both rivers.

- Events taking place on the landscape such as spills, contaminated areas, fires, and flows to aid in the protection of the THM and other covered species.
- HCP development and design status.

IC action in 2022:

- The IC and Executive Committee jointly developed new project priorities for the THM program and will be developing a Request for Proposals (RFP) to address specific projects that are needed to further assist the CCA/A program and protect the species. The RFP should be released in early 2023.
- The IC acted on two project proposals and one grant in 2022.
    1. The IC reviewed and recommended funding for a "Dye Trace Study – Black River Basin Phase II," submitted by National Cave Karst Institute. The Executive Committee requested that this proposal be revised and resubmitted with clarification of how the proposed study would contribute to conservation of the hornshell.
    2. The IC reviewed and recommended funding for the project proposal "Design and Implementation of a Population Monitoring Program for THM in the Black River, NM." submitted by NMDGF and Miami University of Ohio. The Executive Committee approved funding for this project.
    3. The IC reviewed and recommended the CCAA provide matching funds for the grant proposal, "Black River Sensor Array," which was awarded to CEHMM by the National Fish and Wildlife Foundation (NFWF), and the Executive Committee approved the match funding of this grant.
- The IC developed the following list of RFP priorities:
    1. Watershed health assessments/biological functional wetland assessments
    2. Long-term water quality monitoring, improved flow, water quality
    3. Restore and manage watersheds and stream habitat
    4. Erosion reduction
    5. Livestock infrastructure improvement
    6. Vehicle crossings
    7. Brackish water diversion
    8. Trash removal projects

Participant Meeting

CEHMM held a Participant meeting for the hornshell program on September 8, 2022, and discussed the following:

- Program overview of the THM CCA/A
- Current projects
- Current research
- Partnership presentation
- Future goals for the CCA/A program

- HCP development

Technical Working Group

The Instream Flow Technical Working Group was convened in 2022 to provide input on the design of an instream flow program for the Black River. Participants included representatives from CEHMM, SLO, the Service, the NMDGF, the New Mexico Interstate Stream Commission, the National Audubon Society, The Nature Conservancy, and the researchers conducting flow requirement studies from Texas A&M, Auburn, and Miami universities. The meetings were facilitated by AMP Insights, which is working under contract to develop the program.

IV. OUTREACH

In March 2022, CEHMM staff participated in RiverBlitz, an annual river cleanup event in the city of Carlsbad in Eddy County. CEHMM encouraged enrollees along the Black River to join as well. Within a few hours, CEHMM staff removed hundreds of pounds of litter from the banks of the river. CEHMM participates in RiverBlitz annually; please contact us if you or your organization would like to join us in the Black River cleanup efforts.

In June, CEHMM sponsored and participated in the Inspired by Science educational summer camp. During this weeklong camp, CEHMM assisted elementary level students in building a variety of science projects such as air rockets, marble roller coasters, and solar race cars. Throughout the week, CEHMM staff had the opportunity to educate the students on the importance of conservation, ways they can contribute to conservation efforts, and information about the species that CEHMM works to protect.

Figure 4. CEHMM Staff Presenting to Fifth Grade Students at Desert Willow Elementary.

In September, CEHMM hosted its fourth annual Participant Meeting. During the meeting, stakeholders were given an update on the CCA/A program. CEHMM also conducted presentations regarding ongoing funded projects. A THM critical habitat designation update was presented, and threats and concerns for the THM were also discussed.

Also in September, CEHMM participated in National Public Lands Week, an annual event hosted by the BLM. During this event, CEHMM staff removed hundreds of pounds of litter from the banks of the Pecos River, Avalon Lake, and Fisherman's Lane. CEHMM staff also assisted the BLM with a habitat restoration project by installing a series of rock dams in ephemeral drainages to prevent sediment loading into the Ladder Hole Day Use Area along the Black River. CEHMM also assisted New Mexico Bass Nation and ConocoPhillips with installing an education exhibit at Rope Swing Day Use Area along the Black River.

In November, CEHMM staff visited 5th grade classes at Desert Willow Elementary School in Carlsbad and presented on the THM and other covered species (Figure 4). The presentation included an overview of all the species, as well as the research and conservation efforts CEHMM has been involved with.

An SLO Executive Committee member attended a two-day environmental flows workshop for the Pecos Sustainable River Flows program, which was hosted by The Nature Conservancy and the Army Corps of Engineers.

V. SPECIES MONITORING

CEHMM assisted the NMDGF in their annual fish population survey along the Black River (Figure 5). Fish populations were surveyed using numerous sampling methods, including trammel nets and electroshocking. The fish that were caught were weighed, measured, and then released back into the river. Potential THM host fish were inspected for glochidia before being released.

Figure 5. CEHMM staff assisting NMDGF with electroshocking on Black River.

CEHMM assisted Texas A&M with the collection of THM brood stock to retest the thermal tolerance of glochidia and newly transformed individuals. This collection was part of the River Flow Regime Requirements Study, and the results will be used to identify flow regimes most likely to induce mortality and/or thermal stress throughout various life history stages of the THM.

CEHMM staff also assisted the NMDGF and Miami University in monitoring and inspecting data loggers being used for THM population studies on the Black River.

Black River Monitoring

The CCA/A set a temporary minimum flow goal of 9.3 cfs at the Malaga gage on the Black River, pending the development of a revised flow requirement for the THM by October 2024. Since the CCAA took effect in 2017, CEHMM has monitored the daily average flow at existing USGS flow gages in the Black River at Malaga (USGS 08405500[1]) and Blue Springs (USGS 08405450[2]) (Figure 6). CEHMM staff set alarms on the flow gages; when river flows are below 9.3 cfs, they are notified and can monitor the river more closely. Participants in the CCA/A who withdraw water from or near the Black River are also notified so they can implement any pumping curtailment conservation measures contained in their CIs/CPs. CEHMM personnel also conduct visual inspection of the Black River to monitor river conditions. During 2022, CEHMM staff visually inspected the Black River 47

[1] https://waterdata.usgs.gov/nm/nwis/uv?site_no=08405500
[2] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405450

times to monitor flow and overall river health.

CEHMM's river-flow monitoring has also been vital for alerting program staff when additional measures, such as salvage efforts, might be necessary to prevent THM mortality due to low flows. THM require perennially wetted habitat and flowing water. Emersion (stranding) can cause death and dehydration (Coker 1919). Observational data suggests that THM beds may be exposed when flows drop below ~3.0 cfs, if flows are decreasing and nearing 3.0 cfs, CEHMM notifies the Service and the NMDGF allowing them to take appropriate measures to protect the species.

Early in the program's implementation, the CCA/A program partners agreed the two existing gages did not provide sufficient information about flows within the occupied reach, and they determined that installation of additional gages should be a priority. In 2019, CEHMM, SLO, and the Service agreed to share the costs of installation and ongoing annual maintenance of two new USGS gages in the Black River. A Technical Working Group and the USGS collaborated to select the best locations for the new gages and opted to install one new gage at Harkey Crossing (USGS 08405400[3]) and the second gage below Blue Springs (USGS 08405350[2]) (Figure 6). The specific aim of this project is to continue to report low flow streamflow (less than 30.0 cfs) at the Black River below Blue Springs and at Harkey Crossing. The gage at Harkey Crossing also collects water quality parameters within the occupied reach, including temperature, dissolved oxygen, conductivity, and salinity. The addition of the two new gages allows the CCA/A program to develop a more comprehensive data set to monitor flows and understand how flow varies from upstream to downstream in the river and how water quality varies with stream discharge. The gages also help with calculations of the volume of water that would be needed, as well as approximately when it would be needed each year, to reduce threats to the species. These gages do not have a minimum flow requirement under the CCA/A.

[2] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405450
[3] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405400

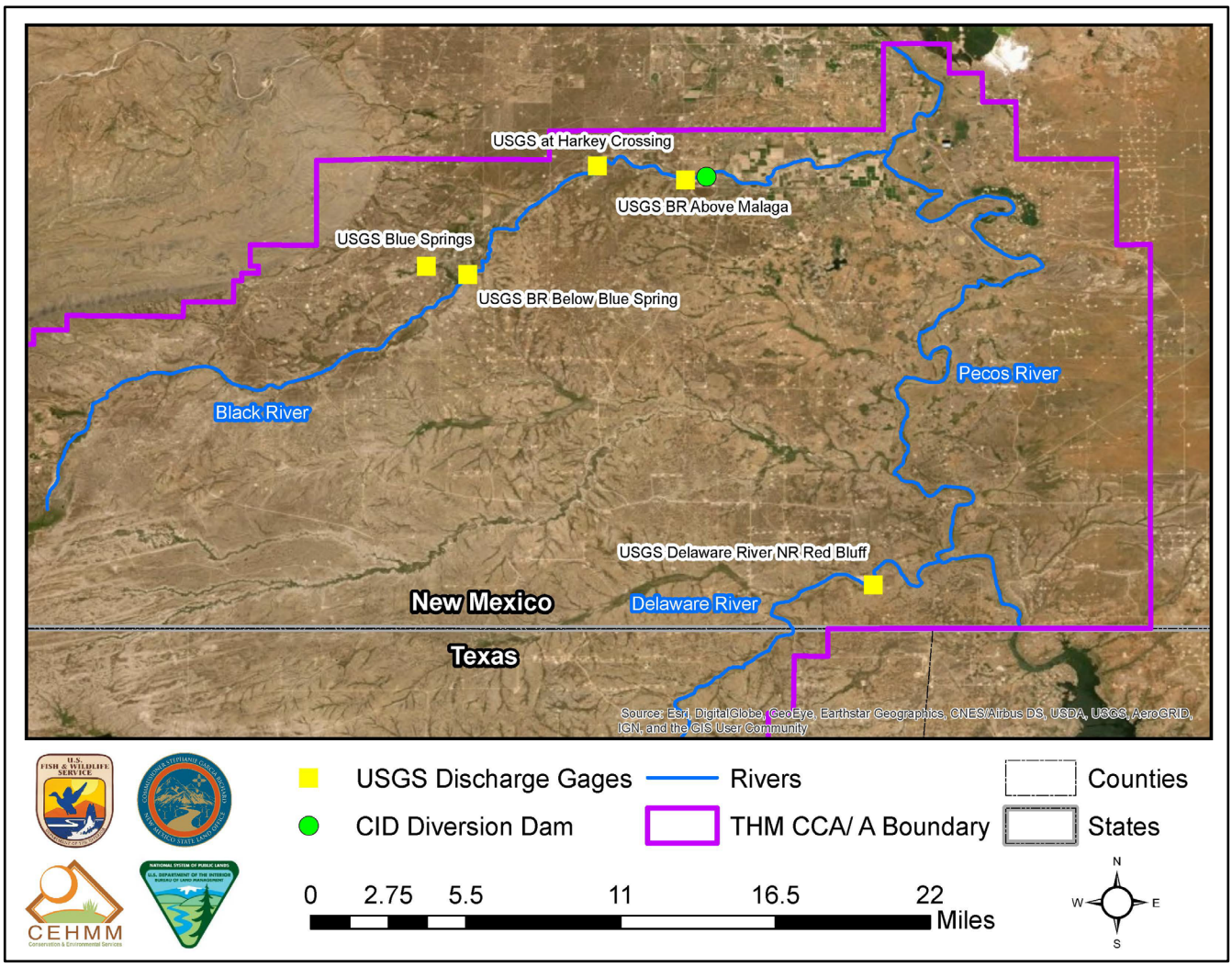


Figure 6. Map of USGS Stream Gage Locations Used by the CCA/A Program.

During 2022, the mean daily discharge (volume of flow) in the Black River at the Malaga gage was below the interim minimum flow threshold of 9.3 cfs for most of the year, except for a brief period in the summer months between July and September. Flows also dropped below 3.2 cfs between June and July (Figure 7a and 7b). Each month had at least twenty days during which flows were below 9.3 cfs (Figure 8).

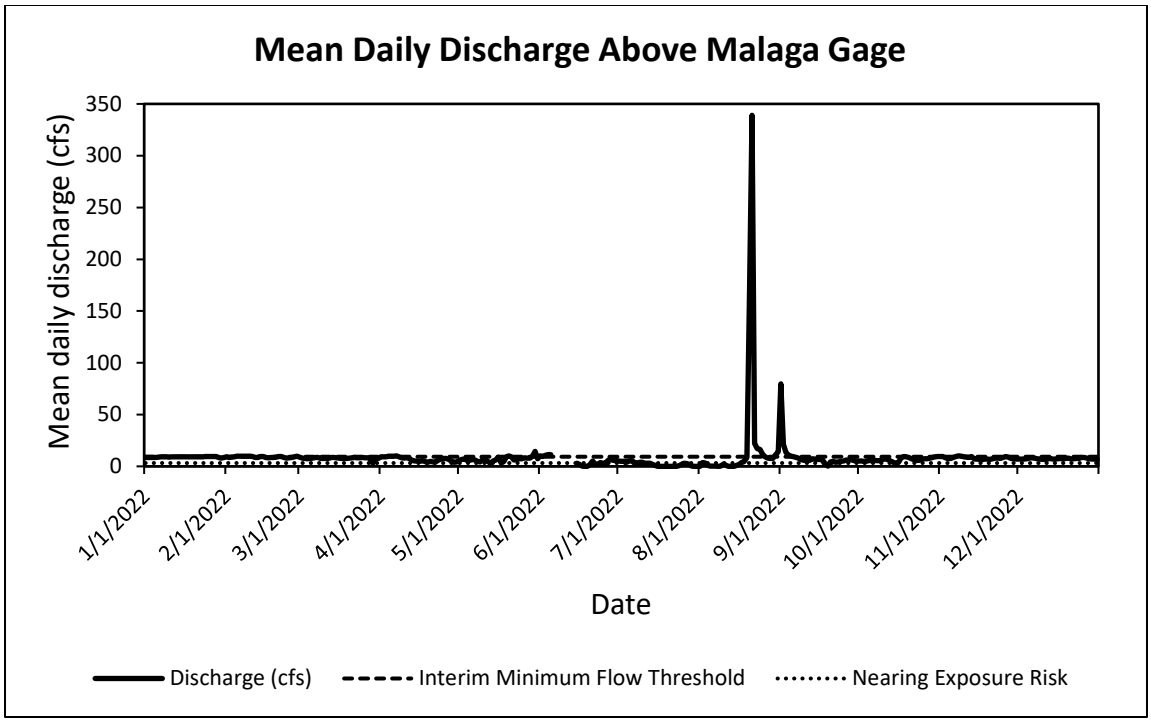


Figure 7a. Mean Daily Discharge (cfs) for the Black River Above Malaga Gage (USGS 08405500) from January 1, 2022 to December 31, 2022.

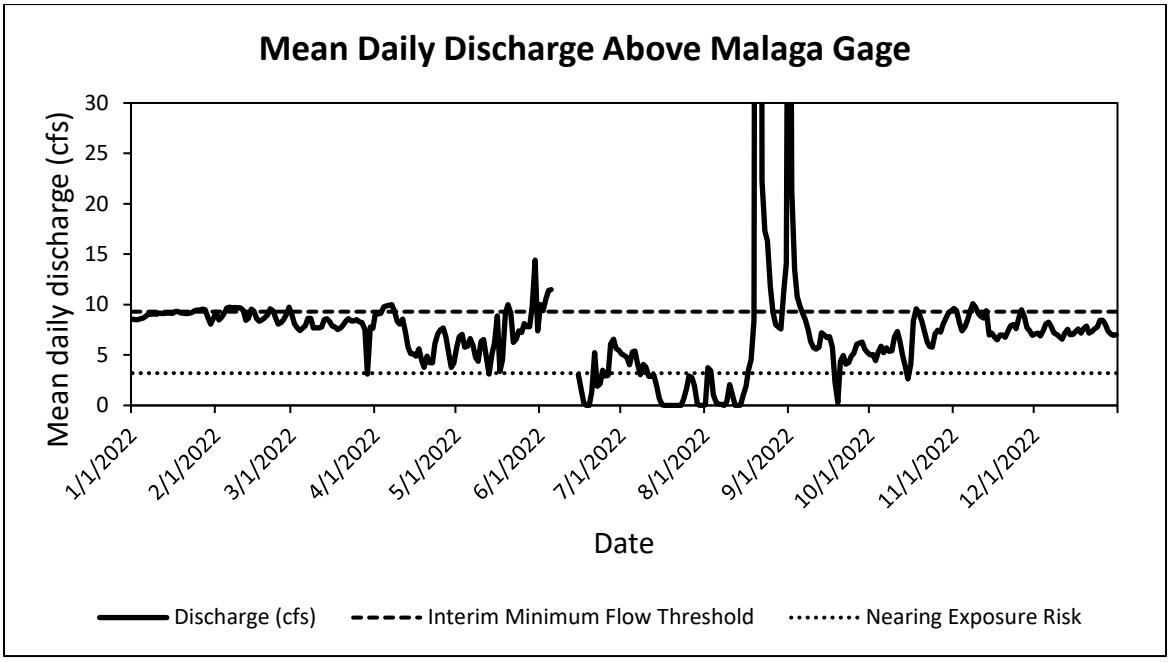


Figure 7b. Magnified View of Mean Daily Discharge (cfs) for the Black River Above Malaga Gage (USGS 08405500) from January 1, 2022 to December 31, 2022.

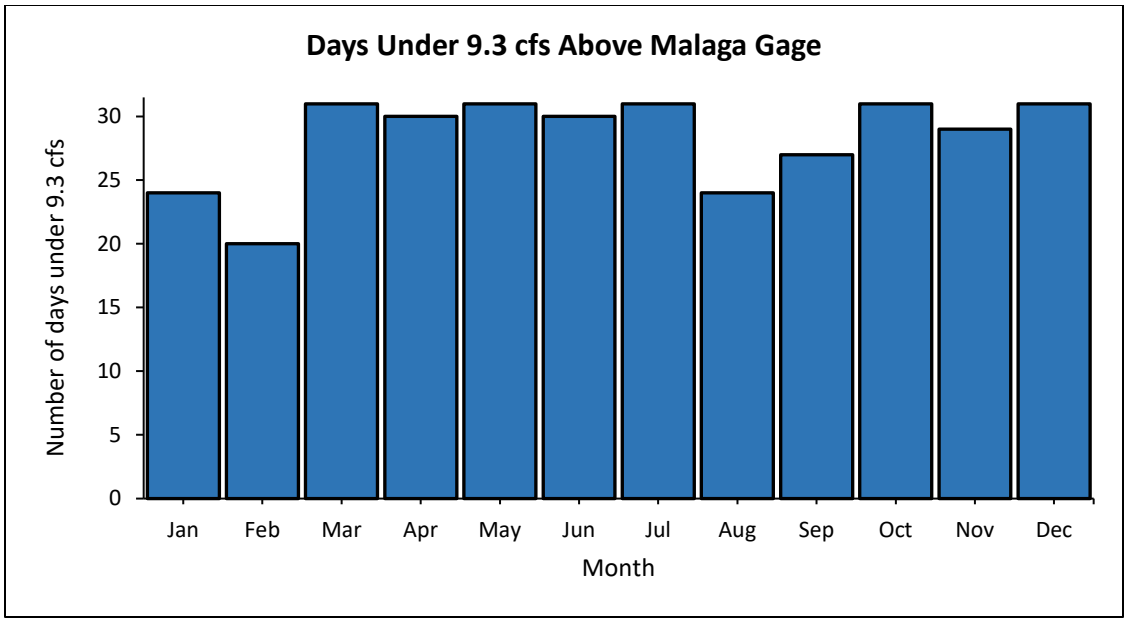


Figure 8. Number of Days Per Month with Flow Under 9.3 cfs.

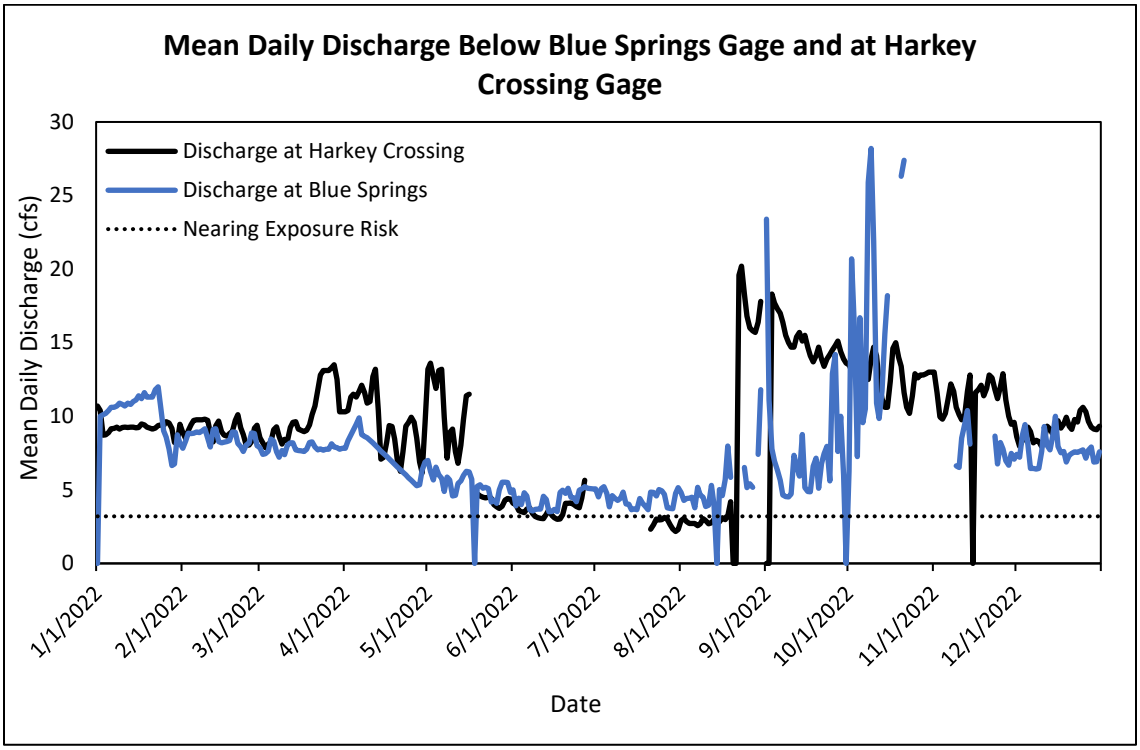


Figure 9. Mean Daily Discharge (cfs) for the Black River Below Blue Springs Gage USGS 08405350) and at Harkey Crossing Gage (USGS 08405400) from January 1, 2022 to December 31, 2022. These gages report low flow streamflow (less than 30 cfs) and do not have an established temporary minimum flow goal.
CEHMM monitors and records the provisional instantaneous USGS gage readings and calculates monthly

average, maximum, and minimum flow data (Table 2). The SLO is developing a stand-alone report that analyzes historical flows on the Black River and the volume of water that would have been required to maintain flows above the incremental thresholds, as well as the seasonal timing of when additional flows would have been needed. The SLO report will be provided to the Instream Flow Technical Working Group by October 2024.

Table 2: Monthly Average, Minimum Daily Average, and Maximum Stream Flow in the Black River Calculated by CEHMM using USGS Instantaneous Provisional Stream Gage Readings.

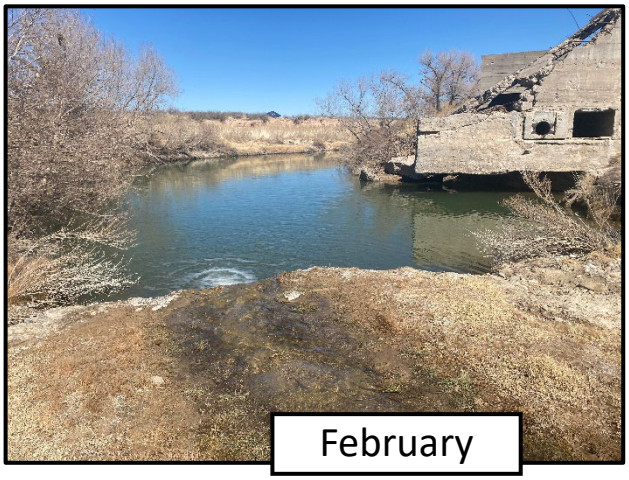
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Black River (USGS 08405500 BR Above Malaga)												
Average Flow	9.03	9.05	9.04	6.84	6.87	4.85	2.13	21.34	9.23	6.50	8.14	7.42
Min - Daily Average	**8.05**	**8.05**	**4.21**	**3.79**	**3.11**	**0.00**	**0.00**	**0.00**	**0.29**	**2.64**	**6.51**	**6.58**
Max - Daily Average	9.55	9.74	10.00	10.00	14.40	11.50	5.40	399.00	79.50	9.59	10.10	8.43
Black River (USGS 08405400 Black River at Harkey Crossing)												
Average Flow	11.04	10.20	9.79	8.98	9.37	6.22	7.09	3.48	13.45	17.04	18.39	8.62
Min - Daily Average	**9.91**	**0.00**	**9.36**	**6.62**	**6.48**	**10.50**	**2.18**	**3.46**	**16.20**	**18.00**	**9.59**	**8.07**
Max - Daily Average	11.60	11.90	12.80	11.20	14.00	12.20	11.10	8.88	17.10	18.70	20.20	9.59
Black River (USGS 08405350 Black River Below Blue Springs)												
Average Flow	11.08	8.98	12.81	12.84	7.43	4.66	4.40	5.43	6.85	16.85	7.38	7.19
Min - Daily Average	**6.55**	**7.90**	**8.44**	**7.32**	**5.77**	**3.30**	**3.64**	**3.87**	**4.31**	**6.67**	**5.62**	**6.15**
Max - Daily Average	14.00	11.30	17.50	24.10	8.69	7.85	5.40	11.70	13.70	28.20	9.23	9.57

Delaware River Monitoring

The lack of flow in past years prompted CEHMM to start monitoring the flows of the Delaware River on a routine basis using a USGS gage (USGS 08408500[4]) and visual inspections. The Delaware River stopped flowing for 138 days in 2019, 240 days in 2020, 0 days in 2021, and 104 days in 2022. CEHMM personnel conducted 36 site visits in 2022 and took photographs to visually document flow. For this report, we selected a representative photo from each month to show typical flow conditions for that month. Flows in the Delaware (Figure 10) were lower in 2022 compared to 2021 (see 2021 annual report), though still higher than previous years when the river frequently had little to no flow (see 2019 and 2020 annual reports). Flood events occurred on the Delaware River in August and September 2022, preventing CEHMM's access to the photo point due to inundation of the site.

[4] https://waterdata.usgs.gov/nwis/uv?08408500


January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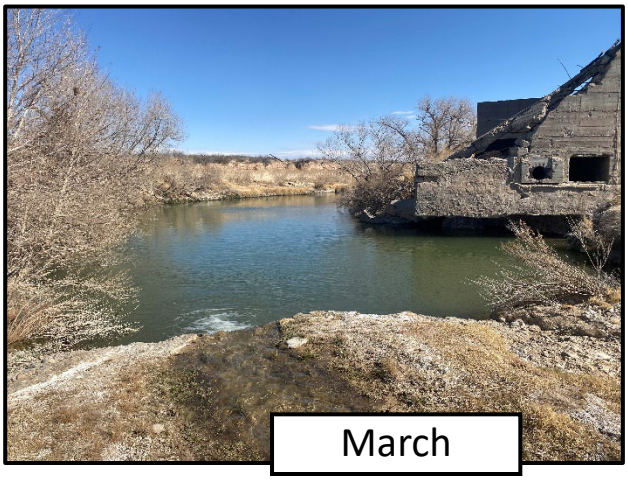
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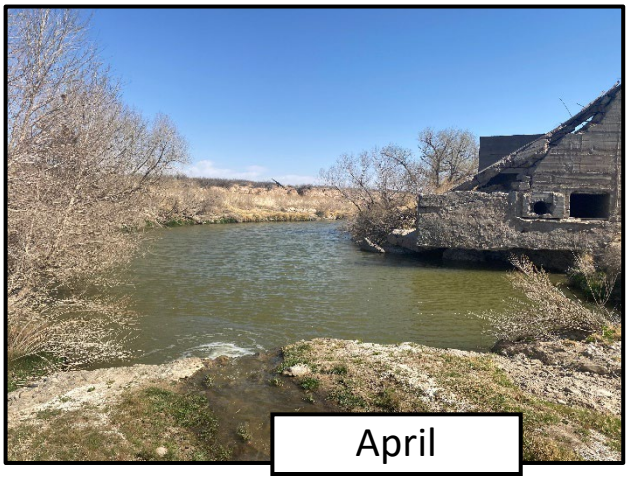
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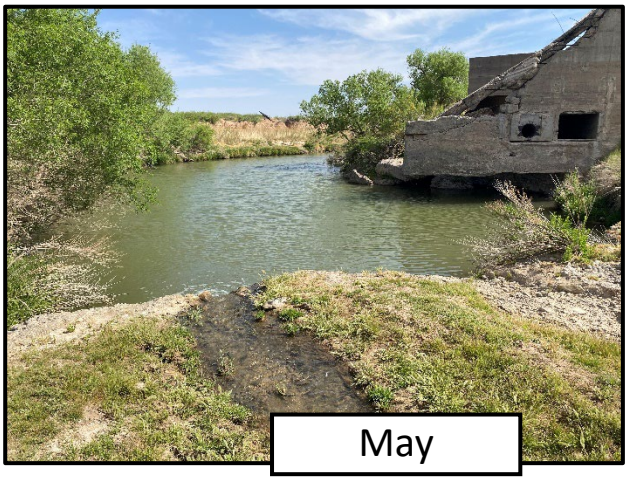
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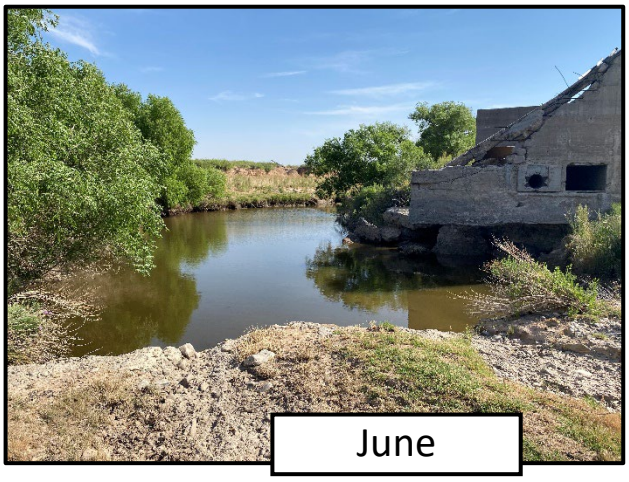

June

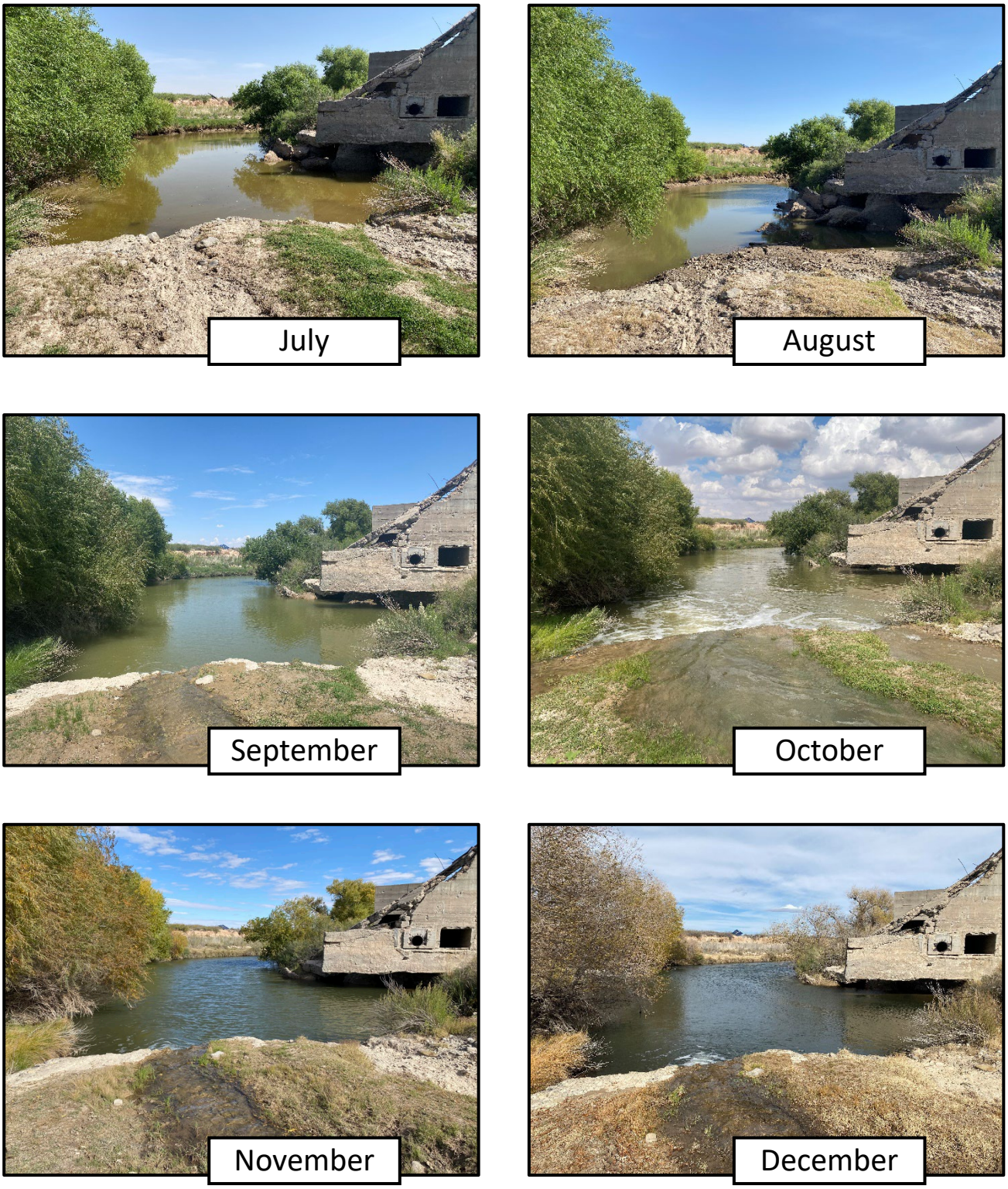


Figure 10. A Photographic Timeline of the Delaware River from January 2022 to December 2022.

VI. MITIGATION OF IMPACTS TO HABITAT

During 2022, CEHMM received a total of 112 notices of new surface disturbances from industry, with 364.66 acres of new surface disturbances documented. All of these disturbances took place in Management Zone D. SLO received a total of 12 notifications of new surface disturbances from Participants, totaling 188.55 acres of disturbance. All of these disturbances also took place in Management Zone D. CEHMM worked with the Participants to ensure all of the proper conservation measures were followed including Reasonable and Prudent Practices for Stabilization (RAPPS) and Spill Prevention Control and Countermeasure (SPCC). These practices included building water-bars, silt fences, culverts, erosion blankets, wattles, and reseeding.

Table 3: New Surface Disturbances in 2022

	Wells Pads	ROWs	Other Infrastructure	Total
CEHMM				
Notifications of New Surface Disturbances	38	56	18	112
Acres Disturbed	158.69	170.75	35.22	364.66
SLO				
Notifications of New Surface Disturbances	3	6	3	12
Acres Disturbed	15.51	22.12	150.92	188.55
COMBINED				
Notifications of New Surface Disturbances	41	62	21	124
Acres Disturbed	174.20	192.87	186.14	553.21

Habitat Conservation Fees

The CCA/As contain a provision that Habitat Conservation Fees will be adjusted once yearly by CEHMM for inflation or deflation. This adjustment is based on the percent increase or decrease in the most recent year's Consumer Price Index (CPI) published by the US Department of Labor, Bureau of Labor Statistics. When adjusting Habitat Conservation Fees, CEHMM refers to the annual inflation or deflation of CPI for All Urban consumers, U.S. City Average, All Items Less Food and Energy, not seasonally adjusted. Adjustments of the CPI occur on the January release date of the CPI for All Items Less Food and Energy. The All Items Less Food and Energy Index rose 5.7 percent in 2022. Details on how the adjustment is calculated can be found in Appendix E of the THM CCA/As. Appendix A of this annual report reflects the updated fees based on the January 2023 release of the CPI. These fees are the same for the THM CCA/A and SLO CCAA.

VII. COMPLIANCE MONITORING

The CCA/As require CEHMM and SLO to submit an annual compliance verification to the Service for each enrolled Participant. CEHMM performed the compliance monitoring for all of the CCA/As. In 2022, CEHMM's CCA/A compliance monitoring included inspection for failure to submit new surface disturbances and inspection for SPCC or RAPPS compliance, if applicable. CEHMM performed field surveys and also utilized New Mexico Oil Conservation Division (NMOCD) data and BLM right-of-way data.

VIII. AWARDED GRANTS

Sensor Array Study – In 2021, CEHMM proposed a project to the NFWF to establish a sensor array within the occupied reach of the Black River in southeastern New Mexico. The NFWF awarded the grant in 2022. This funding requires an in-kind matching contribution of $197,227.80, which was approved by both the Implementation Committee and Executive Committee. In September, CEHMM staff initiated this project through the installation of data loggers. To do so, staff selected three pools within the occupied range of the Black River. One dissolved oxygen and temperature logger, two pressure and temperature loggers, and one barometric reference logger were installed for each pool. These water quality data loggers will allow CEHMM to monitor and better understand the water quality conditions endured by the endangered THM. Through this, CEHMM will be able to further monitor and gain data to determine if, when, and for what period of time the THMs are enduring intolerable environmental conditions. The results of this data collection are expected to provide key insights to the environmental gradients among microhabitats, especially as we prepare for further climate-driven variation.

Environmental Education Exhibit – In April 2022, CEHMM submitted a proposal to the Carlsbad Community Foundation for the Benjamin P. Duke Memorial Grant to fund the creation of environmental education exhibits. The Carlsbad Community Foundation awarded the grant in June of 2022. This funding requires an in-kind contribution from the CCA/A program for up to $5,000, which was approved by both the Implementation Committee and the Executive Committee. The environmental exhibits will address aquatic species of concern in the lower Pecos River Drainage, educating the public and fostering knowledge and appreciation of the species, ultimately promoting the well-being of wildlife and their habitats. CEHMM met with the BLM to discuss the placement of educational exhibits at Cottonwood Day Use Area and began working on sign development. The exhibits will be finalized and installed in 2023.

CEHMM/SLO Instream Flow Program Initiative for the Texas Hornshell Mussel – In 2020, CEHMM and SLO partnered on a proposal to the NFWF to fund the development of an instream flow program to protect the endangered THM and other at-risk species in the Black and Delaware rivers. The NFWF awarded the grant in 2021. This funding requires an in-kind matching contribution from the CCA/A program, and in 2021, the Executive Committee set aside $250,000.00 for the match. Some or all of the match is being provided through in-kind contributions from SLO and CEHMM, but the set-aside amount ensures the matching fund requirement is met. The Executive Committee also approved issuance of a contract with a consulting firm that specializes in the development of market-based instream flow programs. The consultant is facilitating a technical working group and assisting with development of the pilot instream flow program.

The overall objective of the initiative is to provide instream flow for the THM in the Black and Delaware rivers. This may be achieved through the purchase or lease of water rights, or through alternative mechanisms such as forbearance agreements or strategies that make water available for instream flow during otherwise dry periods or when high flows are needed for life history requirements. The first expected outcome of the grant will be the execution of one or more short-term (3-5 year) agreements. At a minimum, these agreements will facilitate sufficient flow in the Black River to prevent the existing Texas hornshell population from being extirpated by lack of water. In the meantime, long-term solutions will be developed. The second expected outcome of the project will be the development of a framework for a long-term plan and budget for maintaining stream flows in the Black and Delaware rivers. The framework will include multiple options such as outright purchase of water rights, long-term forbearance agreements, or other mechanisms to reduce diversion from the rivers.

In 2022, AMP Insights worked with CEHMM and SLO to convene the Instream Flow Technical Working Group and hold the kick-off meeting for the Instream Flow Project. The meeting consisted of introductions, a project overview, the presentation of water transaction and instream flow background information, a discussion of data gaps and needs for the Black River, and general discussions regarding the overall project. AMP Insights also worked with CEHMM, SLO, and the Instream Flow Technical Working Group to develop an Initial Needs and Conditions (ICNA) document for the Black River. The ICNA provides the starting point for program design by analyzing existing demographic, economic, legal, policy, and hydrologic conditions and other factors that will be critical in making decisions about how to develop and operate an instream flow program. Additionally, AMP Insights worked with CEHMM, SLO, and the Instream Flow Technical Working Group to develop a Preliminary Design document for the Black River. The Preliminary Design provides a starting point for programmatic actions to support an instream flow program. The Preliminary Design also provides guidance on possible pilot transactions that could be tested in 2022 to inform development of a final program design. In November 2022, AMP Insights visited the CEHMM Carlsbad office for a site tour of the Black River and Delaware River Basins. This provided further understanding of the landscape and water diversion effects on river flows which will help to construct the Final Water Transaction Program Design.

Rio Grande Cooter Research on Delaware River – CEHMM, the Service, the NMDGF, and Eastern New Mexico University (ENMU) partnered on a proposal to survey for Rio Grande River Cooter (*Pseudemys gorzugi*) in at least three unique locations on the Delaware River, with a high intensity trap effort that is comparable to the recent surveys on the Black River. CEHMM, with approval from the Implementation Committee and Executive Committee, is contributing $20,000 for the proposed research which leverages a productive collaborative team who will be examining the river to understand the current occurrence and population composition at one of the least surveyed sites of its assumed distribution. The product of the proposed work will provide much needed information on species distribution and habitat preferences, which are an essential part of implementing sound management practices for species protection. This grant was originally proposed in 2021 and was awarded by the NFWF in May of 2022. Due to personnel issues, ENMU requested an extension on the grant and was required to resubmit the grant proposal to the NFWF in the fall of 2022. ENMU is expected to begin work on this grant in 2023.

IX. FUNDED OR COMPLETED PROJECTS

Enrollees, universities, government agencies, and others may submit project proposals to the Implementation Committee for funding consideration. CEHMM personnel work closely with enrollees to develop project proposals. The Implementation Committee, which prioritizes each proposal using evaluation criteria developed by the team (Appendix B), includes biologists from CEHMM, the Service, the BLM, SLO, Texas Parks and Wildlife Department (TPWD), and the NMDGF. The Implementation Committee meets quarterly, via telephone, video conferencing, or in person, and votes on proposed projects as they are received. A full list of projects funded by the CCA/As can be found in Table 4 and ongoing or completed projects in Appendixes C-E.

Table 4: CCA/A Projects *** Indicates project is complete**

Project	Date Funded	Completion Date	Amt Funded	Units	Description
*DM Erosion Control	9/19/19	8/21/19	$4,771.99	1 Acre	Installed silt fencing and filter sock to prevent erosion and sediment loading into Zone A of the Black River. This project was funded using CCAA funds.
*Black River Salt Cedar Spraying	9/19/19	12/5/20	$12,000.00	46 Acres	Hand treatment of salt cedar on the Black River from John D. Forehand crossing downriver. Hand treatment of salt cedar to allow native flora the opportunity to become reestablished. This project was completed by Carlsbad Soil and Water Conservation District.
River Flow Regime Requirements Study	9/19/20 amended 12/19/20	In-progress	$358,005.00	Black River	This project is both a research and technical assistance project. The research involves determining streamflow and in situ conditions necessary for the THM to survive and thrive in the Black River by examining lethal and sublethal thermal, hypoxia, and salinity thresholds and by collecting and assessing in-stream water-quality conditions.
*Black River (Rio Grande River Cooter Study)	12/1/19	1/31/21	$75,000.00	Riparian Area of Black River	CEHMM and ENMU are specifically seeking to: (1) identify nesting grounds at various stretches of the Black River, (2) confirm the peak of the nesting season, (3) understand the daily nesting activity (i.e., diurnal vs. nocturnal nesting behavior), (4) characterize nesting substrate, (5) identify nest distance from the water's edge, and (6) quantify nest success and nest predation.
*Black River Wetlands Action Plan	3/24/20	9/15/21	$4,669.81	Black River Watershed	The Wetlands Action Plan (WAP) is designed to specifically address wetland and riparian resources within the boundary of the Black River Watershed. The WAP goals are to assess wetlands/riparian resources in their watershed and to develop ways to protect, restore, and create local wetlands.
*Flume Draw Erosion Control	8/12/20	2/12/22	$2,912.18	3 Acres	CEHMM installed 16 erosion control fences at the headwaters of Flume Draw. The project area is located at the head waters of Flume Draw. In its entirety, this completed project will positively affect the whole drainage.

Project	Date Funded	Completion Date	Amt Funded	Units	Description
Environmental DNA Assay Development	8/12/20	In-progress	$22,480.00	eDNA microsatellite	This project is to develop environmental DNA (eDNA) assays for the THM, Gray Redhorse, and Blue Sucker, and to complete preliminary eDNA-based surveys for these species.
Davis Riparian Restoration	8/12/20	TBD	$4,194.91	10 Acres of Vegetation Restoration	Planting native trees and shrubs to help support bank stabilization and restore riparian function back to the habitat. The project area will encompass approximately 10 acres along the banks of the Black River.
*Beard Black River Erosion Control	8/12/20	6/24/21	$5,291.00	3 to 5 Acres	CEHMM installed 18 erosion control structures. These span areas with 1) highest erosion due to bare soils, 2) small indentations where water can speed up, and 3) areas where erosion is already occurring.
Bounds Riparian Restoration	8/12/20	TBD	$6,241.00	13 Acres of Vegetation Restoration	Planting native trees and shrubs to help support bank stabilization and restore riparian function back to the habitat. The project area will encompass approximately 13 acres along the banks of the Black River .
*USGS Stream Flow Gages	9/1/20	8/31/21	$77,005.00	2 USGS Gages in Black River	Operation, maintenance, and calibration of two USGS stream flow gages in the Black River.
Instream Flow Program	6/1/21 to 5/31/24	In-progress	$250,000.00	Optimal Flow and Habitat for Covered Species	Our long-term objective is to provide dedicated instream flow for the THM in the Black and Delaware rivers through purchase or lease of water rights, or through alternative mechanisms such as forbearance agreements.
USGS Stream Flow Gages	9/1/21	8/31/22	$77,005.00	2 USGS Gages in Black River	Operation, maintenance, and calibration of two USGS stream flow gages in the Black River.
Population Monitoring Program for THM	6/2/22 to 5/31/25	TBD	$149,987.00	Black River	Develop methods for estimating the size of the THM population in the Black River and employ these methods for long-term monitoring of this essential population of mussels.

X. CONSERVATION MEASURE VIOLATIONS

As the administrators of the CCA/A, CEHMM and SLO have the responsibility to provide formal notification to Participants if it is discovered that any of the conservation measures listed in their CIs and CPs are not being implemented. A Conservation Measure Violation (CMV) is a formal notification to Participants of the failure to implement conservation measure(s). It is similar to an Incident of Non-Compliance (INC) that the BLM issues to operators that do not meet the conditions of use on their respective operations. If a CMV is issued, CEHMM and SLO will work with Participants to remedy the violation in relation to the specific conservation measure that is not being applied. No fine or penalty is involved with a CMV; however, if three CMVs are issued in a 12-month period, Participants risk termination of their CPs and/or CIs. Due to diligent planning, consultation with CEHMM and SLO, and an understanding of the purpose of the CCA/A, no CMVs were issued in 2022. However, CEHMM worked with one enrollee to initiate corrective action to prevent issuance of a CMV.

XI. SIGNATURE

If you have any questions, please call Matt Ramey at (575)-885-3700.

Signed: Emily K Wirth Date: 4/6/2023

Emily K. Wirth, Executive Director
CEHMM

Signed: Lisa D Henne Date: 4/13/2023

Lisa J. Henne, Associate Counsel
New Mexico State Land Office

APPENDIX A – HABITAT CONSERVATION FEES FOR THE CALENDER YEAR 2023

Appendix E
Fee Structure – Revised 2/1/2023 for Inflation

The Participant may be responsible for paying an Enrollment Fee for the first three years this CCA and CP are in effect. If the Participant opts out of the CCA, the Participant is still responsible for these fees. The Participant shall pay the $30,000 Enrollment Fee for enrollment of facilities existing within the Covered Area if enrolling by the All Activities method of enrollment. The Participant may choose to enroll via the Parcel-by-Parcel method. In this case, the Participant shall pay a minimum Enrollment Fee of $3,000 for up to 1,000 acres. For all acreage above 1,000 acres, the Participant shall pay $3/acre. For either method of enrollment, the Participant shall make the first payment of Enrollment Fees at the time of enrollment. The Participant shall pay the second and third on the first and second anniversaries of the CCA effective date. If the Participant so chooses, the Participant may pay all three Enrollment Fees at the time of enrollment. Enrollment Fees will not be required after the initial three-year period.

The Habitat Conservation Fee for New Surface Disturbance associated with oil and gas development activities will be calculated using the following scales. The scales also apply to third parties doing work for the Participant either on or off the Participant's Enrolled Lands, regardless of who constructs or operates the associated facilities. The Participant may prepay Habitat Conservation Fees at any time at their discretion. The Participant must notify CEHMM prior to conducting any surface disturbing activities associated with this CP on or off the Enrolled Lands either by the Participant or third-party subcontractors. Management zone of the New Surface Disturbance is determined by the location of the activity being developed, not actual habitat found on site.

All Habitat Conservation Fees will be adjusted once yearly by CEHMM to account for inflation or deflation. The term "Base Habitat Conservation Fee" shall refer to the values of the Habitat Conservation Fees set forth in this Exhibit. For purposes of this section, the term "CPI-U" shall refer to the Consumer Price Index for All Urban Consumers, U.S. City Average, all items less food and energy (base 1982-84=100), not seasonally adjusted, as published by the U.S. Department of Labor, Bureau of Labor Statistics. The Maximum Annual Inflation Increase shall be based on the percent increase between the annual average CPI-U for the calendar year that precedes the date of the adjustment ("Current CPI-U") and the annual average CPI-U for calendar year 2016 ("Base CPI-U"). The Maximum Annual Inflation Increase shall be calculated as follows:

Maximum Annual Inflation Increase =

Base Habitat Conservation Fee x ((Current CPI-U – Base CPI-U) / Base CPI-U))

Increases, if any, shall occur on the January release date of the CPI-U. The Maximum Annual Inflation Increase will reflect the most recent revision to the annual average Current CPI-U, if any. CEHMM will send Participants a notification, both electronically and by mail, each year at the time the fees are adjusted.

If the annual average CPI-U is unavailable for a calendar year, no increases will be made. If the CPI-U is discontinued entirely or unavailable for a period longer than two calendar years, CEHMM will consult with the Participant to select an appropriate alternative index.

1) New Well Location Fees[1]

Management Zone	Conservation Fee
Zone A	Not applicable
Zone B	$23,759.73/location
Zone C	$11,879.86/location
Zone D	$2,969.96/location

[1.] Includes a single well pad no larger than 3 acres, multi-well pad no larger than 5 acres, and associated access road not to exceed 1 acre. Anything larger will be considered New Surface Development Fees described below. If any portion of the project falls into a higher management zone, the charge incurred will be that of the higher management zone.

2) New Surface Development Fees

For other New Surface Disturbances associated with Enrolled Lands, but not directly attributable to a new well pad[2] and associated road, including but not limited to pipelines, frac ponds, electric lines, pits, etc. the Habitat Conservation Fee will be based on the following scale:

Management Zone	Conservation Fee[3]
Zone A	Not applicable
Zone B	$8,909.90/acre
Zone C	$2,969.96/acre
Zone D	$1,187.99/acre

[2.] Co-located wells that require an increase in the size of the existing pad will be assessed by new acres disturbed.

[3.] These Conservation Fees are based on the following figures. No additional amounts are owed beyond the amount of the Conservation Fees:

Lease of Water Rights……10-acre feet = $5,000-$10,000
Purchase of Water Rights……1-acre foot = $5,500-$10,000
Habitat Restoration (i.e., salt cedar treatment) ……4 acres = $10,000
Caliche Removal……2-3 acres = $10,000
Reseeding……1 acre = $1,000
Rebuilding Water Crossings……Undeterminable at this time

Note: All acreage calculations will be rounded up to the next whole acre, if over 0.5 acres.

New operations on previously disturbed land (e.g., co-located new well on an existing pad or new pipeline in an existing corridor, etc.) will incur no additional Habitat Conservation Fee, unless the area to be re-disturbed has been reseeded and/or reclaimed as part of reclamation. Fees will also be assessed for any new acreage disturbed.

CEHMM will calculate areas of New Surface Disturbances based on information received and/or on-the-ground observations. Should the Participant disagree with CEHMM's calculation of the area of New Surface Disturbance, the Participant has the right to challenge the estimate, provide supporting data, and meet with CEHMM and/or

the FWS, if necessary. CEHMM and the FWS, if participating, will have the responsibility for the final determination of the area of New Surface Disturbance.

The Habitat Conservation Fee for above-ground powerlines will be calculated using the above scale for New Surface Development. The acreage of New Surface Disturbance will be based on information found in the OCD and SLO New Surface Disturbance activities approval document provided by the Participant to CEHMM.

If New Surface Disturbance falls within two or more management zones, the amount of the Habitat Conservation Fee will reflect the amount of the New Surface Disturbance within each management zone.

3) Fees Associated with New Seismic Data Acquisition

Management Zone	3D Survey Conservation Fee	2D Survey Conservation Fee
Zone A	$11.89/acre	$237.59/linear mile*
Zone B	$8.91/acre	$178.20/linear mile*
Zone C	$5.94/acre	$118.80/linear mile*
Zone D	$1.79/acre	$29.71/linear mile*

*or any fraction thereof

The acquisition of seismic data on enrolled parcels may also disturb the surface of other land not enrolled in this CP. The Habitat Conservation Fee calculated for seismic activity includes disturbances occurring on both enrolled and non-enrolled land.

Routine Production Operations

Routine production operations are not considered New Surface Disturbance and will not create the obligations to pay a Habitat Conservation Fee. Routine production operations are those which do not require an agency permit or approval, and those operations that require an agency approval but do not disturb the surface.

APPENDIX B – PROJECT EVALUATION CRITERIA

Research & Monitoring Evaluation Criteria				
Participants Name:				
Project Name:		Ranking Criteria		
Evaluator Name:		Points (1 - 10)	Weighting	Total
30%	Does the proposal benefit the Texas Hornshell Mussel?		7.0%	0
	Does the proposal benefit the Other Covered Species?		7.0%	0
	Is the proposed work a component of an overall research and monitoring plan or objective?		10.0%	0
11%	Which management zone does this project apply too?(Zone A,B, C, or D) Zone A - 10 Points, Zone B - 8 Points, Zone C - 5 Points, Zone D - 2 Points		7.0%	0
	Are Texas Hornshell or other Covered Species surveys needed.		2.0%	0
	Does the proposal provide a map showing the area of work in relation to known locations of Texas Hornshell and the other Covered Species?		1.0%	0
31%	Will the proposed work provide vital information required for the Texas Hornshell and other Covered Species		8.0%	0
	Will the proposed work provide information about multiple parameters needed for the development of a flow regime?		10.0%	0
	Does the proposed work focus on addressing gaps in existing scientific knowledge?		8.0%	0
	Does the proposal define a clear product or outcome?		5.0%	0
	Does the proposal meet all of the proposal guidelines?		7.0%	0
23%	Does the proposal include a timeline in which the work will be completed?		3.0%	0
	Does the proposal include a detailed budget?		5.0%	0
	Is there a Private, Federal or State cost share or match?		3.0%	0
	Does the proposal include partnership or coordination with government agencies or NGO's? (E.g. non-profit, international originations, etc.)		7.0%	0
	What is the likelihood of project completion within the proposed timeframe and budget?		5.0%	0
5%	Does the qualifications of the team meet the needed qualifications to complete the proposed work?		5.0%	0
100%	Total:	0	100.0%	0
Does this project warrant funding? Yes or No. Explain.				
Explain projects benefit torwards The Net Conservation Gain-				

Scoring Legend:	
10	Fully Accomplished
7	Mostly Accomplished
3	Partially Accomplished
0	Not Usable

APPENDIX C – COMPLETED PROJECTS IN 2022

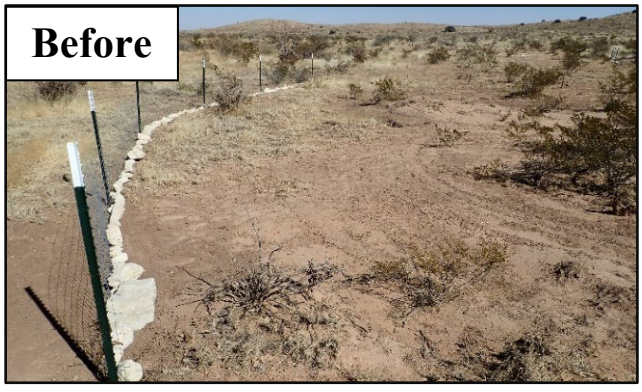
USGS Stream Flow Gages

Early in the CCA/A program's implementation, the CCA/A program partners agreed the two existing gages in the Black River did not provide sufficient information about flows within the occupied reach, and they determined that installation of additional gages should be a priority. In 2019, CEHMM, SLO, and the Service committed to share the installation and ongoing annual maintenance costs for two new USGS gages in the Black River. The Technical Working Group and USGS collaborated to select the best locations for the new gages and opted to install one new gage at Harkey Crossing (USGS 08405400[5]) and the second gage below Blue Springs (USGS 08405350[2]). The specific aim of this project is to continue to report low flow streamflow (less than 3.0 cfs) at the Black River below Blue Springs and at Harkey Crossing.

The gage at Harkey Crossing also collects water quality parameters within the occupied reach, including temperature, dissolved oxygen, conductivity, and salinity. The addition of the two new gages allows the CCA/A program to develop a more comprehensive data set to monitor flows and understand how flow varies from upstream to downstream in the river and how water quality varies with stream discharge. The gages also help with calculations of the volume of water that would be needed, as well as approximately when it would be needed each year, to reduce threats to the species. On August 3, 2022, CEHMM, with approval of the Implementation Committee and the Executive Committee, continued its funding of $77,005.00 through the CCA/As for the maintenance and calibration of the two additional USGS stream gages.

Flume Draw Erosion Control

Originally approved and funded on August 12, 2020, for $2,912.18, this erosion control project was started on October 13, 2021 and completed on February 12, 2022. Sixteen erosion control structures were installed at the head waters of Flume Draw. The structures will reduce sedimentation of the Black River and will promote vegetative growth in a highly eroded ephemeral drainage. V-fence was cut to a height of 36 inches and bent into an L-shape with the bottom 18 inches being buried. Natural woody substrate and rock was lined on the bottom of the fence to create a porous dam.



[2] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405450
[5] https://waterdata.usgs.gov/nm/nwis/uv/?site_no=08405400

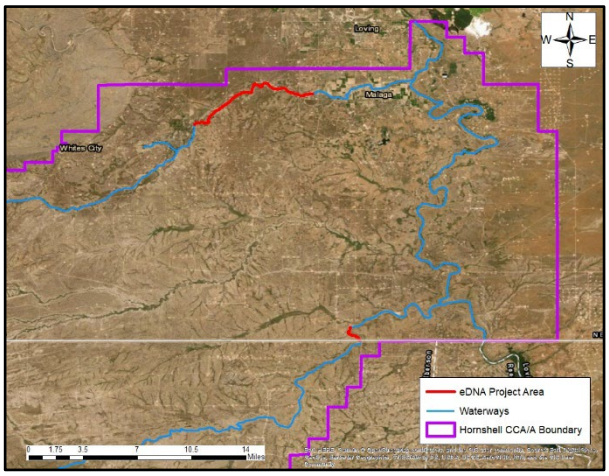
APPENDIX D – PROJECTS IN PROGRESS 2022

River Flow Regime Requirements Study

Lab facility at TAMU University.

This project is currently ongoing. Due to Covid-related delays in data collection and analysis, the Service extended the deadline for completion from October 2022 to October 2024. This study was approved and funded in October of 2020 for $358,005.00. A collaborative team of researchers from Miami, Texas A&M, and Auburn universities is conducting a series of laboratory experiments and field monitoring studies to examine lethal and sublethal effects of thermal and hypoxia stress on various life history stages of the THM. Relationships between flow, temperature, and dissolved oxygen in the Black River are also being studied. Results will be used to identify flow regimes most likely to induce mortality and/or thermal stress in the THM. Combined with historical datasets, results will be used by CEHMM, SLO, and the Service. CEHMM will determine whether frequency of stressful periods has been increasing over time, and the Service will make specific flow recommendations for Texas hornshell populations in the Black River.

Environmental DNA Assay Development for Texas Hornshell and Host Fishes



Research area for eDNA study.

Originally approved and funded on August 12, 2020 for $22,480, the eDNA research project proposed by the United States Department of Agriculture (USDA), U.S. Forest Service Rocky Mountain Research Station, and NMDGF began in January 2022. eDNA refers to DNA that can be extracted from environmental samples, such as water. The goal of this project is to develop an eDNA assay for the THM (*Popenaias popeii*), gray redhorse (*Moxostoma congestum*), and blue sucker (*Cycleptus elongatus*). This project will provide an additional tool for determining the presence, absence, and distribution of the target species. Using eDNA techniques to evaluate distribution of these covered species will be more efficient than traditional survey methods. Contracts have been developed and work on this project is expected to be completed in June 2023.

Instream Flow Program

This project was originally approved and funded on June 1, 2021 for $250,000. Our long-term objective is to provide dedicated instream flow for the Texas hornshell in the Black and Delaware rivers. This may be accomplished through the purchase or lease of water rights, or through alternative mechanisms such as forbearance agreements for rivers.

Population Monitoring Program for the Texas Hornshell Mussel

This project was proposed in March of 2022 and funded by the Implementation Committee (IC) and Executive Committee (EC) in June 2022 for $149,987. The proposal aims to develop methods for estimating the THM population in the Black River and to employ these methods for long-term monitoring. Miami University and the NMDGF will conduct a robust design mark-recapture study to estimate survival and probability of recapture of mussels from two microhabitats. This project will utilize data from censuses in 2011-2012 and 2018-2019 to conduct computer simulation studies to identify the best methods for estimating population size of the THM in the Black River. Based on these studies, Miami University and the NMDGF will implement the first two years of a long-term population monitoring program that can regularly estimate the size of the THM population in the Black River, while detecting significant changes in population size over time.

APPENDIX E – FUTURE PROJECTS

Davis and Bounds Riparian Restoration Projects

CEHMM plans to restore 23 acres of riparian habitat across two different enrolled landowners' properties during 2023. The Implementation Committee and the Executive Committee have approved funding of $10,435.91 for the two restoration projects. The restoration will utilize the planting of native trees and shrubs to help support bank stabilization and restore riparian function back to the habitat. Bank stabilization will aid in preventing sedimentation into the Black River which is known to be one of the biggest threats to the THM. The overall restoration of riparian function will not only benefit the hornshell but all species that are utilizing the improved habitat.

CEHMM employees planting trees at Cottonwood Day-Use Area. This work is similar to that proposed in the Davis and Bounds Riparian Restoration Projects.