

MEMORANDUM

To/Attention	Anne Burnham, Parsons	Date	June 7, 2021
From	Kurt Jirka, EcoLogic	Project No	451879
Subject	Rochester Gas & Electric Corporation West Station Site No. 828205 (formerly V00593), Freshwater Mussel Habitat Assessment Protocol Genesee River, Rochester, Monroe County New York		

This memorandum provides a general overview of the Rochester Gas & Electric Corporation (RG&E) West Station Remediation project to provide context regarding the need for a mussel habitat assessment. The memo will outline species ranked as S1¹ or S2² by the New York Natural Heritage Program (NYNHP) as well as their habitat preferences, and methodologies for conducting habitat assessment. This habitat assessment will be used to determine the potential for suitable habitat within the study area for S1 and S2 ranked freshwater mussel species that potentially occur within the Genesee River, and determine the need for a formal mussel survey prior to the commencement of construction activities.

Introduction

Parsons Corporation (Parsons) was retained to develop the design of the remediation of the RG&E West Station Site No. 828205 (formerly V00593). The Site was formerly occupied by a manufactured gas plant (MGP) from 1910 to 1952 and used as part of a large coal-fired power generating facility from 1952 to 1999. The majority of Site structures have been previously demolished except for several small structures in the northern portion of the project area. The remedy is being implemented in accordance with the requirements of a Multi-Site Order on Consent (Index# CO-8-20180517-48) governed by the New York State Superfund Program with oversight by the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation. To complete remediation of the Site, in-water work will include installation of river diversion and turbidity barriers, dredging, and excavation. These works have potential to impact aquatic species within the Genesee River including freshwater mussels.

To ensure that populations of rare mussels are not impacted or harmed by the required Site activities, a mussel habitat survey will be conducted to identify any potential habitat within the proposed project area and assess the need for a formal mussel survey prior to commencement of construction activities.

¹ Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

² Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

Study Area

The Site project area is located along the west bank of the Genesee River at Falls Street in the downtown core of the City of Rochester, Monroe County, New York. The Site is an approximately rectangular 5.5-acre area located in the Genesee River Gorge along the west bank of the Genesee River, about ¼ miles northwest of the Genesee River High Falls (43.163146 -77.618504). The mussel habitat evaluation will occur in the area immediately adjacent to the west shore and include the area of stream bed disturbance and 10-meter wide upstream, downstream, and lateral buffers (**Figure 1**).

Purpose

A mussel habitat assessment survey will be completed to assess the potential for habitat that may support freshwater mussel species ranked as S1 or S2 by the NYNHP to be impacted by proposed project work during the upcoming remedial action. The mussel habitat assessment will be used to:

- Evaluate the potential of habitat present within the proposed project area to support S1 or S2 freshwater mussel species, including green floater (*Lasmigona subviridis*, listed as threatened in New York State); and
- Determine whether the proposed project will adversely impact the habitat of S1 or S2 freshwater mussel species.

Mussel Habitat Requirements

Consultation with the NYSDEC identified that a mussel habitat assessment would be required to identify potential suitable habitat for any S1 or S2 species within the project area. The S1 and S2 species which are present within the Lower Genesee River and may potentially also be present further upstream within the Genesee River include deertoe (*Truncilla truncate*), lilliput (*Toxolasma parvum*), threeridge (*Amblema plicata*), Wabash pigtoe (*Fusconaia flava*), pink heelsplitter (*Potamilus alatus*), and fragile papershell (*Leptodea fragilis*). Additional S1 and S2 species which may be present within the Genesee River include black sandshell (*Ligumia recta*), eastern pondmussel (*Ligumia nasuta*), paper pondshell (*Utterbackia imbecillis*), pocketbook (*Lampsilis ovata*), and rainbow (*Villosa iris*).

Although not confirmed or reported in the immediate vicinity of the project area, green floater is an S1S2 species listed as Threatened in New York State and has been reported in upstream reaches of the Genesee River. **Table 1** provides a summary of S1 and S2 species potentially present within the Genesee River drainage basin.

Green Floater – Inhabits small to medium size streams and rivers. It can be found in a variety of different flowing-water systems but is more likely to be found where there are stable, fine substrate particles including gravel, sand, and silt. It is intolerant of strong currents and often is found in slow runs and eddies with gravel and sand substrate, often near stream margins. Green Floater are one of the few known mussel species that can complete their life cycle without a fish host, but their larvae have been shown to successfully metamorphose using mottled sculpin (*Cottus bairdii*), rock bass (*Ambloplites rupestris*), central stoneroller (*Campostoma anomalum*), blacknose dace (*Rhinichthys atratulus*), and margined madtom (*Noturus insignis*).

Deertoe – Prefers habitats within rivers with moderately swift current with firm mud, sand, and gravel substrates, and is occasionally found in small streams. Known fish host include freshwater drum (*Aplodinotus grunniens*) and sauger (*Sander canadense*).

Lilliput – Found in backwater areas of lower reaches of rivers, lakes, ponds and slower moving areas of streams and medium rivers. Typically found in sandy and muddy substrates or fine gravel. Fish hosts include green sunfish (*Lepomis cyanellus*), warmouth (*Lepomis gulosus*), orangespotted sunfish (*Lepomis humilis*), bluegill (*Lepomis macrochirus*), white crappie (*Pomoxis annularis*), and johnny darter (*Etheostoma nigrum*).

Threeridge – Found in small to large rivers with a wide variety of substrates including mud, sand, and gravel. Fish host species include black crappie (*Pomoxis nigromaculatus*), white crappie, largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), yellow perch (*Perca flavescens*), bluegill, green sunfish, and rock bass (*Ambloplites rupestris*).

Wabash Pigtoe – Prefers creeks, streams, and rivers with moderate current up to depths of 15 feet. Prefers stable and firm bottoms consisting of mud, coarse sand, and gravel but tolerates a variety of substrates. Identified fish hosts include creek chub (*Semotilus atromaculatus*) and silver shiner (*Notropis photogenis*).

Pink Heelsplitter – Inhabits medium to large rivers and lakes and is often found in mud, sand, and gravel substrates. The only known fish host is freshwater drum.

Fragile Papershell – Inhabits large streams, rivers, and lakes and uses a wide range of substrates from sandy mud to cobble. The only known fish host is freshwater drum.

Black Sandshell – Typically in large streams, rivers, and lakes. In rivers and streams usually in fast current areas including riffles and raceways. Preferred substrates include sandy mud, firm mud, coarse sand and gravel, and cobble. Known fish hosts include banded killifish (*Fundulus diaphanus*), white perch (*Morone americana*), central stoneroller (*Campostoma anomalum*), redbfin shiner (*Lythrurus umbratilis*), rosyface shiner (*Notropis rubellus*), Red-breast sunfish, green sunfish, longear sunfish, orangespotted sunfish, pumpkinseed, rock bass, largemouth bass, walleye (*Sander vitreum*), and yellow perch.

Eastern Pondmussel – Usually found in protected areas of lakes and ponds, in slackwater areas of rivers, slow moving streams, and in canals over a wide range of substrates but seems to prefer fine sand and mud. Usually found in depths ranging from 1 foot to 15 feet. Fish hosts are currently unknown.

Paper Pondshell - Usually found in ponds, lakes, or mud-bottomed pools and backwater areas of creeks and rivers. Known fish hosts include bluegill, green sunfish, pumpkinseed, warmouth, rock bass, dollar sunfish (*Lepomis marginatus*), longear sunfish (*Lepomis megalotis*), black crappie, and largemouth bass.

Pocketbook – Generalized in habitat preference, may be found in big rivers at depths of 15 to 20 feet and in small streams in less than 2 feet of water. Usually found in moderate to strong current with substrates of gravel and coarse sand with some silt and mud.

Rainbow – May occur in a broad range of habitats with substrates ranging from gravel to soft silt or clay within areas of low to strong current velocity. Is sometimes found along the edges of emergent vegetation beds. Identified fish hosts include, streamline chub (*Erimystax dissimilis*), greenside darter (*Etheostoma blennioides*), rainbow darter (*Etheostoma caeruleum*), Bluebreast Darter (*Etheostoma camurum*), green sunfish, striped shiner (*Luxilus chrysocephalus*), smallmouth bass (*Micropterus dolemieu*), largemouth bass, and yellow perch.

TABLE 1 – SUMMARY OF S1 AND S2 FRESHWATER MUSSEL SPECIES AND DISTRIBUTION

Species		Ranking		Listing		
Common Name	Scientific Name	State	Global	State	Federal	Genesee River Distribution
Green Floater	<i>Lasmigona subviridis</i>	S1S2	G3	THR	-	Confirmed in upper Genesee River
Fragile Papershell	<i>Leptodea fragilis</i>	S1S2	G5	-	-	Confirmed in Genesee River downstream of Lower Falls
Deertoe	<i>Truncilla truncata</i>	S1	G5	-	-	Confirmed in Genesee River downstream of Lower Falls
Lilliput	<i>Toxolasma parvum</i>	S1	G5	-	-	Confirmed in Genesee River downstream of Lower Falls
Paper Pondshell	<i>Utterbackia imbecillis</i>	S1	G5	-	-	Unknown in Genesee River, present in Lake Ontario drainage
Threeridge	<i>Amblema plicata</i>	S1	G5	-	-	Confirmed in Genesee River downstream of Lower Falls

Wabash Pigtoe	<i>Fusconaia flava</i>	S2	G5	-	-	Confirmed in Genesee River downstream of Lower Falls
Black Sandshell	<i>Ligumia recta</i>	S2	G4G5	-	-	Unknown in Genesee River, present in Lake Ontario drainage
Eastern Pondmussel	<i>Ligumia nasuta</i>	S2	G4	-	-	Unknown in Genesee River, present in Lake Ontario drainage
Pink Heelsplitter	<i>Potamilus alatus</i>	S2	G5	-	-	Confirmed in Genesee River downstream of Lower Falls
Pocketbook	<i>Lampsilis ovata</i>	S2S3	G5	-	-	Confirmed in Genesee River basin
Rainbow	<i>Villosa iris</i>	S2S3	G5Q	-	-	Unknown in Genesee River, present in Lake Ontario drainage

Methodology

The freshwater mussel habitat assessment will be completed to cover the portion of the Genesee River (i.e., in the riverbed outboard of the ordinary high water mark) associated with the project area, as well as those areas upstream and downstream of the project area with the potential to be impacted by project activities. The assessment area has been designed to encompass all areas which could be directly (dredging, excavation etc.) or indirectly (vegetation clearing etc.) impacted by project works. The assessment area will be delineated based on the criteria below:

- Assessment area will extend into the Genesee River 33 feet beyond the proposed eastern limit of direct work limits; and
- Assessment area will extend 33 feet downstream and 33 feet upstream of the proposed direct work limits.

Habitat assessment in areas less than 3 feet deep and with current velocity low enough to safely wade will be conducted by qualified biologists wading in the river viewing substrates and submerged habitat features with the use of underwater viewers and/or by probing the bottom with a rigid rod or by hand. Assessment in areas too deep to safely wade will be conducted by canoe. Bottom substrate in these areas will be determined by probing with a rigid pole or a sounding weight. A petite PONAR grab sampler may be used to spot-check the accuracy of substrate determinations made by other means. Substrate may not be characterized in areas that are too swift to safely wade or sample from an anchored canoe.

In addition to the habitat assessment, any live mussels or shells of dead mussels encountered during the field effort will be identified to species and enumerated. Determining the presence/absence of mussel in general and specific species is not part of this investigation, but any evidence of mussels found will be recorded and reported.

TIMING

Habitat assessments will be conducted in summer 2021 once flows and water levels associated with spring freshet have sufficiently receded to allow for sufficient observation of habitat features. Additionally, habitat assessments should be conducted under normal 'dry' conditions in absence of significant rainfall events to allow for improved water clarity and reduced water levels to facilitate observation of habitat features.

DESCRIPTION

The habitat assessment will provide a description of all habitats present to aid in analysis of the suitability of the habitat present to support S1 and S2 mussel species. Habitat characteristics collected will include the following:

- Substrate composition;
- Stream gradient and flow (approximate);
- Channel morphology (riffles, runs, pools);
- Stream dimensions (width, depth etc.);
- Water clarity;
- Other notable habitat features; and

- Photo documentation

Substrate analysis will consist of characterizing substrates throughout the project area using methods noted above. Substrate type will be visually classified based on particle size using the Wentworth scale (Wentworth 1922) and will be recorded as the percentage of silt, clay, organic, rubble, cobble, sand, boulder, or bedrock. Due to expected large coarse substrate in deeper areas, probing will be used to characterize substrate as soft, fine, or coarse material, or bedrock.

Representative photos of each habitat encountered will be collected during the survey to document all habitat types present. Photograph location and direction will be noted for all photographs supporting habitat types observed. Field maps will be created to identify habitat locations and notable habitat features.

Collected habitat data will be evaluated regarding habitat use and requirements of the S1 and S2 mussel species with potential to occur within the project area.

Reporting

Upon completion of the mussel habitat assessment survey, a report will be prepared documenting all elements of the habitat assessment including methodology, existing conditions, delineation of specific habitat areas, and an analysis of the potential for habitat in the project area to support S1 and S2 freshwater mussels identified by the NYNHP.

The report will include a description of the study area, location, and area surveyed. Existing condition descriptions will assess general habitat for mussels (substrate composition, flow and stream gradient, channel morphology [riffles, runs, pools], aquatic vegetation, etc.). The report will provide descriptions of suitable habitat for S1 and S2 mussel species that may occur in the project area as well as a determination of whether such habitat exists within the study area. A habitat map will be included within the report. The habitat map will be overlain on ortho imagery or satellite imagery with an indication of scale and will cover all portions of the study area. If suitable habitat for any of the potential S1 and S2 species is present, the area of such habitat will be demarcated on a map of the study area. A mussel distribution map will identify those locations where mussels or mussel shells were observed within the study area. In addition, the report will include a photographic record of the observed habitats and their features and representative mussels or mussel shells found.

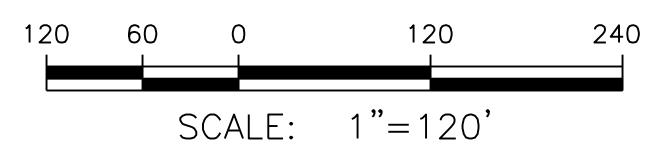
A photographic record of habitats observed during the survey will be included which will adequately display the study area and habitats present.

Conclusion

The habitat assessment will be used to determine the existence of suitable habitat within the study area for S1 and S2 ranked freshwater mussel species that may potentially occur within the project vicinity. Should suitable habitat be observed or identified during the habitat assessment, the need for a formal mussel survey prior to the commencement of construction activities will be determined in consultation with the NYSDEC.



- ORDINARY HIGH WATER MARK (OHWM)
 1.94 acres OHWM TO LOW
- 0.79 acres LOW TO 10m LINE
- APPROXIMATE LIMITS OF STREAMBED DISTURBANCE
- 10 METER BUFFER ZONE
- EXPOSED BEDROCK



RG&E West Station Former MGP Site Site No. 828205 (Formerly V00593) Rochester, NY
PROPOSED MUSSEL HABITAT SURVEY AREA
PARSONS
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Mr. Kurt Jirka has worked in the field of biological consulting since 1987, participating in aquatic studies with an emphasis on aquatic macroinvertebrates and fishery resources. He is a recognized expert on native freshwater mussels in New York State and is coauthor of the book *The Pearly Mussels of New York State* (Strayer and Jirka 1997). Mr. Jirka is also recognized as a Certified Fisheries Professional by the American Fisheries Society. He has supervised/participated in freshwater mussel investigations throughout New York State, as well as in Maine, West Virginia, and Virginia and has been responsible for associated analysis of data and preparation of reports.

EDUCATION

- M.S. 1986, Virginia Polytechnic Institute and State University, Fisheries Science
Thesis Research: *Reproductive biology and comparative growth rates of freshwater mussel species in the New and Greenbrier rivers, Virginia and West Virginia.*
- B.S. 1982, University of Florida, Wildlife Ecology

PERTINENT EXPERIENCE/QUALIFICATIONS

Conducted field surveys for native freshwater mussels at well over 100 sites in New York State. Nearly all of these surveys were focused on determining the presence/absence of threatened or endangered species, documenting habitat conditions that supported these species, salvaging mussels from project impact zones, and/or identifying strategies to protect populations of threatened or endangered mussel species from project-specific impacts. Some projects included salvaging and relocating threatened or endangered mussel species (both New York State and federally listed) from project impact zones to appropriate habitat outside of impact zones. Some of these efforts also included follow-up monitoring of transplanted mussels to determine short-term and long-term survival.

EXAMPLES OF MUSSEL INVESTIGATIONS

Freshwater Mussel Survey of the Imperial Mills Dam Impoundment, Saranac River, NY

Mr. Jirka led a survey for freshwater mussels in the Imperial Mills Dam impoundment on the Saranac River in Plattsburgh, NY. The survey was required to determine the presence and distribution of freshwater mussels within the area of the impoundment that would be exposed during a proposed dam maintenance drawdown. Twenty-five 50-m transects were distributed throughout the proposed drawdown zone and sampled by snorkeling. Mussel species composition, relative abundance, and density were determined. Information gathered during the survey was used to provide a rough estimate of the number of mussels that would be susceptible to impacts from the proposed drawdown and identify potential relocation areas for any necessary mussel salvage operation.

Freshwater Mussel Survey and Salvage of Oswayo Creek, Route 305 Bridge, Portville, NY

Mr. Jirka led a survey of a 50-m reach of Oswayo Creek in the vicinity of the Route 305 bridge in Portville NY, for the New York State Department of Transportation. This investigation consisted of surveying for, collecting, and relocating all mussels found within the survey area. Species of particular interest were the state-and federally-endangered rayed bean (*Villosa fabalis*) and clubshell (*Pleurobema clava*) the state-threatened wavy-rayed lampmussel (*Lampsilis fasciola*). Over 700 mussels were collected and relocated upstream of the project, including multiple rayed beans and wavy-rayed lampmussels. Monitoring of survival of relocated mussels occurred for one-year following relocation.

Freshwater Mussel Survey of the Olean Flood Protection Project, Allegheny River, NY

Mr. Jirka led a survey of a 550-m reach of Oswayo Creek downstream of the Route 305 bridge in Portville NY, conducted for the New York State Department of Environmental Conservation. This investigation consisted of a qualitative mussel survey aimed at identifying areas likely to support mussels and determining the presence of mussels in such areas. Species of particular interest were the state-and federally-endangered rayed bean mussel (*Villosa fabalis*) and the state-threatened wavy-rayed lampmussel (*Lampsilis fasciola*). This survey was followed by an intensive quantitative survey to determine the status, abundance, and distribution of these two species within the study area. A report was prepared providing the findings of the surveys; discussion of potential impacts from proposed riprap placement to mussels; and potential mitigation strategies.

Freshwater Mussel Survey, Chemung River, City of Elmira, NY

Mr. Jirka led a survey for freshwater mussels in the Chemung River along a 1,000-m reach bracketing two bridge replacement projects in the City of Elmira, NY. Species of concern were the green floater (*Lasmigona subviridis*), a state-threatened freshwater mussel species, and the yellow lampmussel (*Lampsilis cariosa*), an unlisted federal species of concern. Snorkeling, wading, and the use of underwater viewing devices were used to search for mussels. Over 1,000 live mussels were found, representing five species, including 35 live green floaters and 425 live yellow lampmussels. A report was prepared detailing mussel species composition, abundance, distribution, and habitat in the survey reach.

Freshwater Mussel Survey of the Olean Flood Protection Project, Olean Creek, NY

Mr. Jirka led an investigation of a 970-m reach of Olean Creek in Cattaraugus County, NY, conducted for the New York State Department of Environmental Conservation. This investigation consisted of a qualitative mussel survey aimed at identifying areas likely to support mussels and determining the presence of mussels in such areas. Species of particular interest were the endangered rayed bean mussel (*Villosa fabalis*) and the threatened wavy-rayed lampmussel (*Lampsilis fasciola*). This survey was followed by an intensive quantitative survey to determine the status, abundance, and distribution of these two species within the study area. A report was prepared providing: the findings of the surveys; a discussion of potential impacts from proposed riprap placement to mussels in the study area; and potential strategies to avoid, minimize, or mitigate these impacts.

Freshwater Mussel Salvage and Relocation, East Branch of Sandy Creek, Monroe County, NY

Mr. Jirka led a mussel salvage and relocation effort on the East Branch of Sandy Creek in the vicinity of the Monroe-Orleans County Line Road bridge in Monroe County, NY. This salvage operation was necessary to protect rare mussel species from impacts from a bridge replacement project. The salvage effort was conducted entirely by snorkeling. Over 1,600 live mussels were collected from a 380-ft reach of the creek and relocated to an area upstream of the project impact zone. Nine species were found, including two species considered rare in New York, rainbow (*Villosa iris*), and Wabash pigtoe (*Fusconaia flava*).

SELECT PUBLICATION

Strayer, D. L., and K. J. Jirka. 1997. *The pearly mussels of New York State*. New York State Museum Memoir 26, Albany, NY. 113 pp. + 27 plates.