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QUALITATIVE MUSSEL SURVEY REPORT

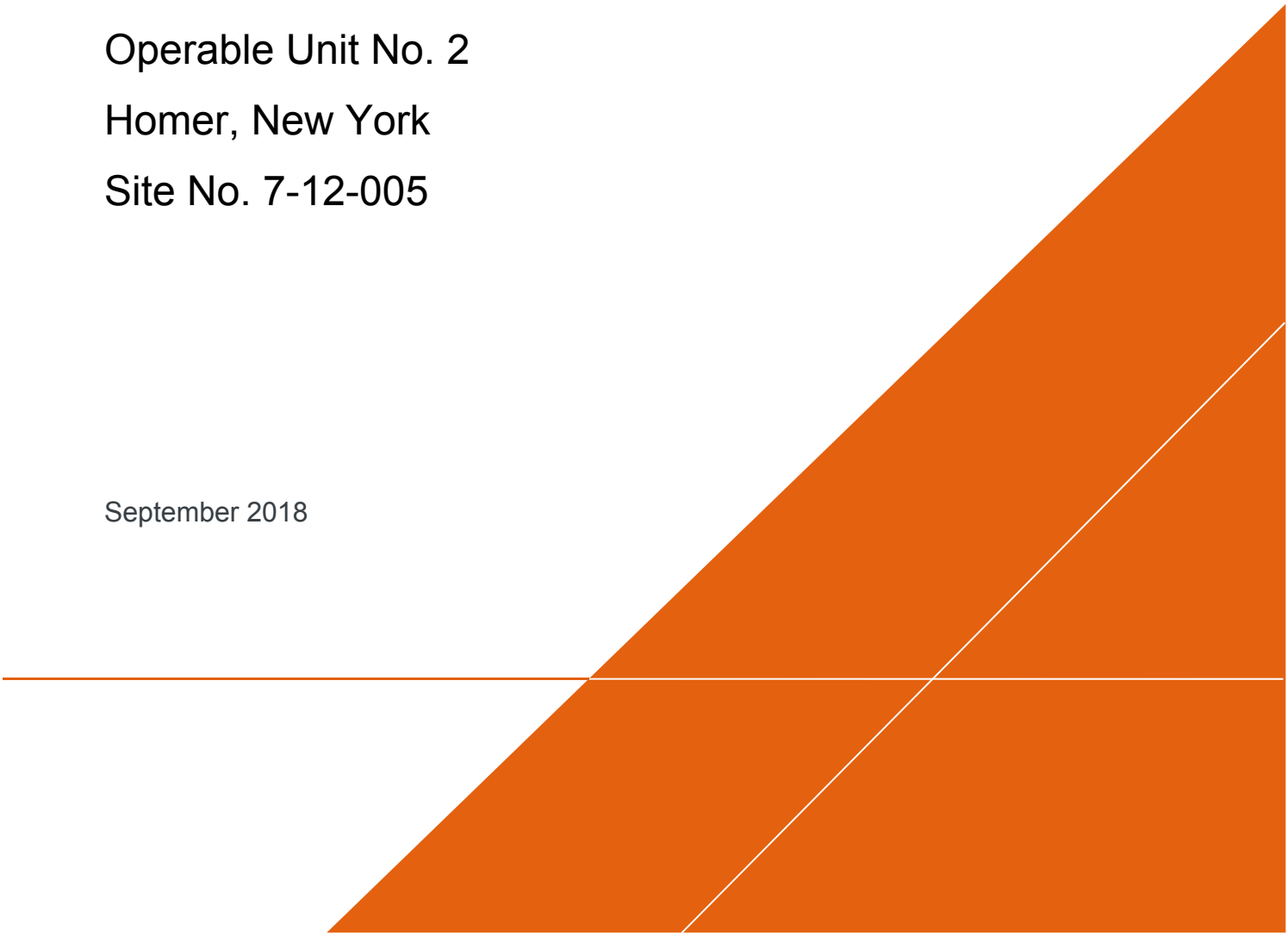
Cortland-Homer Former Manufactured Gas Plant Site

Operable Unit No. 2

Homer, New York

Site No. 7-12-005

September 2018



QUALITATIVE MUSSEL SURVEY REPORT

Cortland-Homer Former Manufactured Gas Plant Site
Operable Unit No. 2
Homer, New York
Site No. 7-12-005

Prepared for:

NYSEG

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Date:

September 2018

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1 INTRODUCTION

This report presents the findings for the qualitative mussel surveys completed within the West Branch of Tioughnioga River for Operable Unit No. 2 (OU-2) of the Cortland-Homer Former Manufactured Gas Plant (MGP) Site (the site) (Figure 1) in the two targeted remediation areas (i.e., Areas 1 and 2). Arcadis performed the qualitative mussel surveys from July 9 through July 12, 2018, following the procedures detailed in the New York State Department of Environmental Conservation (NYSDEC)-approved Mussel Survey Work Plan (MSWP) (Arcadis 2018), using timed-area visual searches in Areas 1 and 2 and buffer areas to evaluate the presence of state-listed threatened and/or endangered (T&E) mussel species.

All work was performed in accordance with NYSDEC-issued mussel survey permits. Specifically, a License to Collect or Possess (LCPSCI) permit #2332, and an Endangered and Threatened Species (ETSSCI) permit #427. The LCPSCI permit allows for the handling of common freshwater mussel species, while the ETSSCI permit allows for the handling of state-listed T&E mussel species. This report will be submitted to the NYSDEC Special Licenses Unit in Albany, New York to meet the annual reporting requirements of each permit.

2 QUALITATIVE MUSSEL SURVEY METHODS

Methodologies were employed consistent with the procedures presented in Smith et al. (2001), which uses timed direct observations by divers, snorklers, and/or waders to visually assess the presence of live mussels on the river bed surface (visual and surface tactile inspection), and subsurface excavation (up to 15 centimeters [cm]) of test plots within 0.25-square meter (m2) for areas where live mussels were found on the surface. Timing duration was based on the number of observers used in each cell and was adjusted per cell area to allow the minimum 5% effective search area to be completed. However, a higher search rate was used (i.e., 30-50% or higher) due to very good water clarity and visibility. The total amount of time spent searching in each cell is presented in Table 1. Observers used direct visual observations which included fanning loose sediment and hand-probing of substrates. Excavated sediments of subsurface materials were processed using a ½-inch sieve.

The location of individual search cell areas used for the qualitative mussel survey are shown on Figures 2 and 3. The OU-2 anticipated remediation areas and buffer areas were segmented into search cells to allow a uniform level of effort for direct visual observations. Buffer areas were established both upstream (100 meters) and downstream (200 meters) of Areas 1 and 2. Each cell area was segmented into 25-meter river lengths upstream to downstream to cover the entire OU-2 and buffer areas using surveyors to mark and stake out each cell along the shoreline. Cells were then further demarcated using weighted yellow polypropylene rope transect lines stretched across the river between the survey stakes to make the cell boundaries clear. A total of 50 cells were established, including 16 cells within Area 1, 10 cells within Area 2, four cells within the upstream buffer area for Area 1, eight cells within the downstream buffer area for Area 1, four cells within the upstream buffer area for Area 2, and eight cells within the downstream buffer area for Area 2.

In-water workers performed the mussel survey in the downstream to upstream direction within each cell. Weighted ropes were used to clearly establish the cell boundaries. Any observed live mussel was removed from the sediment and placed in buckets with fresh water by the processing team. Where

mussels were found in surface sediment, subsurface material was then excavated to search for additional mussels buried in the sediment. After completing a cell, all mussels collected were identified, measured, and photographed. Voucher specimens and representative relic shells were retained for taxonomic verification purposes. Once processing was completed, mussels were returned to the location in the cell from where they were collected. All locations where mussels were observed were marked using a handheld Trimble GPS unit.

In addition to the qualitative mussel survey, a qualitative habitat assessment was performed in each cell to describe general inorganic substrate composition and presence/absence of invasive mollusk species, as well as a measure of stream velocity within mid-water column and water depth. Water quality parameters were also collected on an overall area basis to understand general conditions for water temperature, pH, dissolved oxygen, turbidity, and specific conductivity.

3 QUALITATIVE MUSSEL SURVEY RESULTS

Surveys were performed near baseflow conditions for the West Branch of the Tioughnioga River, based on evaluation of the downstream USGS gaging station for the Tioughnioga River and existing comparison to ordinary high-water levels along the river banks. Turbidity was low and water conditions were clear throughout the observation period.

3.1 Habitat and Water Quality Conditions

Observed habitat and water quality conditions are summarized in Tables 1 and 2, respectively. For Area 1:

- Within the upstream buffer area, habitat was primarily a shallow run, with some softer fringe habitat margins. Main channel water depths ranged from 1 to 1.2 feet, with stream velocities ranging from 0.39 to 0.75 ft/sec. Substrates were typically dominated by gravel and cobbles, with some sand. Similar to Area 1, water quality conditions indicated slightly basic pH conditions (8.4), with low turbidity, and a suitable dissolved oxygen concentration (10.4 mg/L).
- General habitat within Area 1 was primarily shallow run conditions with some riffle sections and finger-grained fringe habitat margins along much of the eastern shoreline. Main channel water depths ranged from 0.8 to 1.6 feet, with stream velocities ranging from 0.45 to 1.87 feet per second (ft/sec). Substrates were typically dominated by gravel, cobbles, and sands. Water quality conditions indicated slightly basic pH conditions (i.e., above 7), with low turbidity, and suitable dissolved oxygen concentrations in the 10 to 11 milligrams per liter (mg/L) range.
- The downstream buffer area habitat conditions were primarily run habitats. Main channel water depths ranged 0.9 to 2.4 feet, with stream velocities ranging from 0.81 to 2.9 ft/sec. Substrates were typically dominated by gravel, cobbles, and sands. Water quality conditions were similar to upstream, with a slightly basic pH (8.0), with low turbidity, and a suitable dissolved oxygen concentration (8.3 mg/L).

For Area 2:

- Within the upstream buffer area, habitat was primarily run with slightly shallower water depths than Area 2. Main channel water depths ranged from 2.0 to 2.5 feet, with stream velocities ranging from 0.31 to 0.97 ft/sec. Substrates were typically dominated by gravel, cobble, and sands, with less silt observed. Water quality conditions were similar to Area 2, with a slightly basic pH (8.5), with low turbidity, and a suitable dissolved oxygen concentration (10.2 mg/L).
- General habitat conditions within Area 2 was primarily a deep slow-moving run with some pool features, and siltation areas outside of the main channel. Main channel water depths ranged from 2.2 to 5.0 feet, with stream velocities ranging from 0.2 to 0.5 ft/sec. Substrates were typically dominated by silt and gravel, with lesser amounts of cobble and sands. Water quality conditions indicated a slightly basic pH (8.1), with low turbidity, and a suitable dissolved oxygen concentration (8.4 mg/L).
- The downstream buffer area habitat conditions were a mix of run and riffle conditions. Main channel water depths 0.7 to 3.4 feet, with stream velocities ranging from 0.12 to 3.43 ft/sec. Substrates were typically dominated by gravel and cobbles, with differing ranges of boulder and silts depending upon habitat conditions. Similar to upstream conditions, water quality conditions indicated slightly basic pH (8.0), low turbidity, and a suitable dissolved oxygen concentration (7.5 mg/L).

3.2 Mussel Survey Results

A total of 40 live mussels were observed within the surface substrate in Areas 1 and 2 (and the buffer zones). Locations of observed mussels are shown on Figures 2 and 3 and summarized in Table 3. The number of mussels found per survey cell ranged from 0 to 5 individuals, and most mussels were found in Area 1 as compared to Area 2:

- 11 live mussels were observed in the upstream buffer for Area 1.
- 25 live mussels were observed in Area 1.
- No live mussels were observed in the downstream buffer of Area 1 or the upstream buffer area of Area 2.
- 2 live mussels were observed each in Area 2 and within the downstream buffer of Area 2.
- No live mussels were found below the surface substrates, based on the excavations performed within the 0.25 m^2 quadrats.

A summary of the species observed by cell are provided in Table 3. Five live mussel species were observed during the qualitative surveys: eastern elliptio (Elliptio complanata); creeper (Strophitus undulatus); eastern floater (Pyganodon cataracta); triangle floater (Alasmidonta undulata); and yellow lampmussel (Lampsilis cariosa). Representative species photos are included in Attachment 1. The general abundance by species was greatest for eastern elliptio (21), followed by creeper (16), and only one individual was observed for each the eastern floater, triangle floater, and yellow lampmussel. No state- or federally-listed threatened or endangered mussel species were observed during the survey.

Taxonomy was performed using exterior shell diagnostics and the use of representative species relics, as well as archived site vouchers to assess the internal morphology of potential species. The main literature

source for taxonomic identification used during the survey was The Pearly Mussels of New York State by Strayer and Jirka (1997). This reference has a detailed dichotomous key that is used to help guide in the identification process and support the verification of a positive identification. Additional literature for the potential distribution of mussel species in the West Branch of the Tioughnioga River included studies performed by Strayer and Fetterman (1999) to document surveys performed from 1955-1965 to 1996-1997 in the Upper Susquehanna River Basin.

4 SUMMARY

Five live mussel species were observed during the qualitative mussel survey, none of which are listed in New York State as threatened or endangered. The mussel species with the greatest abundance during the survey was the eastern elliptio (E. complanata), which exists commonly throughout New York State. More mussels were found in Area 1 and its buffers (36 total mussels) than Area 2 and its buffers (4 total mussels). Area 1 was primarily shallow run conditions (0.8 to 1.6 feet) with some riffle sections, and softer fringe habitat margins along much of the eastern shoreline. Area 2 was primarily a deep slow-moving run (2.2 to 5.0 feet) with some pool features, and siltation areas outside of the main channel.

Mussel abundance was low throughout the study areas of the West Branch of Tioughnioga River and no New York State threatened or endangered species were encountered. Therefore, performing the additional quantitative mussel survey (as indicated by the MSWP), which had the primary objective of determining the population density of T&E mussel species (if found), is not recommended. In addition, relocation of the common mussel species observed in Areas 1 and 2 is not recommended, given low abundance of encountered mussels.

5 REFERENCES

Arcadis. 2018. Mussel Survey Work Plan. Cortland-Homer Former Manufactured Gas Plant, Operable Unit No. 2., Homer, New York, Site No. 7-12-005. Prepared for NYSEG.

Strayer, D.L. and K.J.Jirka. 1997. The Pearly Mussels of New York State. New York State Museum Memoir 26. The University of the State of New York. State Education Department.

Strayer, D.L. and A.R. Fetterman. 1999. Changes in the Distribution of Freshwater Mussels (Unionidae) in the Upper Susquehanna River Basin, 1955-1965 to 1996-1997. American Midland Naturalist. Vol. 142, pp 328-339.

TABLES

Table 1. Mussel Survey Search Rate and Habitat Data
Qualitative Mussel Survey Report
Cortland-Homer Former Manufactured Gas Plant Site, Operable Unit No. 2
Homer, New York

Area	Date	Time	Cell	Cell Surface Area (m^2)	5% Search Rate (m^2)	Total Search Time ($0.5m^2$/min)	Flow	Depth	Cell Substrate (%)				
							(ft/s)	(ft)	Boulder	Cobble	Gravel	Sand	Silt
U.S. Buffer Area 1	7/11/18	1716	1	481	24	48	0.50	1.2	5	50	25	10	10
U.S. Buffer Area 1	7/11/18	1648	2	552	28	55	0.39	1.0	5	20	55	15	5
U.S. Buffer Area 1	7/11/18	1616	3	603	30	60	0.69	1.2	0	10	55	30	5
U.S. Buffer Area 1	7/11/18	1534	4	590	29	59	0.75	1.1	5	20	50	20	5
Area 1	7/11/18	1502	5	611	31	61	0.74	1.1	5	40	40	10	5
Area 1	7/11/18	1416	6	629	31	63	0.55	1.1	0	15	55	25	5
Area 1	7/11/18	1344	7	699	35	70	0.45	0.9	0	10	55	30	5
Area 1	7/11/18	1257	8	671	34	67	0.75	0.9	0	15	45	35	5
Area 1	7/11/18	1055	9	652	33	65	0.68	1.1	0	15	50	25	10
Area 1	7/11/18	1016	10	639	32	64	0.82	1.2	5	40	35	15	5
Area 1	7/11/18	949	11	666	33	67	0.66	0.9	5	35	35	20	5
Area 1	7/11/18	902	12	658	33	66	0.61	1.1	5	40	35	15	5
Area 1	7/11/18	832	13	598	30	60	0.88	0.9	5	45	30	15	5
Area 1	7/9/18	1619	14	526	26	53	1.14	0.8	0	25	55	10	10
Area 1	7/9/18	1557	15	464	23	46	1.27	1.0	5	50	30	10	5
Area 1	7/9/18	1528	16	409	20	41	1.65	1.0	5	35	45	10	5
Area 1	7/9/18	1506	17	519	26	52	1.87	1.0	5	35	40	15	5
Area 1	7/9/18	1444	18	574	29	57	1.49	1.1	5	25	30	30	10
Area 1	7/9/18	1411	19	656	33	66	0.58	1.6	0	20	20	50	10
Area 1	7/9/18	1343	20	429	21	43	0.81	1.5	0	20	20	50	10
D.S. Buffer Area 1	7/9/18	1322	21	459	23	46	1.13	1.5	5	20	40	30	5
D.S. Buffer Area 1	7/9/18	1253	22	454	23	45	0.81	2.4	10	45	30	10	5
D.S. Buffer Area 1	7/9/18	1234	23	428	21	43	1.89	0.9	0	35	50	10	5
D.S. Buffer Area 1	7/9/18	1136	24	318	16	32	2.90	1.3	0	35	50	10	5
D.S. Buffer Area 1	7/9/18	1114	25	349	17	35	1.13	1.5	0	35	50	10	5
D.S. Buffer Area 1	7/9/18	1045	26	431	22	43	1.02	1.1	0	35	50	10	5
D.S. Buffer Area 1	7/9/18	1017	27	496	25	50	1.09	1.1	0	35	50	10	5
D.S. Buffer Area 1	7/9/18	917	28	500	25	50	1.86	0.9	0	35	50	10	5
U.S. Buffer Area 2	7/10/18	1649	29	351	18	35	0.97	2.1	5	40	35	15	5
U.S. Buffer Area 2	7/10/18	1630	30	390	19	39	0.82	2.0	5	20	50	20	5
U.S. Buffer Area 2	7/10/18	1600	31	467	23	47	0.31	2.0	0	40	25	30	5
U.S. Buffer Area 2	7/10/18	1538	32	475	24	47	0.54	2.5	5	25	50	10	10
Area 2	7/10/18	1517	33	553	28	55	0.50	3.1	5	15	50	15	15
Area 2	7/10/18	1446	34	560	28	56	0.45	2.2	5	20	35	30	10
Area 2	7/10/18	1418	35	574	29	57	0.21	3.5	0	20	30	15	35
Area 2	7/10/18	1349	36	671	34	67	0.31	3.7	0	25	40	10	25
Area 2	7/10/18	1319	37	795	40	80	0.24	5.0	0	20	30	25	25
Area 2	7/10/18	1200	38	696	35	70	0.40	4.1	5	35	20	10	30
Area 2	7/10/18	1126	39	577	29	58	0.22	4.0	5	10	30	10	45
Area 2	7/10/18	1047	40	565	28	57	0.20	5.0	10	25	0	25	40
Area 2	7/10/18	1017	41	529	26	53	0.24	3.5	0	5	25	15	55
Area 2	7/10/18	925	42	483	24	48	0.26	3.3	0	5	35	10	50
D.S. Buffer Area 2	7/10/18	1806	43	572	29	57	0.12	3.9	5	5	25	25	40
D.S. Buffer Area 2	7/10/18	1745	44	526	26	53	0.57	2.3	10	10	50	15	15
D.S. Buffer Area 2	7/12/18	1045	45	481	24	48	1.53	2.1	15	50	20	10	5
D.S. Buffer Area 2	7/12/18	1015	46	492	25	49	3.43	1.2	0	50	35	10	5
D.S. Buffer Area 2	7/12/18	955	47	494	25	49	2.92	0.7	5	20	65	5	5
D.S. Buffer Area 2	7/12/18	930	48	404	20	40	1.19	2.1	25	35	20	10	10
D.S. Buffer Area 2	7/12/18	855	49	376	19	38	0.77	2.4	35	35	20	5	5
D.S. Buffer Area 2	7/12/18	840	50	296	15	30	2.10	1.2	20	55	15	5	5

Notes:
1. U.S. = Upstream
2. D.S. = Downstream

Table 2. Water Quality Data
Qualitative Mussel Survey Report
Cortland-Homer Former Manufactured Gas Plant Site, Operable Unit No. 2
Homer, New York

Parameter / Area	U.S. Buffer Area 1	Area 1	Area 1	D.S. Buffer Area 1	U.S. Buffer Area 2	Area 2	D.S. Buffer Area 2
Date	7/11/18	7/9/18	7/11/18	7/9/18	7/10/18	7/10/18	7/12/18
Time	1530	1717	830	929	1624	945	815
Cell	4	14	13	28	30	41	50
Temperature (°C)	25.3	26.0	20.6	20.5	25.0	20.4	18.2
Dissolved Oxygen (mg/L)	10.4	9.8	10.9	8.3	10.2	8.4	7.5
Specific Conductivity (mS/cm)	0.437	0.435	0.445	0.449	0.454	0.489	0.496
pH	8.4	8.4	8.1	8.0	8.5	8.1	8.0
Turbidity (NTU)	-1.9	0.1	2.4	1.1	-1.1	-0.5	1.4

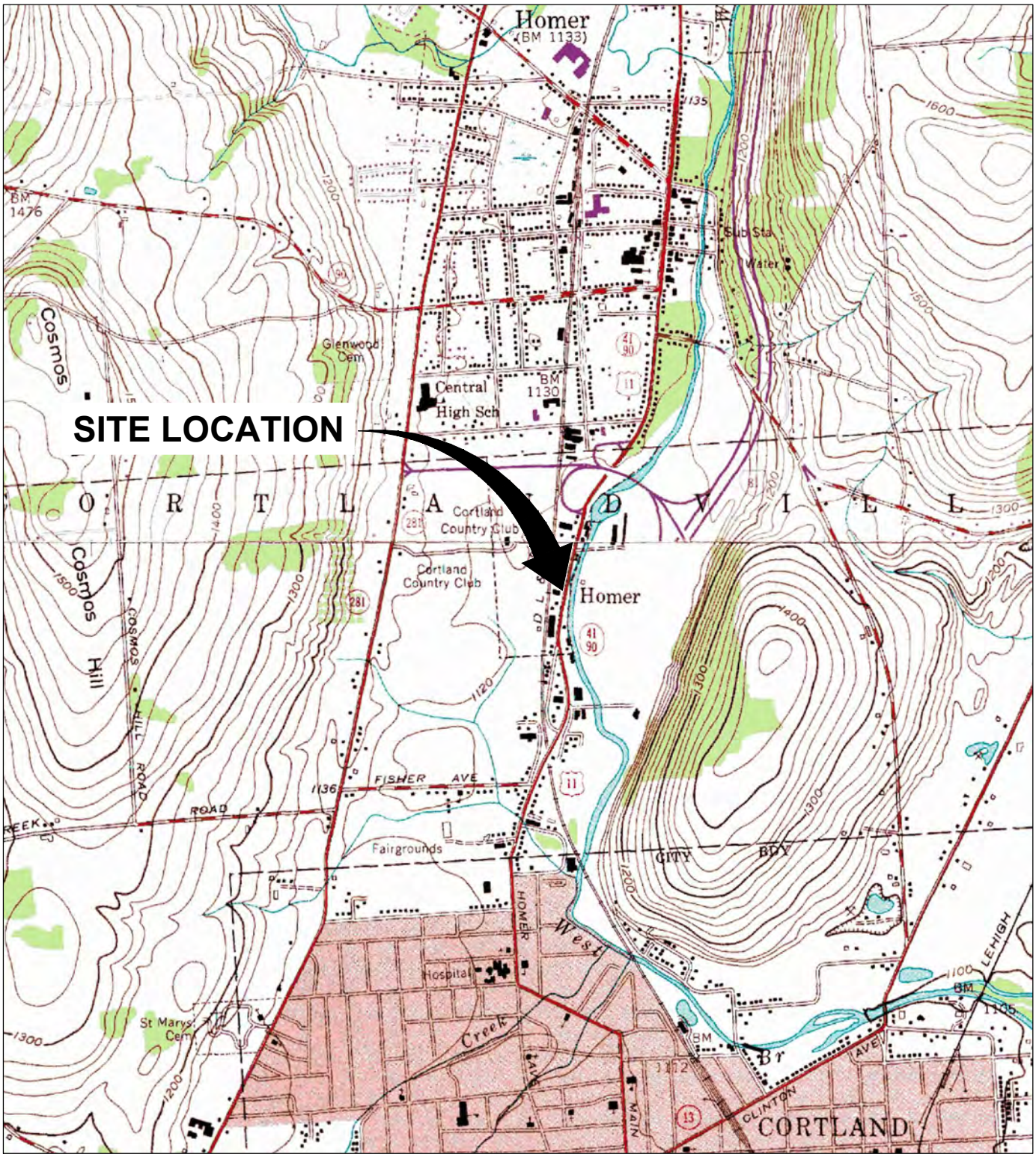
Notes:
1. U.S. = Upstream
2. D.S. = Downstream

Table 3. Mussel Survey Species Data
Qualitative Mussel Survey Report
Cortland-Homer Former Manufactured Gas Plant Site, Operable Unit No. 2
Homer, New York

Area	Cell	GPS ID	Species	Common Name	Length (mm)	Width (mm)	Height (mm)
U.S. Buffer Area 1	2	51	Elliptio complanata	Eastern elliptio	108	30	56
U.S. Buffer Area 1	2	50	Elliptio complanata	Eastern elliptio	86	28	51
U.S. Buffer Area 1	3	49	Elliptio complanata	Eastern elliptio	84	22	45
U.S. Buffer Area 1	3	48	Strophitus undulatus	Creeper	50	19	29
U.S. Buffer Area 1	3	47	Strophitus undulatus	Creeper	50	17	30
U.S. Buffer Area 1	3	46	Strophitus undulatus	Creeper	51	18	31
U.S. Buffer Area 1	4	45	Elliptio complanata	Eastern elliptio	100	25	51
U.S. Buffer Area 1	4	10/42	Elliptio complanata	Eastern elliptio	94	27	48
U.S. Buffer Area 1	4	41	Elliptio complanata	Eastern elliptio	108	28	55
U.S. Buffer Area 1	4	44	Strophitus undulatus	Creeper	56	21	33
U.S. Buffer Area 1	4	43	Strophitus undulatus	Creeper	39	14	24
Area 1	5	40	Elliptio complanata	Eastern elliptio	107	29	57
Area 1	6	9/39	Elliptio complanata	Eastern elliptio	108	34	56
Area 1	6	37	Elliptio complanata	Eastern elliptio	95	27	56
Area 1	6	38	Strophitus undulatus	Creeper	56	21	33
Area 1	7	8/36	Lampsilis cariosa	Yellow lampmussel	110	48	67
Area 1	7	35	Strophitus undulatus	Creeper	52	20	32
Area 1	7	34	Strophitus undulatus	Creeper	55	22	31
Area 1	8	33	Elliptio complanata	Eastern elliptio	91	26	47
Area 1	8	31	Elliptio complanata	Eastern elliptio	97	26	51
Area 1	8	30	Elliptio complanata	Eastern elliptio	100	27	54
Area 1	8	32	Strophitus undulatus	Creeper	51	18	33
Area 1	9	28	Elliptio complanata	Eastern elliptio	86	23	46
Area 1	9	29	Strophitus undulatus	Creeper	50	19	30
Area 1	9	27	Strophitus undulatus	Creeper	57	22	34
Area 1	9	26	Strophitus undulatus	Creeper	50	17	28
Area 1	9	25	Strophitus undulatus	Creeper	48	17	29
Area 1	10	24	Strophitus undulatus	Creeper	45	16	26
Area 1	12	23	Elliptio complanata	Eastern elliptio	86	25	47
Area 1	13	22	Elliptio complanata	Eastern elliptio	96	27	52
Area 1	13	21	Elliptio complanata	Eastern elliptio	93	25	49
Area 1	14	17	Elliptio complanata	Eastern elliptio	78	20	44
Area 1	14	16	Elliptio complanata	Eastern elliptio	109	29	58
Area 1	14	15	Pyganodon cataracta	Eastern floater	136	40	65
Area 1	15	13.5	Elliptio complanata	Eastern elliptio	75	21	45
Area 1	15	14	Strophitus undulatus	Creeper	52	20	30
Area 2	32	19	Alasmidonta undulata	Triangle floater	51	20	30
Area 2	42	18	Elliptio complanata	Eastern elliptio	77	25	46
D.S. Buffer Area 2	44	20	Strophitus undulatus	Creeper	57	21	33
D.S. Buffer Area 2	45	13/52	Elliptio complanata	Eastern elliptio	120	39	63

Notes:
1. U.S. = Upstream
2. D.S. = Downstream

FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUADS., CORTLAND, NY, 1955, AND HOMER, NY 1955, PHOTOREVISED 1978.

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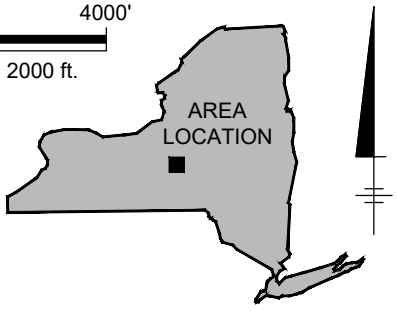


NYSEG - CORTLAND-HOMER FORMER MGP
HOMER, NEW YORK
QUALITATIVE MUSSEL SURVEY REPORT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

City: SYR Div/Group: IMDV Created By: K.IVES Last Saved By: kives
Q:\NYSEG\Cortland-Homer\MusselSurveyWorkPlan\mxd\Figure2_MusselSurveyLocations.mxd 8/15/2018 4:44:59 PM

LEGEND:

- MUSSEL SURVEY LOCATION
- TRANSECT LINES
- AREA BOUNDARY
- CELL BOUNDARY

0 175 350 Feet
GRAPHIC SCALE

NYSEG - CORTLAND-HOMER FORMER MGP
HOMER, NEW YORK
QUALITATIVE MUSSEL SURVEY REPORT

MUSSEL SURVEY LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

City: SYR Div/Group: IMDV Created By: K.IVES Last Saved By: kives
Q:\NYSEG\Cortland-Homer\MusselSurveyWorkPlan\mxd\Figure3_MusselSurveyLocations.mxd 8/15/2018 4:49:05 PM

LEGEND:

- MUSSEL SURVEY LOCATION
- TRANSECT LINES
- AREA BOUNDARY
- CELL BOUNDARY

0 125 250 Feet

GRAPHIC SCALE

NYSEG- CORTLAND-HOMER FORMER MGP
HOMER, NEW YORK

QUALITATIVE MUSSEL SURVEY REPORT

MUSSEL SURVEY LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3

ATTACHMENT 1

Photograph Log

PHOTOGRAPH LOG

NYSEG
Cortland-Homer Former Manufactured Gas Plant, Operable Unit No. 2
Homer, New York

Photograph: 1

Description:
Eastern elliptio

Location:
Area 1 – Cell #9

Photograph taken by:
Arcadis

Date: 7/11/2018

Photograph: 2

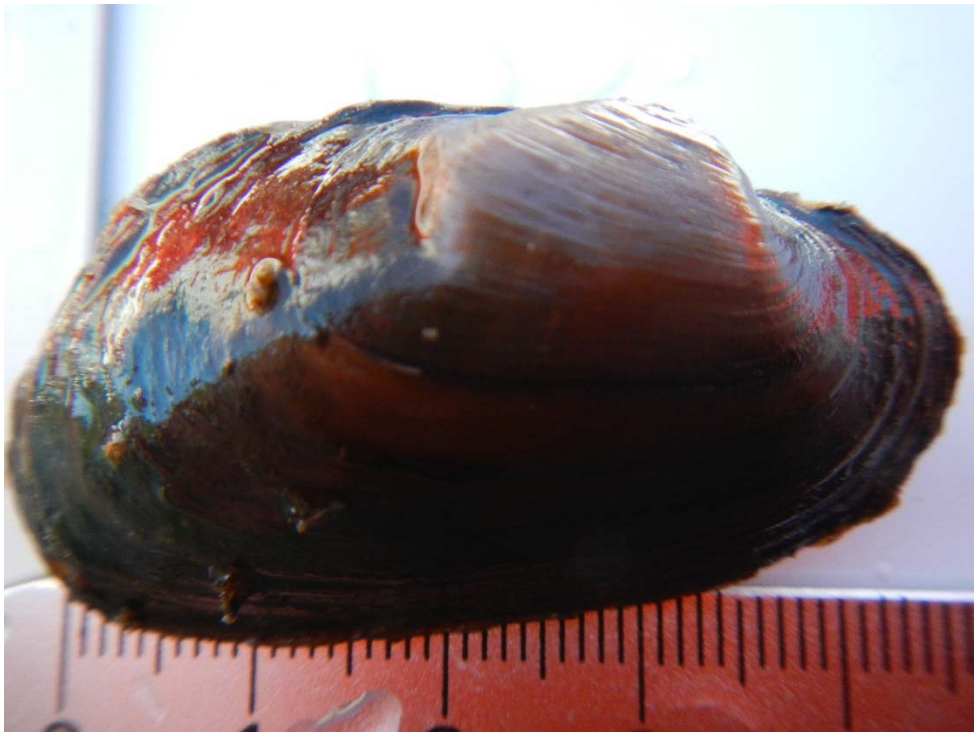
Description:
Eastern elliptio

Location:
Area 1 – Cell #9

Photograph taken by:
Arcadis

Date: 7/11/2018

NYSEG
Cortland-Homer Former Manufactured Gas Plant, Operable Unit No. 2
Homer, New York



Photograph: 3

Description:
Creeper

Location:
Area 1 – Cell #10

Photograph taken by:
Arcadis

Date: 7/11/2018

Photograph: 4

Description:
Creeper

Location:
Area 1 – Cell #10

Photograph taken by:
Arcadis

Date: 7/11/2018

Photograph: 5

Description:
Eastern floater

Location:
Area 1 – Cell #14

Photograph taken by:
Arcadis

Date: 7/9/2018

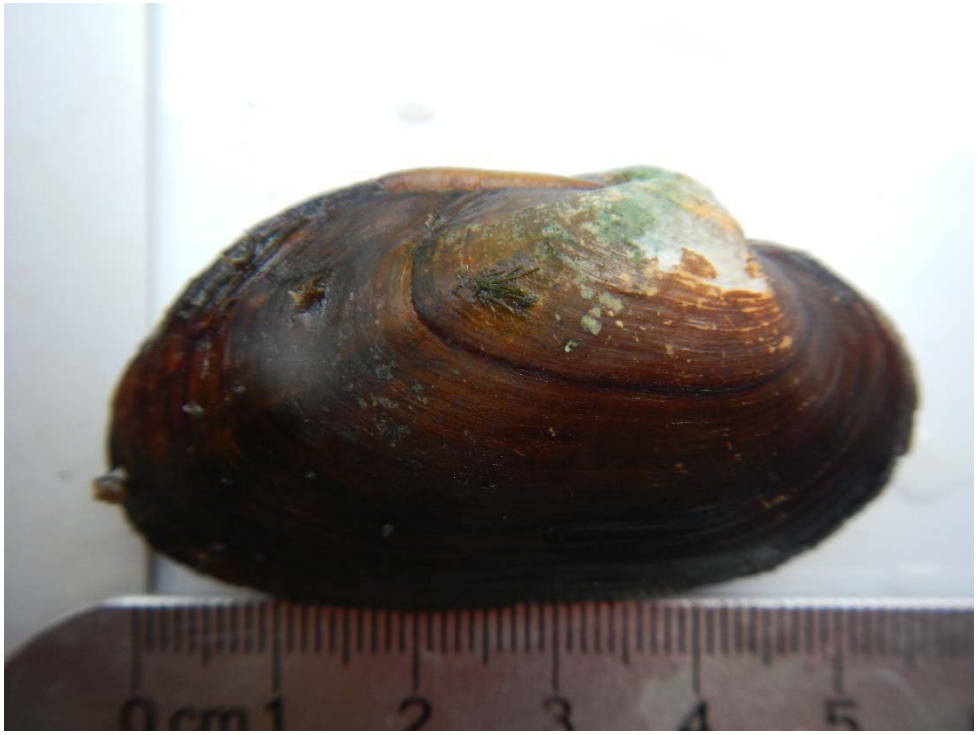
Photograph: 6

Description:
Eastern floater

Location:
Area 1 – Cell #14

Photograph taken by:
Arcadis

Date: 7/9/2018



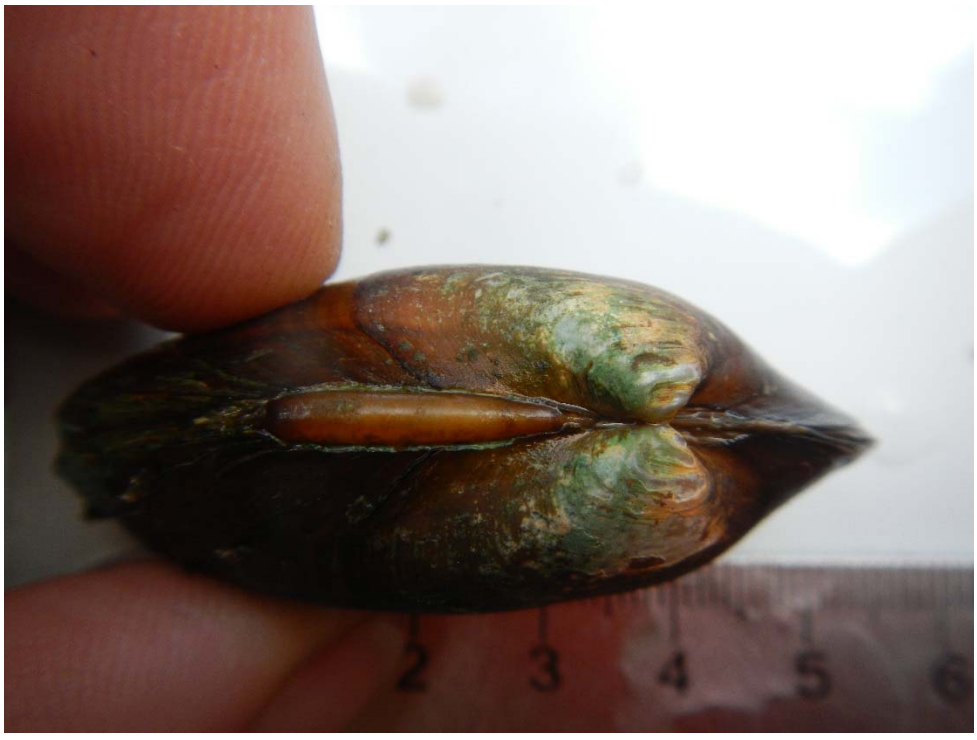
Photograph: 7

Description:
Triangle floater

Location:
Upstream Buffer Area 2 – Cell #32

Photograph taken by:
Arcadis

Date: 7/10/2018



Photograph: 8

Description:
Triangle floater

Location:
Upstream Buffer Area 2 – Cell #32

Photograph taken by:
Arcadis

Date: 7/10/2018

Photograph: 9

Description:
Yellow lampmussel

Location:
Area 1 – Cell #7

Photograph taken by:
Arcadis

Date: 7/11/2018

Photograph: 10

Description:
Yellow lampmussel

Location:
Area 1 – Cell #7

Photograph taken by:
Arcadis

Date: 7/11/2018

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