



Hudson River PCBs Site

Phase 1 Target Area Identification Report

Prepared for:

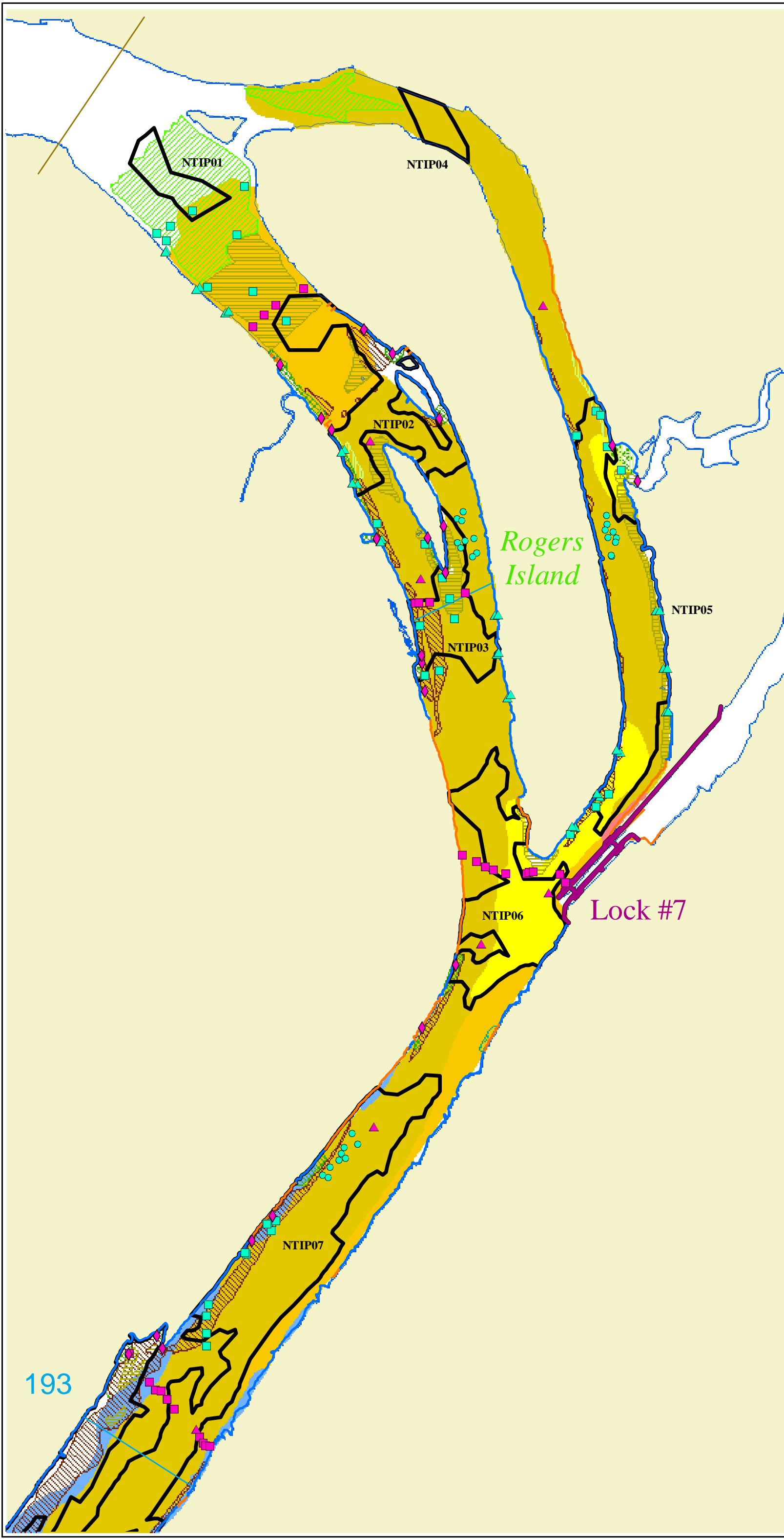
**General Electric Company
Albany, NY**

Prepared by:

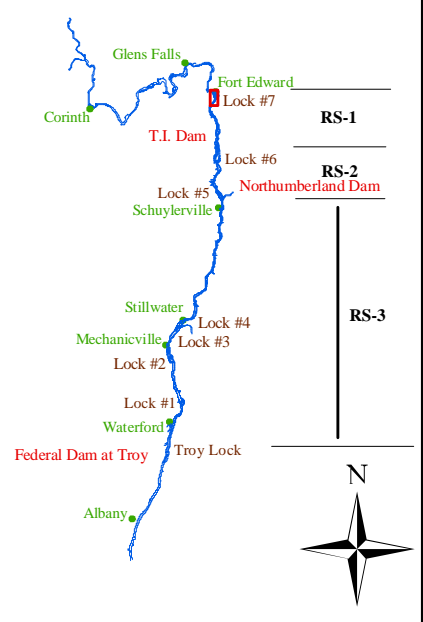
**Quantitative Environmental Analysis, LLC
Glens Falls, NY**

September 13, 2004

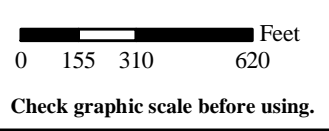
FIGURES
(Continued)



LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

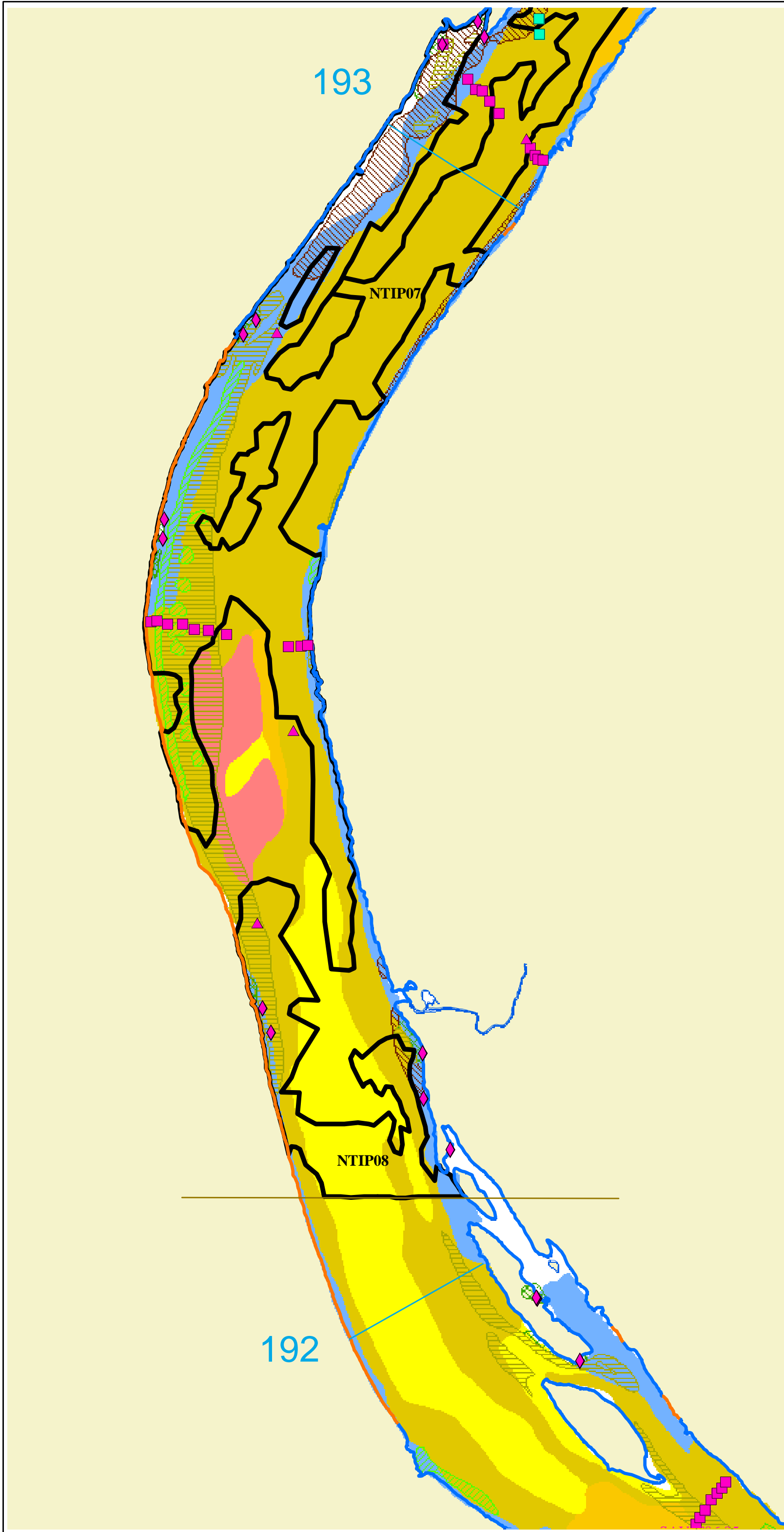
- 2003 Habitat Survey***
- Backwater Wetland
 - Fringe Wetland
 - SAV (0 - 25%)
 - SAV (25 - 50%)
 - SAV (50 - 75%)
 - SAV (75 - 100%)
 - SAV (unclassified)
 - Trapa
- 2003 Habitat Shoreline**
- Maintained Shore
 - Natural Shore
- SSS Sediment Types**
- Type I Sediment
 - Type II Sediment
 - Type III Sediment
 - Type IV Sediment
 - Type V Sediment
- Assessment Locations**
- SAV
 - Shoreline
 - Unconsolidated
 - Wetland
- Groundtruthing Locations**
- SAV
 - Shoreline
 - Wetland
- Dredge Areas
 - Phase 1 Boundary
 - River Miles
 - Shore Line
 - Dams and Locks

*SAV % Cover Adapted from Orth et al.1991

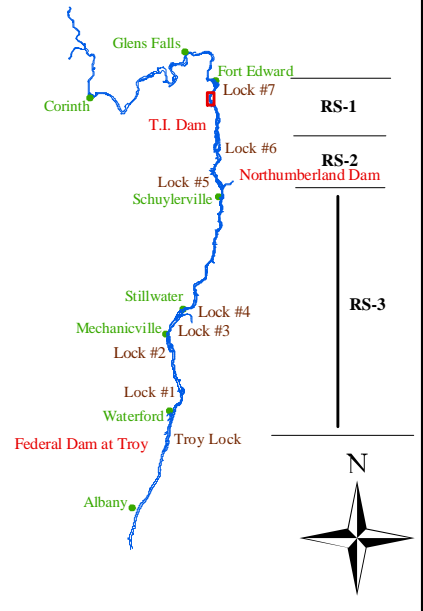
**General Electric Company
Hudson River Project**
Figure 2-20.
Habitat Types - Northern NTIP.



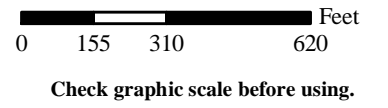
193



LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

2003 Habitat Survey*

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- Type V Sediment

Assessment Locations

- SAV
- Shoreline
- Unconsolidated
- Wetland

Groundtruthing Locations

- SAV
- Shoreline
- Wetland

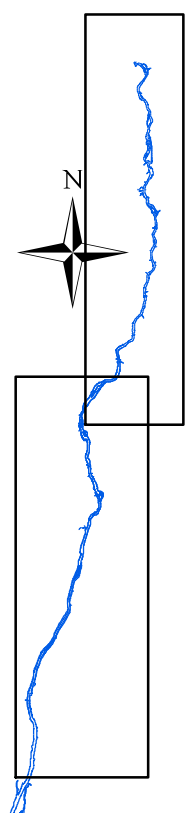
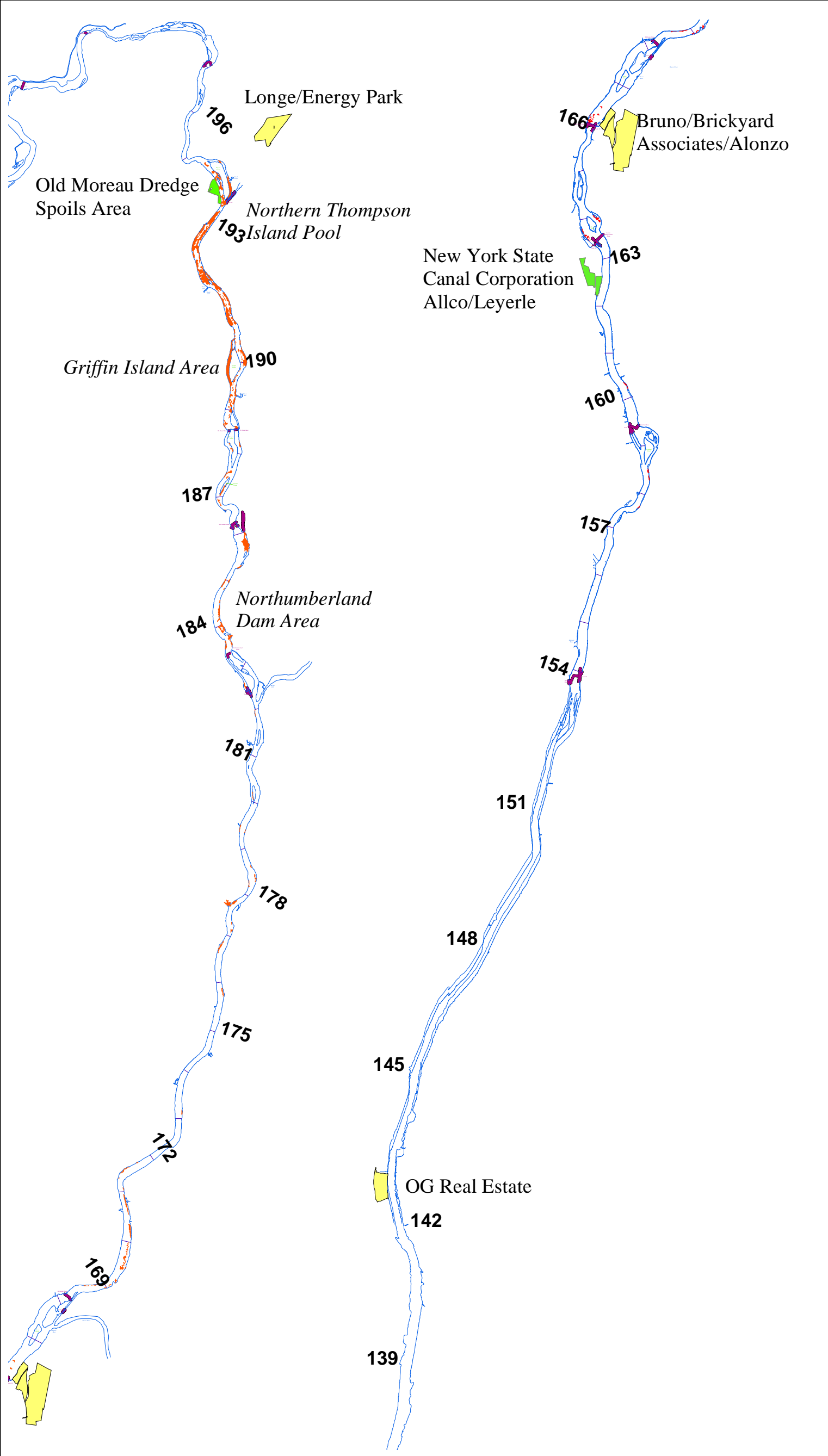
- Dredge Areas
- Phase 1 Boundary
- River Miles
- Shore Line
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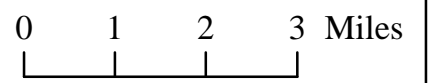
**General Electric Company
Hudson River Project**
Figure 2-21.
Habitat Types - Southern NTIP.



LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

- Candidate Facilities**
- Recommended Sites
 - Suitable Sites
 - Preliminary Dredge Areas
 - Dams and Locks
 - Mile Markers
 - Shoreline

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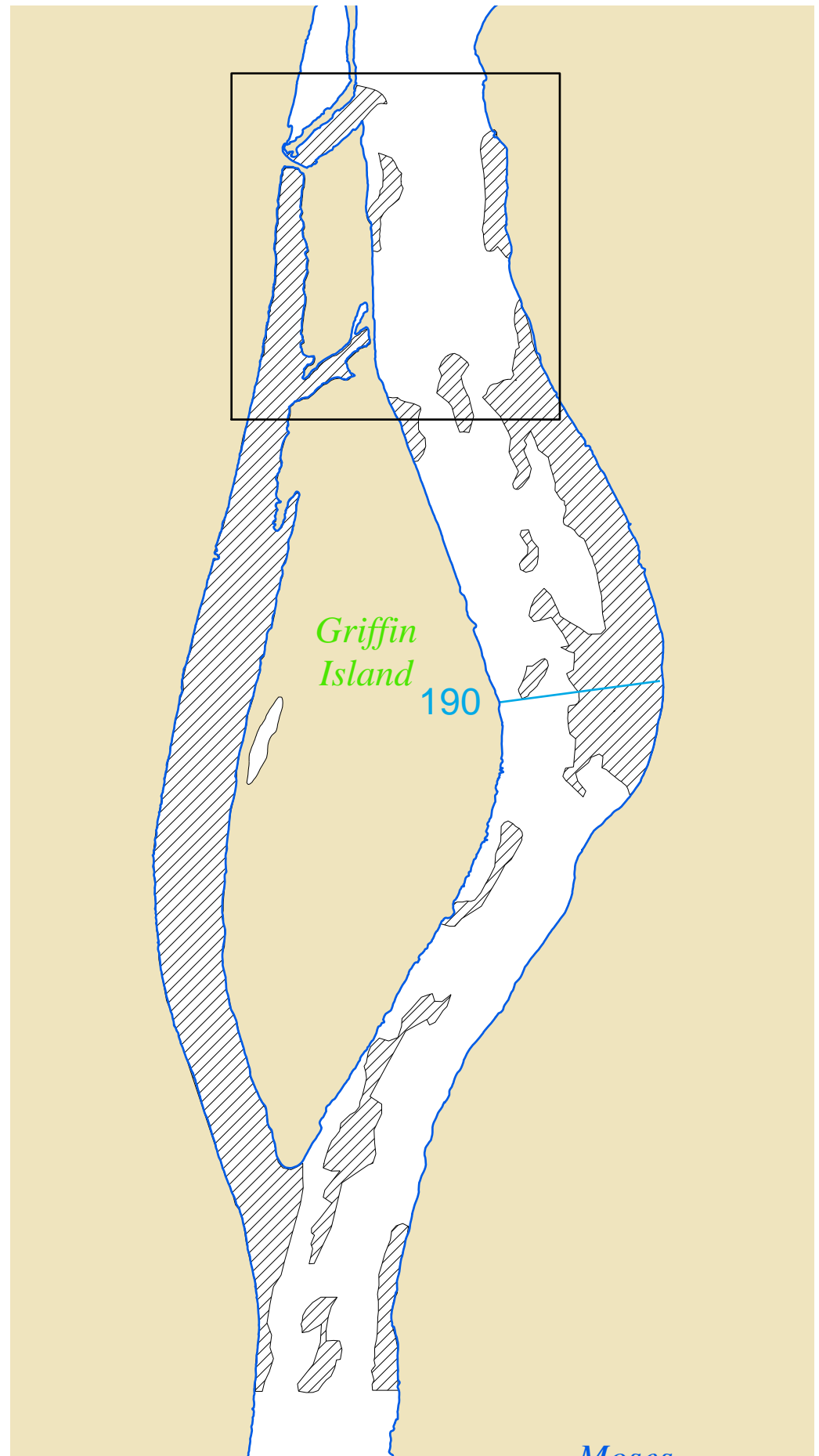
**Figure 2-22.
Candidate sediment
processing/transfer
facility locations.**

Approximate River Mile		Recommended Sites			Suitable Sites	
		Energy Park /Longe/NYSCC RM 195	Bruno/Brickyard Associates/Alonzo RM 166	OG Real Estate RM 143	Old Moreau Dredge Spoils Area RM 194	NYSCC/Allco/Leyerle RM 162
NTIP	Distance (mi)	2	27	50	1	31
	# Locks	1	3	7	0	5
GIA	Distance (mi)	5	24	47	4	28
	# Locks	1	3	7	0	5
NDA	Distance (mi)	11	18	41	10	22
	# Locks	2	2	6	1	4

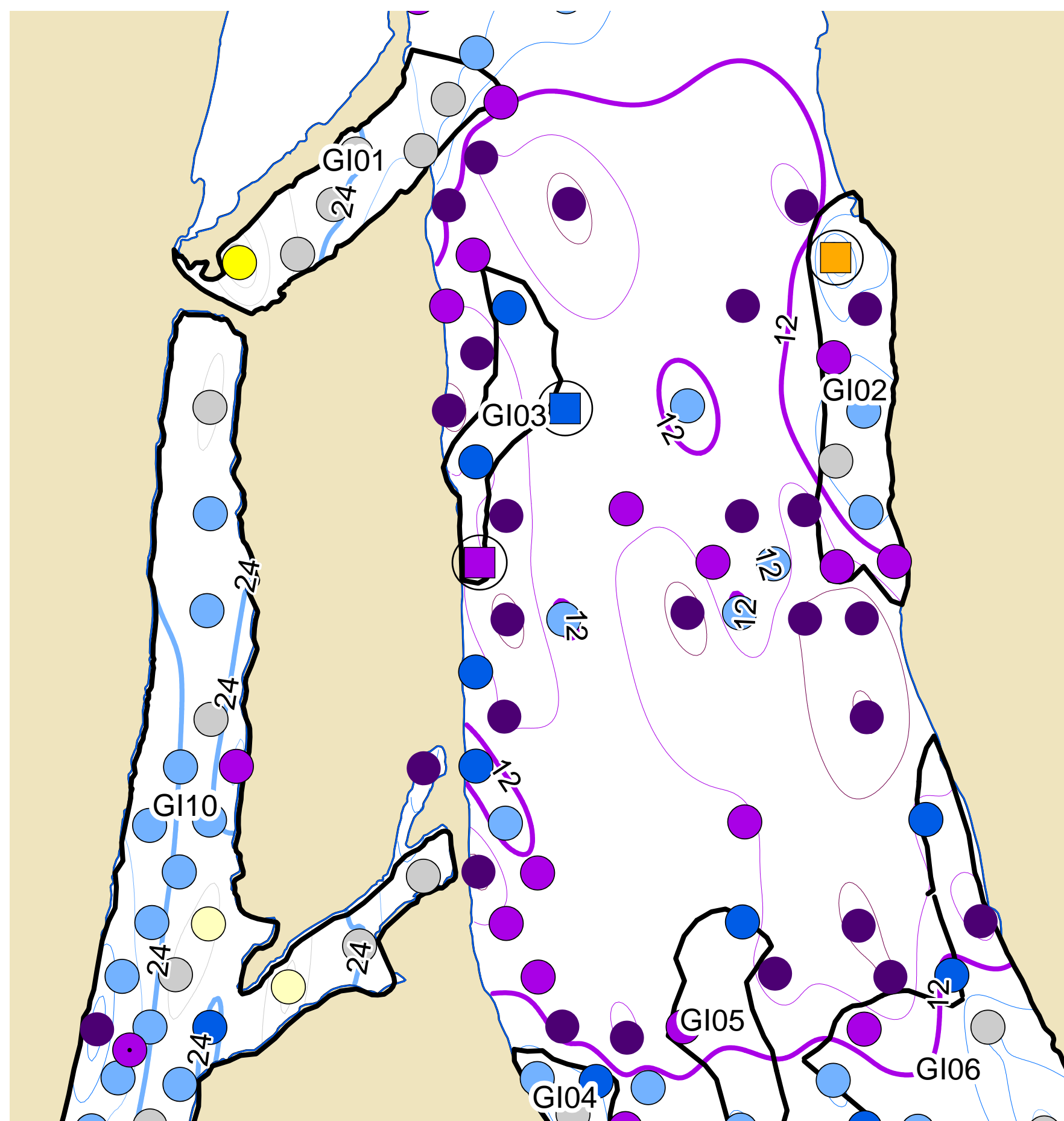
Note: Distance calculated in river miles from midpoint of Candidate Phase 1 Areas



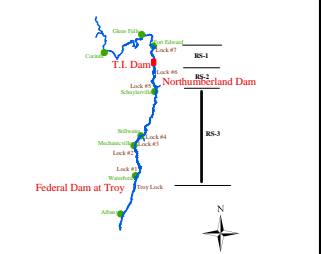
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

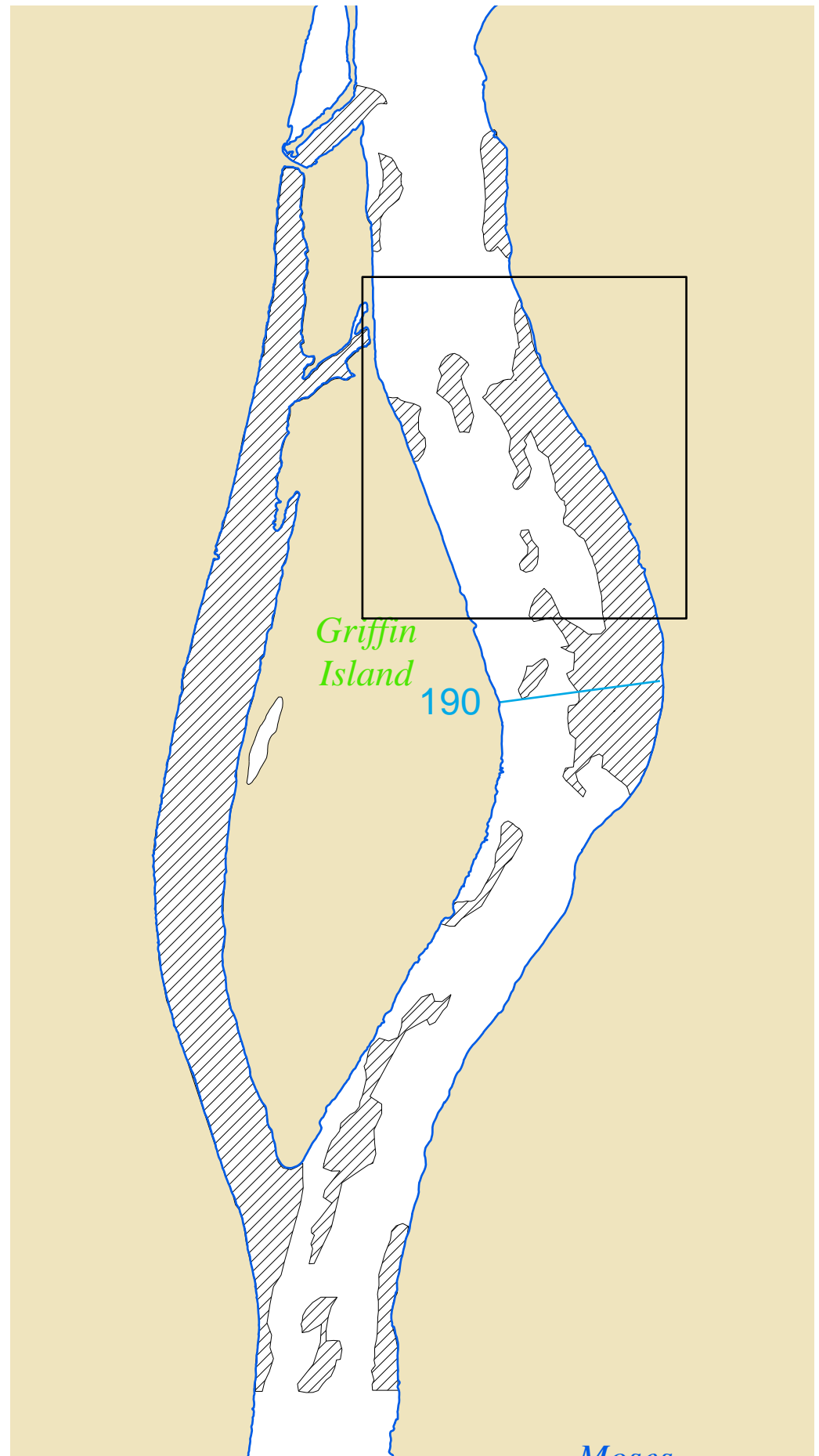
- Dredge Areas
- Dams and Locks
- River Miles
- Bridges
- DOC Contours**
- 12 Inch Intervals
- 3 Inch Intervals
- Incomplete cores with uncertain depths of contamination
- Cores with certain depths of contamination
- Incomplete cores with uncertain depths of contamination but integrated into interpolation
- Historic cores
- Depth scale (in.)**
- 0 - 6
- 6 - 12
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- 36 - 48
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- 84 - 96
- 96 - 108
- 108 - 120

General Electric Company
Hudson River Project

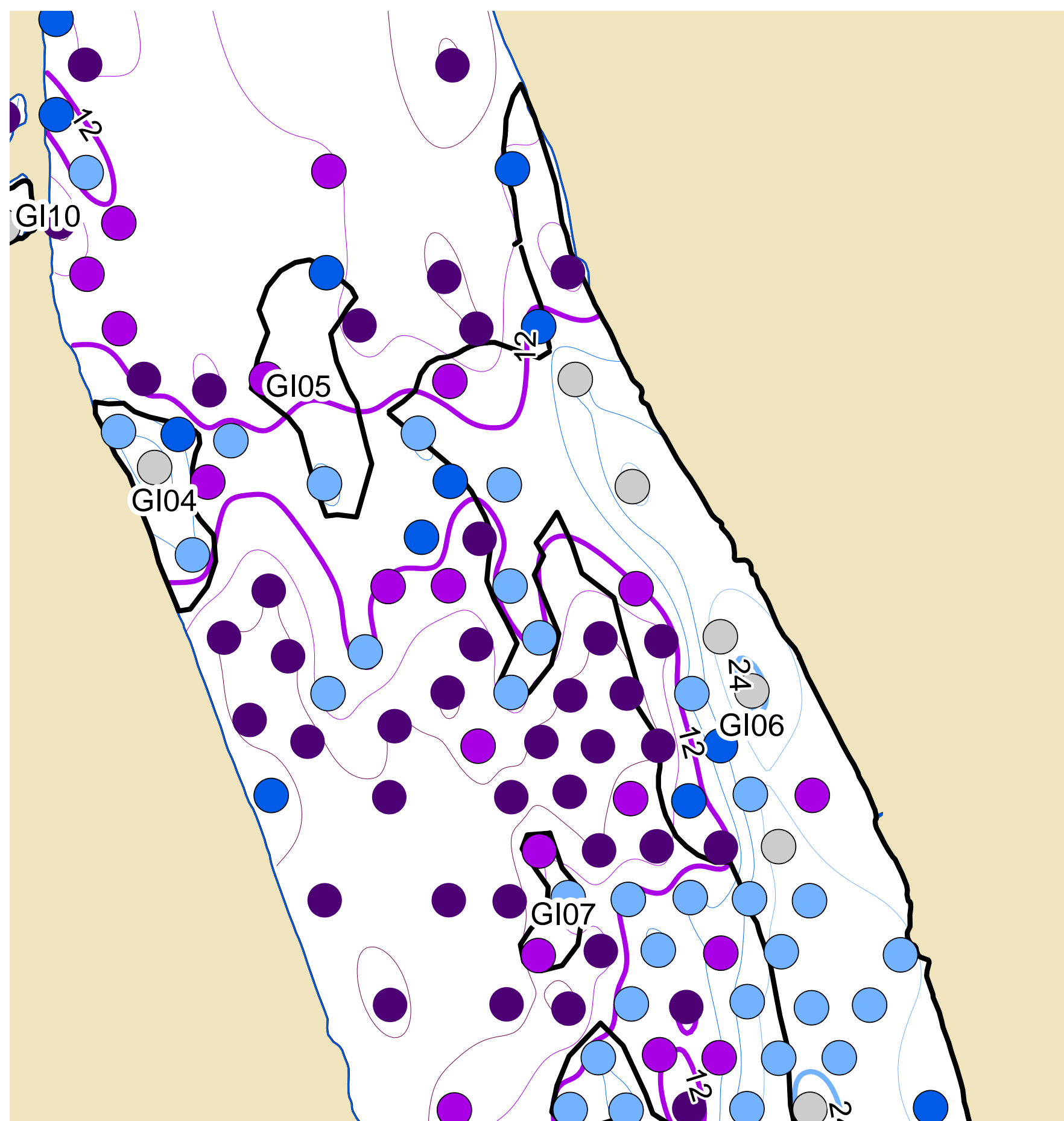
Figure 2-23
Depth of contamination contours for GI01, GI02, GI03, and upper GI10.



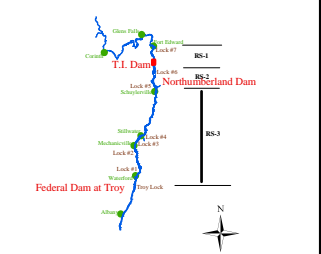
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

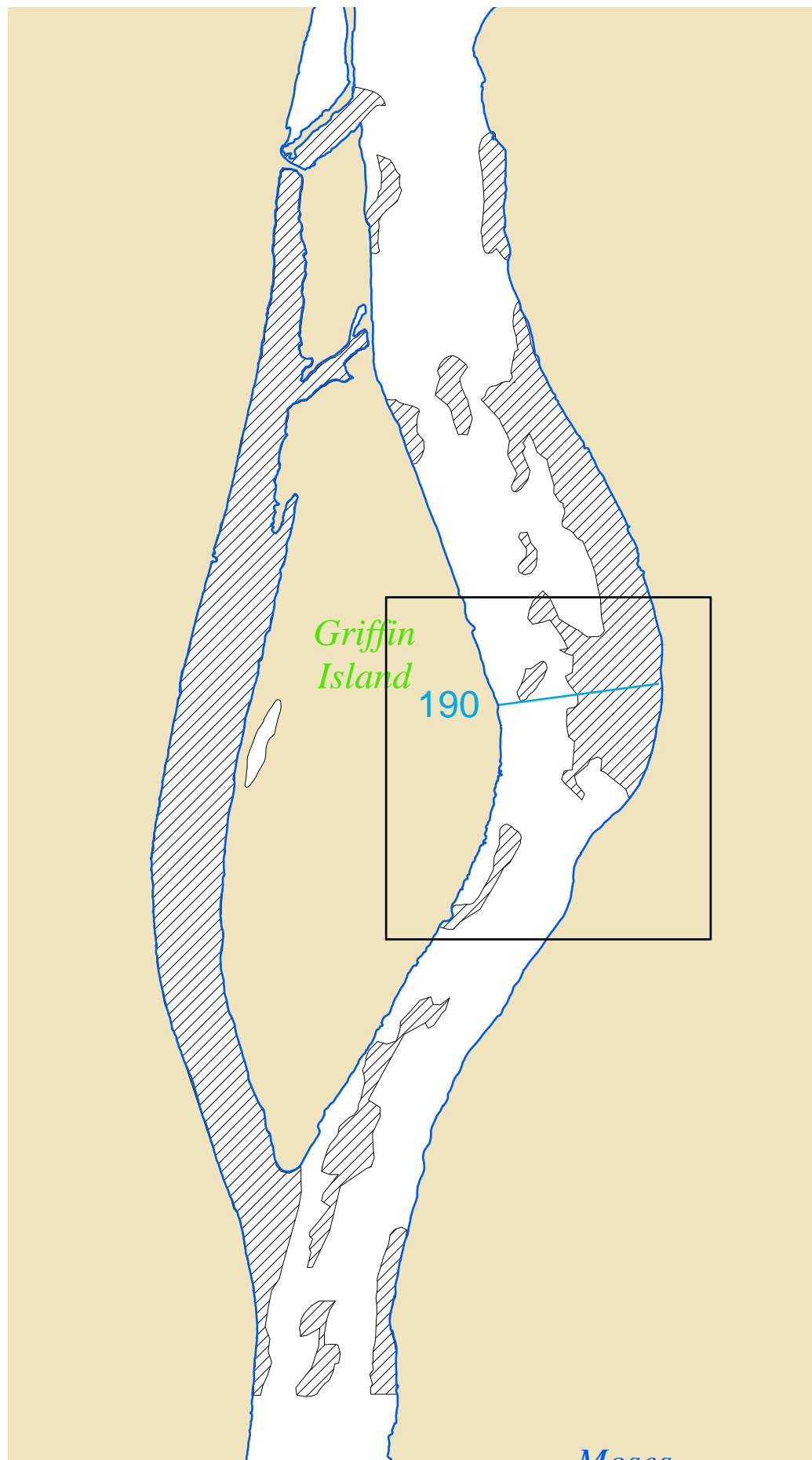
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General Electric Company Hudson River Project

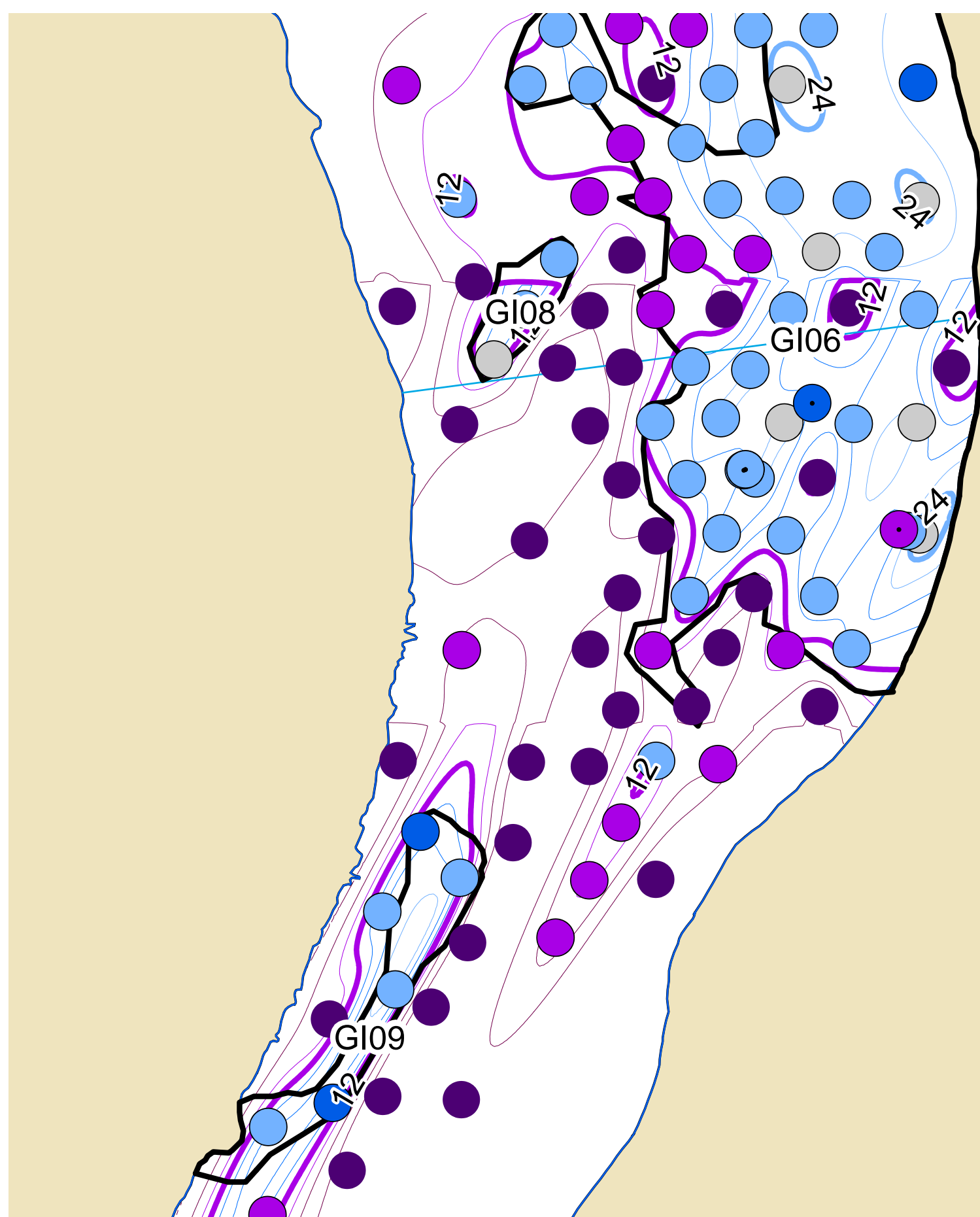
Figure 2-24
Depth of contamination contours for GI04, GI05, upper GI06, and GI07.



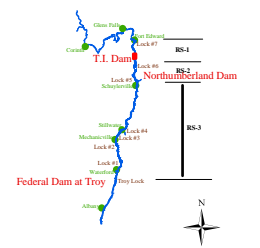
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

- Dredge Areas
 - Dams and Locks
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 - Bridges
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Depth scale (in.)

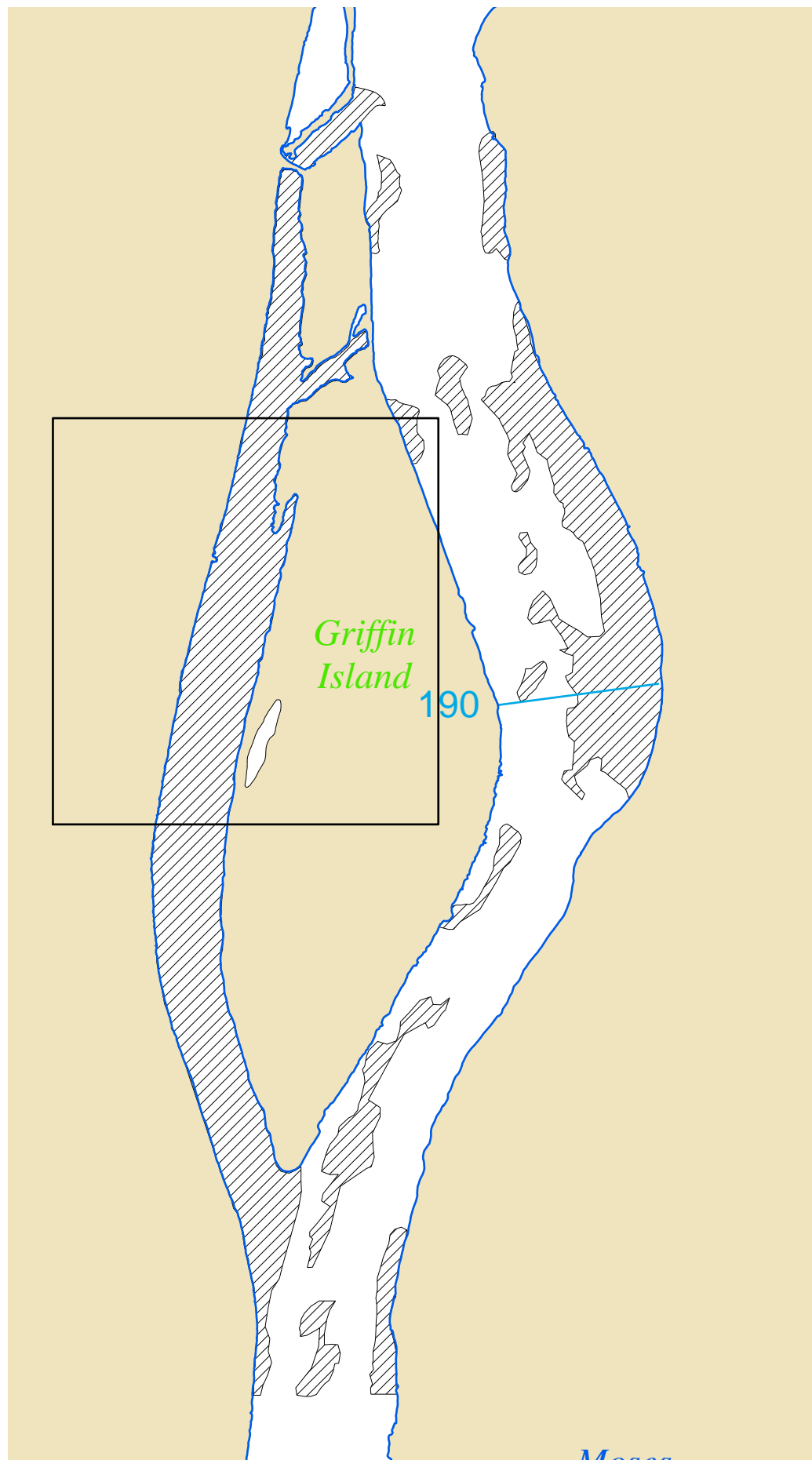
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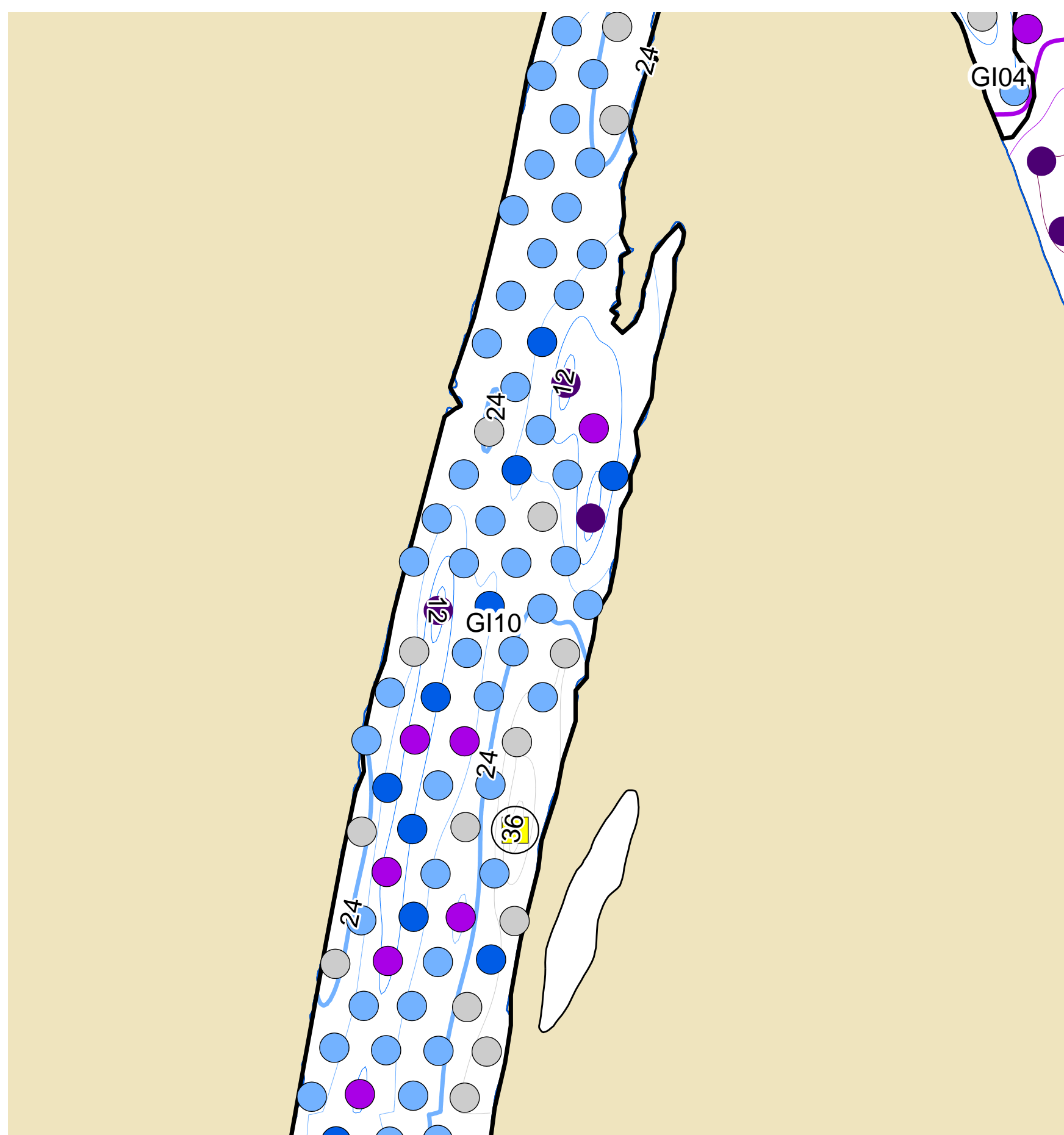
Figure 2-25
Depth of contamination contours for lower GI06, GI07, and GI08.



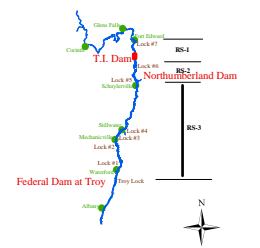
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

- Dredge Areas
 - Dams and Locks
 - River Miles
 - Bridges
- DOC Contours**
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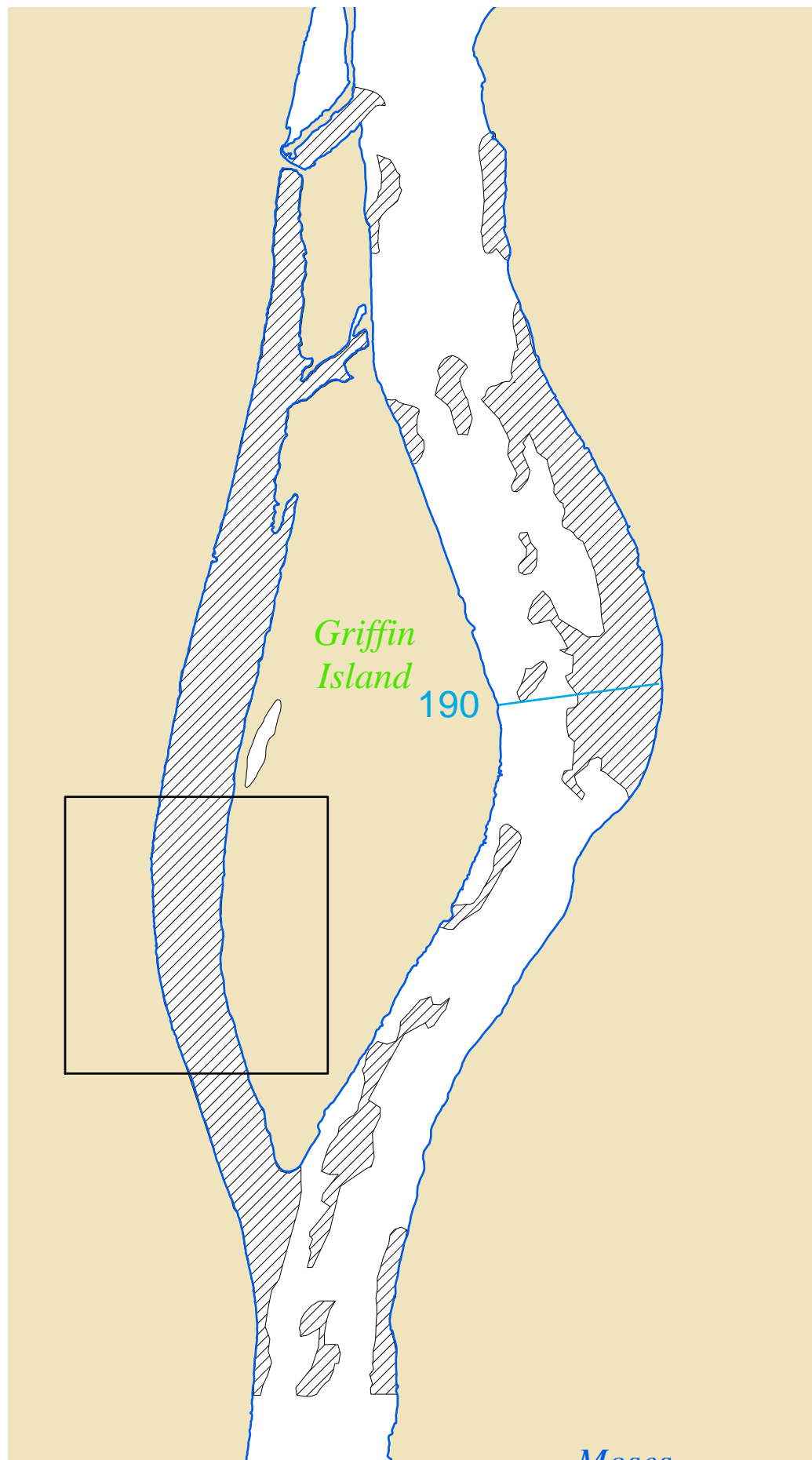
General Electric Company
Hudson River Project

Figure 2-26

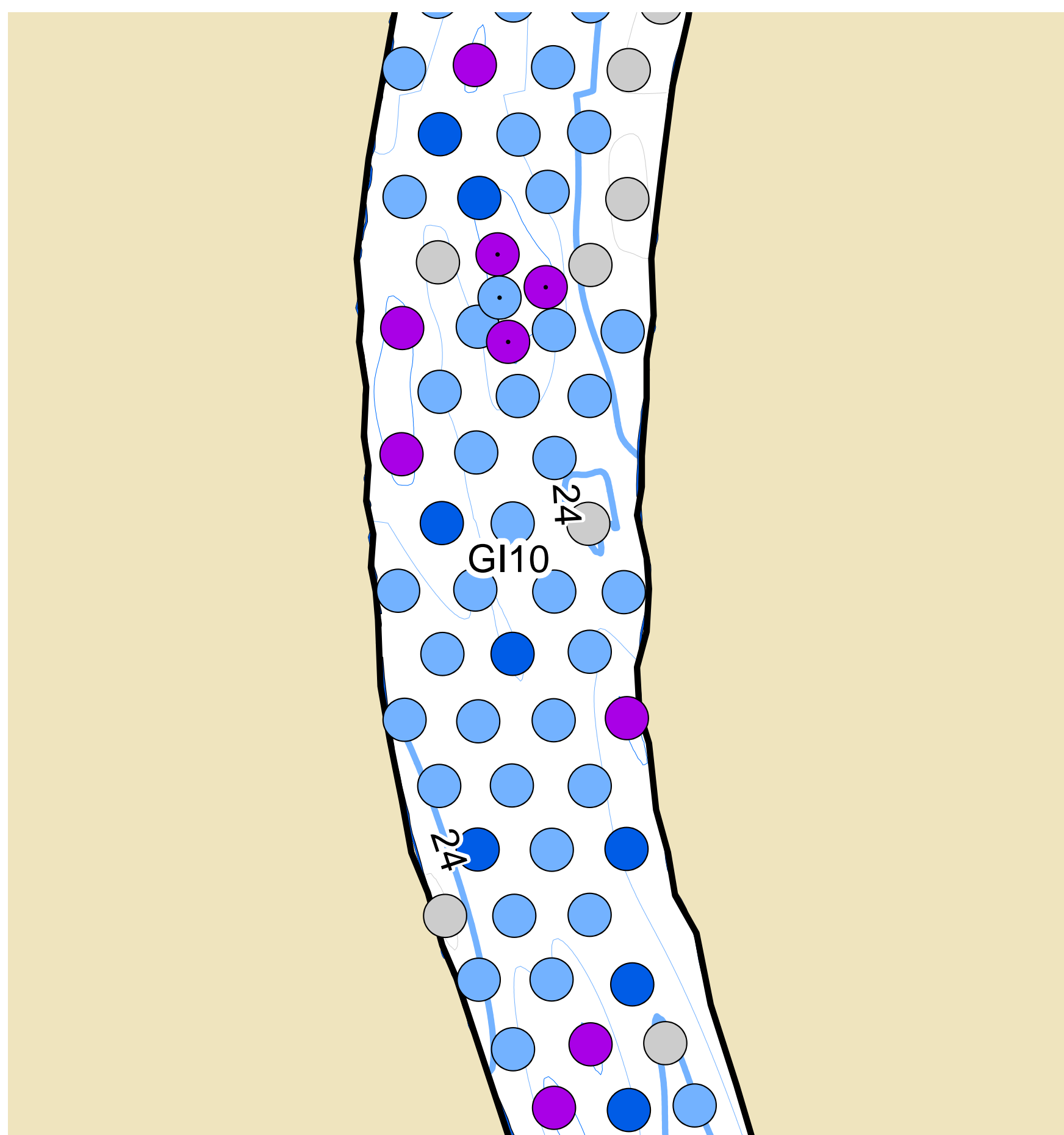
Depth of contamination contours for middle GI10.



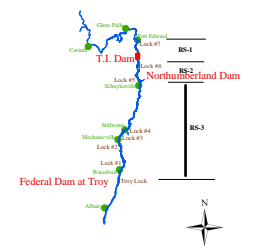
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

- Dredge Areas
- Dams and Locks
- River Miles
- Bridges

DOC Contours

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- 3 Inch Intervals
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- Incomplete cores with uncertain depths of contamination but integrated into interpolation
- Historic cores

Depth scale (in.)

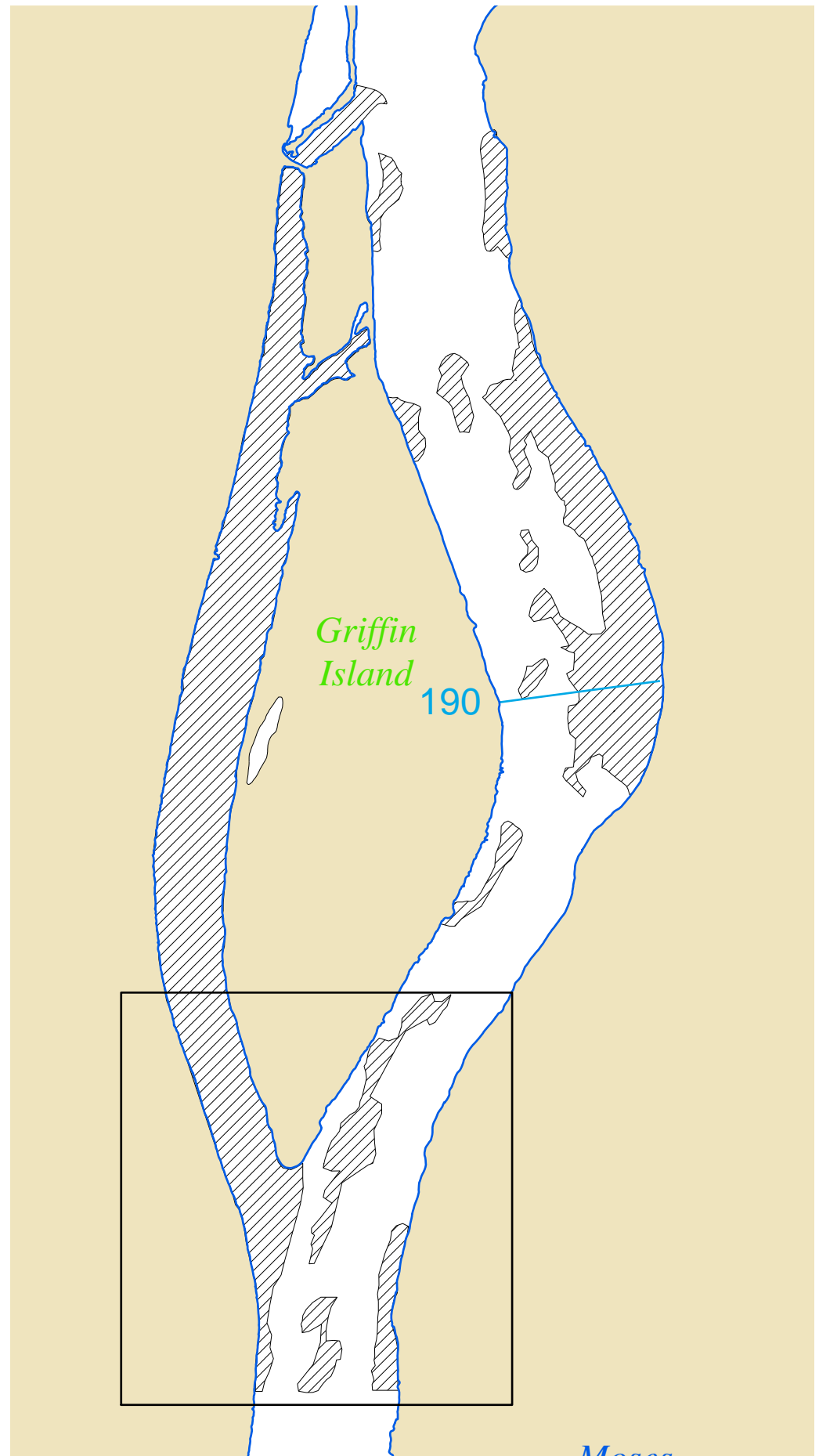
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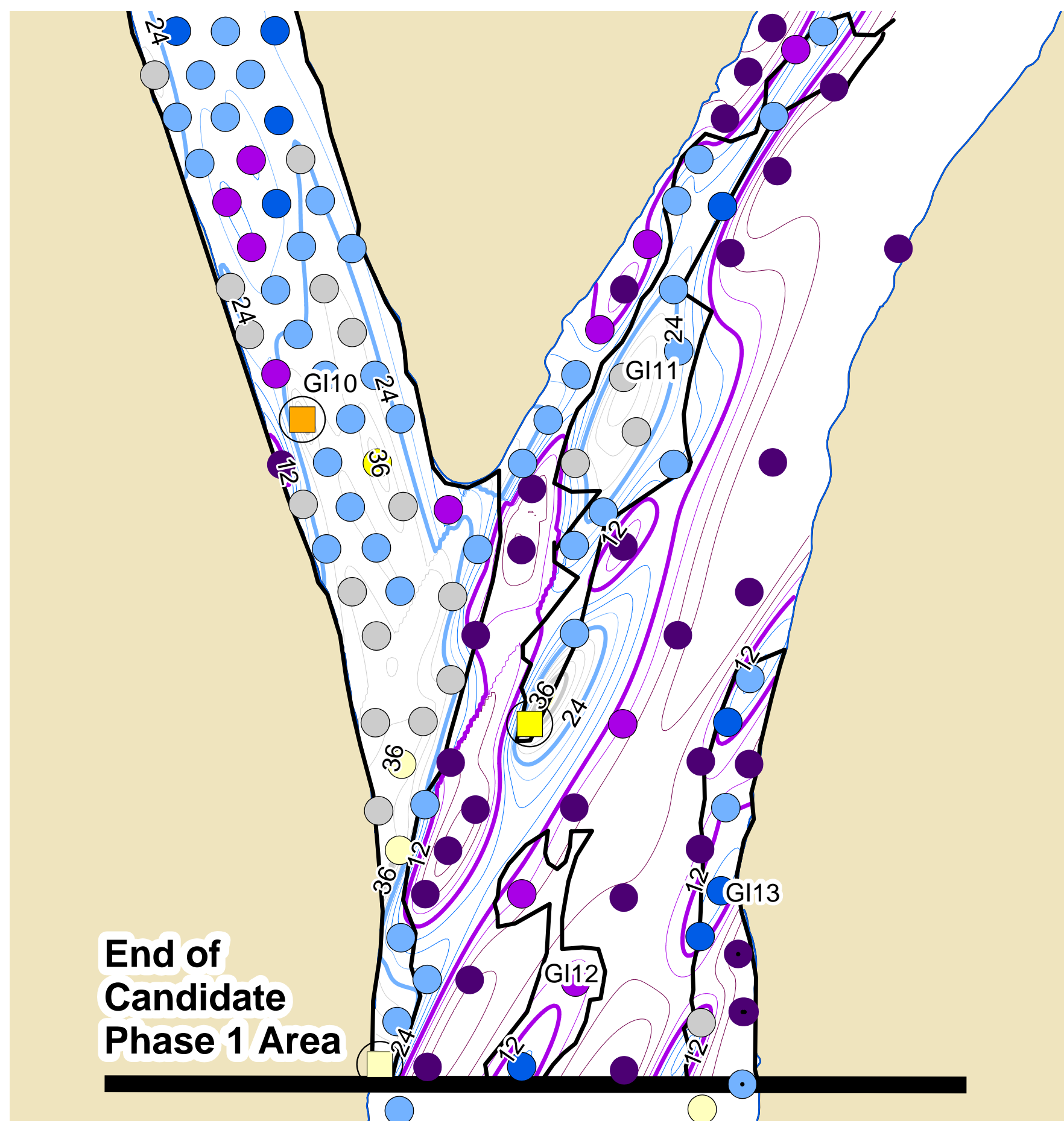
Figure 2-27
Depth of contamination contours for middle GI10.



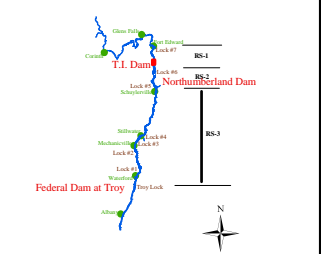
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

- Dredge Areas
- Dams and Locks
- River Miles
- Bridges
- DOC Contours**
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- 3 Inch Intervals

Incomplete cores with uncertain depths of contamination

Cores with certain depths of contamination

Incomplete cores with uncertain depths of contamination but integrated into interpolation

Historic cores

Depth scale (in.)

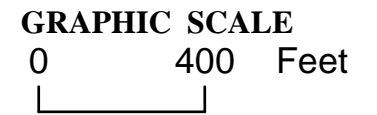
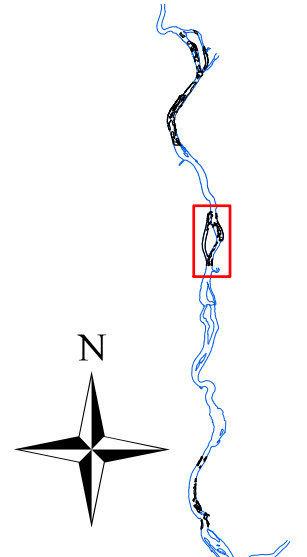
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Figure 2-28

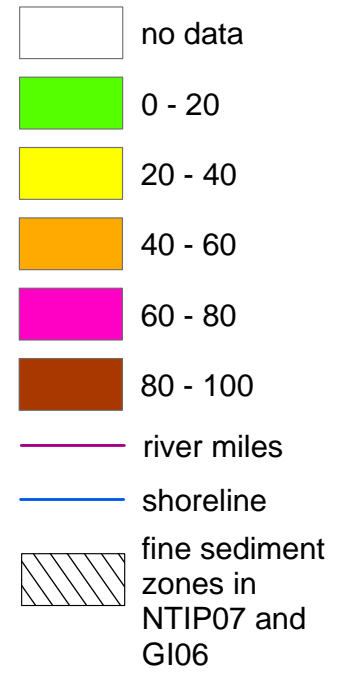
Depth of contamination contours for
GI09, lower GI10,
GI11, GI12, and GI13.





LEGEND

Combined silt and clay content (% by mass)



RS1 Match Line 3

GI01 = 41.4%

GI02 = 28.4%

GI03 = 23.3%

GI05 = 50.1%

GI04 = 28%

GI06 fine zones = 53.3%
(Area of GI06 fine zones = 4.9 acres)

GI07 = 13.9%

GI08 = 57.3%

190

GI10 = 32.7%

Griffin Island

Rest of GI06 = 28.9%
(All of GI06 = 38.3%)

GI09 = 40.2%

GI11 = 21.9%

GI13 = 44.3%

RS1 Match Line 4

GI12 = 31.2%

Moses Kill

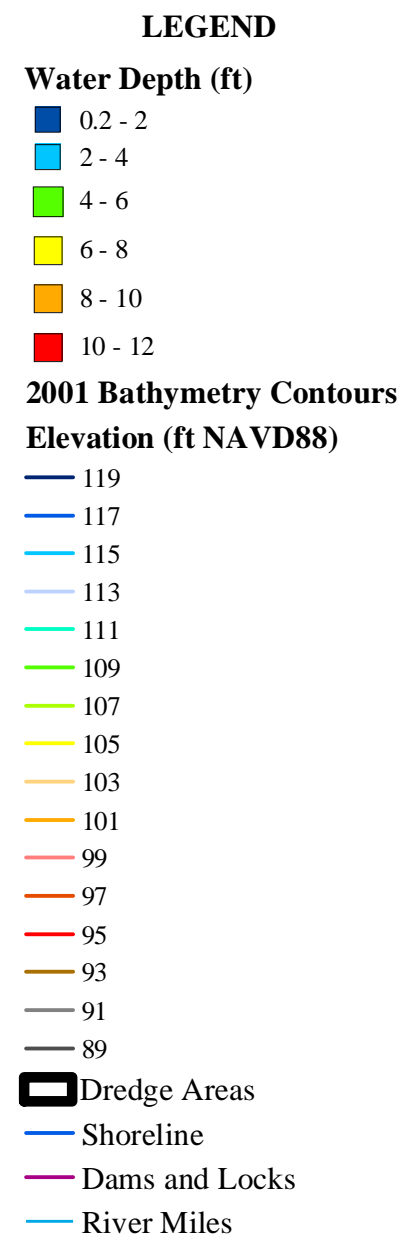
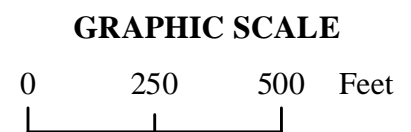
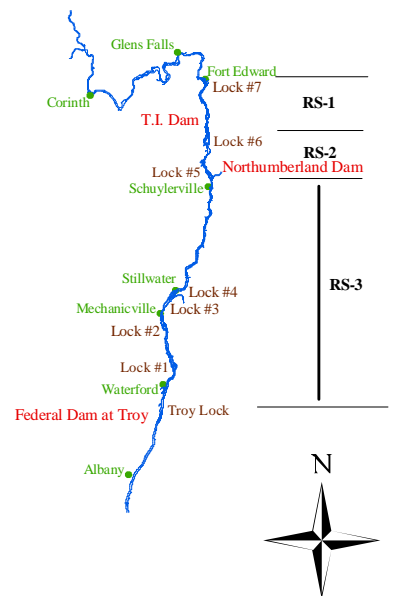
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Figure 2-29.

Percent by mass
silt + clay
- GIA.



LOCATOR MAP OF THE UPPER HUDSON RIVER

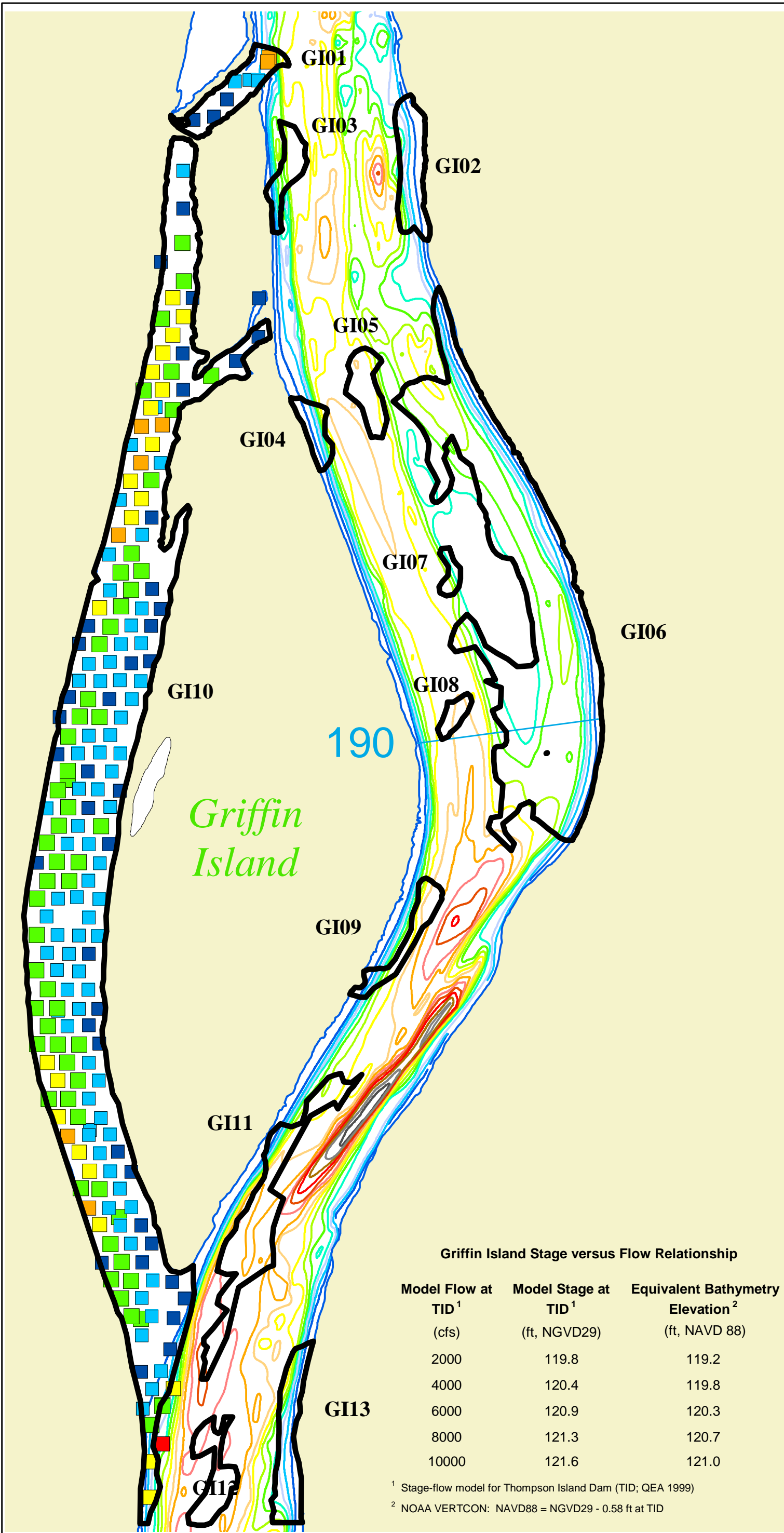


Notes:

- 1) Dredge areas shown were delineated in the Phase 1 Dredge Area Delineation Report (QEA 2004).
- 2) Reported water depths represent the depth of water at time off SSAP core collection.
- 3) Elevation data is referenced to North American Vertical Datum of 1988 (NAVD88).

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Figure 2-30. Bathymetry Contours and Water Depths - GIA.



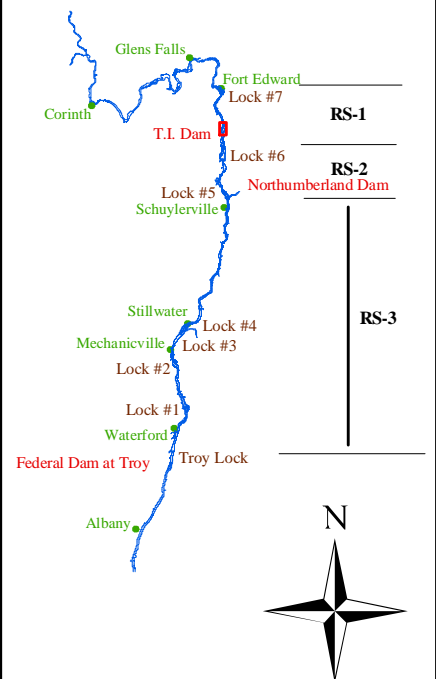
Griffin Island Stage versus Flow Relationship

Model Flow at TID ¹ (cfs)	Model Stage at TID ¹ (ft, NGVD29)	Equivalent Bathymetry Elevation ² (ft, NAVD 88)
2000	119.8	119.2
4000	120.4	119.8
6000	120.9	120.3
8000	121.3	120.7
10000	121.6	121.0

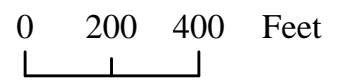
¹ Stage-flow model for Thompson Island Dam (TID; QEA 1999)

² NOAA VERTCON: NAVD88 = NGVD29 - 0.58 ft at TID

LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

- Sonar Targets
- Dredge Areas
- Shore Line
- Dams and Locks
- River Miles

Notes:

1. Side Scan Sonar target areas created by: Ocean Surveys, Inc., 2003. Data Interpretation Report - Side Scan Sonar Survey Investigation. Hudson River - River Sections 1 and 3, Fall 2002. OSI Report No. 02ES072 - DIR - F2002. May 1, 2003. Prepared for the General Electric Company.
2. Dredge areas shown were delineated in the Phase 1 Dredge Area Delineation Report (QEA 2004).

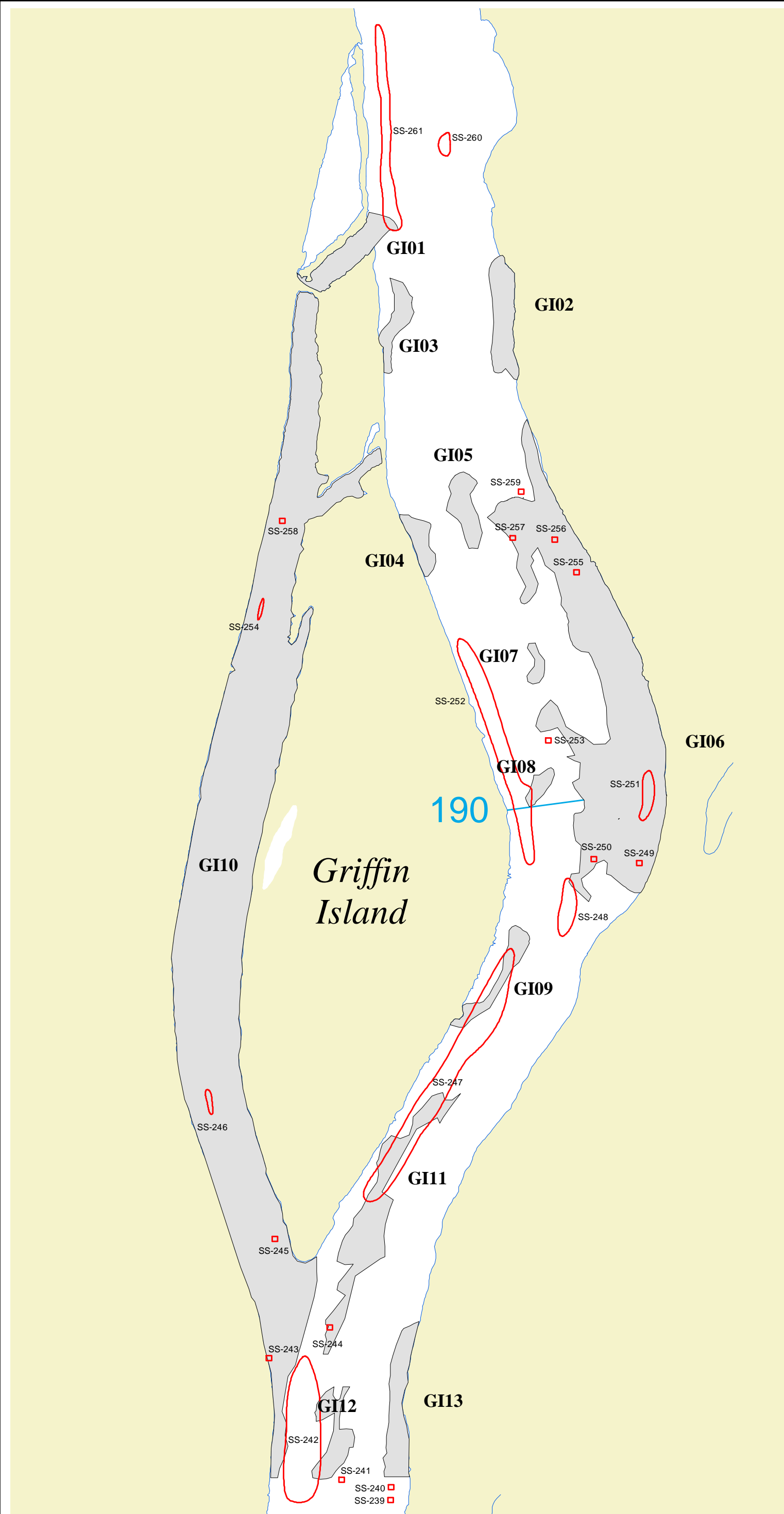
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**Figure 2-31.
Charted sonar targets
and debris areas - GIA.**

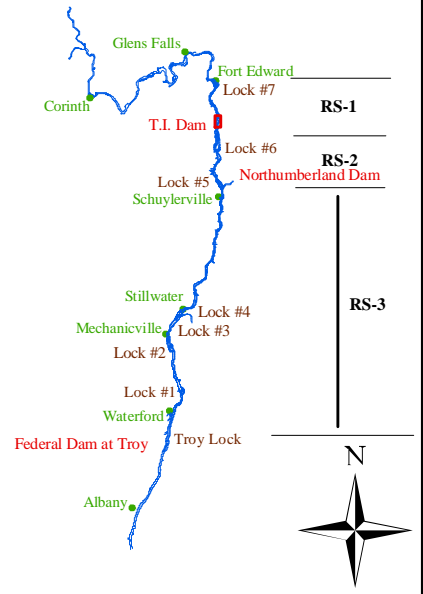


GENdad:132

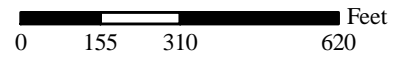
September 2004



LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



Check graphic scale before using.

LEGEND

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Groundtruthing Locations

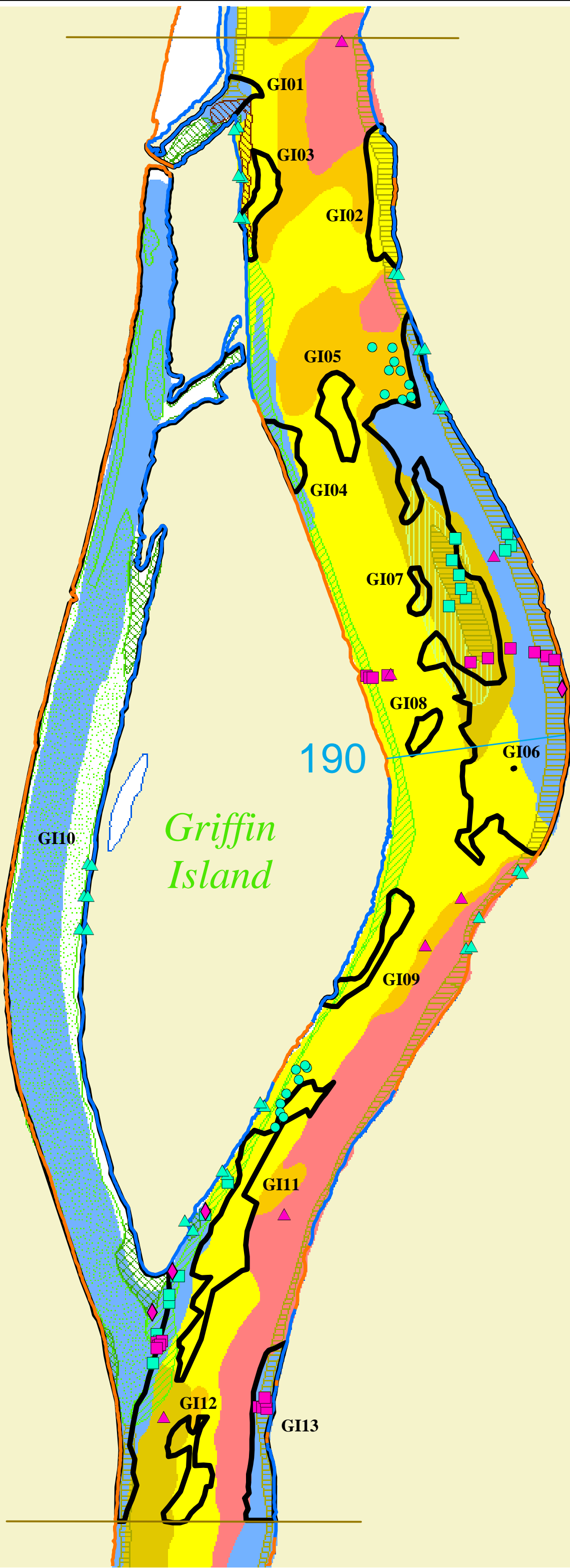
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- Dredge Areas
- Phase 1 Boundary
- River Miles
- Shore Line
- Dams and Locks

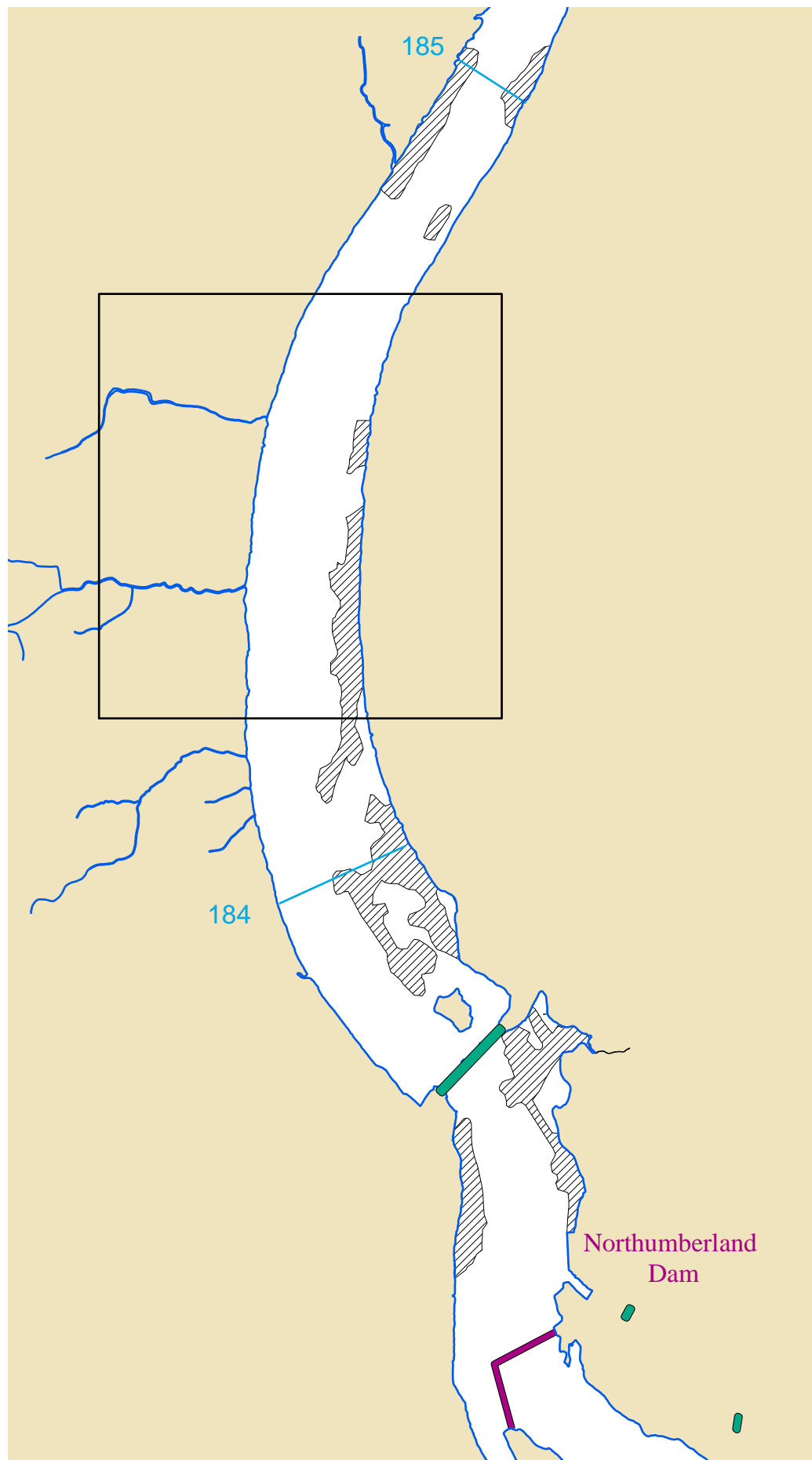
*SAV % Cover Adapted from Orth et al.1991

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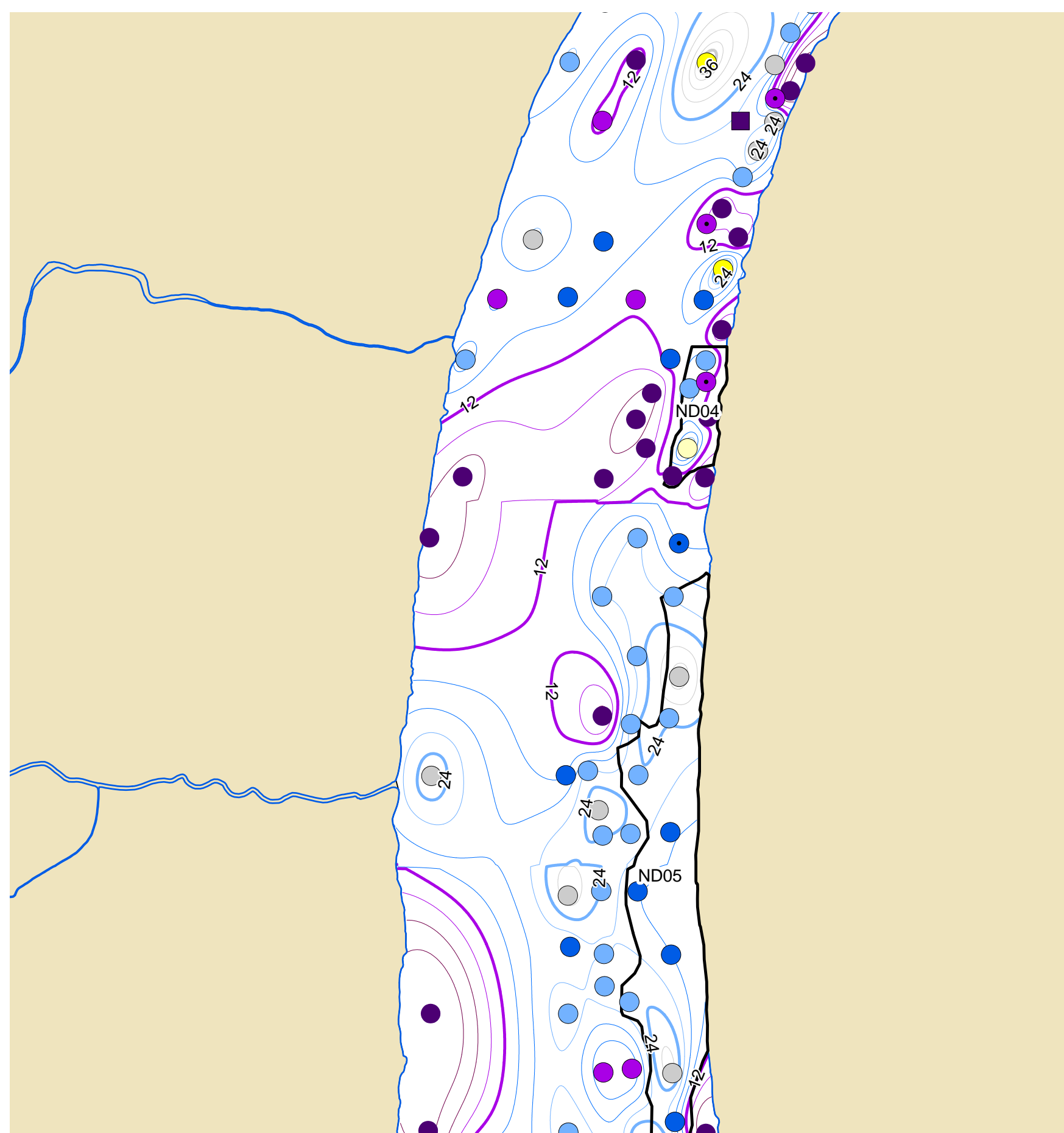
Figure 2-32. Habitat Types - GIA.



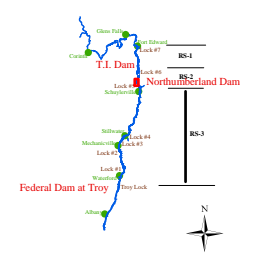
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

- Dredge Areas
- Dams and Locks
- River Miles
- Bridges

DOC Contours

- 12 Inch Intervals
- 3 Inch Intervals

Incomplete cores with uncertain depths of contamination

Cores with certain depths of contamination

Incomplete cores with uncertain depths of contamination but integrated into interpolation

Historic cores

Depth scale (in.)

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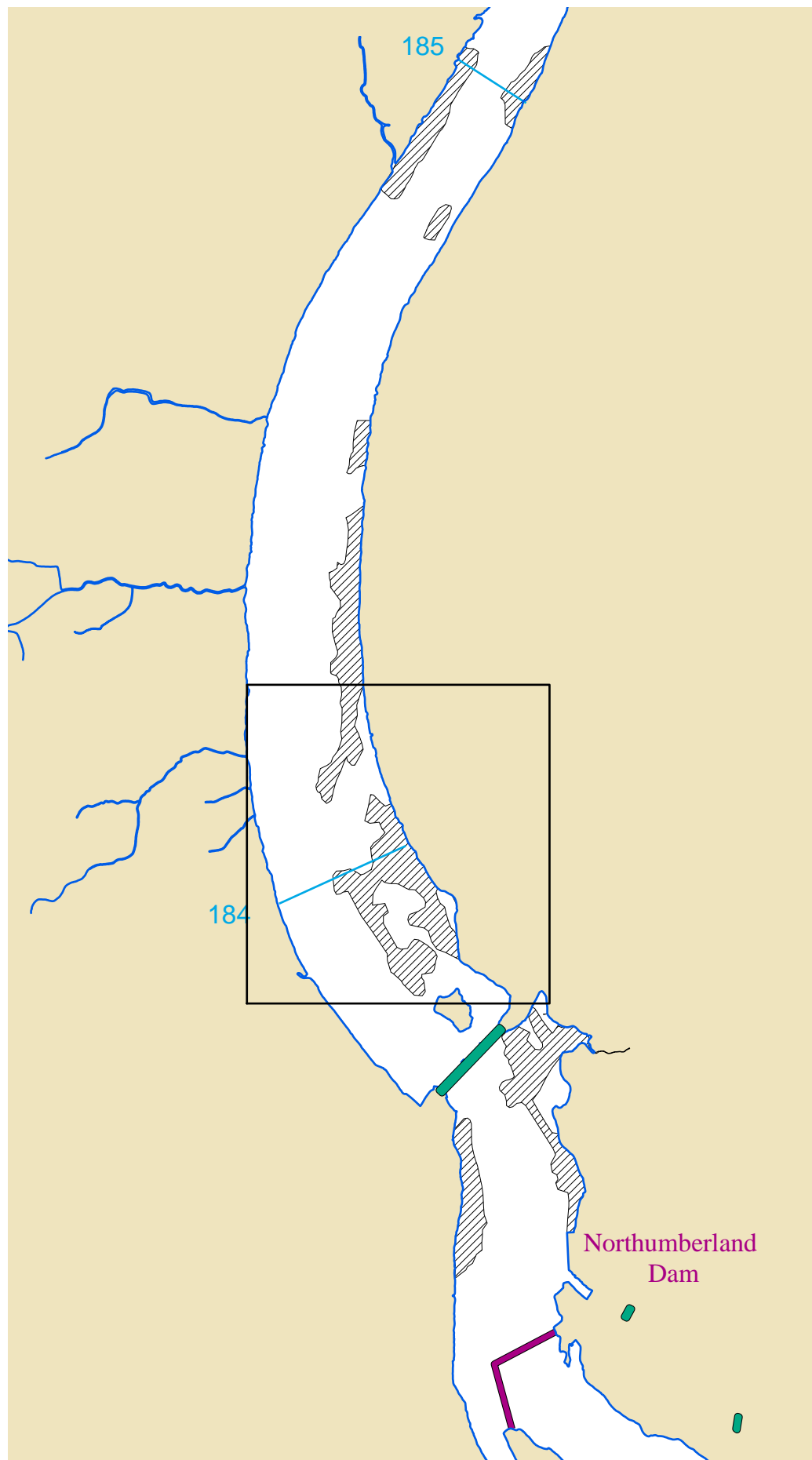
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Figure 2-34

Depth of contamination contours for ND04 and upper ND05.

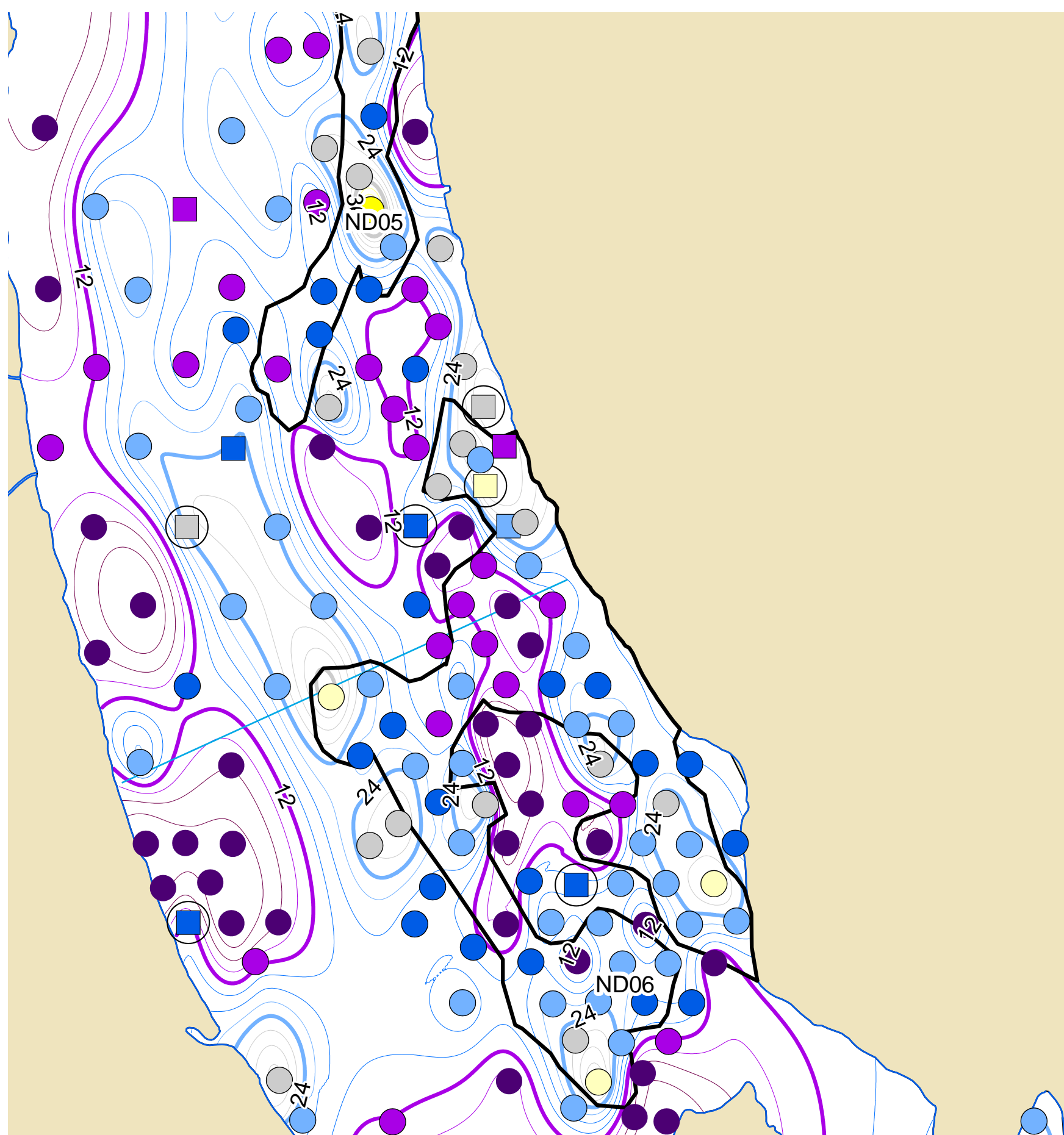


GENERAL AREA



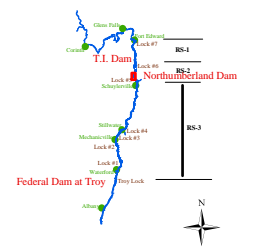
0 950 1,900 3,800 Feet

FOCUSED AREA



0 250 500 750 Feet

LOCATOR MAP OF THE HUDSON RIVER



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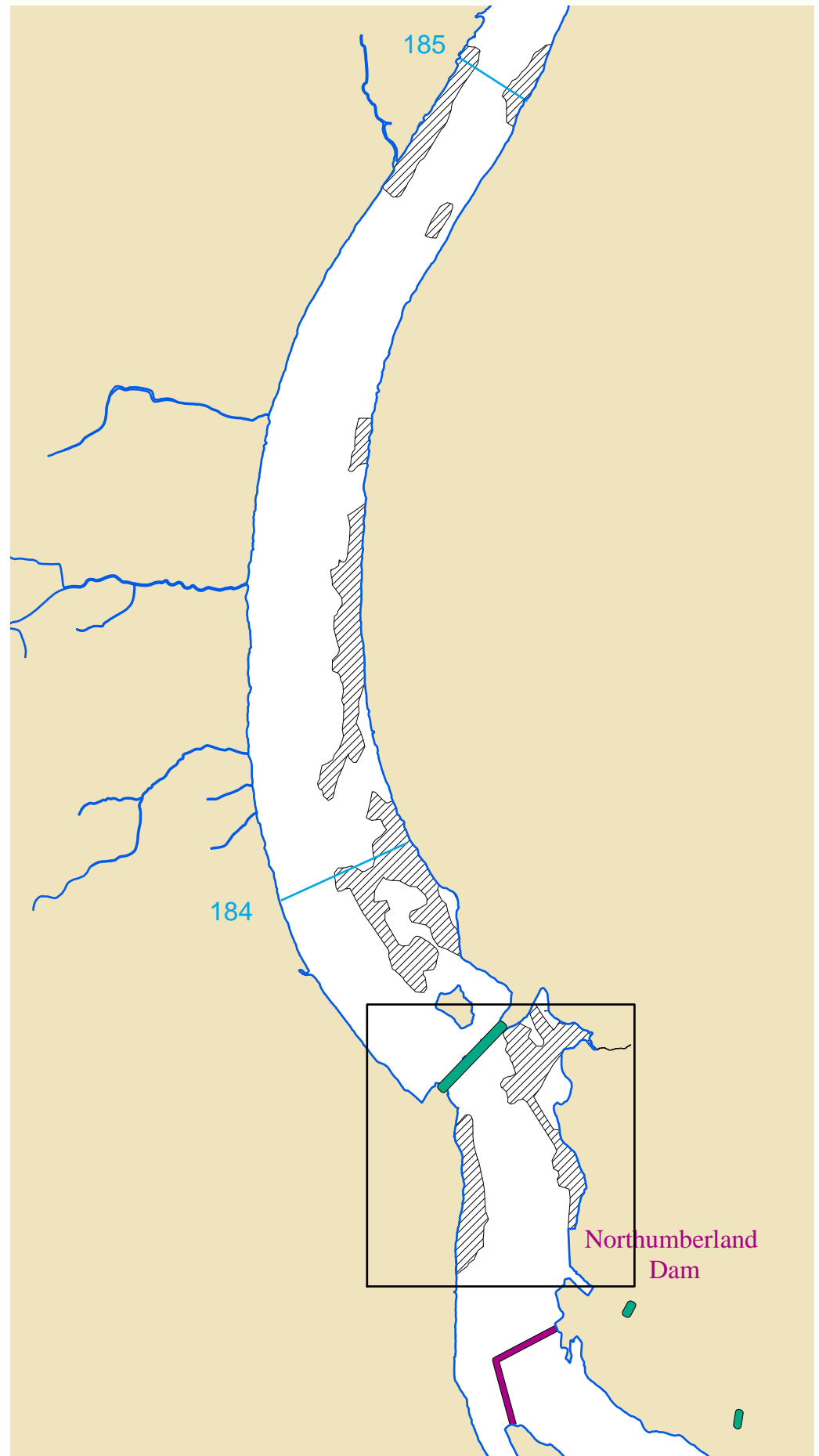
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Figure 2-35

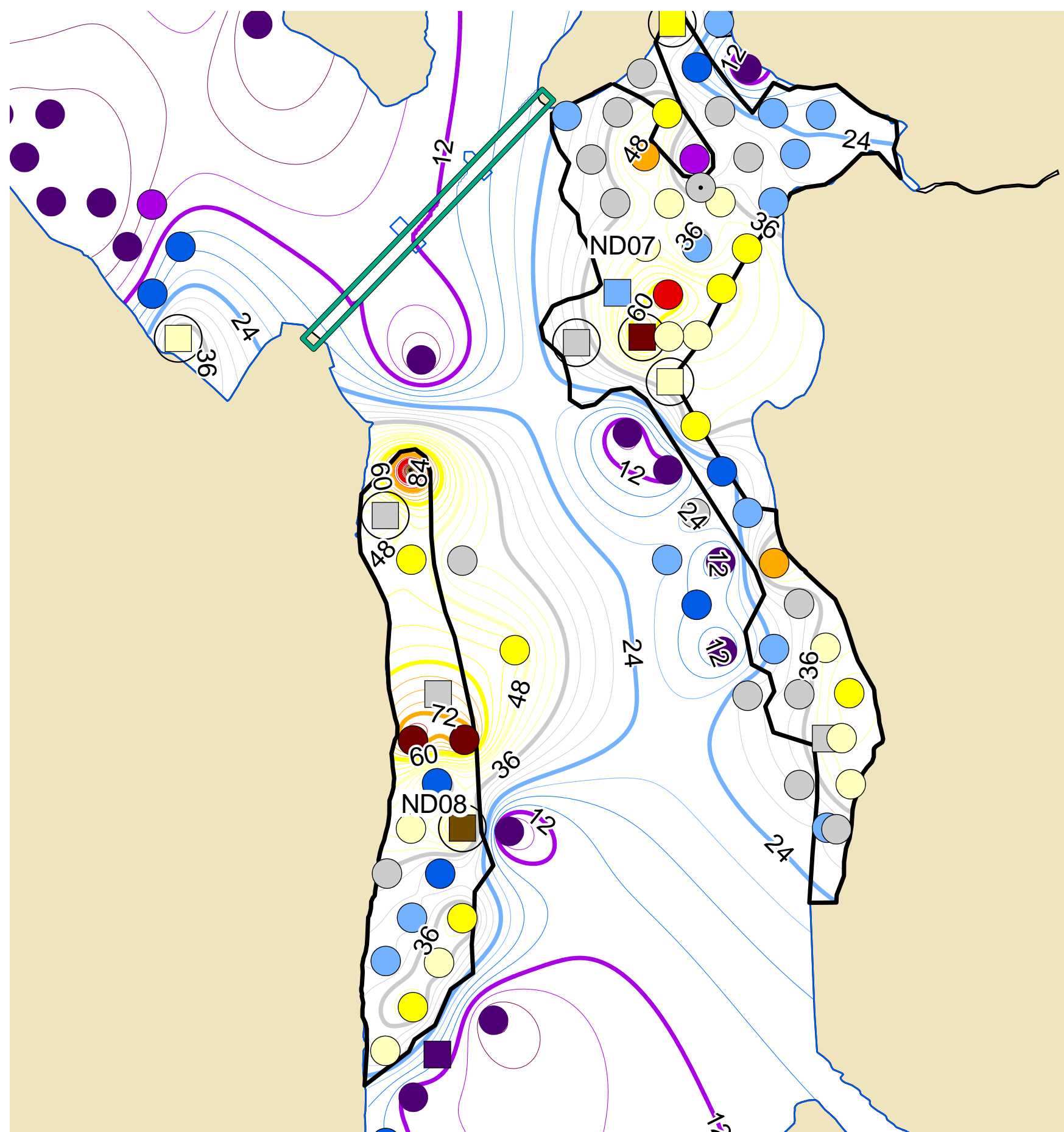
Depth of contamination contours for lower ND05 and ND06.



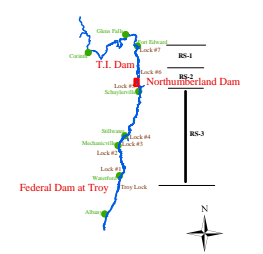
GENERAL AREA



FOCUSED AREA



LOCATOR MAP OF THE HUDSON RIVER



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- Historic cores

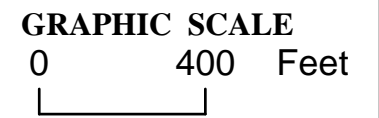
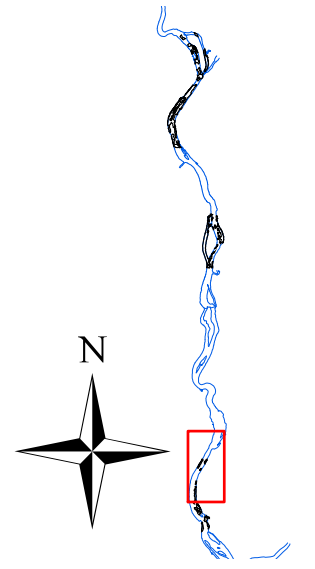
- Depth scale (in.)**
- 0 - 6
 - 6 - 12
 - 12 - 18
 - 18 - 24
 - 24 - 36
 - 36 - 48
 - 48 - 60
 - 60 - 72
 - 72 - 84
 - 84 - 96
 - 96 - 108
 - 108 - 120

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Figure 2-36
Depth of contamination contours for ND07 and ND08.

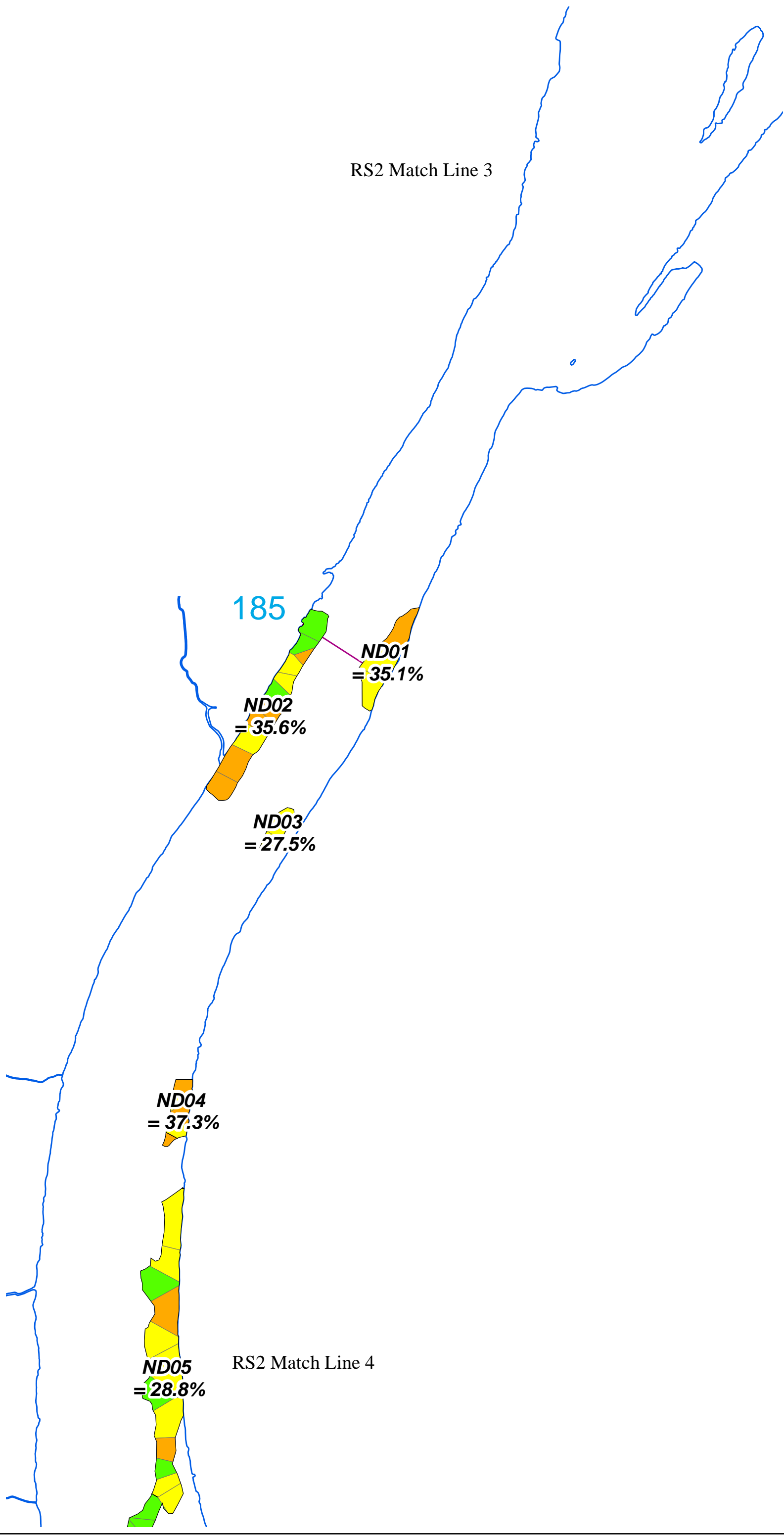


LOCATOR MAP OF THE UPPER HUDSON RIVER



LEGEND

Combined silt and clay content (% by mass)

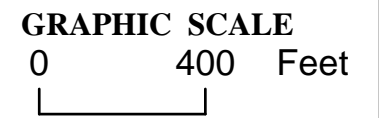
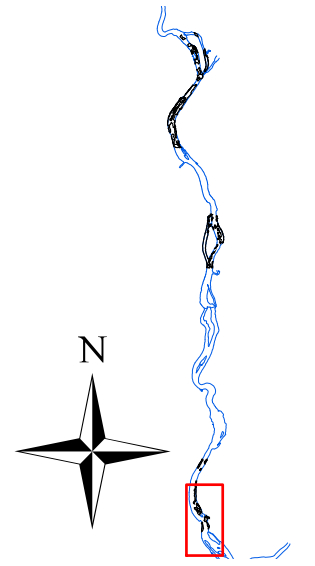


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Figure 2-37.
Percent by mass silt + clay - northern NDA.

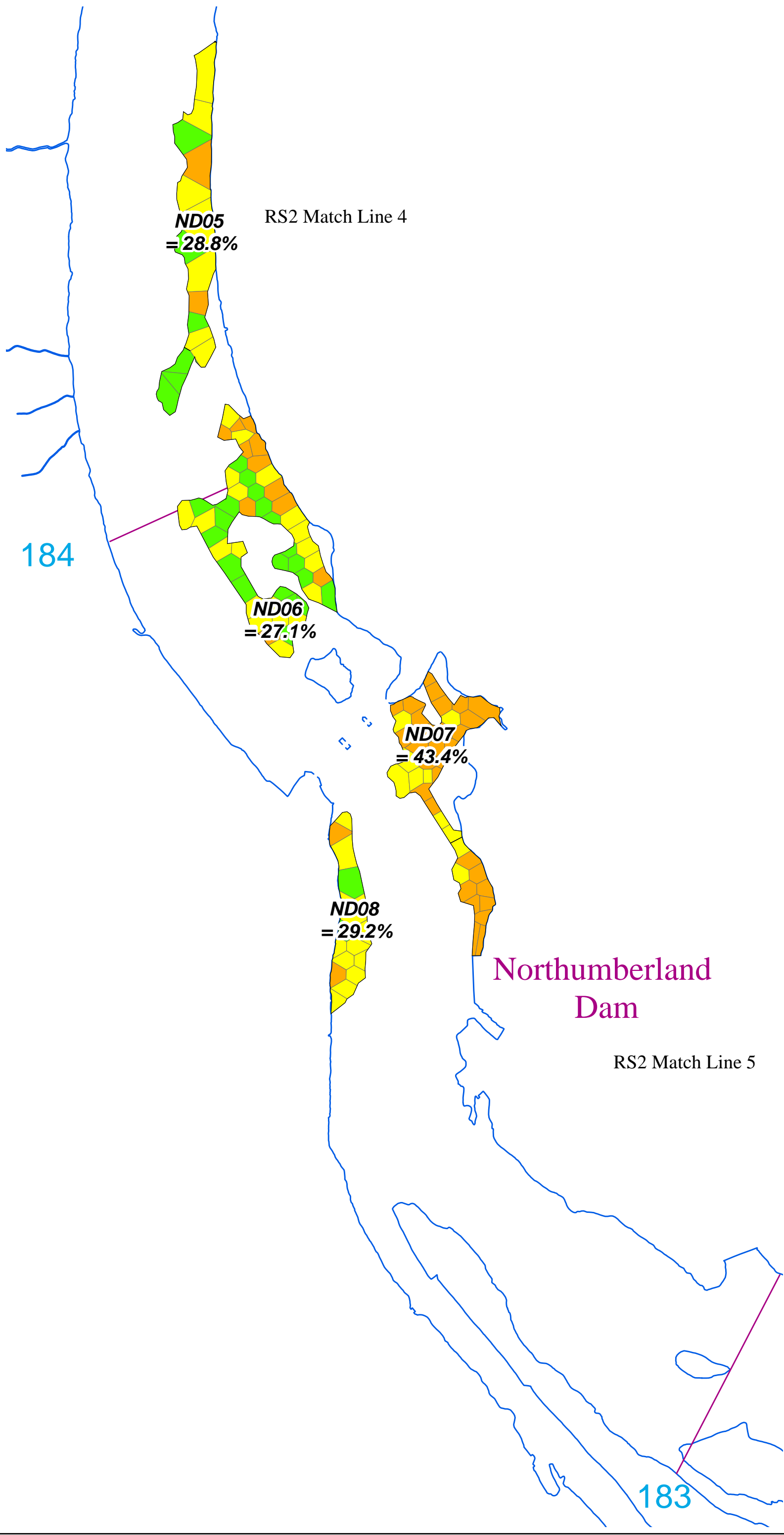
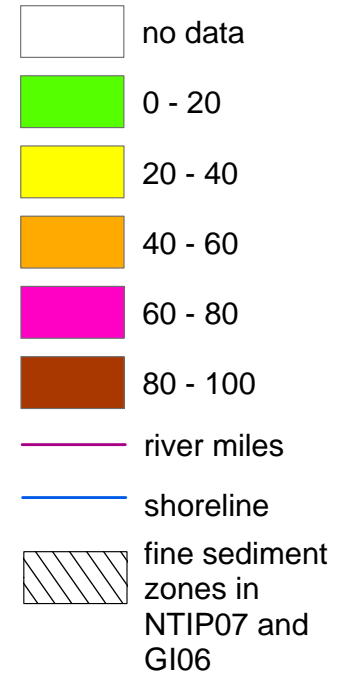


LOCATOR MAP OF THE UPPER HUDSON RIVER



LEGEND

Combined silt and clay content (% by mass)

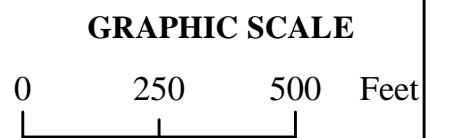
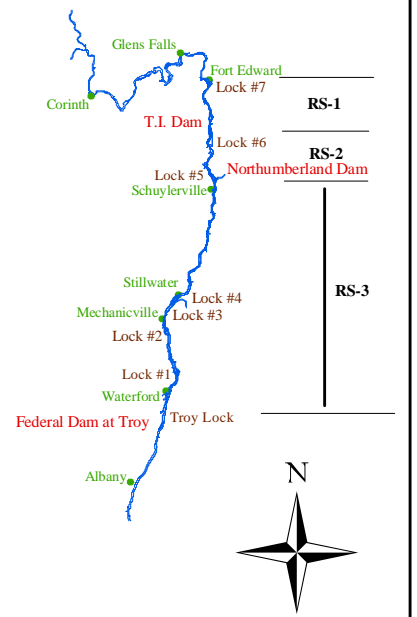


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Figure 2-38.
Percent by mass silt + clay - southern NDA.



LOCATOR MAP OF THE UPPER HUDSON RIVER



LEGEND

**2003 Bathymetry Contours
Elevation (ft NAVD88)**

- 102
- 100
- 98
- 96
- 94
- 92
- 90
- 87
- 84
- 81
- 78
- 73
- 68
- 63
- Dredge Areas
- Shoreline
- Dams and Locks
- River Miles

Notes:
 1) Dredge areas shown were delineated in the Phase 1 Dredge Area Delineation Report (QEA 2004).
 2) Elevation data is referenced to North American Vertical Datum of 1988 (NAVD88).

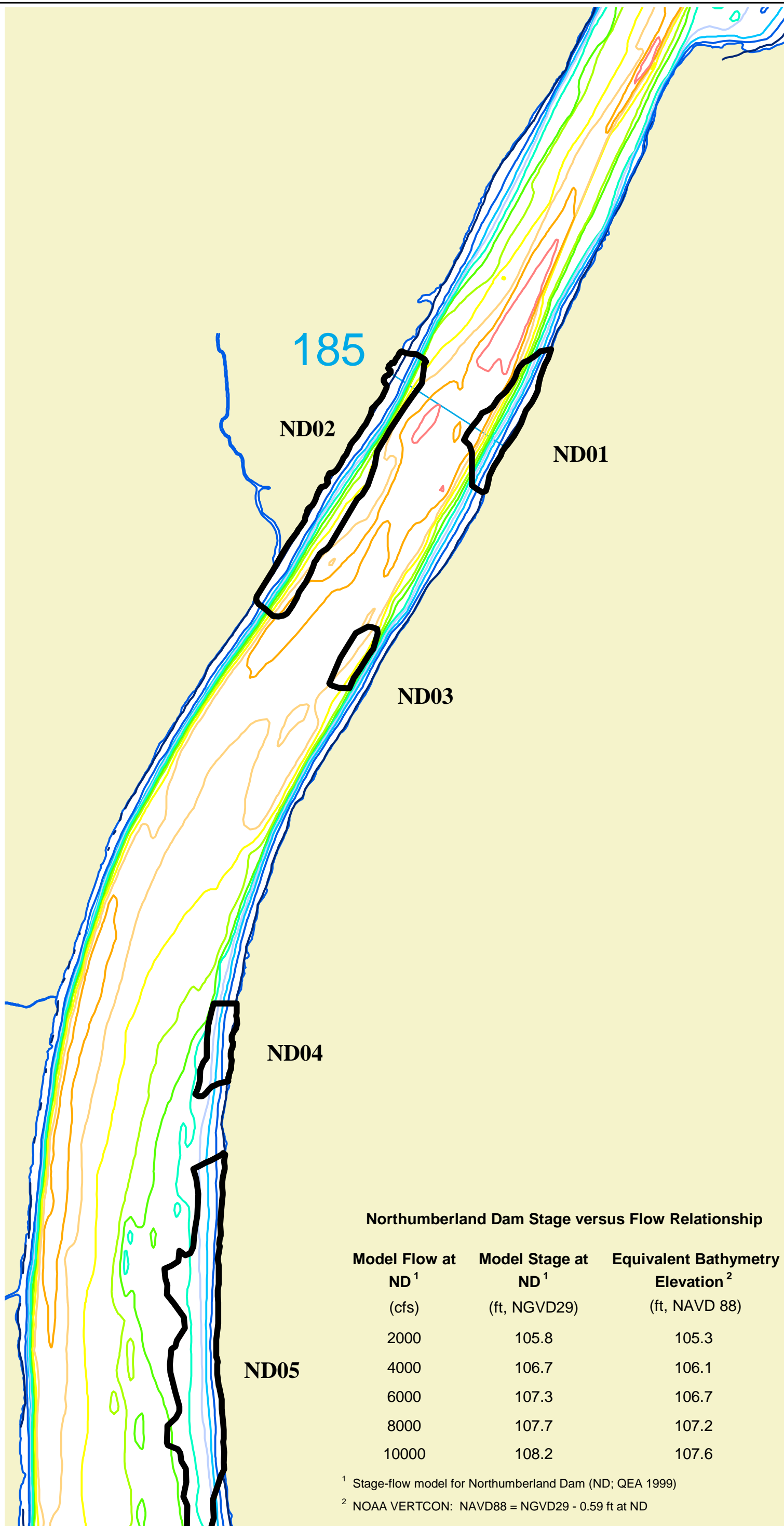
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**Figure 2-39.
Bathymetry Contours
and Water Depths -
Northern NDA.**



GENdad:132

September 2004

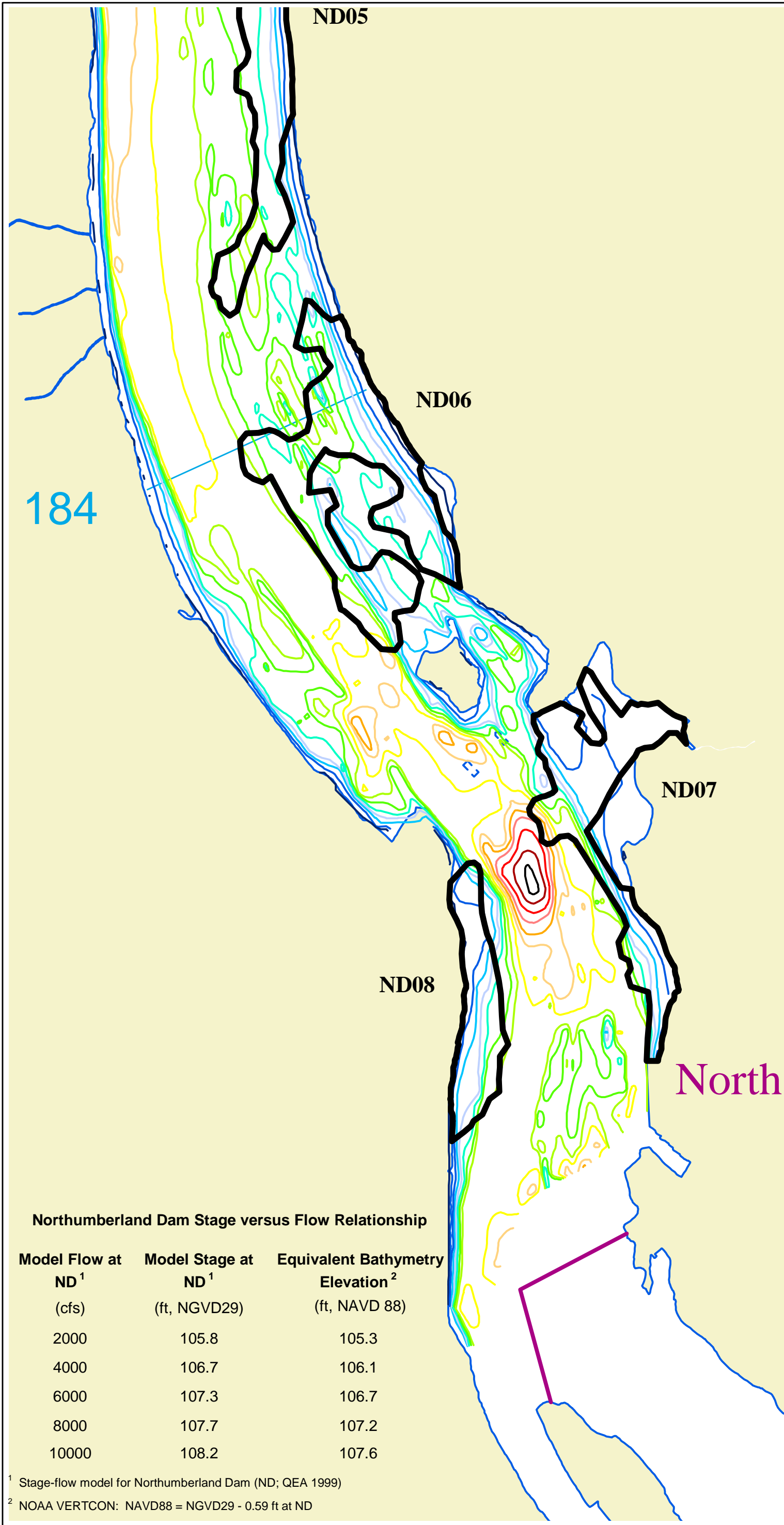


Northumberland Dam Stage versus Flow Relationship

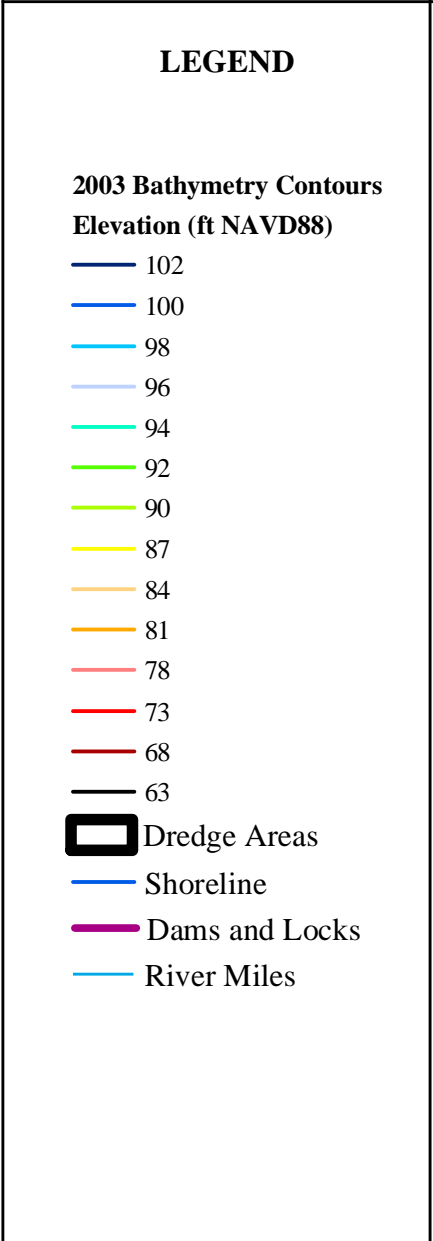
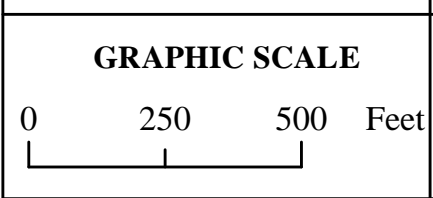
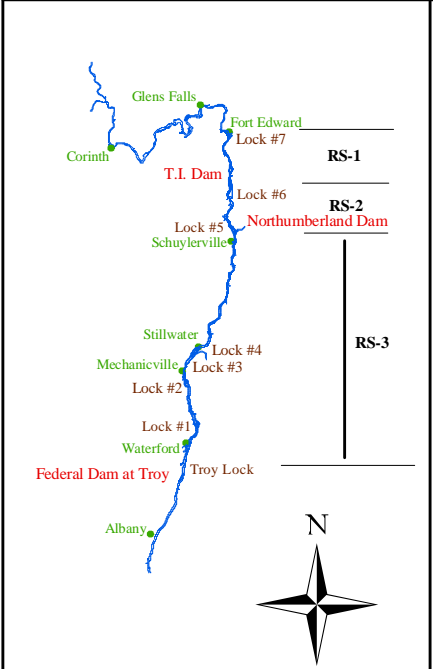
Model Flow at ND ¹ (cfs)	Model Stage at ND ¹ (ft, NGVD29)	Equivalent Bathymetry Elevation ² (ft, NAVD 88)
2000	105.8	105.3
4000	106.7	106.1
6000	107.3	106.7
8000	107.7	107.2
10000	108.2	107.6

¹ Stage-flow model for Northumberland Dam (ND; QEA 1999)

² NOAA VERTCON: NAVD88 = NGVD29 - 0.59 ft at ND



LOCATOR MAP OF THE UPPER HUDSON RIVER



Notes:
 1) Dredge areas shown were delineated in the Phase 1 Dredge Area Delineation Report (QEA 2004).
 2) Elevation data is referenced to North American Vertical Datum of 1988 (NAVD88).

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**Figure 2-40.
Bathymetry Contours
and Water Depths -
Southern NDA.**

GENdad:132 September 2004

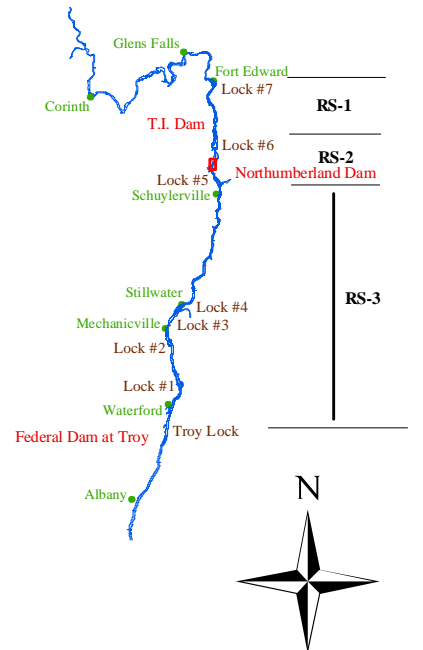
Northumberland Dam Stage versus Flow Relationship

Model Flow at ND ¹ (cfs)	Model Stage at ND ¹ (ft, NGVD29)	Equivalent Bathymetry Elevation ² (ft, NAVD 88)
2000	105.8	105.3
4000	106.7	106.1
6000	107.3	106.7
8000	107.7	107.2
10000	108.2	107.6

¹ Stage-flow model for Northumberland Dam (ND; QEA 1999)

² NOAA VERTCON: NAVD88 = NGVD29 - 0.59 ft at ND

LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

- Sonar Targets
- Dredge Areas
- Shore Line
- Dams and Locks
- River Miles

Notes:

1. Side Scan Sonar target areas created by: Ocean Surveys, Inc., 2003. Data Interpretation Report - Side Scan Sonar Survey Investigation. Hudson River - River Sections 2, Spring 2003. OSI Report No. 02ES072 - DIR - S2003. October 1, 2003. Prepared for the General Electric Company.
2. Dredge areas shown were delineated in the Phase I Dredge Area Delineation Report (QEA 2004).

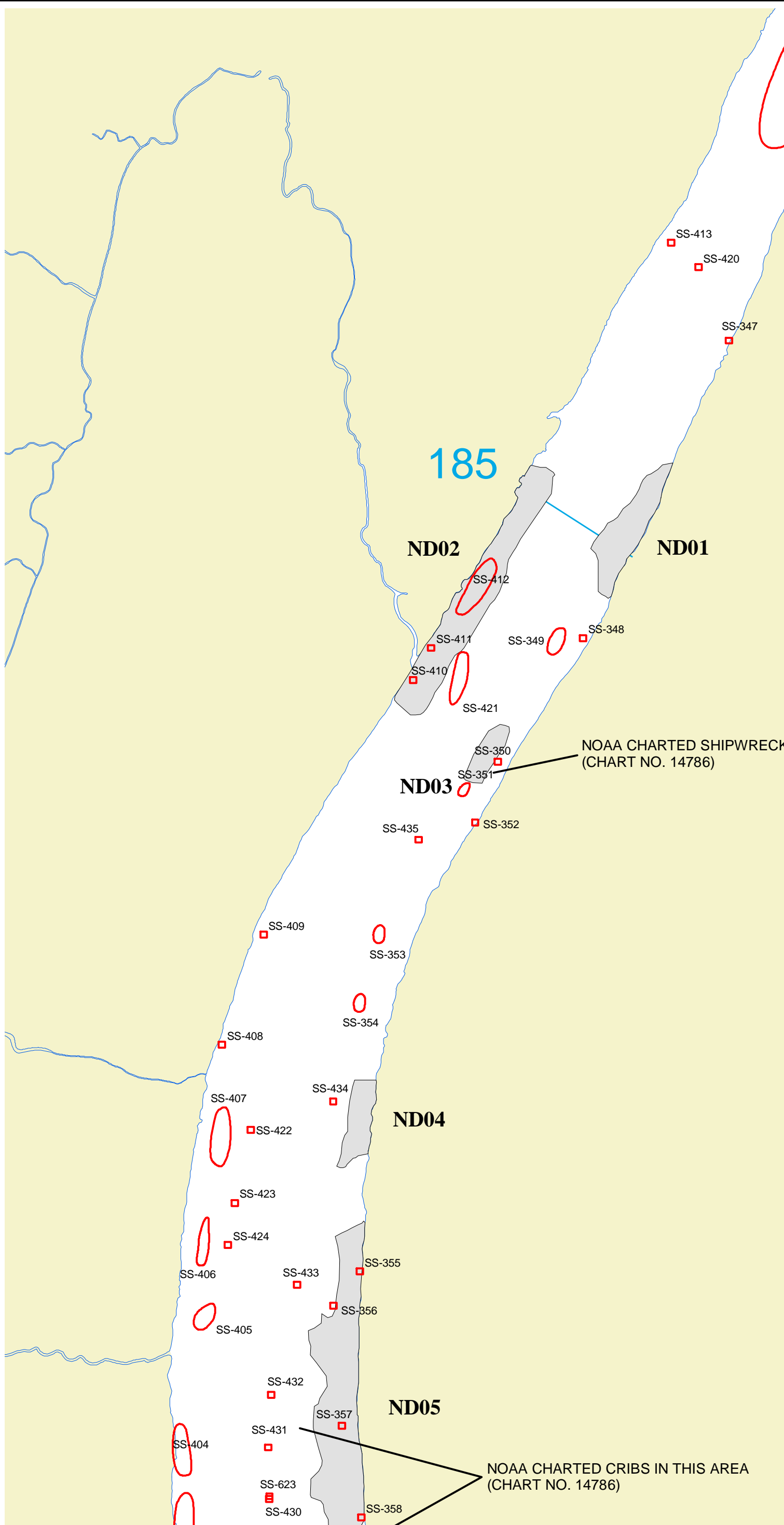
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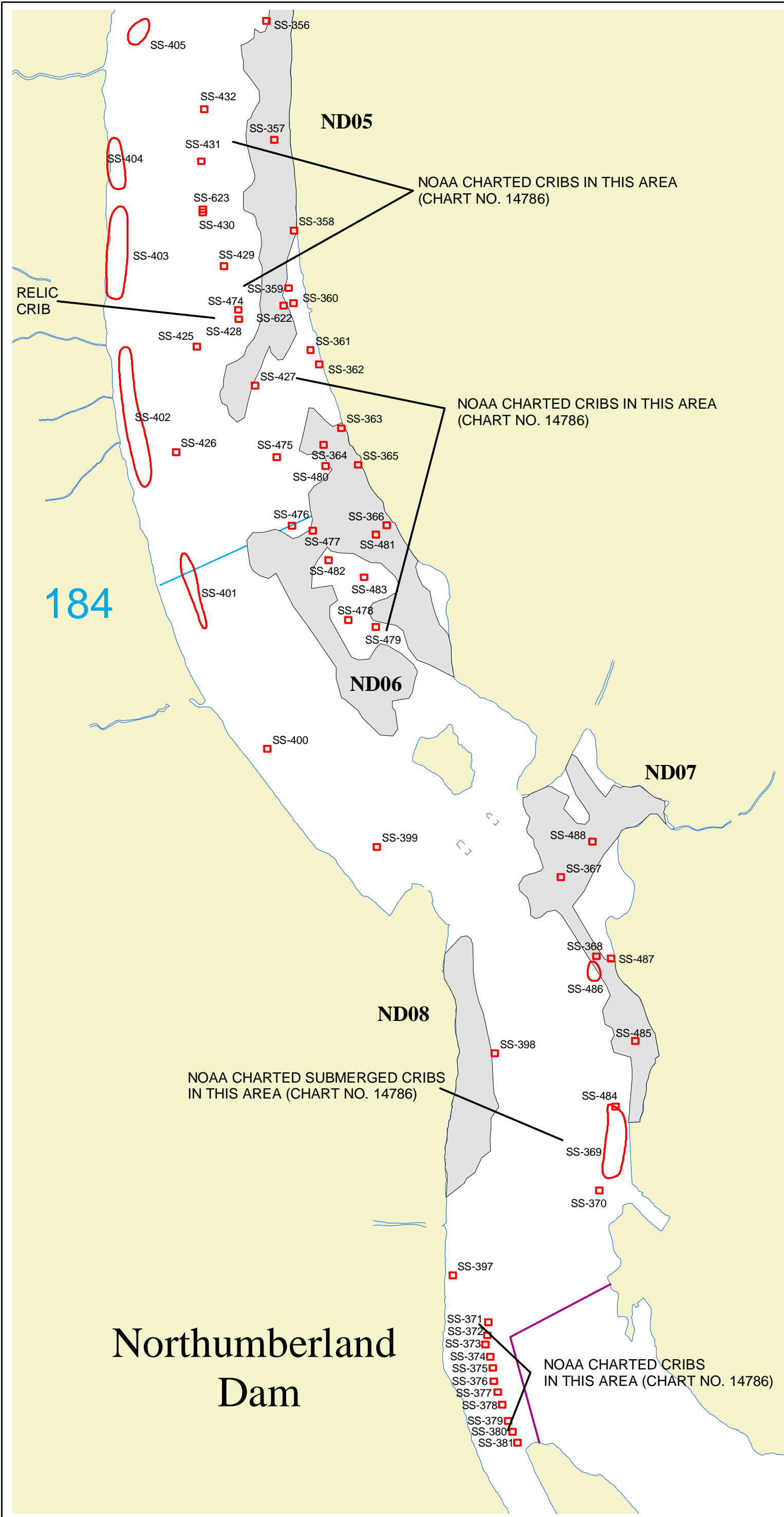
**Figure 2-41.
Charted sonar targets and
debris areas - Northern NDA**



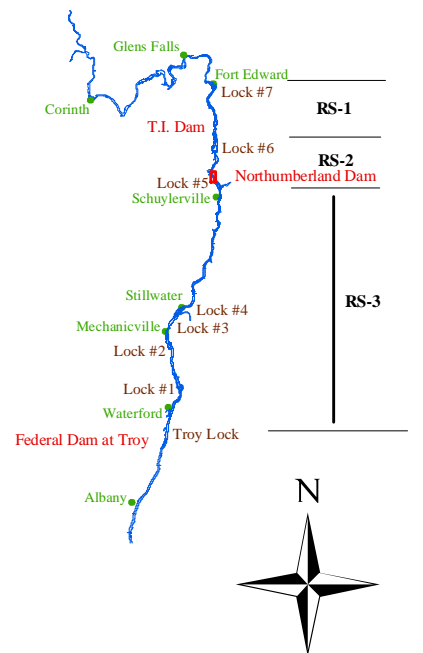
GENdad:132

September 2004

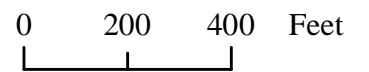




LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

- Sonar Targets
- Dredge Areas
- Shore Line
- Dams and Locks
- River Miles

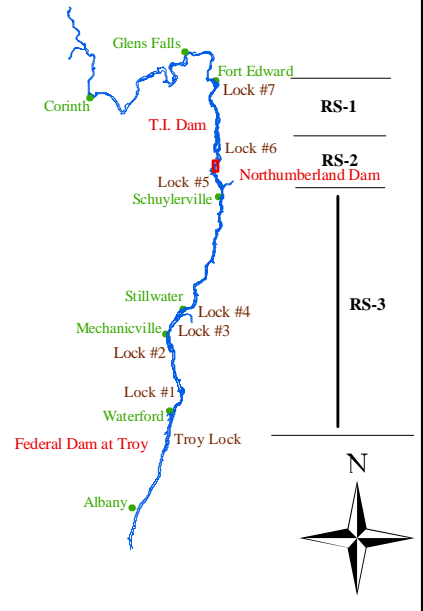
Notes:
 1. Side Scan Sonar target areas created by: Ocean Surveys, Inc., 2003. Data Interpretation Report - Side Scan Sonar Survey Investigation. Hudson River - River Sections 2, Spring 2003. OSI Report No. 02ES072 - DIR - S2003. October 1, 2003. Prepared for the General Electric Company.
 2. Dredge areas shown were delineated in the Phase I Dredge Area Delineation Report (QEA 2004).

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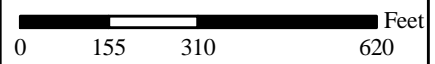
**Figure 2-42.
Charted sonar targets and debris areas - Southern NDA**



LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



Check graphic scale before using.

LEGEND

2003 Habitat Survey*

- Backwater Wetland
- Fringe Wetland
- SAV (0 - 25%)
- SAV (25 - 50%)
- SAV (50 - 75%)
- SAV (75 - 100%)
- SAV (unclassified)
- Trapa

2003 Habitat Shoreline

- Maintained Shore
- Natural Shore

SSS Sediment Types

- Type I Sediment
- Type II Sediment
- Type III Sediment
- Type IV Sediment
- Type V Sediment

Assessment Locations

- SAV
- Shoreline
- Unconsolidated
- Wetland

Groundtruthing Locations

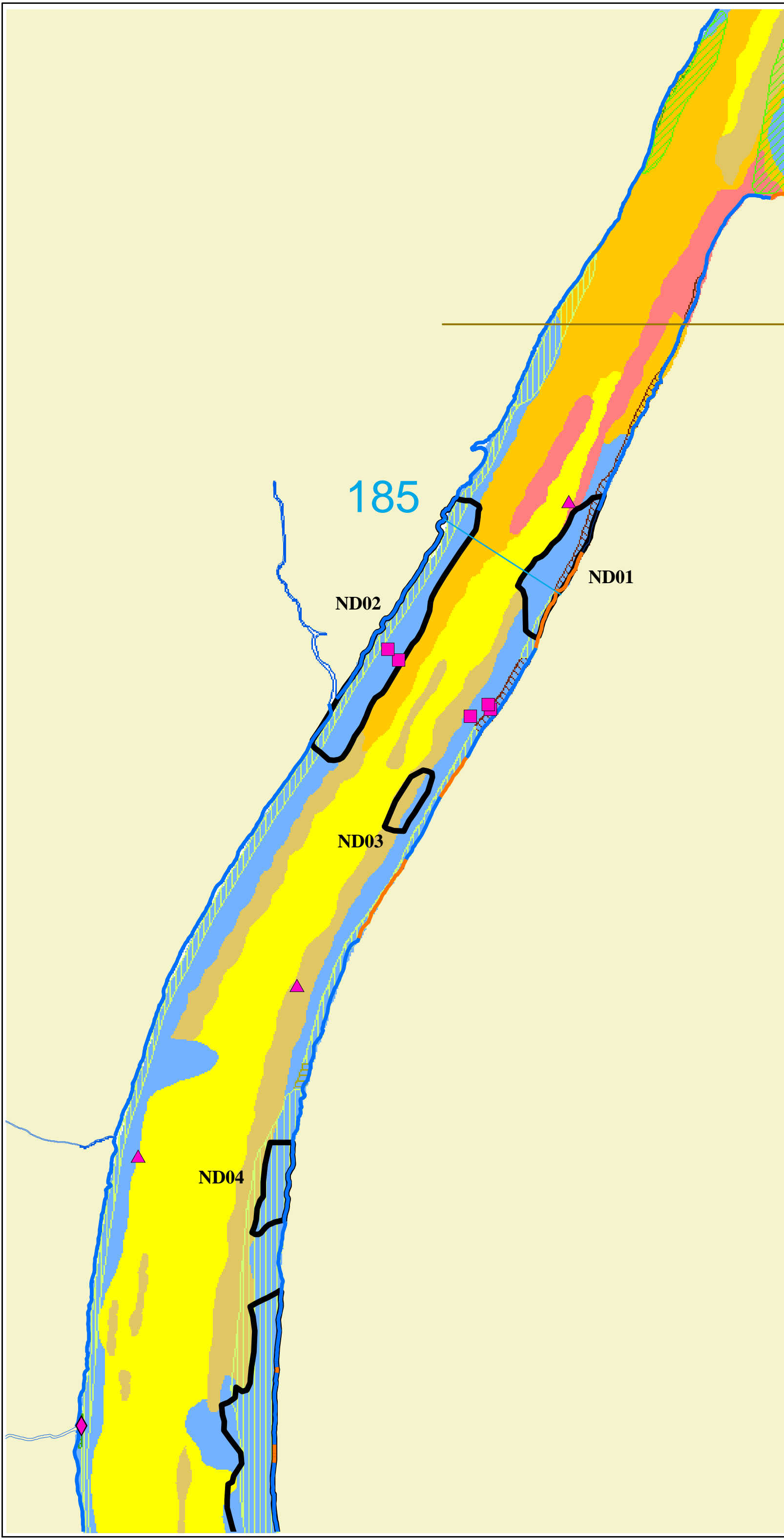
- SAV
- Shoreline
- Wetland

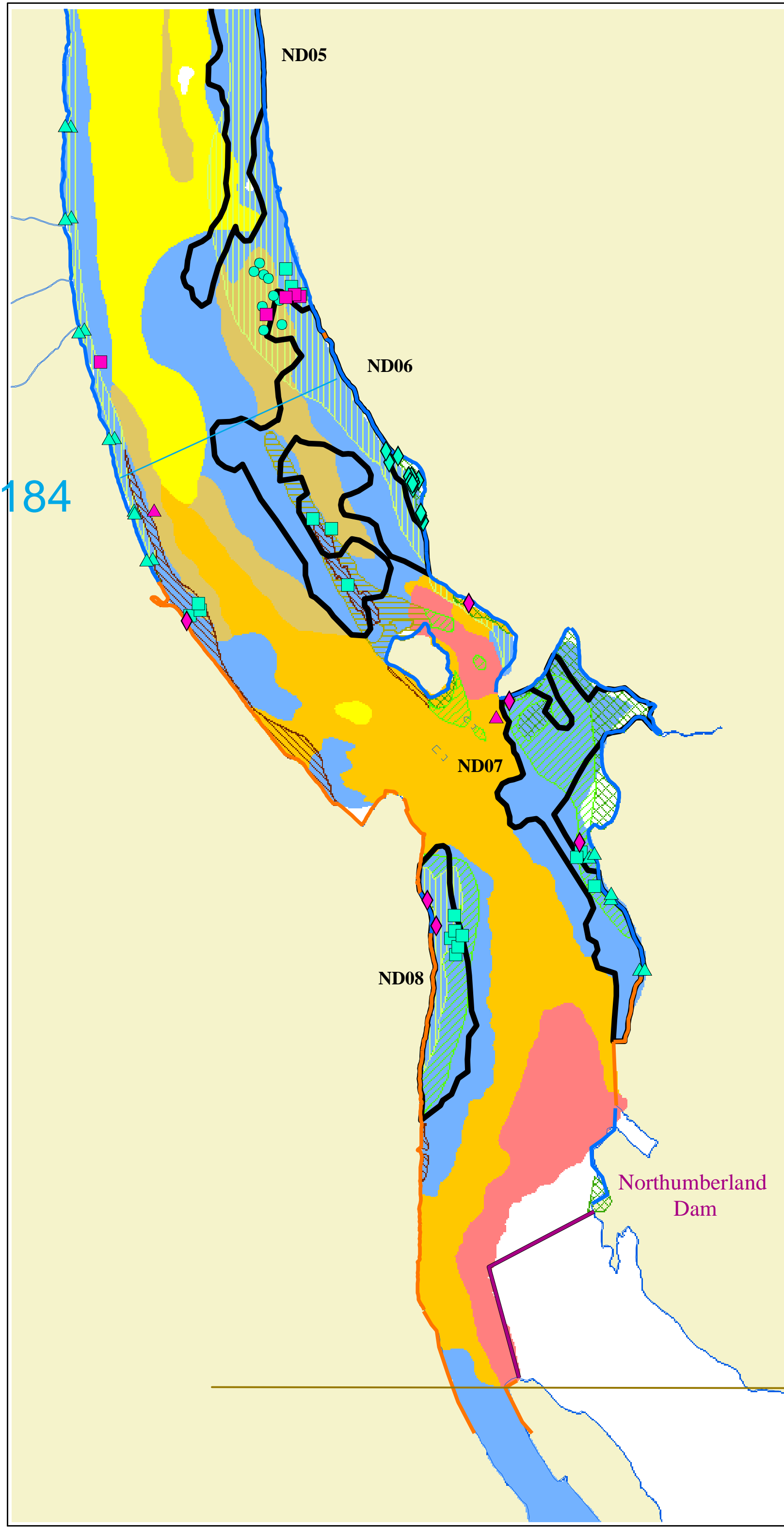
- Dredge Areas
- Phase 1 Boundary
- River Miles
- Shore Line
- Dams and Locks

*SAV % Cover Adapted from Orth et al.1991

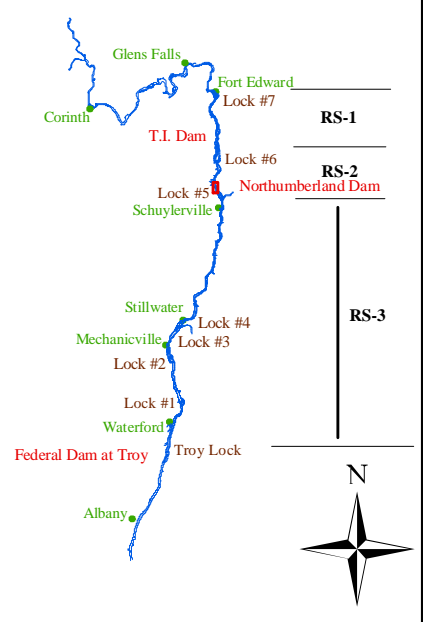
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**Figure 2-43.
Habitat Types - Northern NDA**

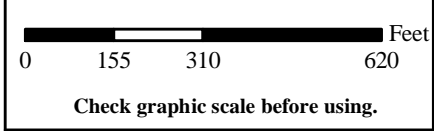




LOCATOR MAP OF THE UPPER HUDSON RIVER



GRAPHIC SCALE



LEGEND

- 2003 Habitat Survey***
- Backwater Wetland
 - Fringe Wetland
 - SAV (0 - 25%)
 - SAV (25 - 50%)
 - SAV (50 - 75%)
 - SAV (75 - 100%)
 - SAV (unclassified)
 - Trapa
- 2003 Habitat Shoreline**
- Maintained Shore
 - Natural Shore
- SSS Sediment Types**
- Type I Sediment
 - Type II Sediment
 - Type III Sediment
 - Type IV Sediment
 - Type V Sediment
- Assessment Locations**
- SAV
 - Shoreline
 - Unconsolidated
 - Wetland
- Groundtruthing Locations**
- SAV
 - Shoreline
 - Wetland
- Dredge Areas
 - Phase 1 Boundary
 - River Miles
 - Shore Line
 - Dams and Locks

*SAV % Cover Adapted from Orth et al. 1991

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Figure 2-44.
Habitat Types - Southern NDA.

