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# Water Surface Elevation and Flood Flows at Flood Insurance Study (FIS) Cross Sections for Four Conditions

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# Water Surface Elevation and Flood Flows at Flood Insurance Study (FIS) Cross Sections for Four Conditions:

Flood Insurance Rate Maps (FIRMs)

Updated (2005) Conditions; 8.5 inch 24-hr rainfall

2100 Conventional (2100 CON) Buildout; 11.4 inch 24-hr rainfall

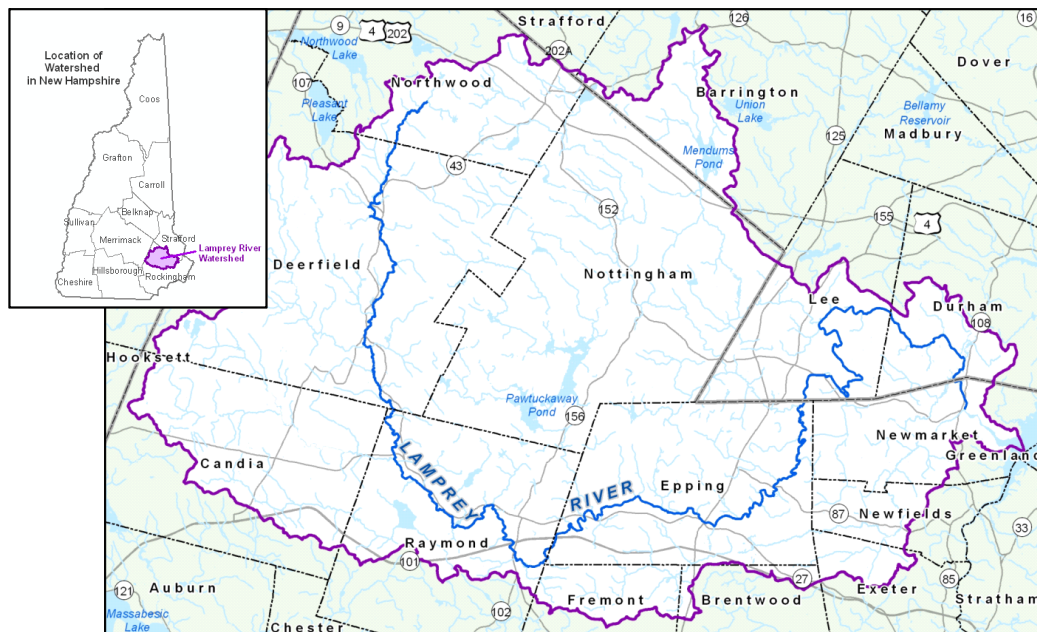
2100 Low Impact Development (2100 LID) Buildout; 11.4 inch 24-hr rainfall

Assessing the Risk of 100-year Freshwater Floods in the Lamprey River  
Watershed of New Hampshire Resulting from Changes in Climate and Land Use

<http://100yearfloods.org/>

Ann Sholz, Rob Roseen, and Cameron Wake  
University of New Hampshire

June 2012



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100-Year Floodplains in the Lamprey River Watershed:  
Water Surface Elevation at FIS Cross Sections for:  
Flood Insurance Rate Maps (FIRMs), Updated (2005) Conditions,  
2100 Conventional (2100 CON) Buildout,  
and 2100 Low Impact Development (2100 LID) Buildout

FIS <sup>1</sup>	FIS	FIS	Updated 2005	2100 CON	2100 LID
Cross	WSE <sup>2</sup>	WSE	WSE	WSE	WSE
Section	NGVD 29 (ft) <sup>3</sup>	NAVD 88 (ft) <sup>3</sup>	NAVD 88 (ft)	NAVD 88 (ft)	NAVD 88 (ft)
A	32.8	32.1	35.3	38.86	38.52
B	33	32.3	35.9	39.83	39.5
C	33.4	32.7	36.2	40.17	39.85
D	32.9	32.2	35.99	40.01	39.68
E	38.3	37.6	38.83	42.64	42.32
F	39.5	38.8	41.45	45.86	45.5
Packer's Falls Road, Durham					
G	53.4	52.7	58.57	64.42	63.75
H	53.5	52.8	58.75	64.59	63.94
I	53.7	53.0	58.79	64.58	63.92
J	54.1	53.4	58.94	64.73	64.08
K	54.4	53.7	59.06	64.9	64.25
Wiswall Dam, Durham					
L	62	61.3	61.35	65.04	64.43
Wiswall Road, Durham					
M	62.7	62.0	61.84	65.98	65.58
N	63.4	62.7	63.72	67.76	67.4
A	95.4	94.7	100.84	104.38	104.11
B	97.9	97.2	102.22	105.78	105.51
C	100.1	99.4	103.11	106.65	106.38
D	102.3	101.6	103.56	107.07	106.8
Route 87, Epping <sup>4</sup>					
G	105.6	104.9	106.53	109.81	109.56
H	107.2	106.5	107.81	110.83	110.59
I	109.5	108.8	110.46	113.35	113.11
State Route 125, Epping					
J	110.4	109.7	111.14	114.32	114.05
Mill Street, Epping					
K	110.8	110.1	113.54	115.88	115.66
L	111.5	110.8	113.63	116.03	115.81
Main Street (Plummer), Epping					
M	112.3	111.6	114.67	117.77	117.6
N	113.5	112.8	115.67	118.83	118.63
O	115.6	114.9	116.43	119.61	119.4

<sup>1</sup>Flood Insurance Study (FIS)

<sup>2</sup>Water Surface Elevation (WSE)

<sup>3</sup>NGVD 29 is approximately 0.7 feet lower than NAVD 88 within the watershed

<sup>4</sup>RT 87 bridge replaced in 2002, Cross Sections FIS E and FIS F not utilizable

100-Year Floodplains in the Lamprey River Watershed:  
Water Surface Elevation at FIS Cross Sections for:  
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2100 Conventional (2100 CON) Buildout,  
and 2100 Low Impact Development (2100 LID) Buildout

FIS <sup>1</sup>	FIS	FIS	Updated 2005	2100 CON	2100 LID
Cross	WSE <sup>2</sup>	WSE	WSE	WSE	WSE
Section	NGVD 29 (ft) <sup>3</sup>	NAVD 88 (ft) <sup>3</sup>	NAVD 88 (ft)	NAVD 88 (ft)	NAVD 88 (ft)
Blake Road, Epping					
P	138	137.3	141.06	143.63	143.49
Q	138.8	138.1	141.43	144.12	143.96
R	138.9	138.2	141.44	144.13	143.97
S	138.9	138.2	141.45	144.14	143.98
T	147.6	146.9	143.17	146.76	146.46
Route 27, Epping					
U	153	152.3	154.51	158.11	157.78
V	155.4	154.7	159.12	162.28	162.01
State Route 101, Epping					
W	163.7	163.0	164.49	167.66	167.39
X	165.7	165.0	165.03	167.18	166.98
Prescott Road, Raymond					
Y	166.3	165.6	167.96	170.54	170.41
Z	167.8	167.1	168.4	171.04	170.9
State Route 107, Raymond					
AA	177.1	176.4	177.44	180.61	180.37
AB	178.6	177.9	180.73	184.63	184.31
AC	181	180.3	182.78	186.64	186.32
AD	184.7	184.0	188.95	190.7	192.42
B&M Railroad					
AE	185.9	185.2	189.41	191.61	193.24
AF	186.4	185.7	190	192.43	193.64
Epping Road, Raymond					
AG	190.1	189.4	191.92	192.97	194.46
AH	190.3	189.6	192.05	193.23	194.61
Main Street, Raymond					
AI	190.8	190.1	192.47	193.61	195.05
AJ	193.1	192.4	193.35	195.49	196.16
Langford Road, Raymond					
AK	195.8	195.1	198.15	202.11	201.98
AL	196.4	195.7	198.52	202.38	202.24
AM	200.6	199.9	199.89	203.08	202.93
AN	202.6	201.9	203.66	204.36	204.24
AO	206.7	206.0	207.82	209.31	209.19
AP	207.9	207.2	208.38	209.96	209.84

<sup>1</sup>Flood Insurance Study (FIS)

<sup>2</sup>Water Surface Elevation (WSE)

<sup>3</sup>NGVD 29 is approximately 0.7 feet lower than NAVD 88 within the watershed

100-Year Floodplains in the Lamprey River Watershed:  
 Water Surface Elevation at FIS Cross Sections for:  
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FIS <sup>1</sup>	FIS	FIS	Updated 2005	2100 CON	2100 LID
Cross	WSE <sup>2</sup>	WSE	WSE	WSE	WSE
Section	NGVD 29 (ft) <sup>3</sup>	NAVD 88 (ft) <sup>3</sup>	NAVD 88 (ft)	NAVD 88 (ft)	NAVD 88 (ft)
Route 27, Raymond					
AQ	211.7	211.0	213.13	214.81	214.69
Dudley Road, Raymond					
AR	213	212.3	215.13	218.12	217.87
AS	214.4	213.7	217.77	220.36	220.03
AT	216.4	215.7	218.03	220.55	220.24
AU	216.7	216.0	218.27	220.78	220.48
AV	216.8	216.1	218.49	221	220.71

<sup>1</sup>Flood Insurance Study (FIS)

<sup>2</sup>Water Surface Elevation (WSE)

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Flood Discharges at FIS Cross Sections for:  
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and 2100 Low Impact Development (2100 LID) Buildout

FIS <sup>1</sup>	FIS	Updated 2005	2100 CON	2100 LID
Cross	Discharge	Discharge	Discharge	Discharge
Section	cf/sec	cf/sec	cf/sec	cf/sec
A	5,973	8,350	11,783	11,564
B	7,300	10,636	17,609	16,959
C	7,300	10,636	17,609	16,959
D	7,300	10,636	17,609	16,959
E	7,300	10,636	17,609	16,959
F	7,300	10,636	17,609	16,959
Packer's Falls Road, Durham				
G	5,600	10,636	17,122	16,528
H	5,600	10,437	17,122	16,528
I	5,600	10,437	17,122	16,528
J	5,600	10,437	17,122	16,528
K	5,600	10,437	17,122	16,528
Wiswall Dam, Durham				
L	5,600	10,437	17,122	16,528
Wiswall Road, Durham				
M	5,600	10,437	17,122	16,528
N	5,600	10,437	17,122	16,528
A	5,600	10,437	17,122	16,528
B	4,930	6,706	11,092	10,694
C	4,930	6,706	11,092	10,694
D	4,930	6,706	11,092	10,694
Route 87, Epping <sup>2</sup>				
G	4,930	6,706	11,092	10,694
H	4,930	6,706	11,092	10,694
I	4,930	6,706	11,092	10,694
State Route 125, Epping				
J	4,720	6,706	11,077	10,681
K	4,720	6,706	11,077	10,681
L	4,720	6,706	11,077	10,681
Main Street (Plummer), Epping				
M	4,720	6,706	11,077	10,681
N	4,720	6,706	11,077	10,681
O	4,720	6,706	11,077	10,681
Blake Road, Epping				
P	4,720	6,706	11,077	10,681
Q	4,180	6,170	10,137	9,766
R	4,180	6,170	10,137	9,766
S	4,180	6,170	10,137	9,766
T	4,180	6,170	10,137	9,766

<sup>1</sup>Flood Insurance Study (FIS)

<sup>2</sup>RT 87 bridge replaced in 2002, Cross Sections FIS E and FIS F not utiizable

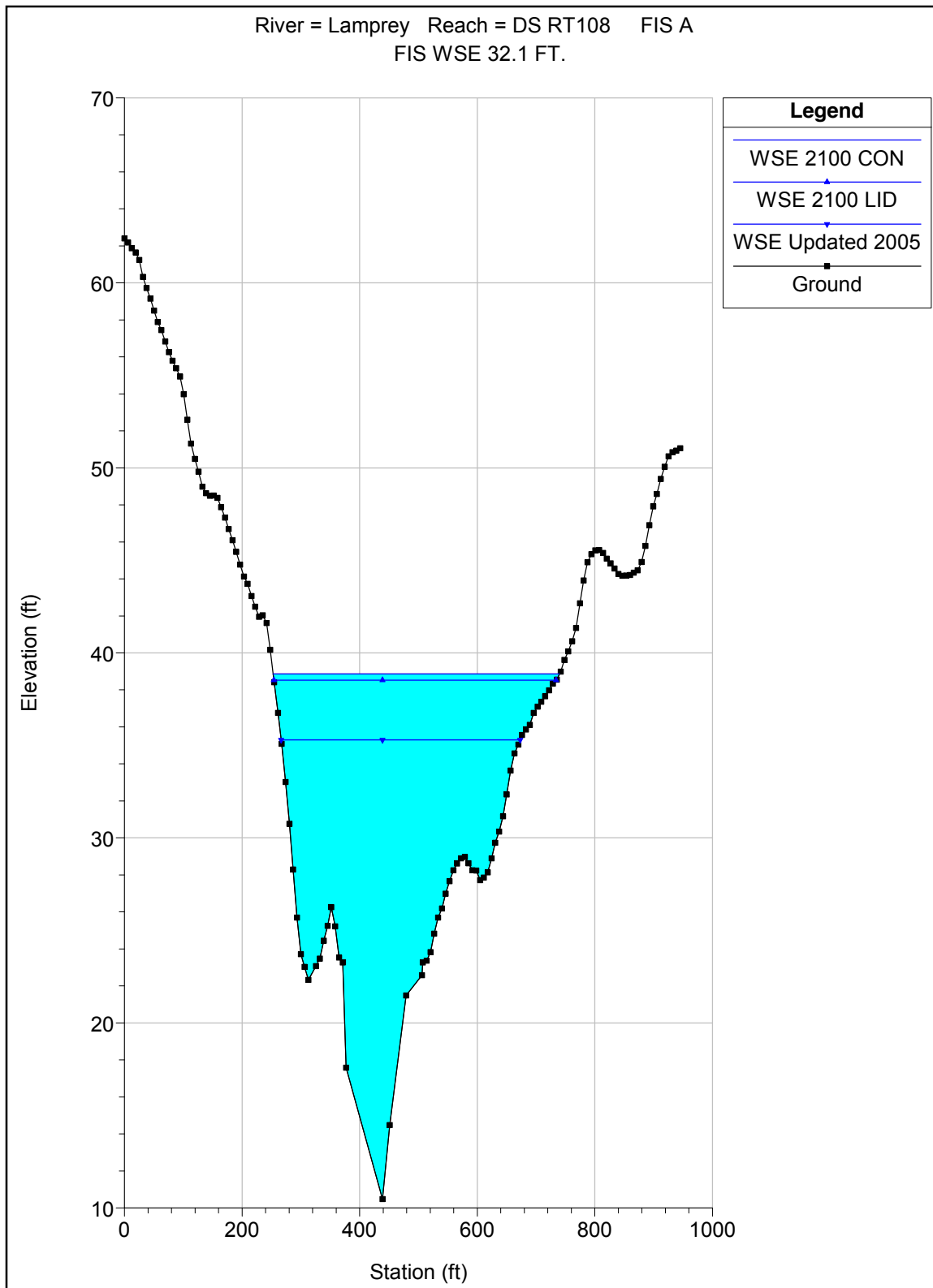
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FIS <sup>1</sup>	FIS	Updated 2005	2100 CON	2100 LID
Cross	Discharge	Discharge	Discharge	Discharge
Section	cf/sec	cf/sec	cf/sec	cf/sec
Route 27, Epping				
U	4,180	6,170	10,137	9,766
V	4,180	6,170	10,137	9,766
State Route 101, Epping				
W	4,180	6,170	10,137	9,766
X	4,370	5,138	8,373	8,065
Prescott Road, Raymond				
Y	4,370	5,138	8,373	8,065
Z	4,370	5,138	8,373	8,065
State Route 107, Raymond				
AA	4,370	5,138	8,373	8,065
AB	4,370	5,138	8,373	8,065
AC	4,370	5,138	8,373	8,065
AD	4,370	5,138	8,373	8,065
B&M Railroad				
AE	4,370	5,138	8,373	8,065
AF	4,370	5,138	8,373	8,065
Epping Road, Raymond				
AG	4,370	5,138	8,373	8,065
AH	4,370	5,138	8,373	8,065
Main Street, Raymond				
AI	4,370	5,138	8,373	8,065
AJ	4,370	5,138	8,373	8,065
Langford Road, Raymond				
AK	3,300	3,214	5,215	5,041
AL	3,300	3,214	5,215	5,041
AM	3,300	3,214	5,215	5,041
AN	3,300	3,214	5,215	5,041
AO	3,300	3,214	5,215	5,041
AP	3,300	3,214	5,215	5,041
Route 27, Raymond				
AQ	3,300	3,214	5,215	5,041
Dudley Road, Raymond				
AR	3,300	3,214	5,215	5,041
AS	3,300	3,214	5,215	5,041
AT	3,300	3,214	5,215	5,041
AU	3,300	3,214	5,215	5,041
AV	3,300	3,214	5,215	5,041

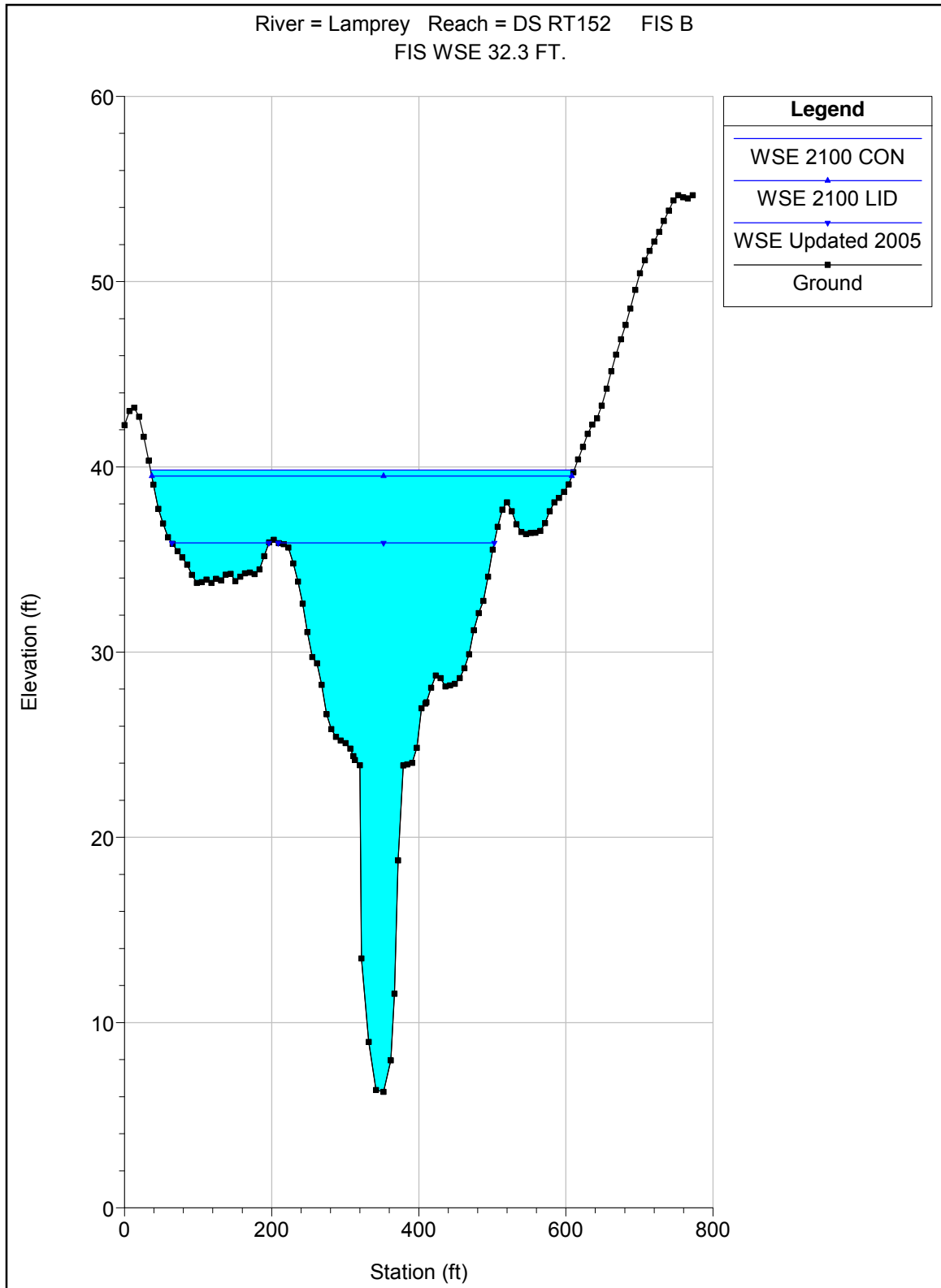
<sup>1</sup>Flood Insurance Study (FIS)



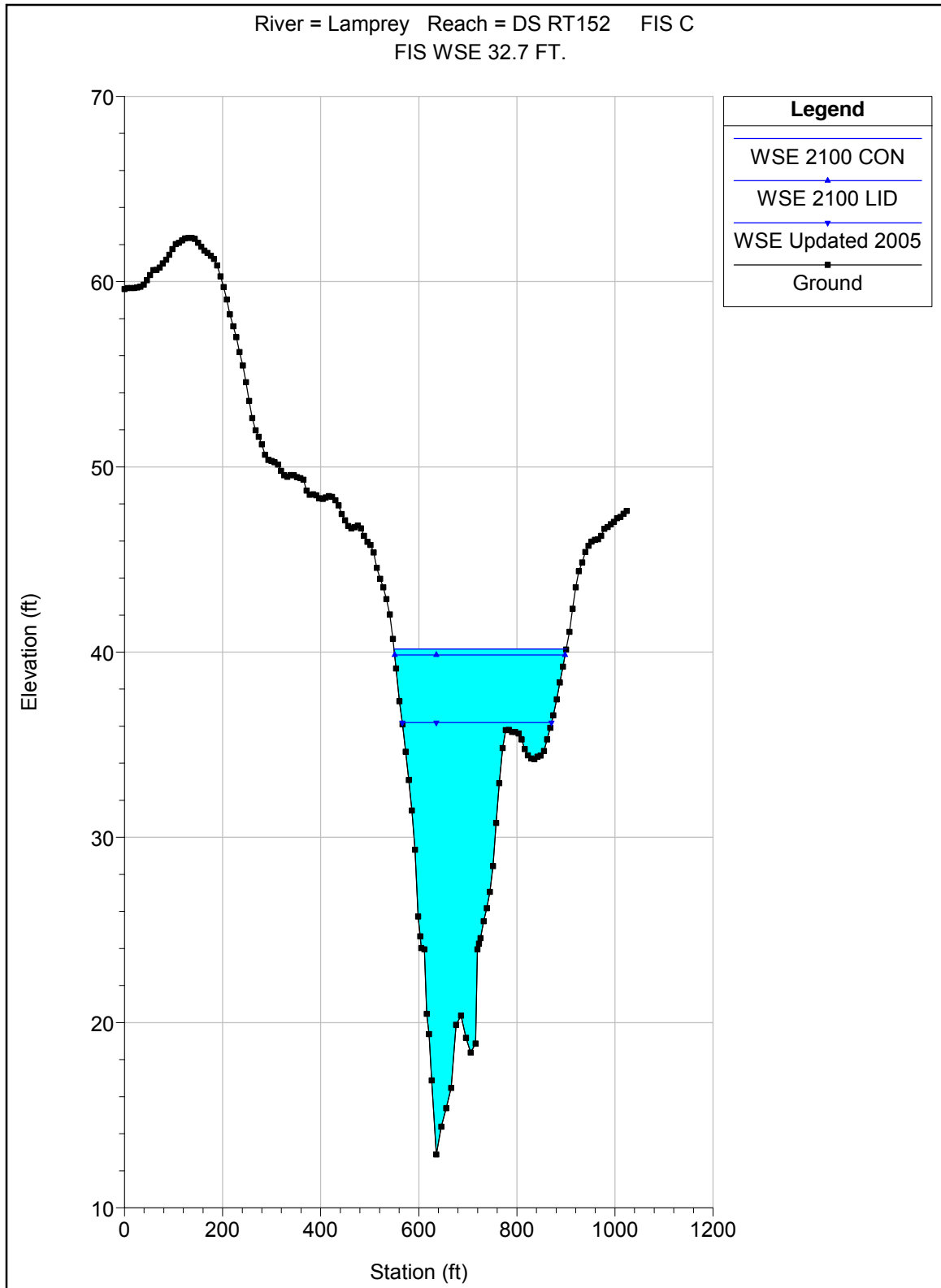
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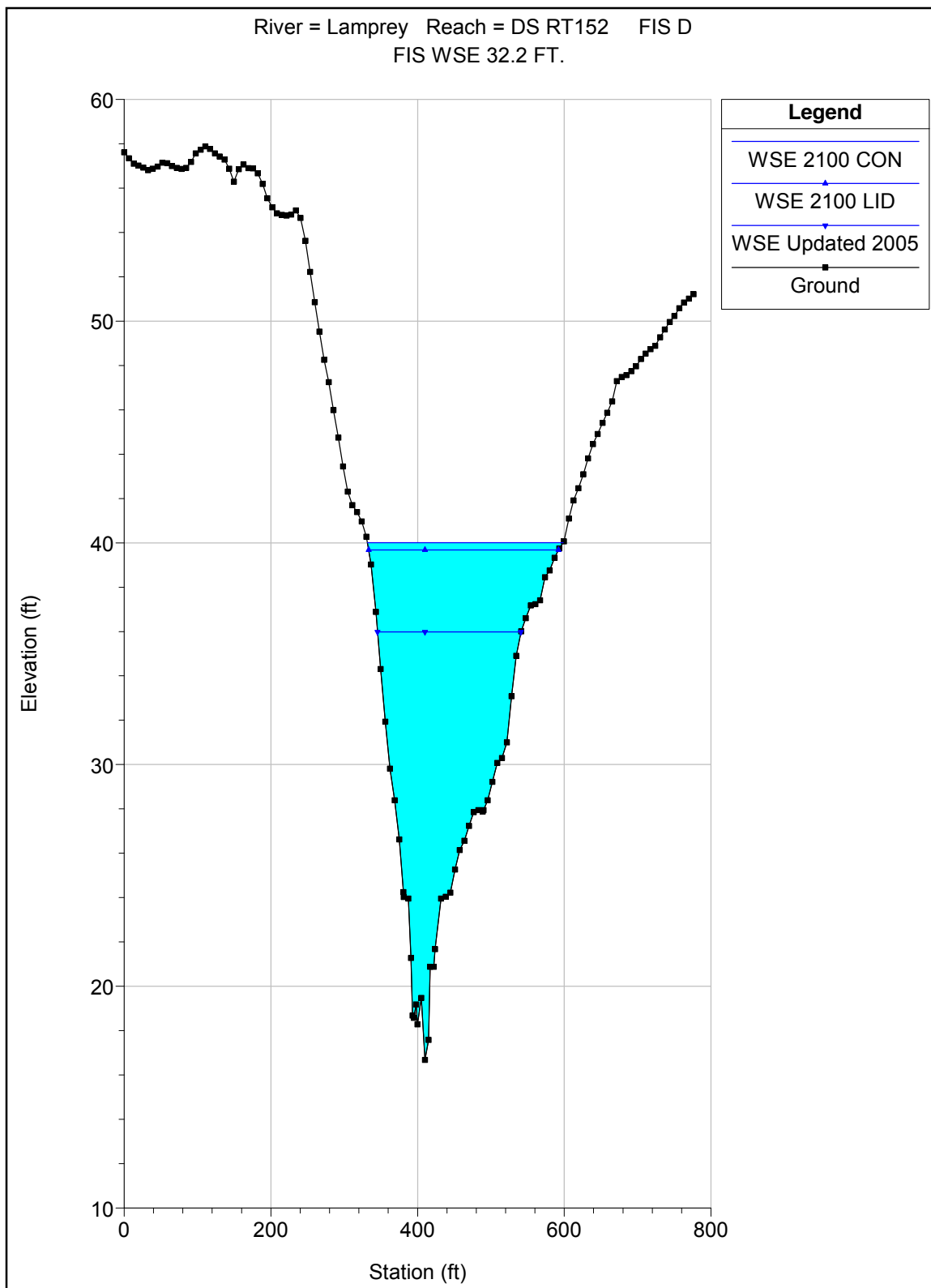
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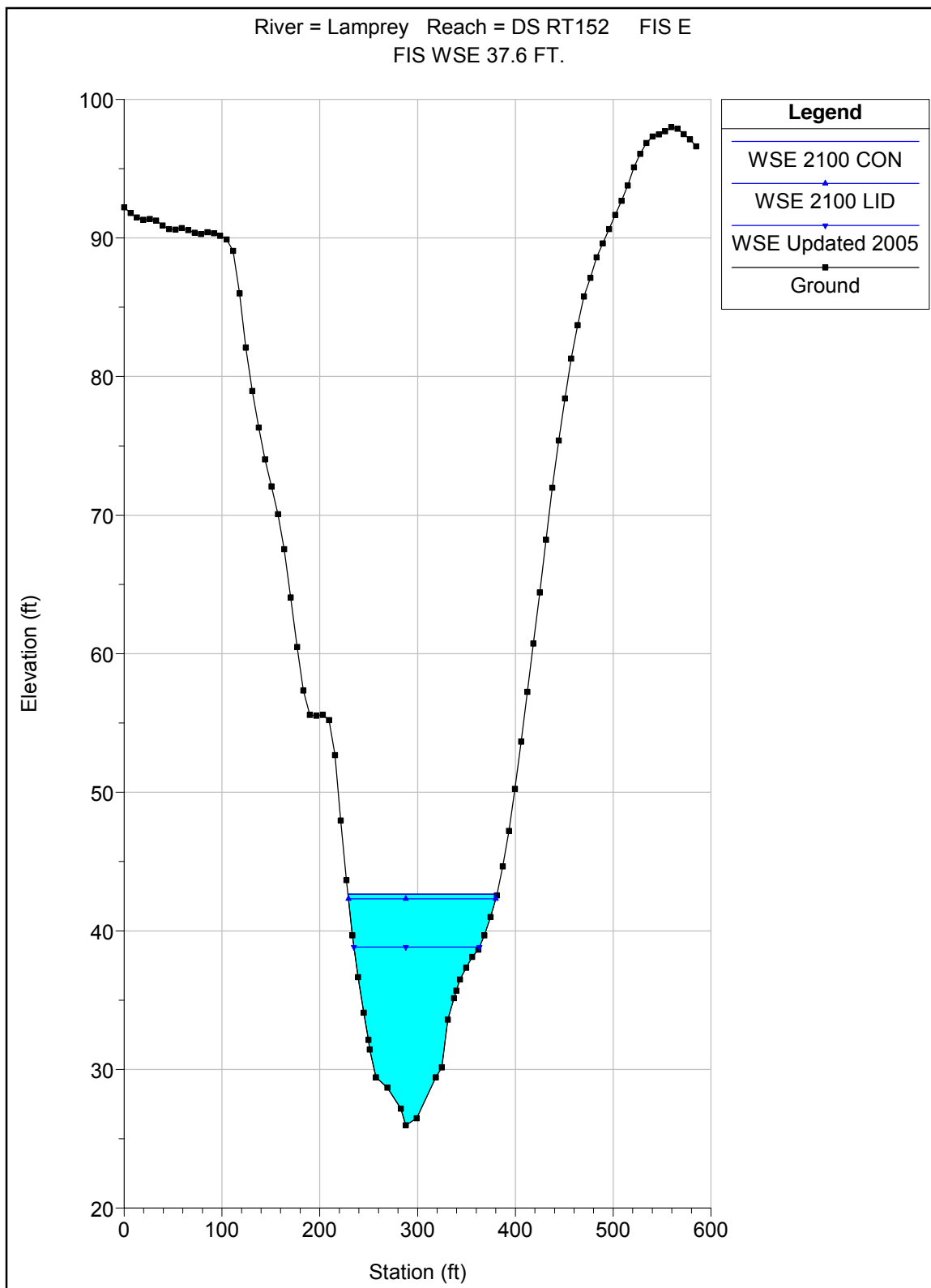
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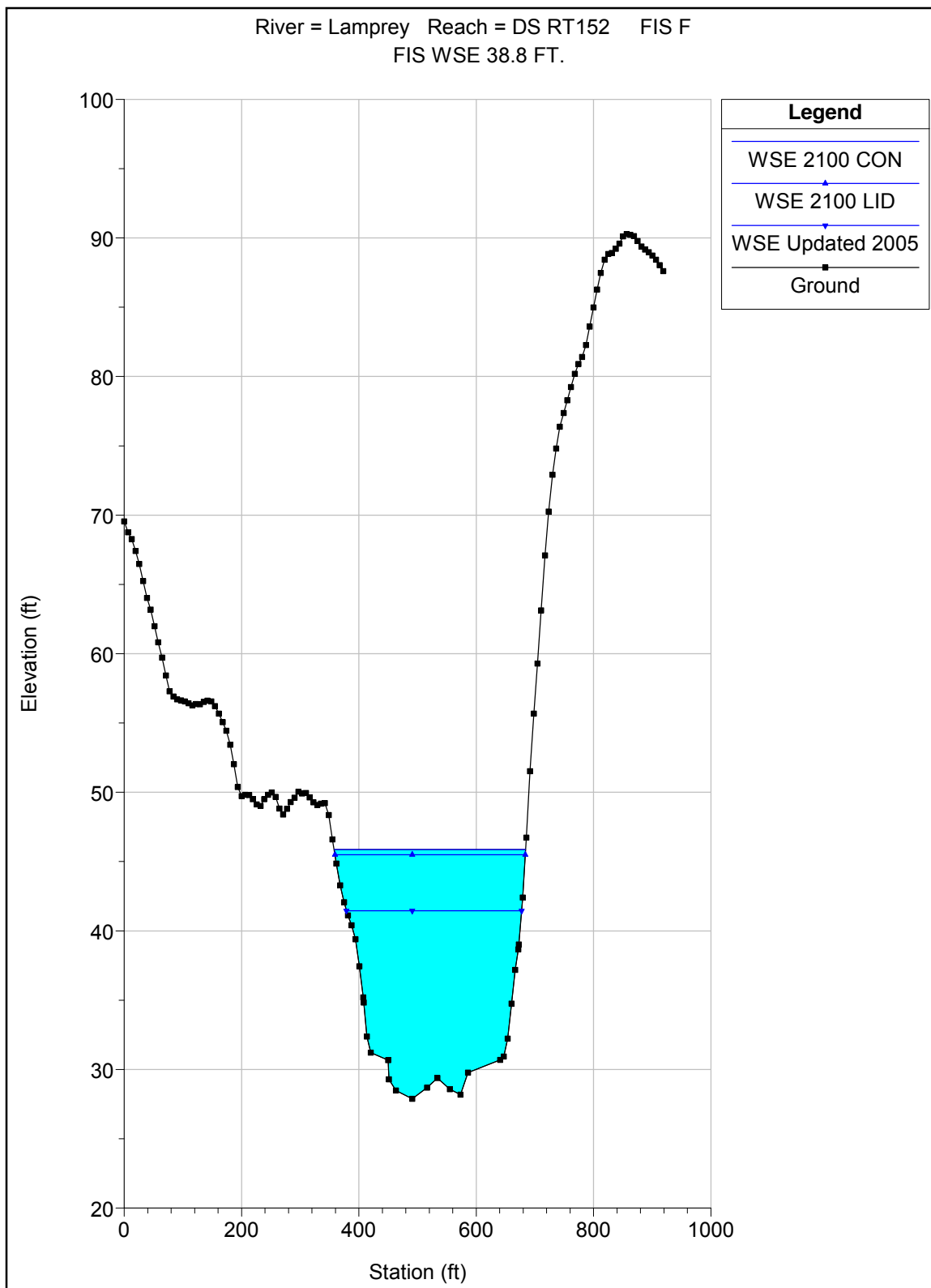
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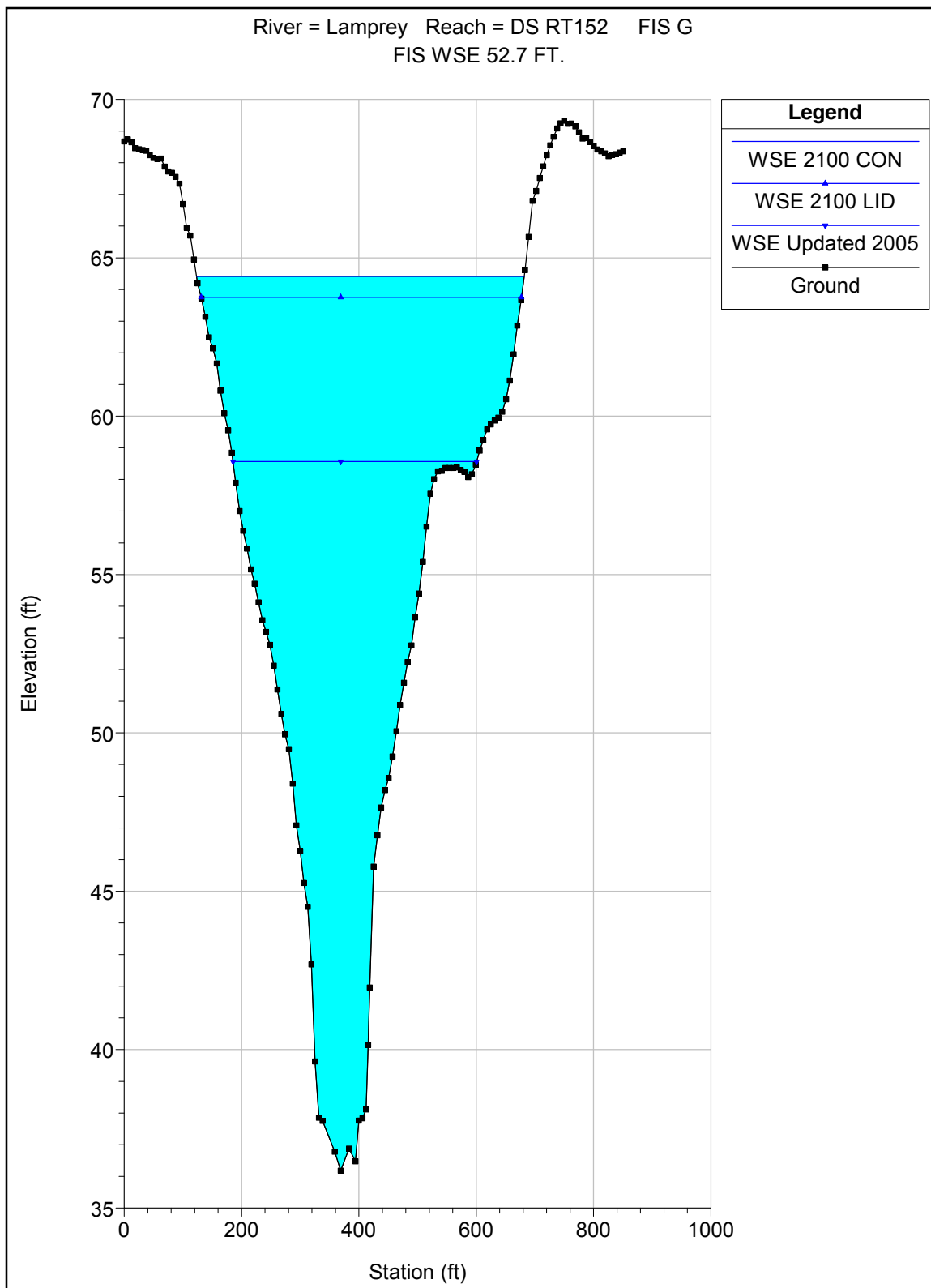
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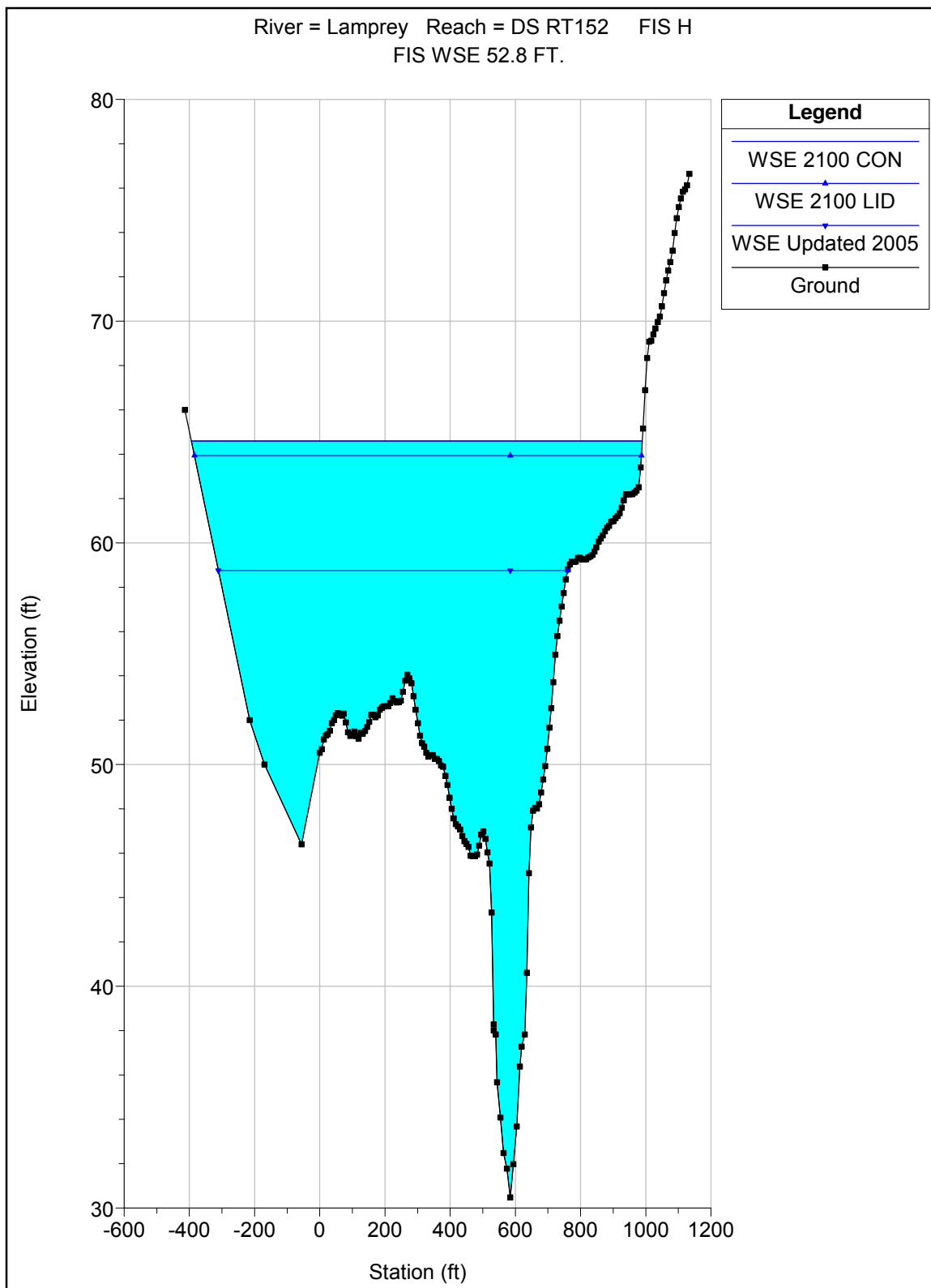
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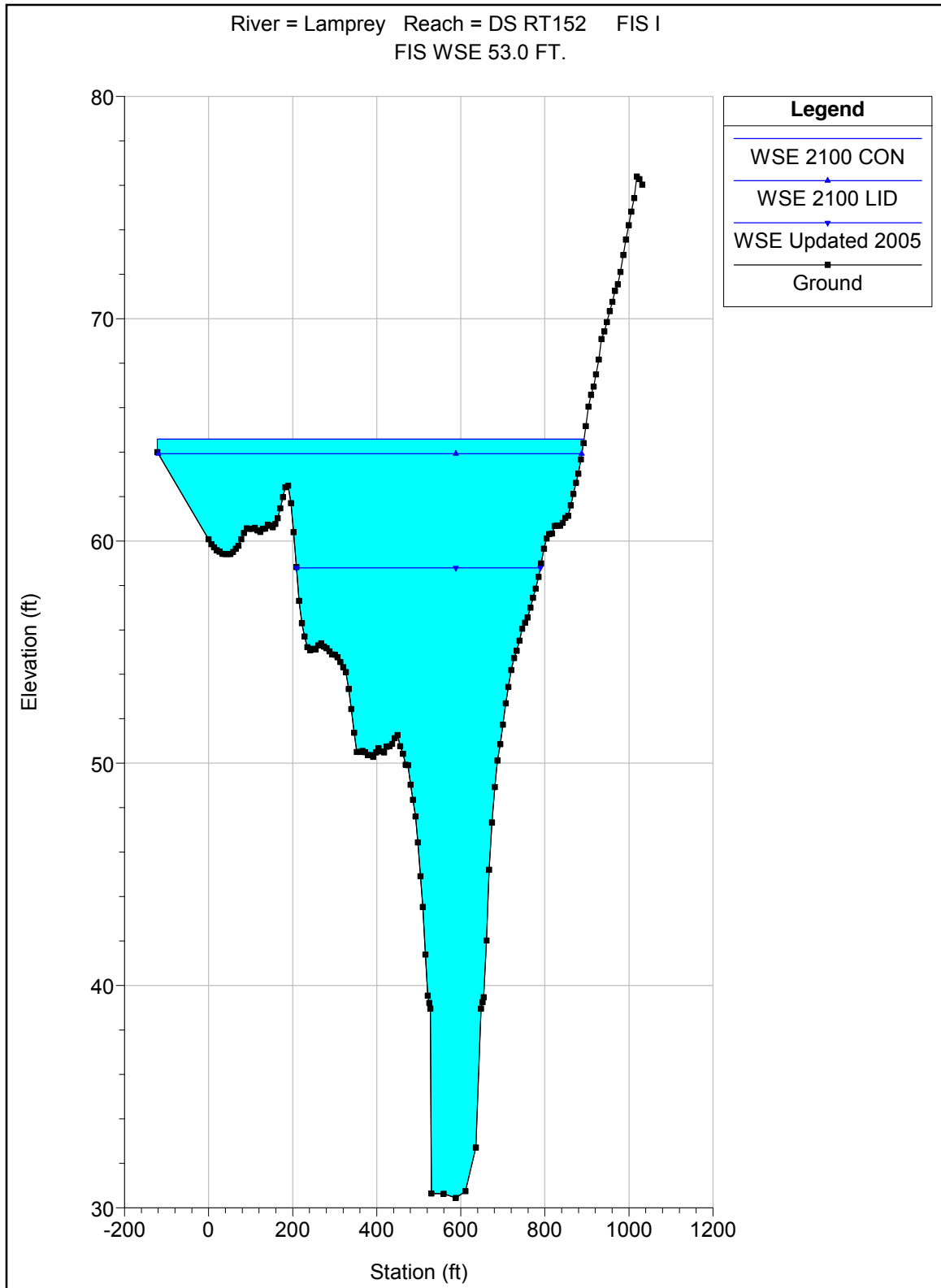


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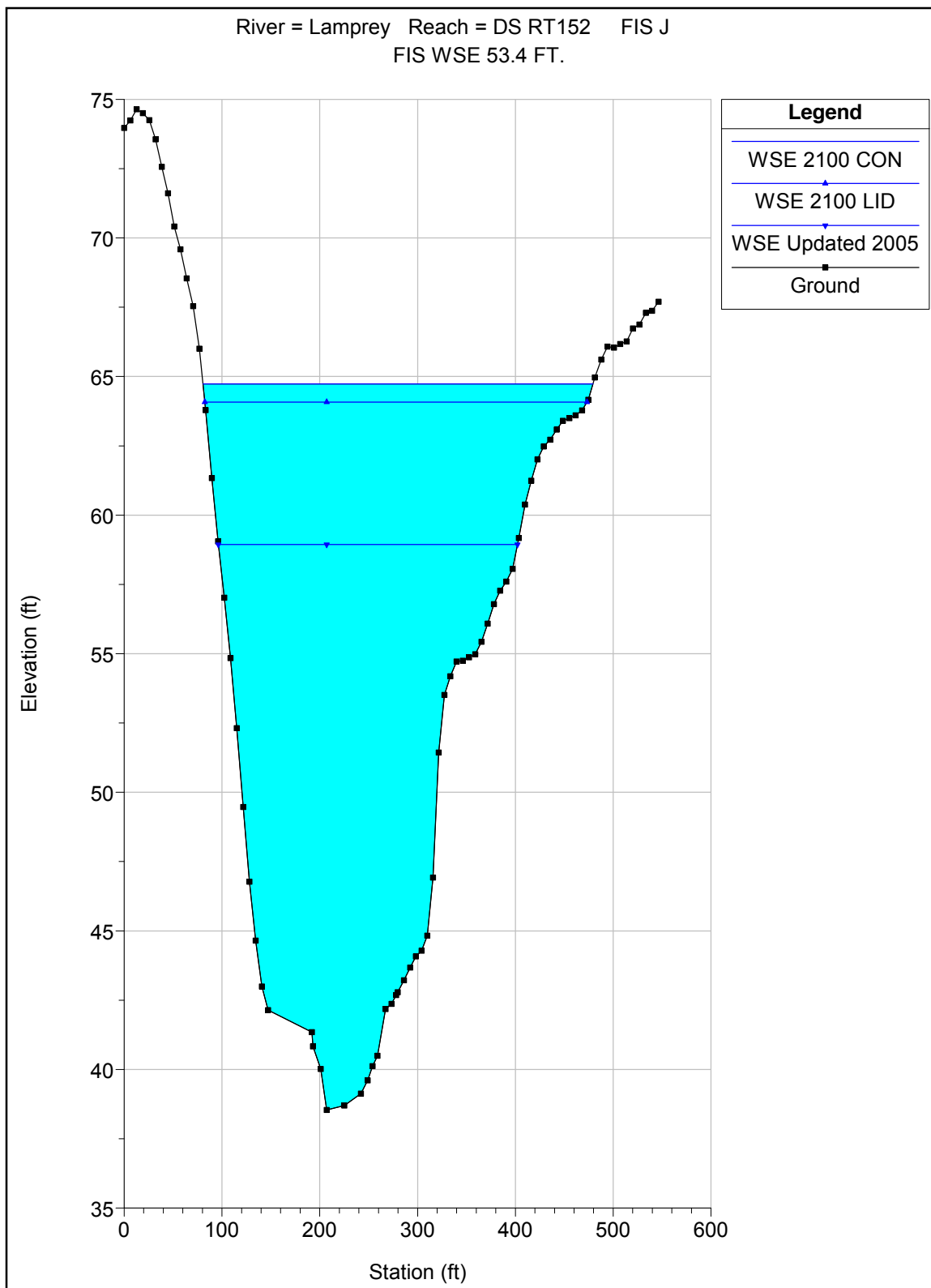




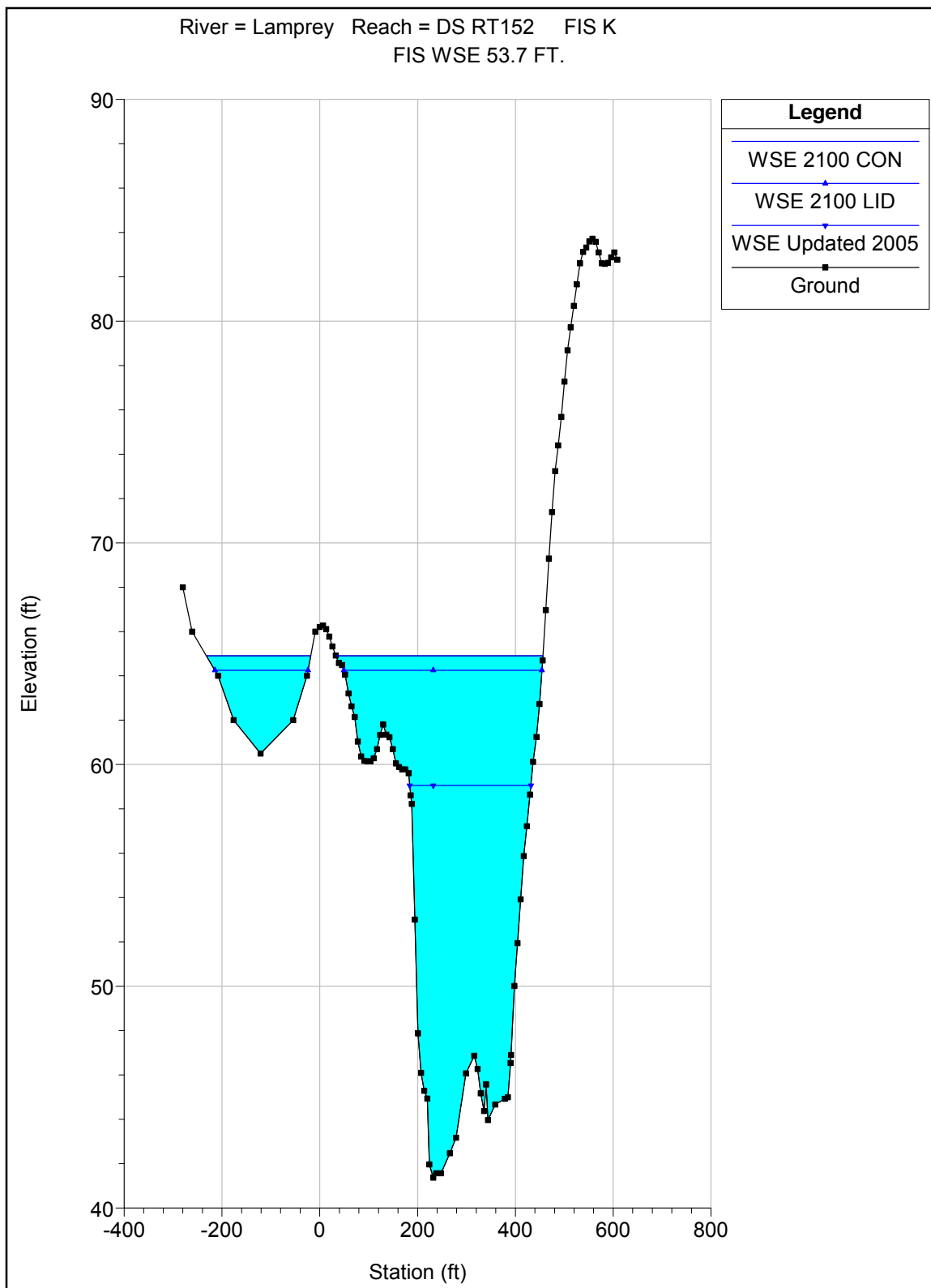
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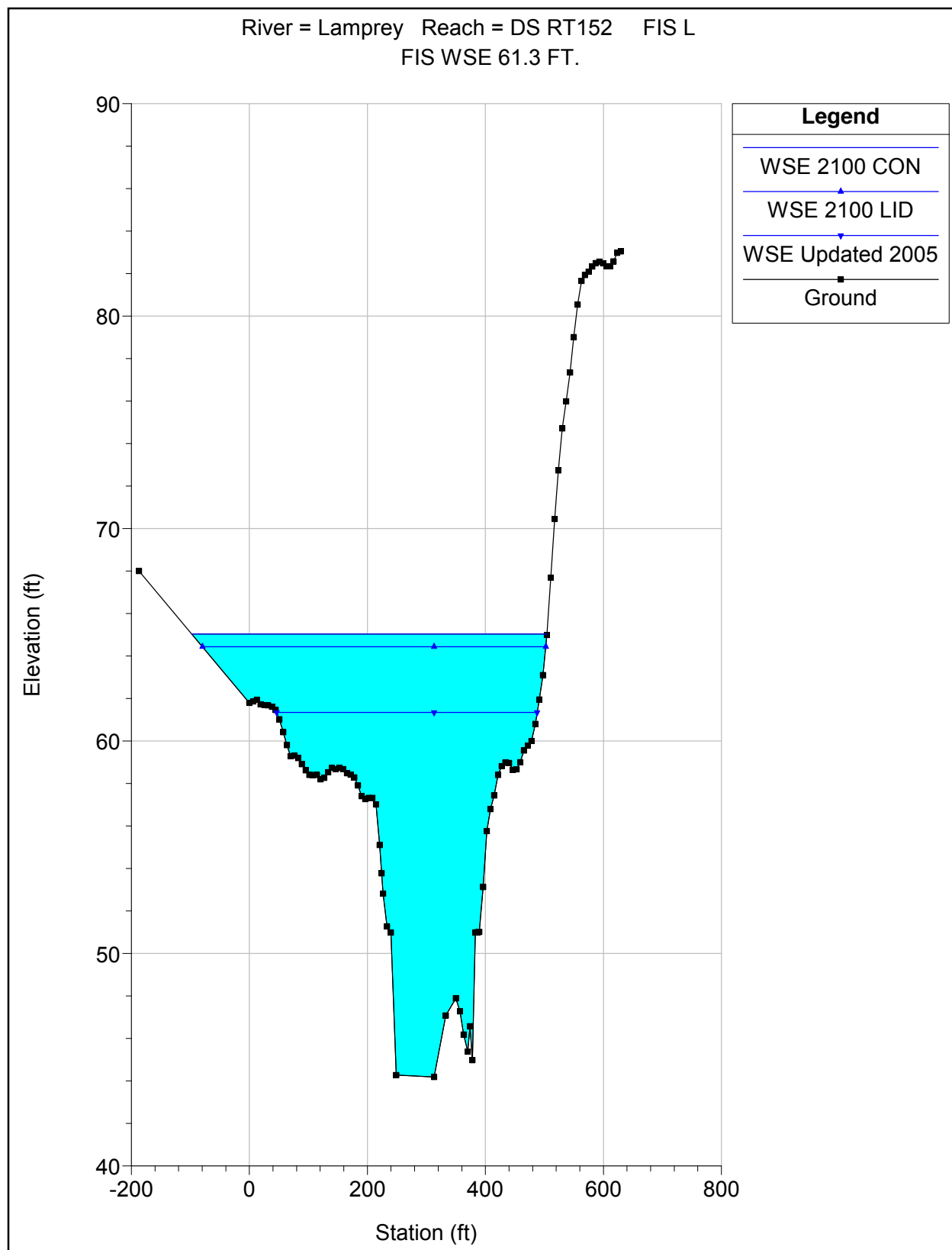
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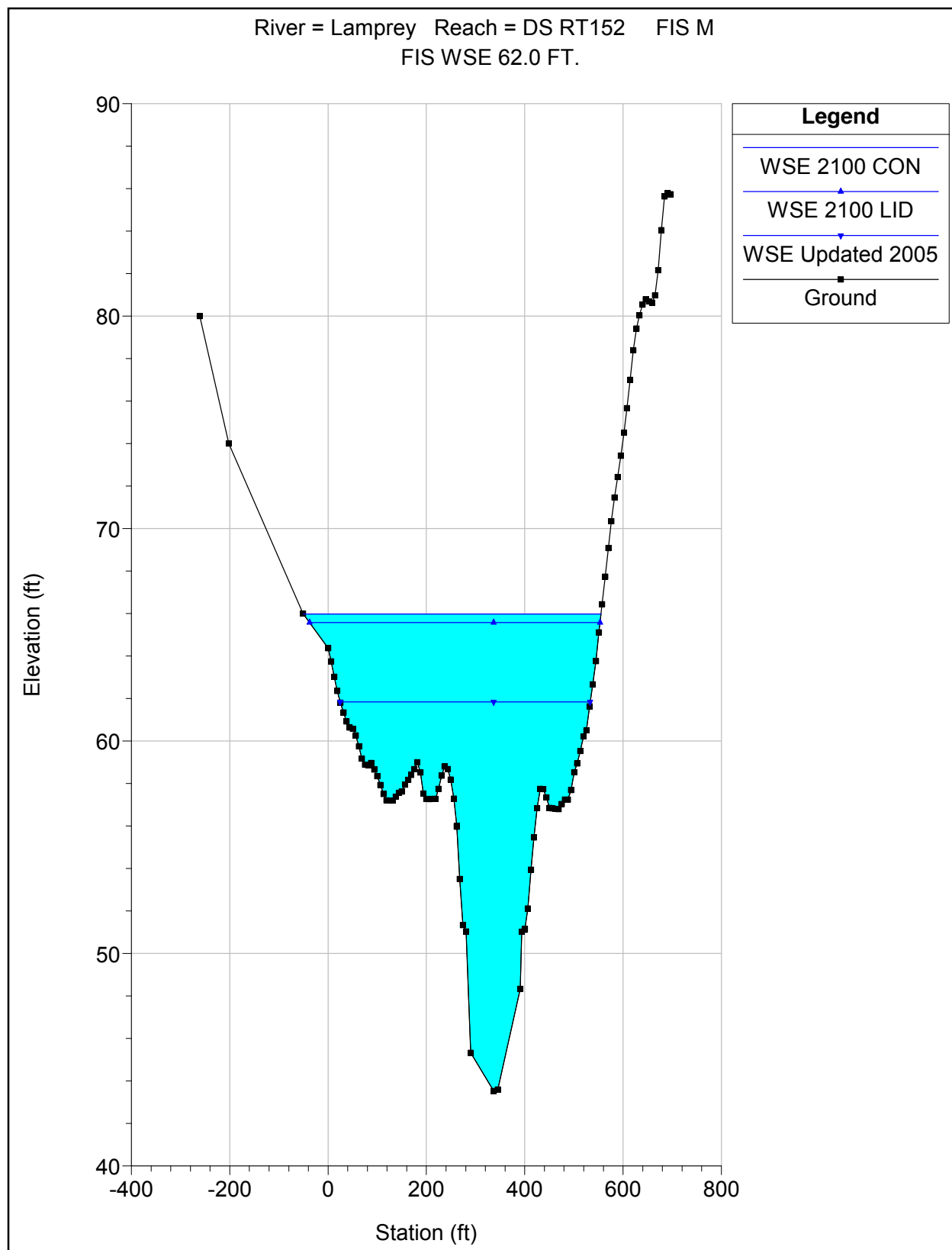
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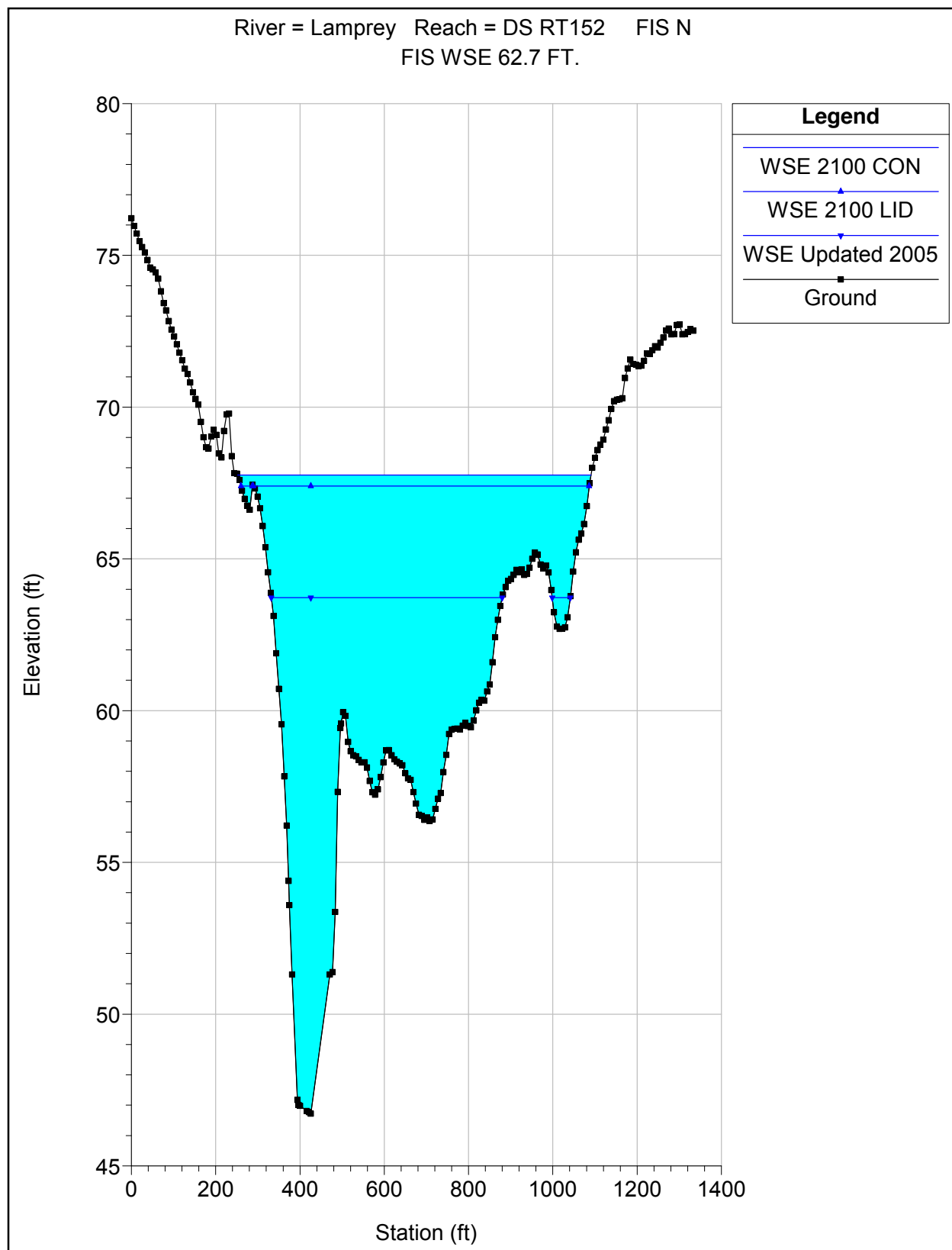
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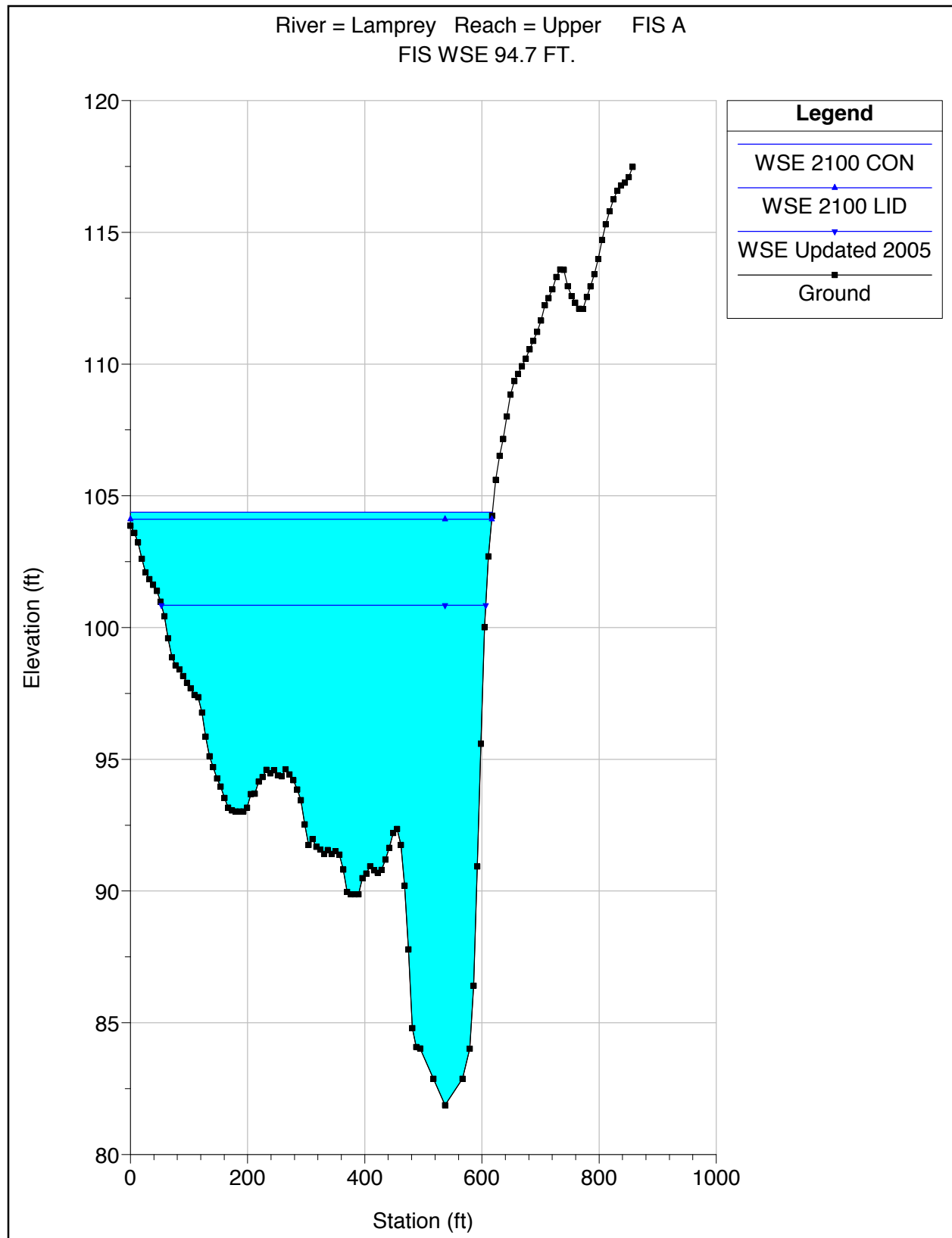
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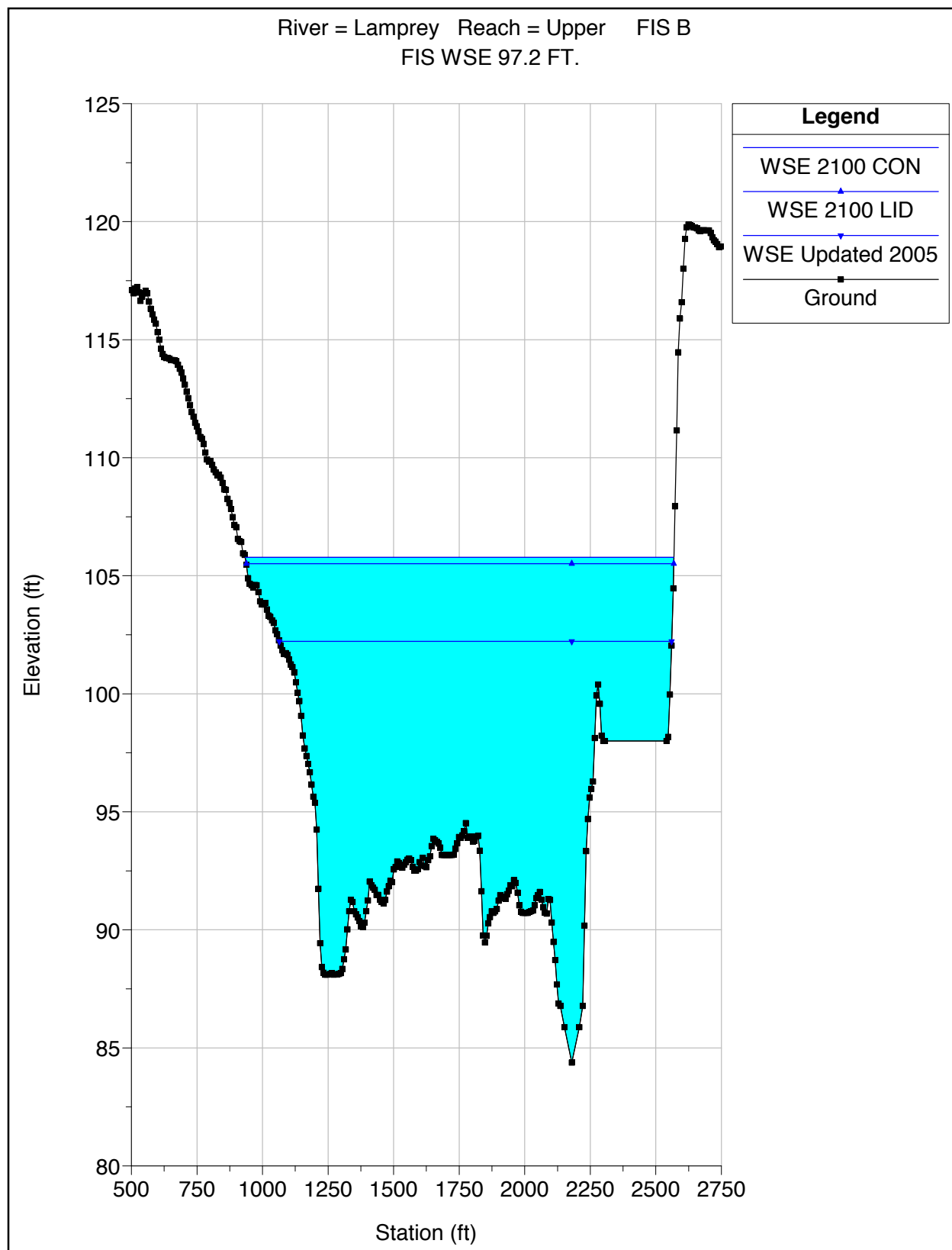
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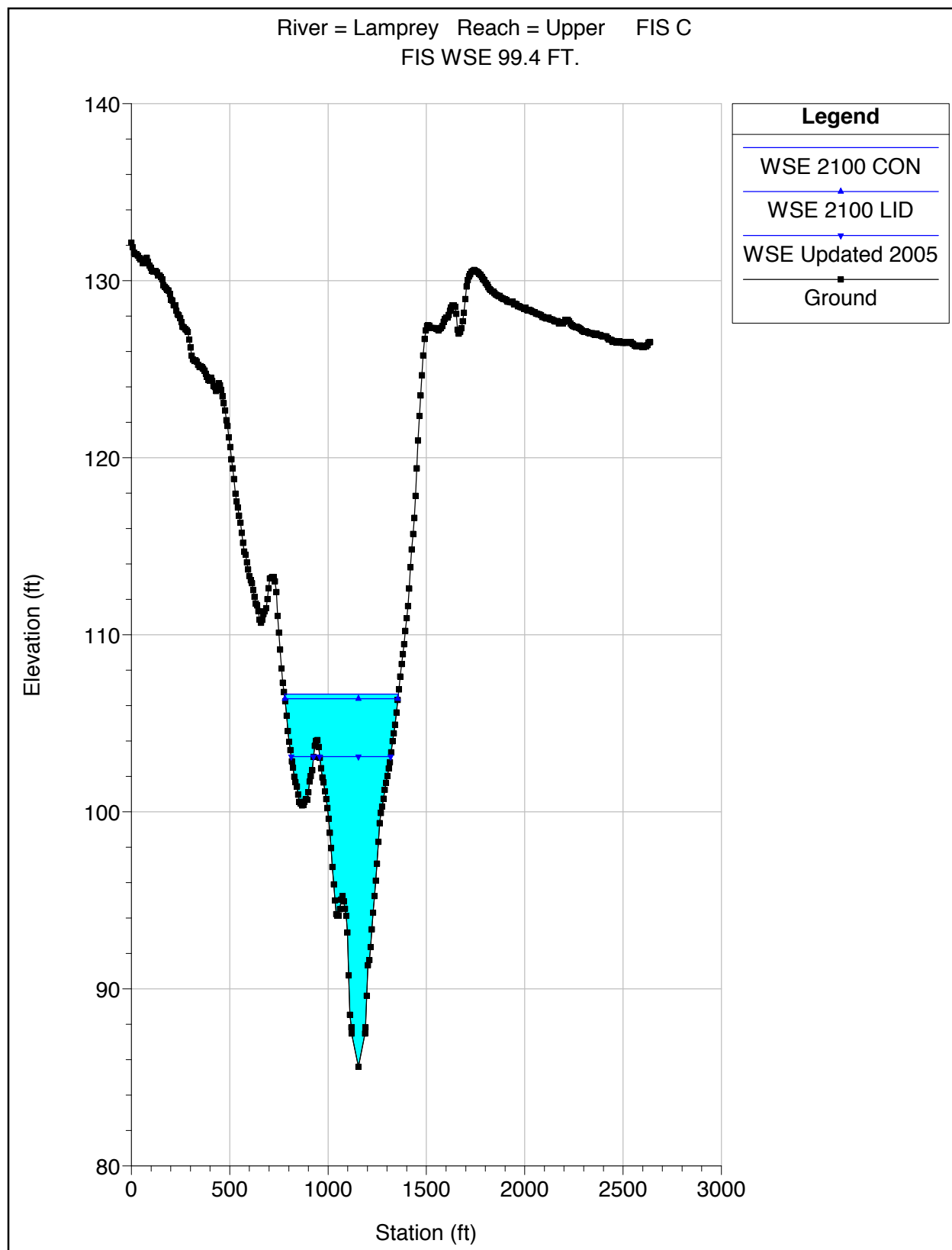


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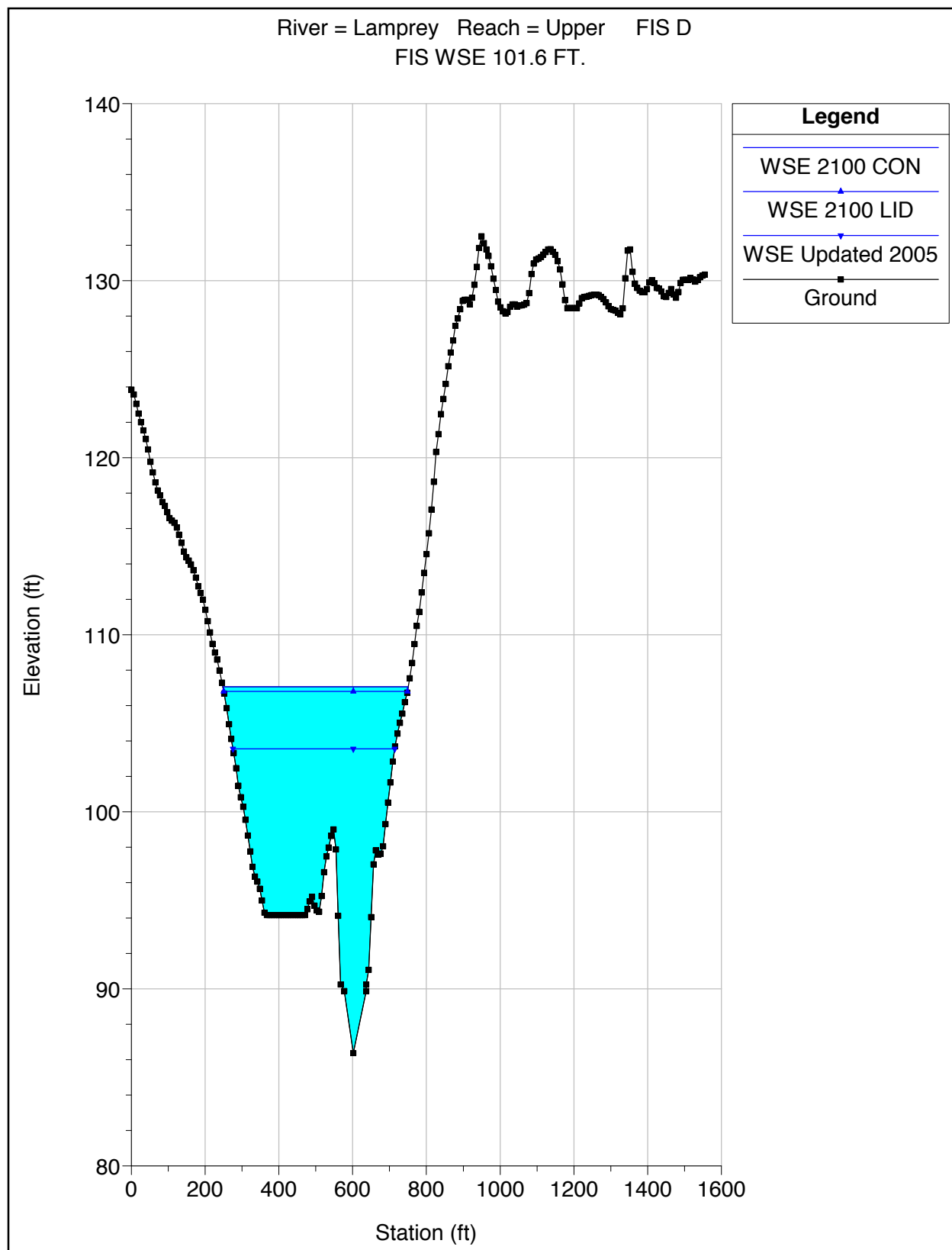




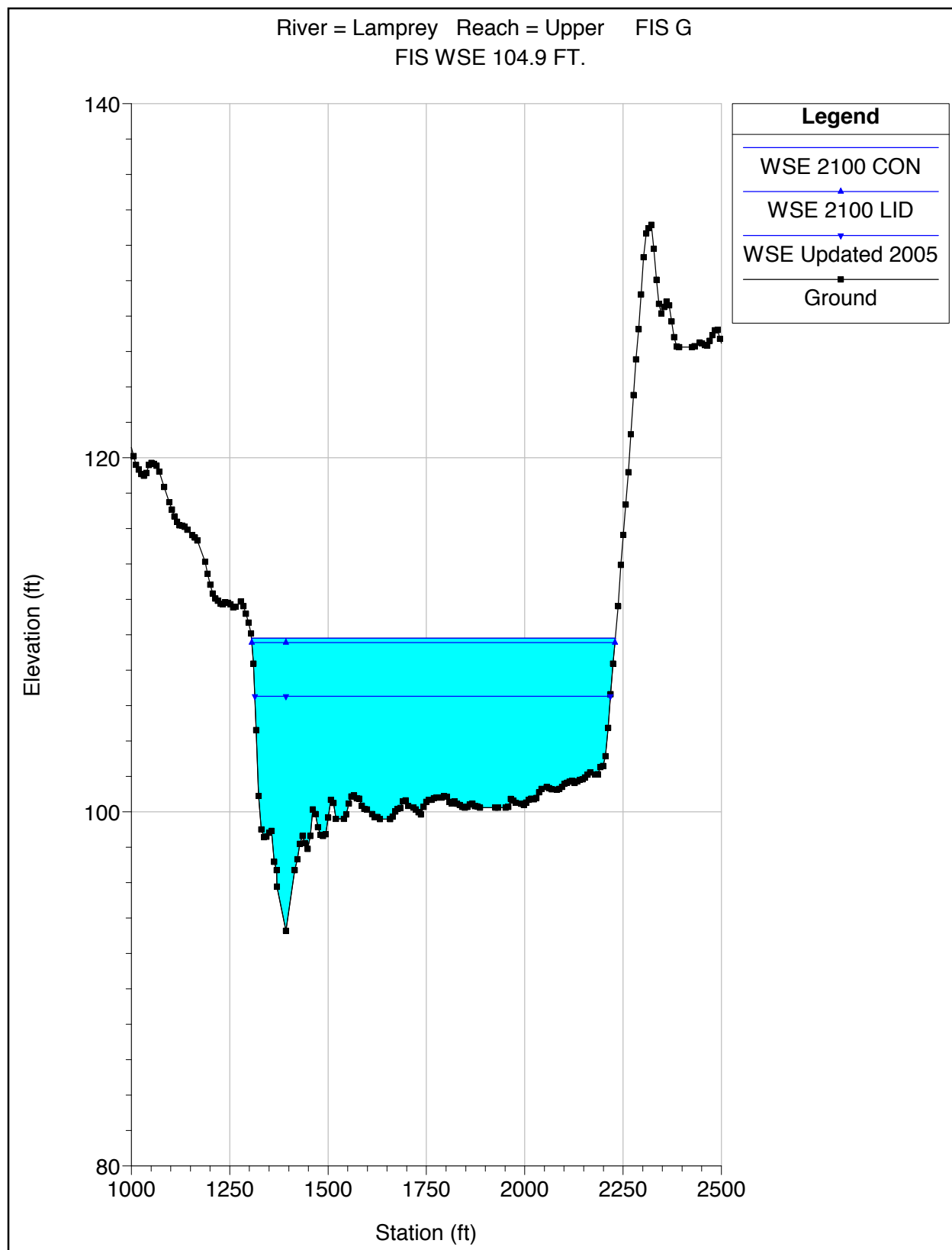
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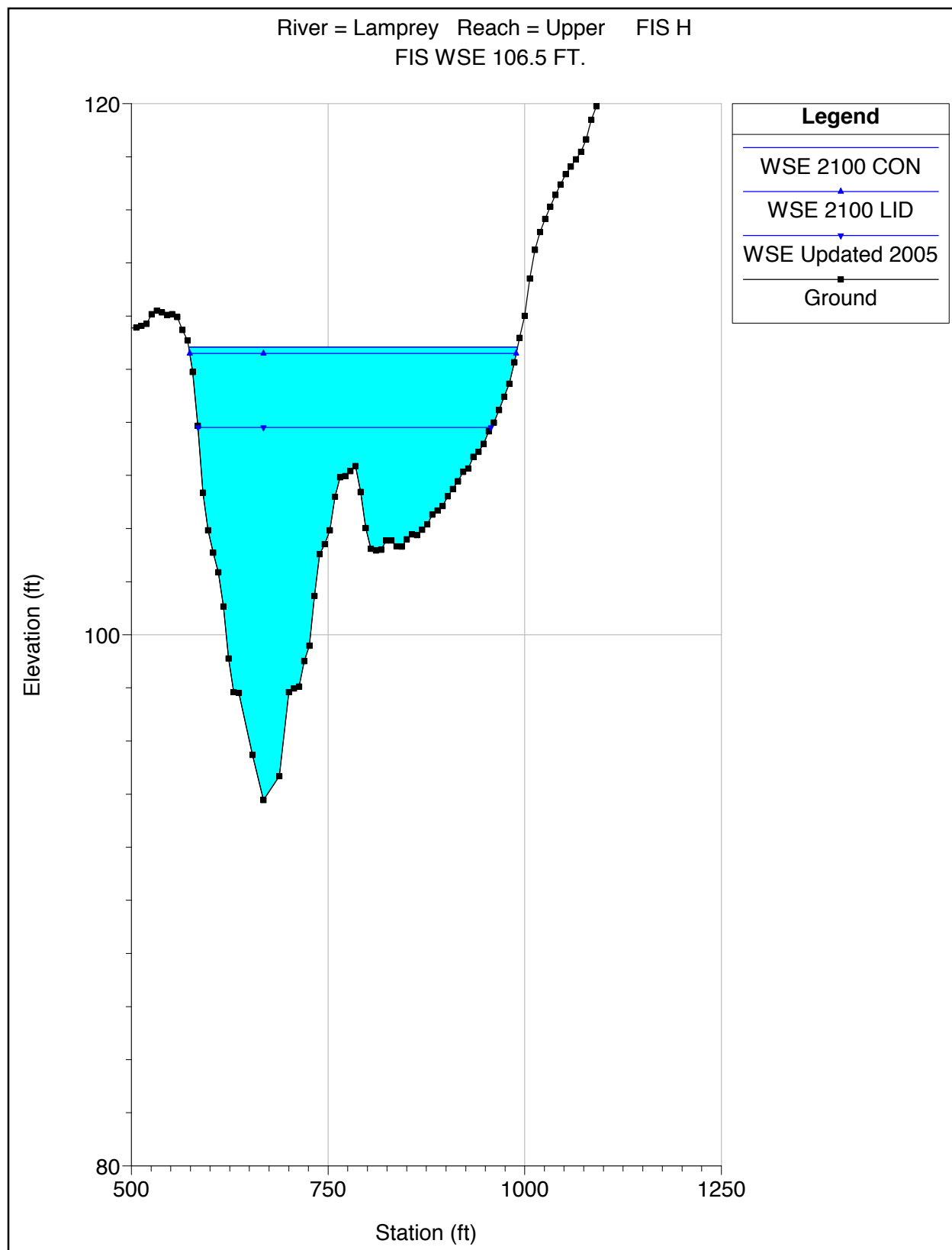
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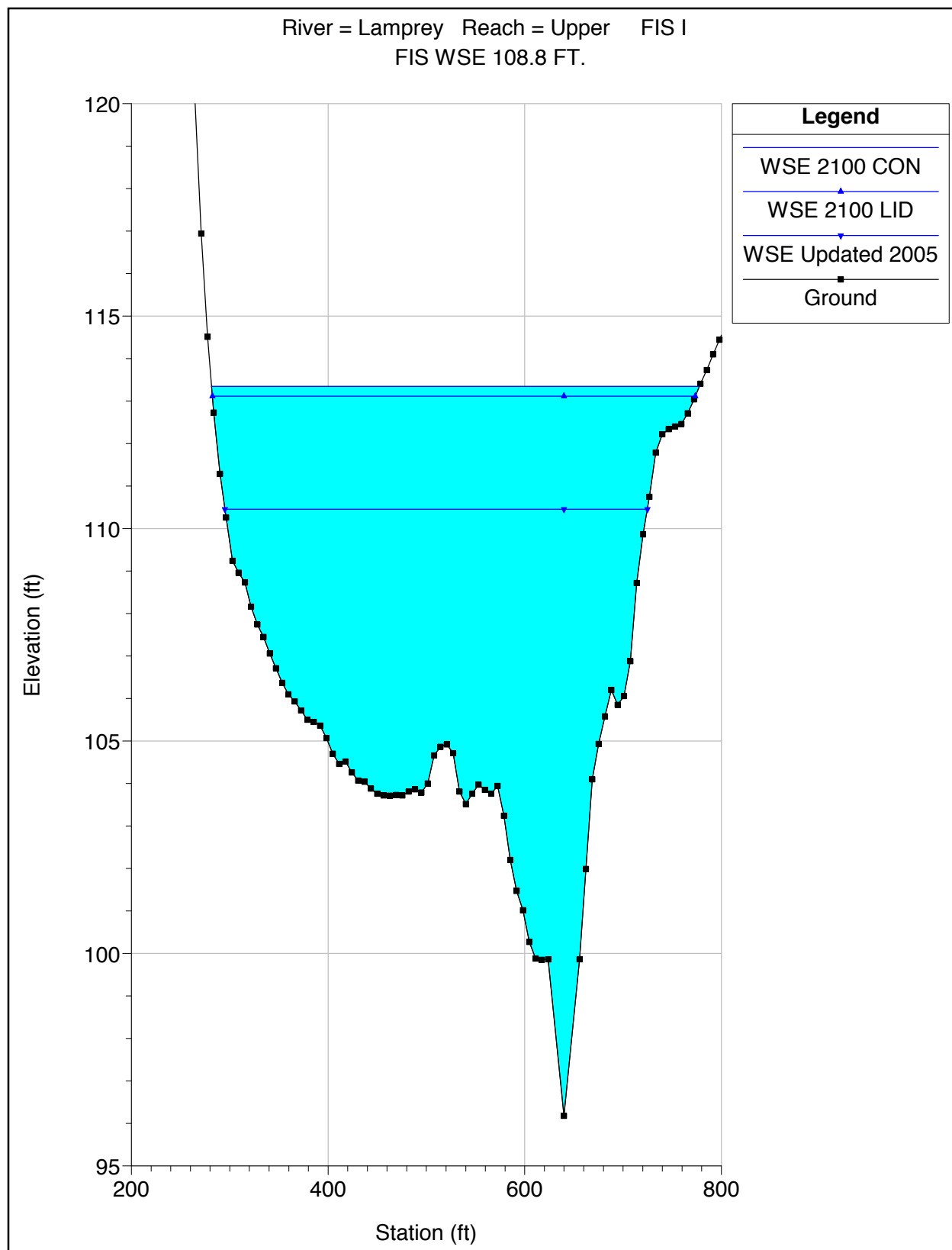
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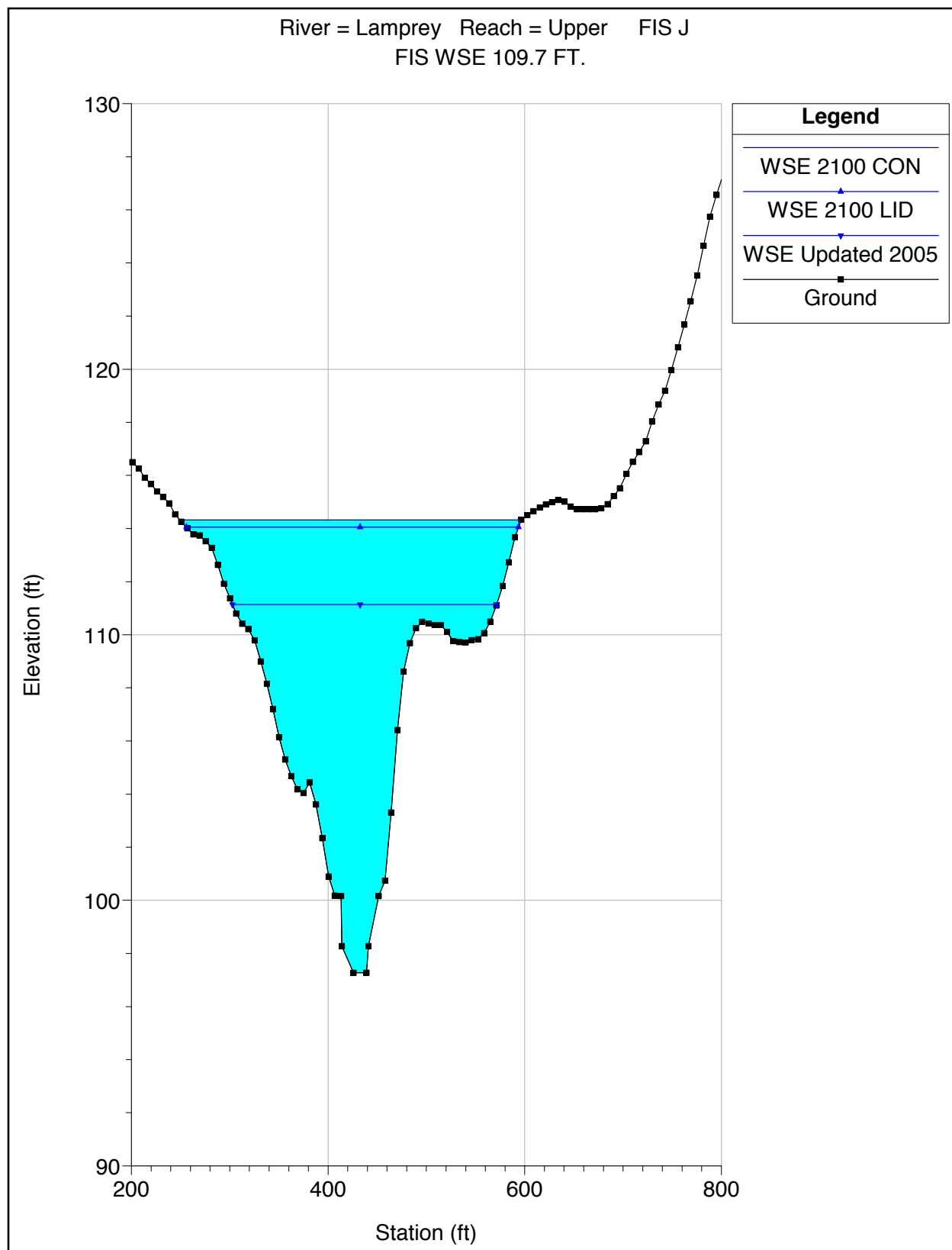
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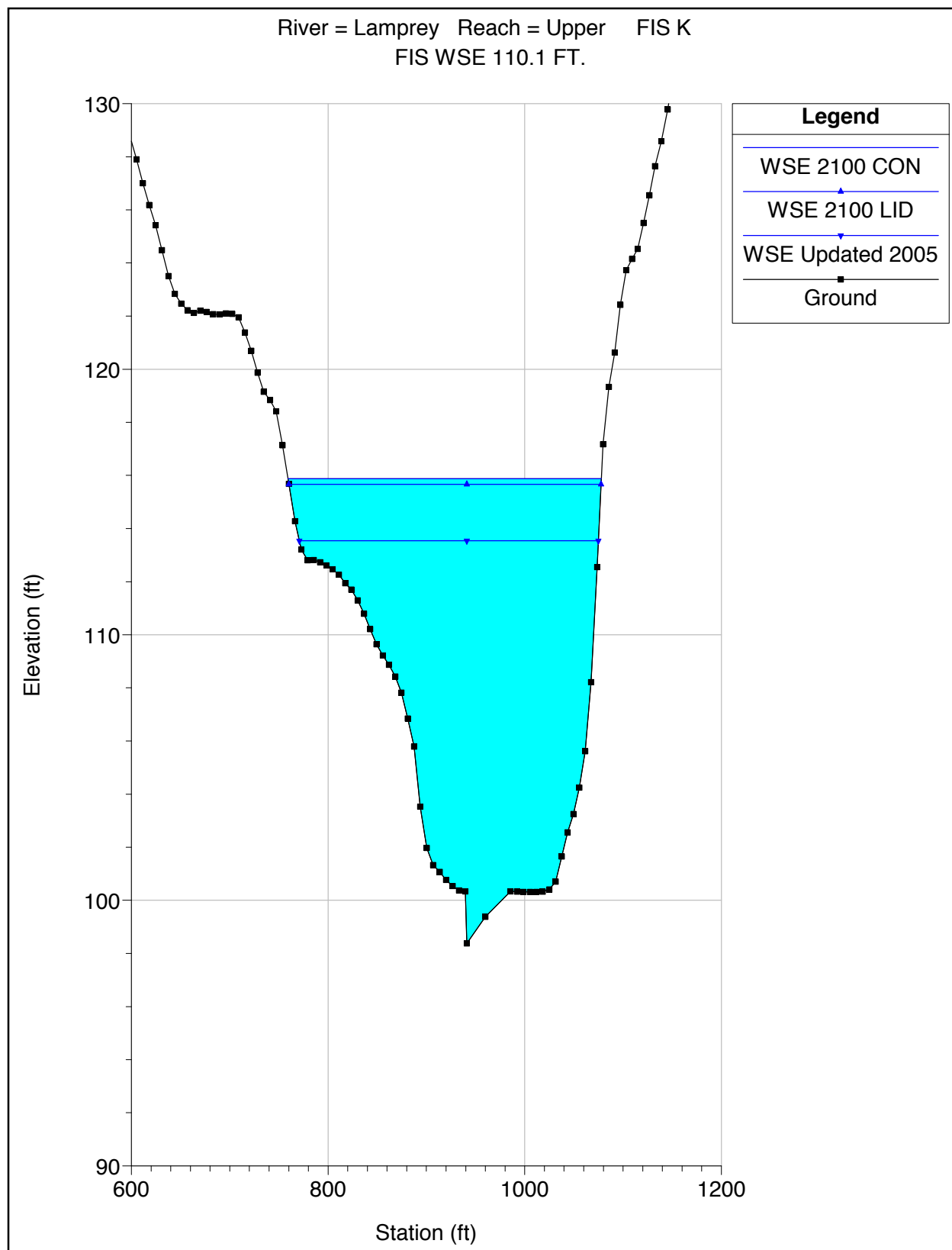
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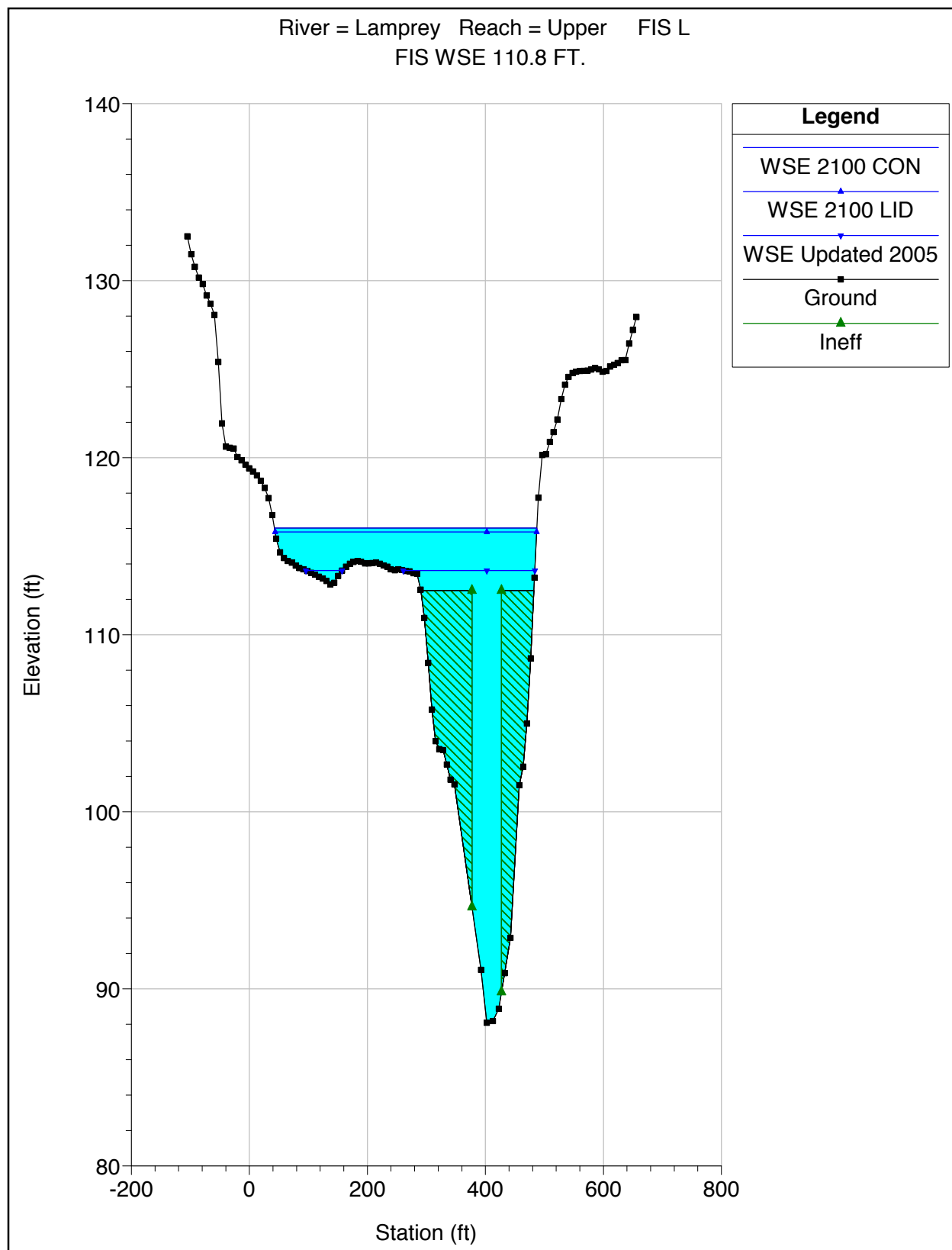
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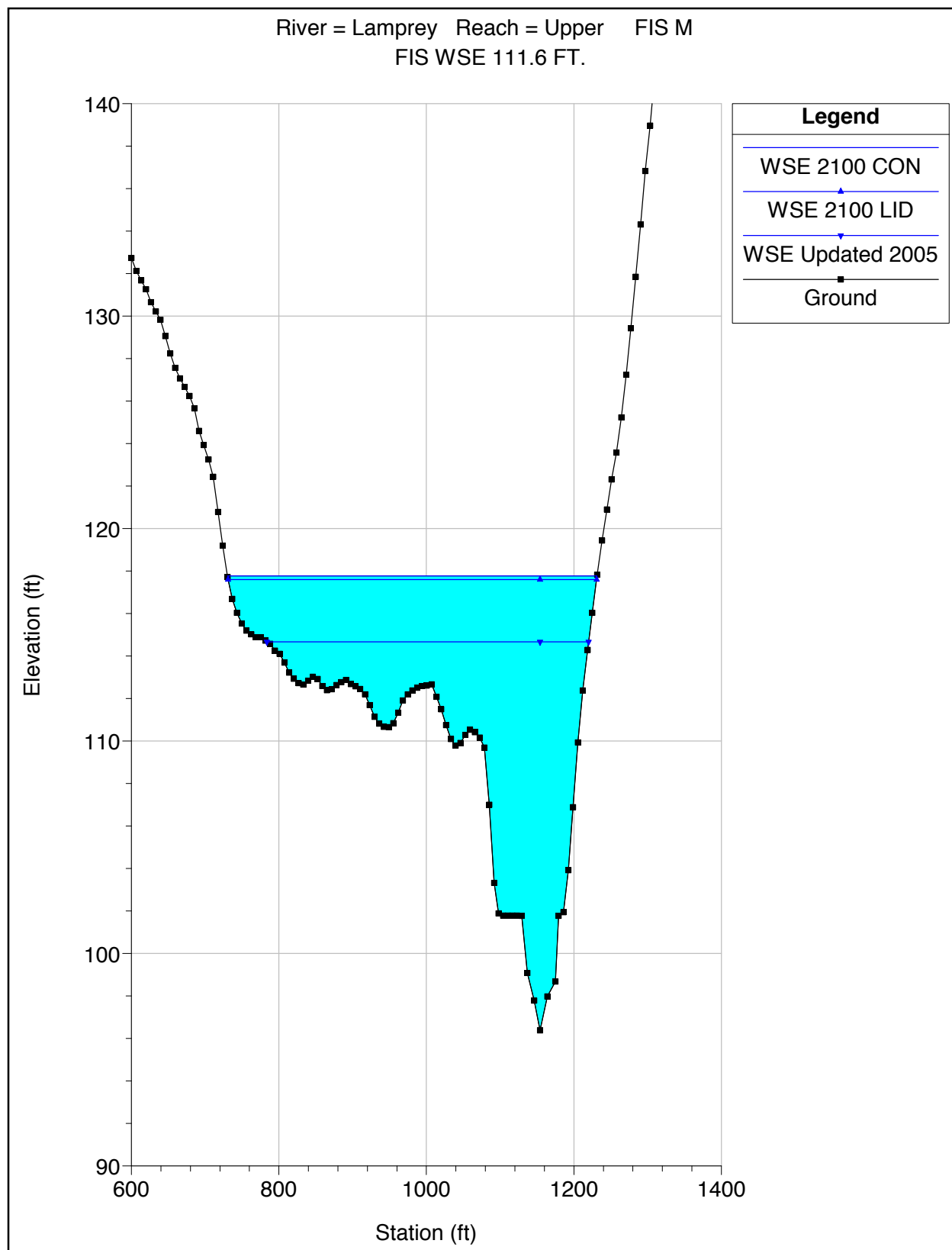


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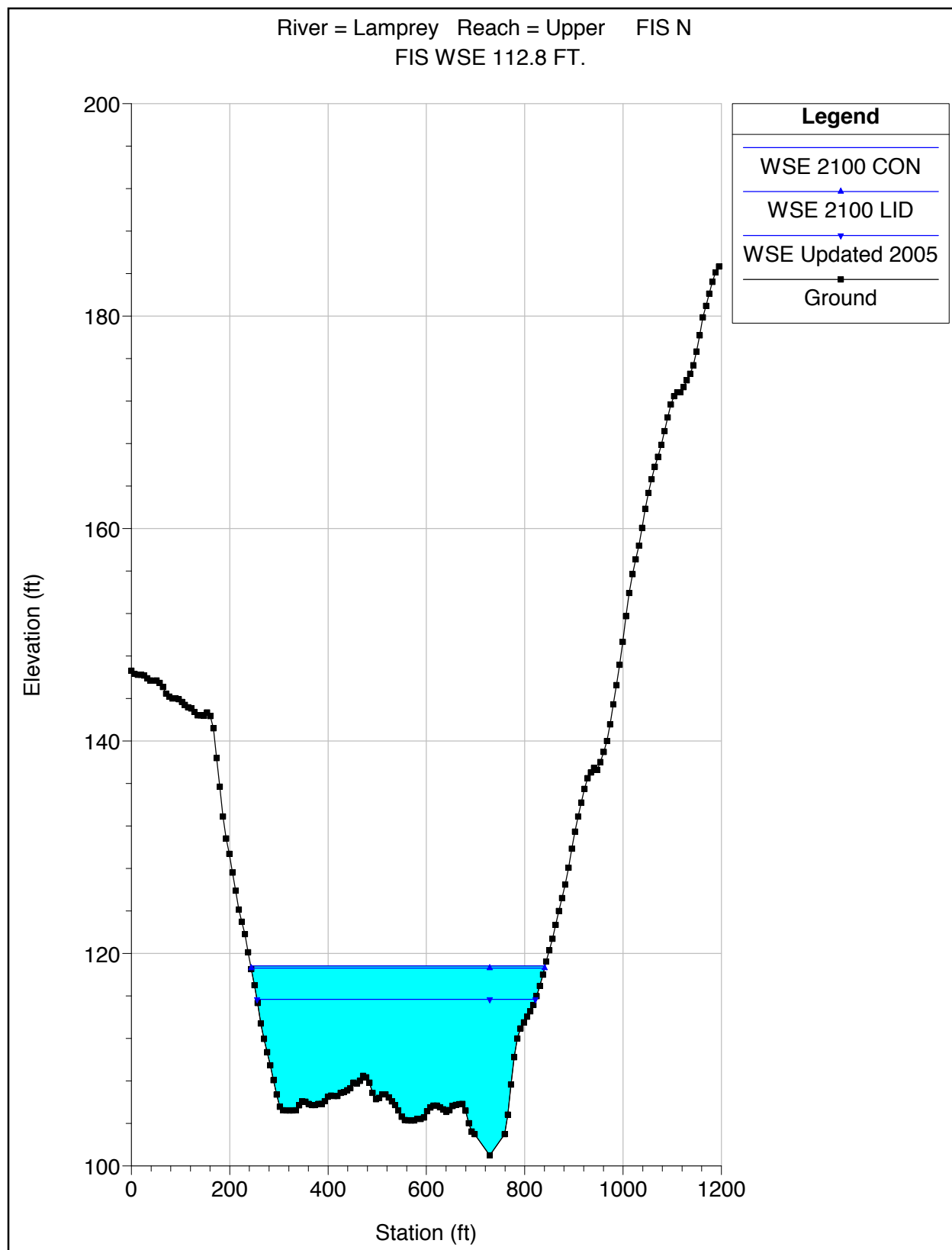




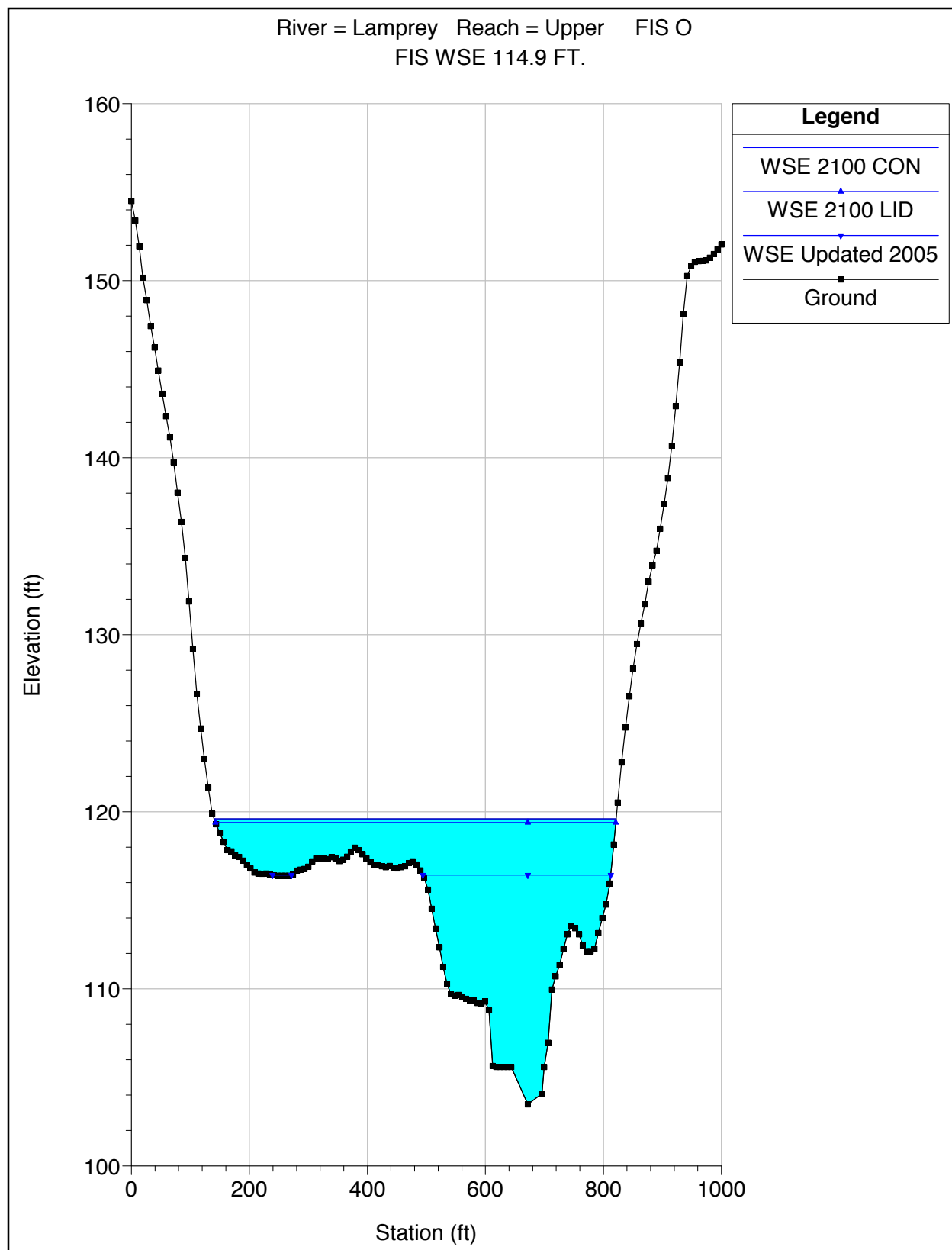
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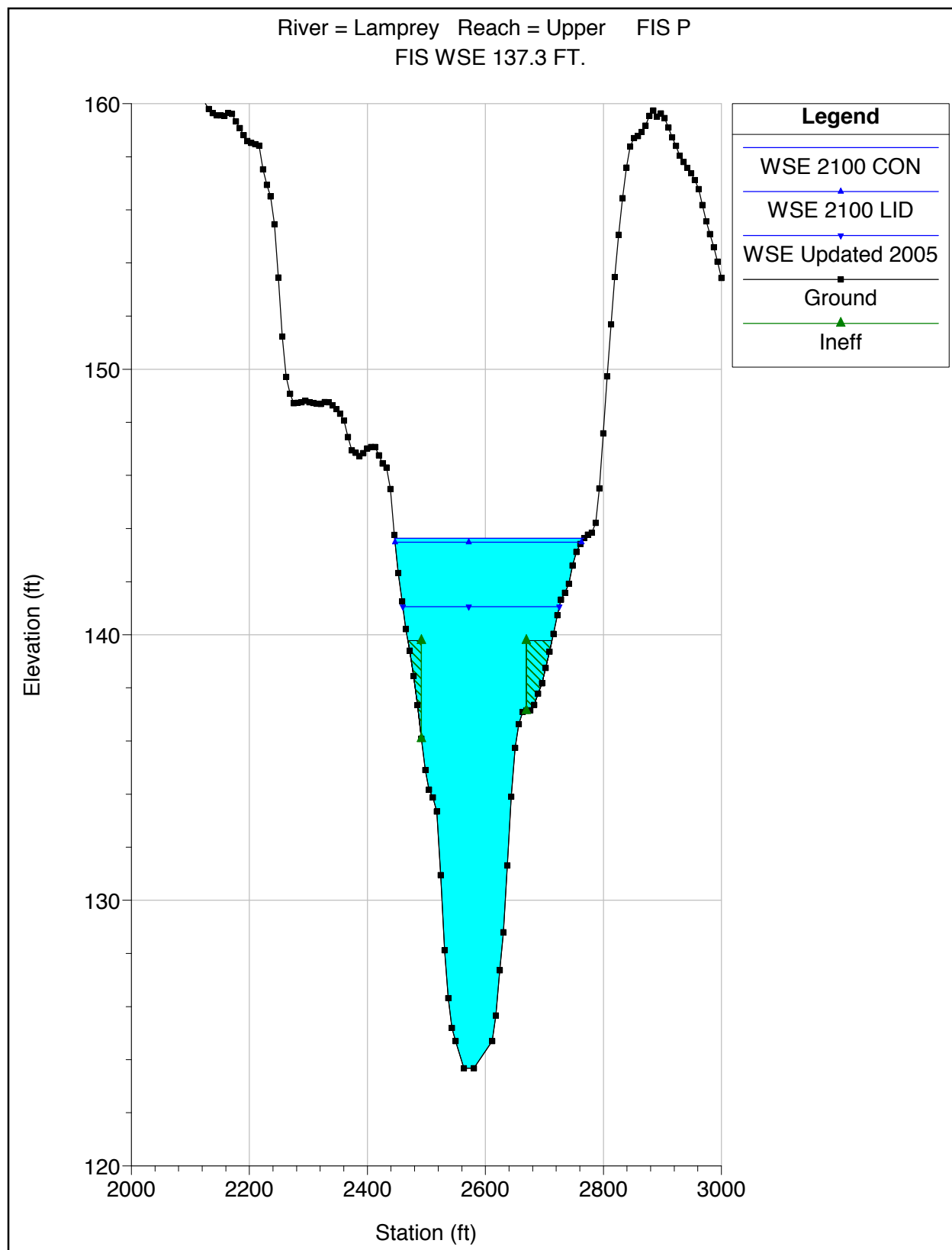
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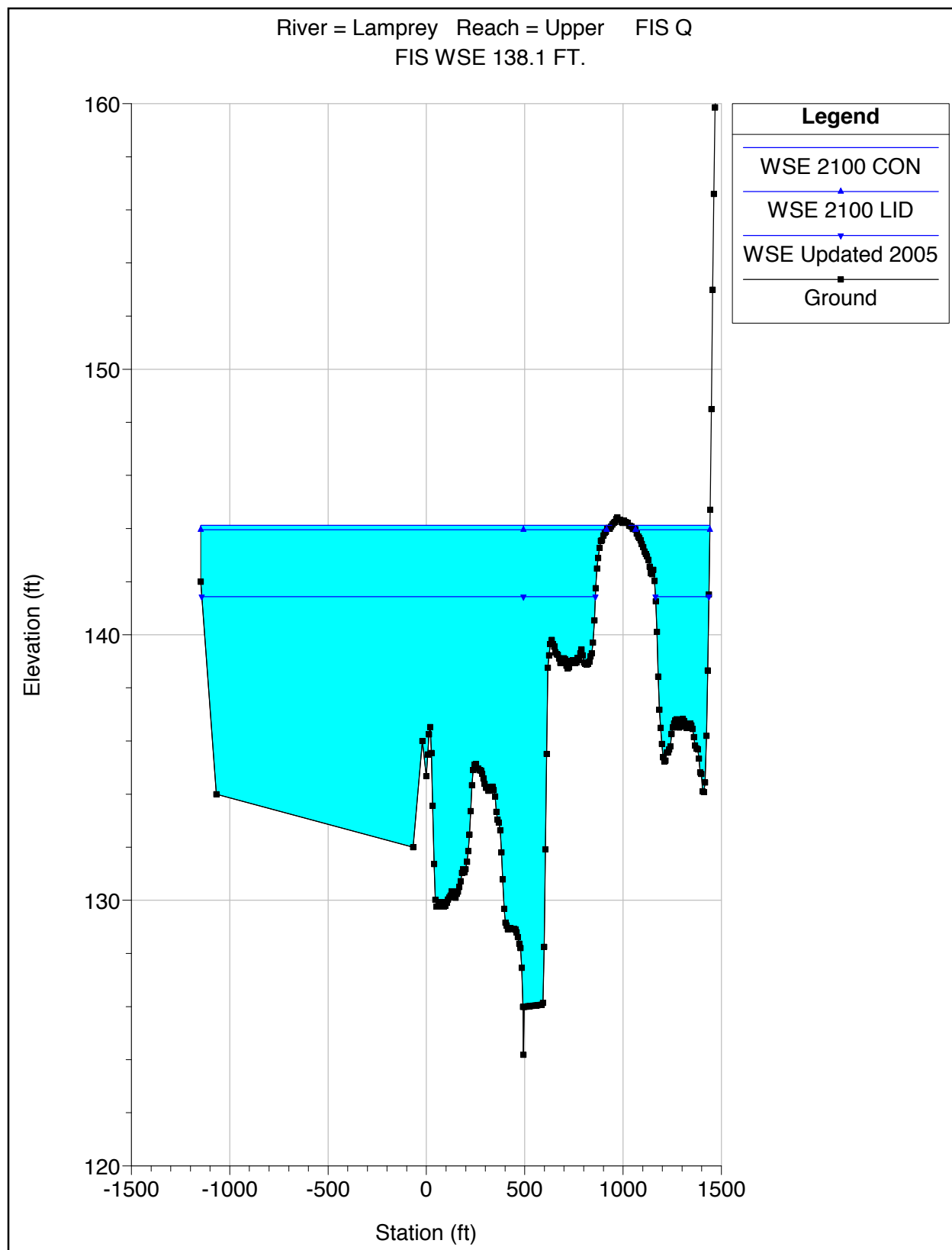
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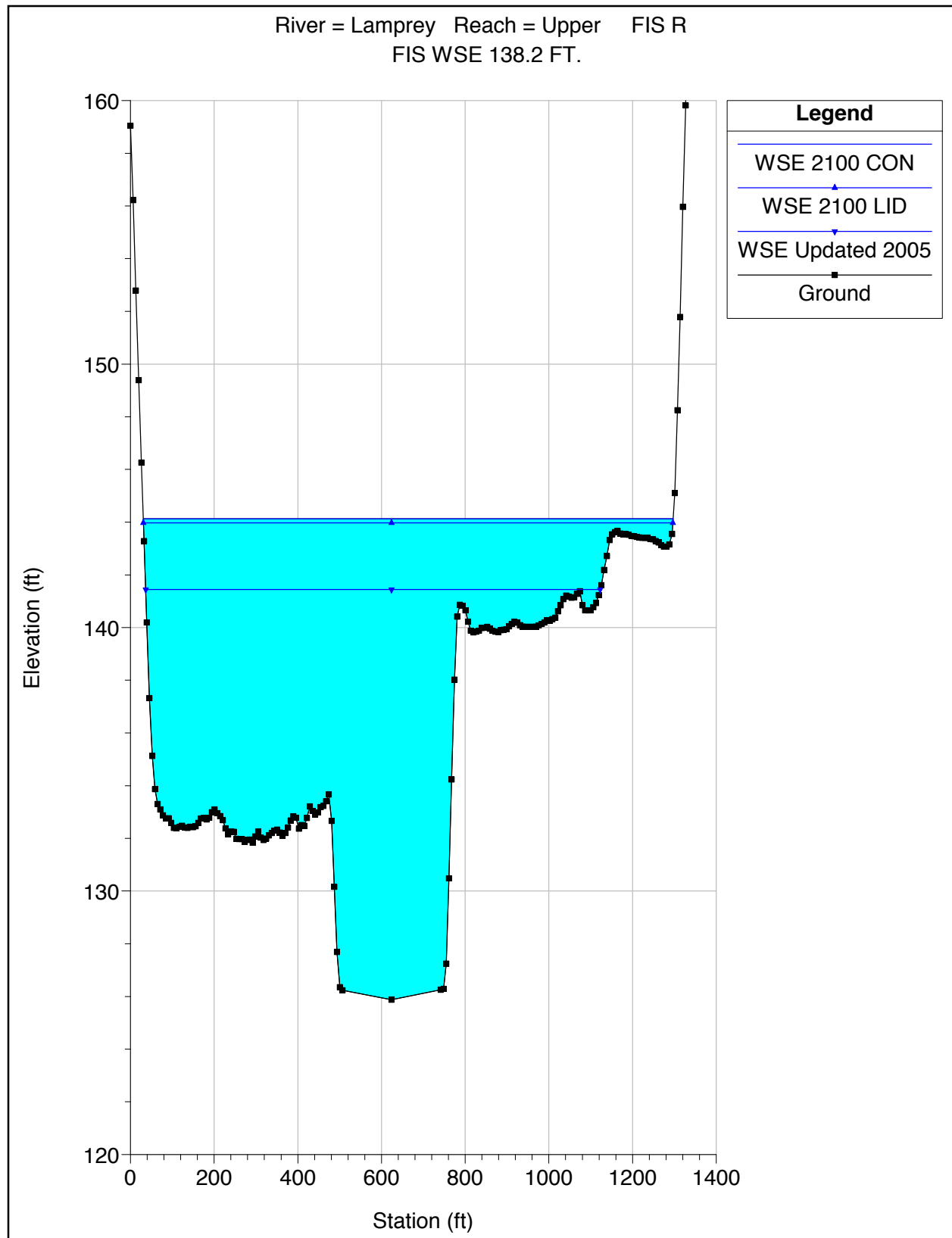
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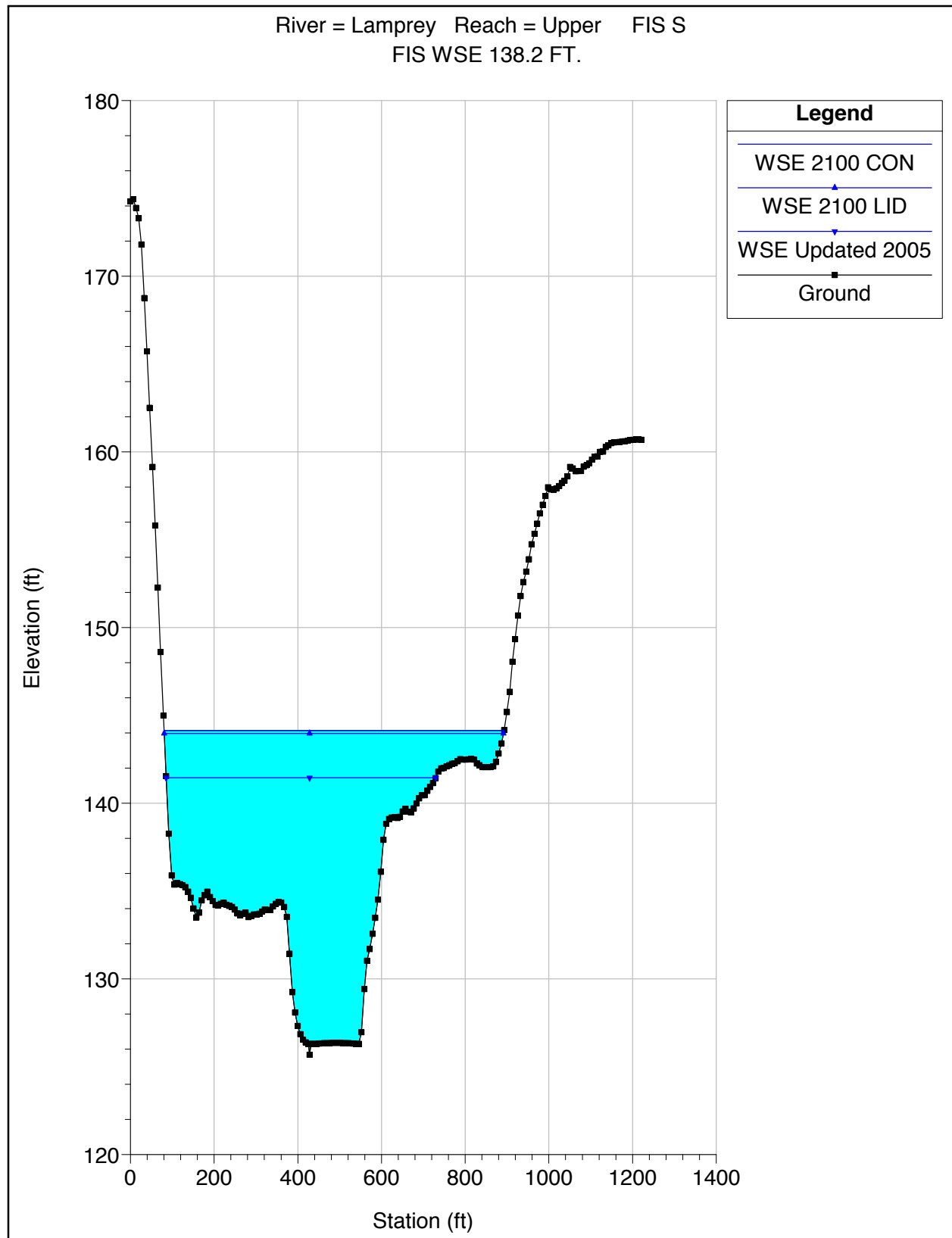
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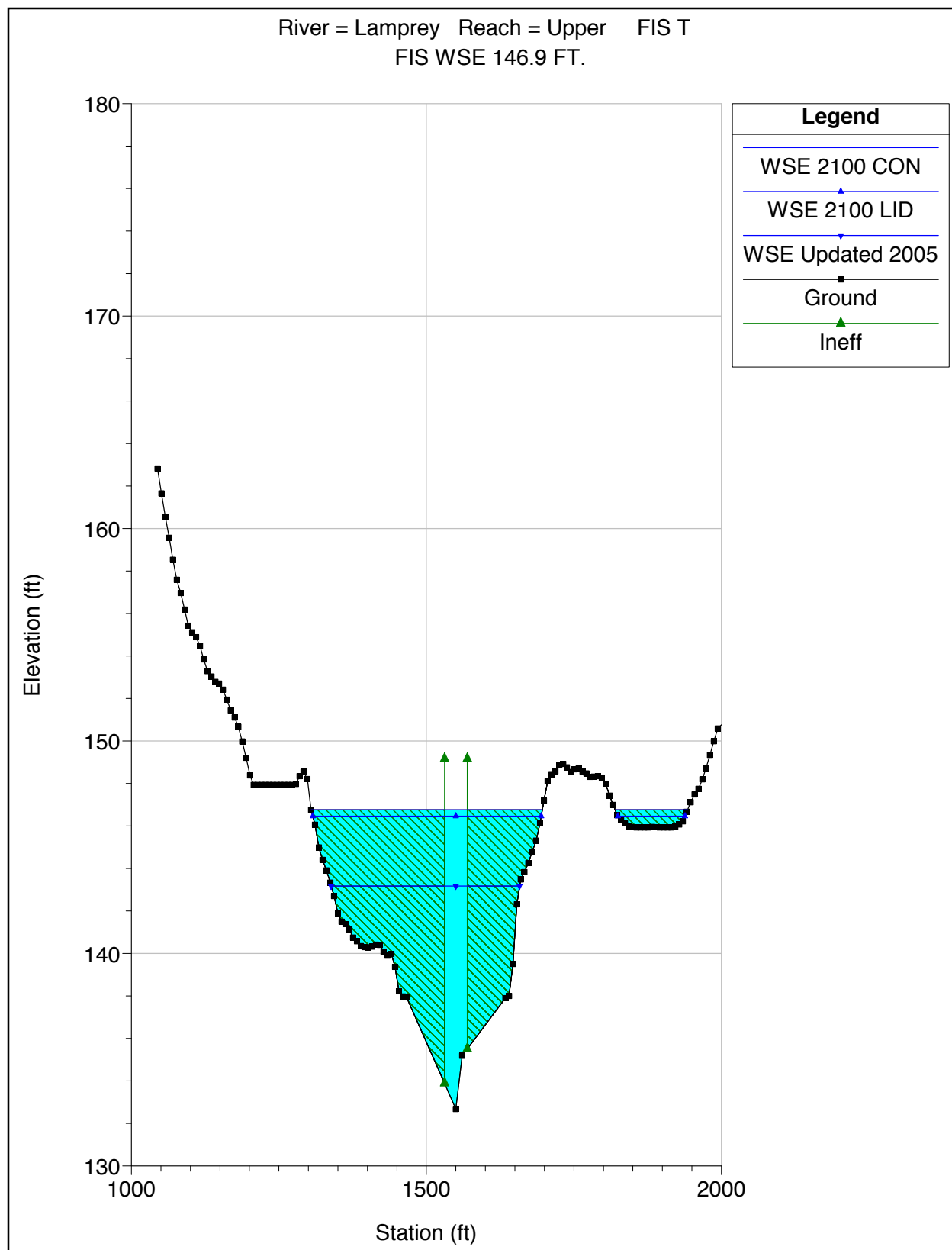
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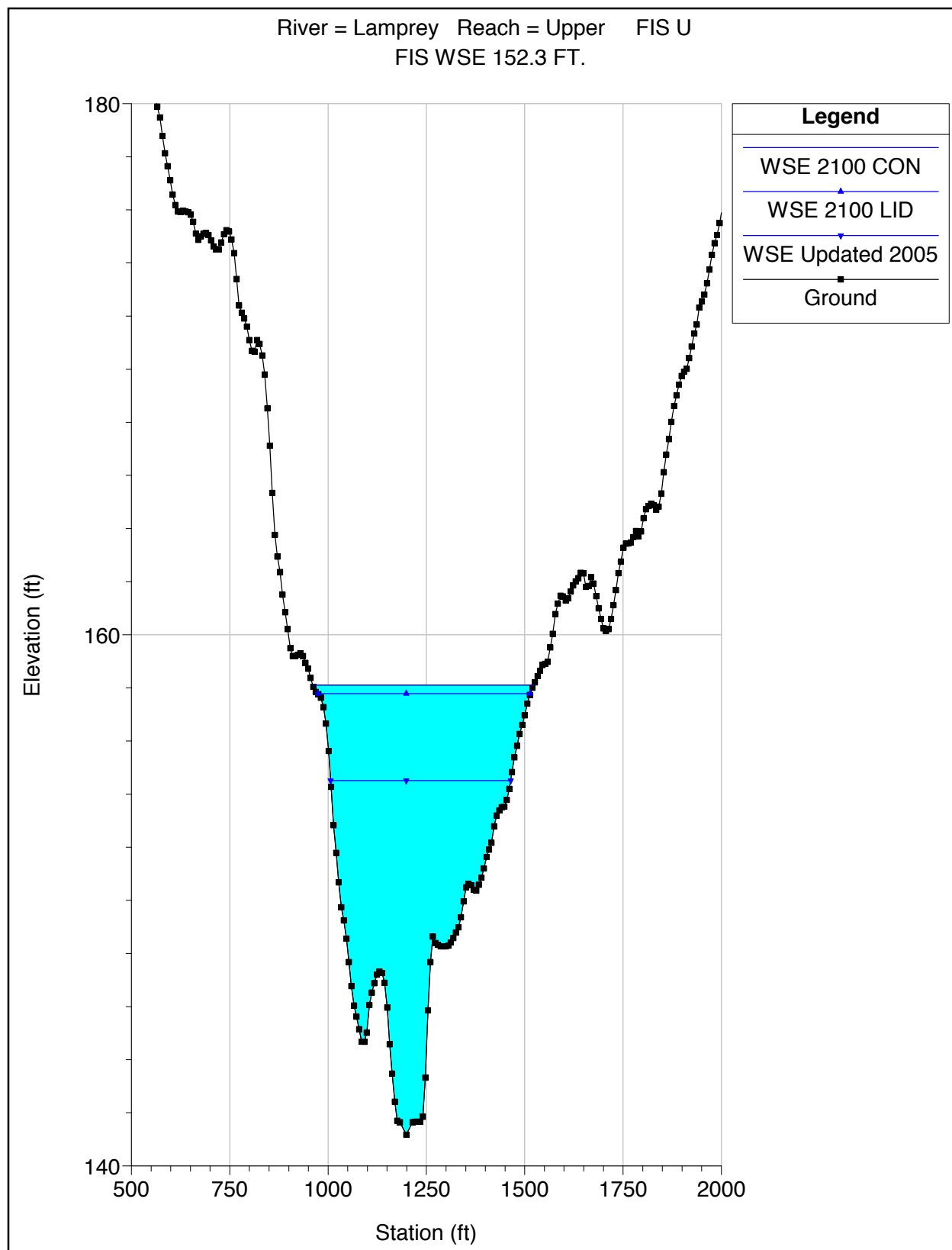


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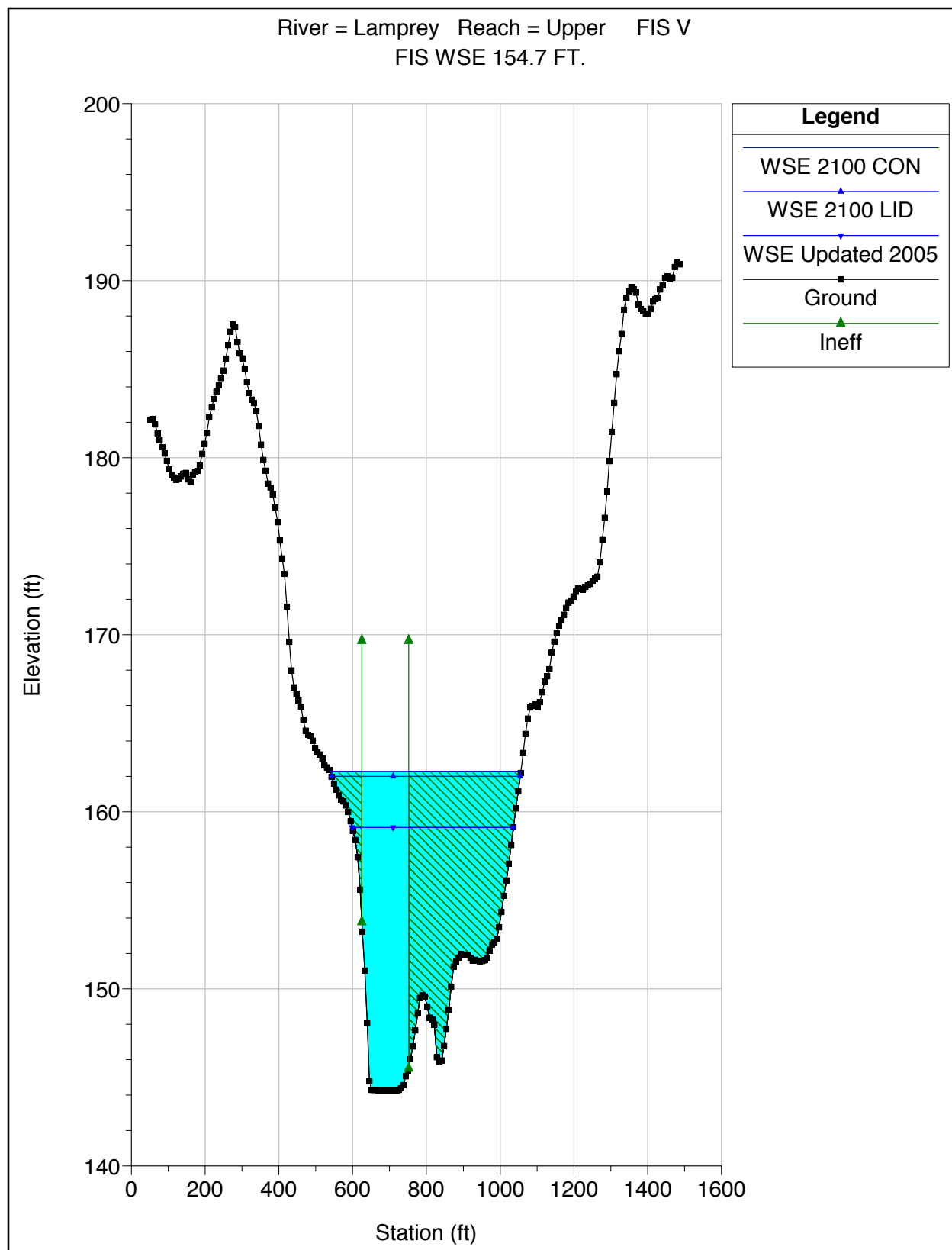




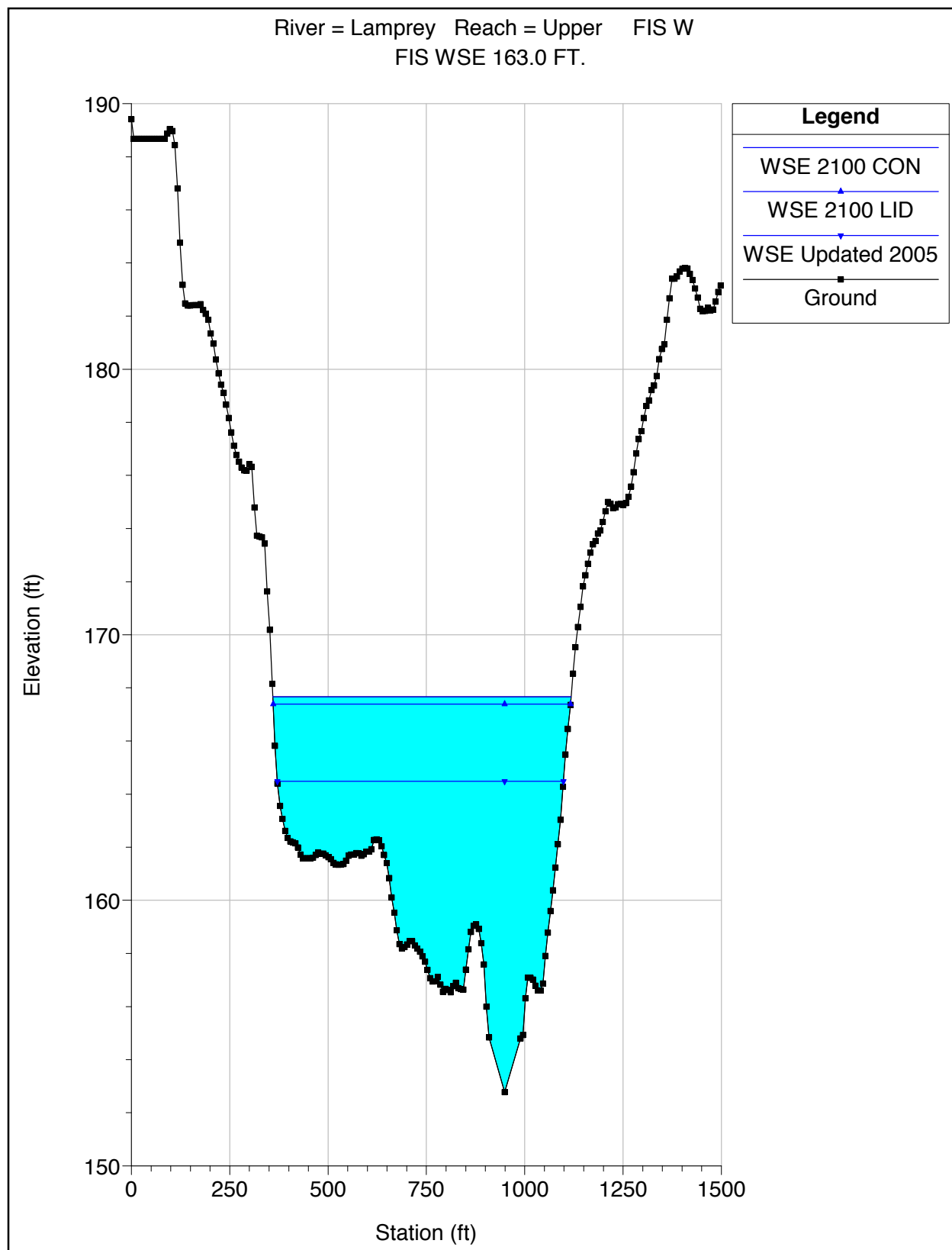
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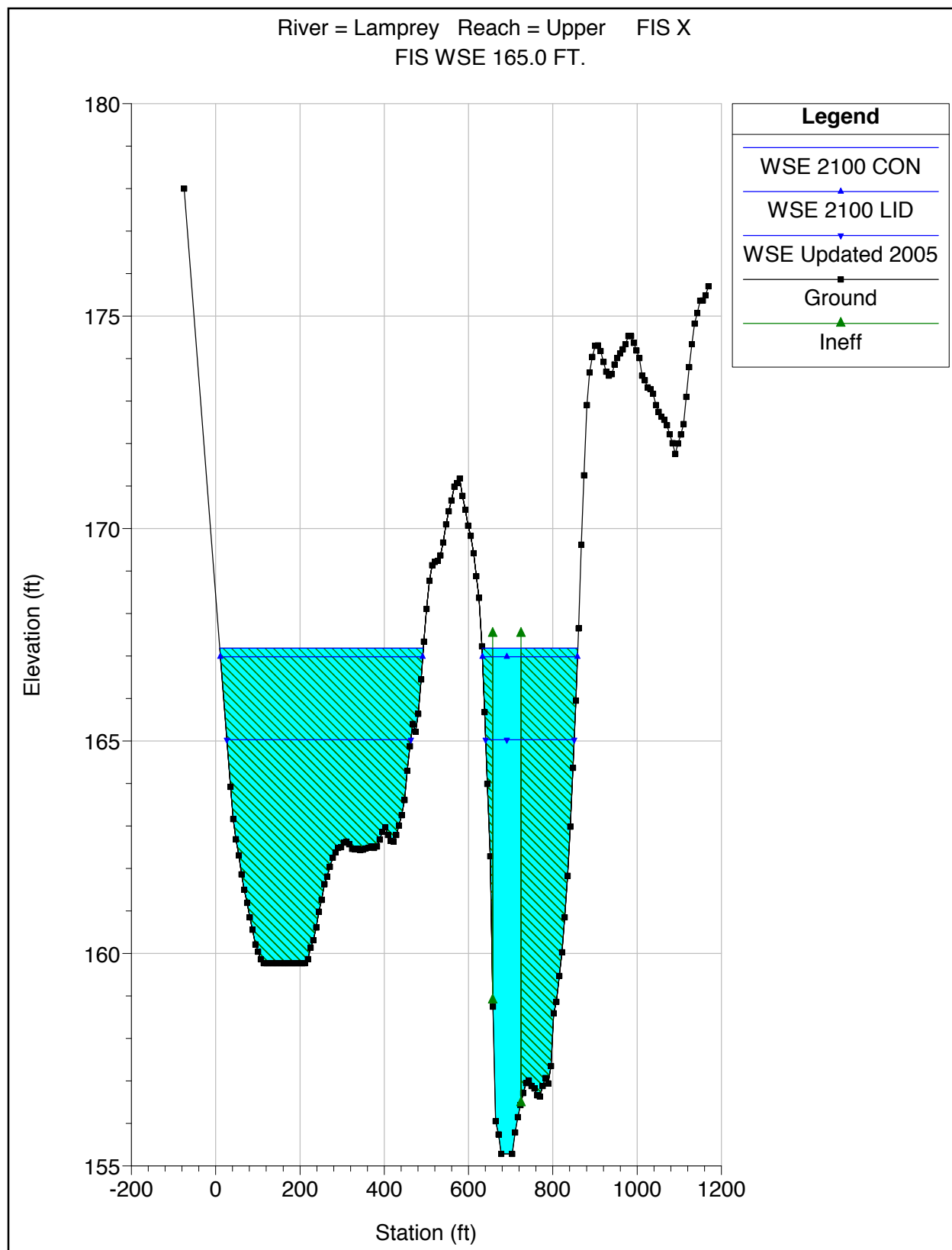
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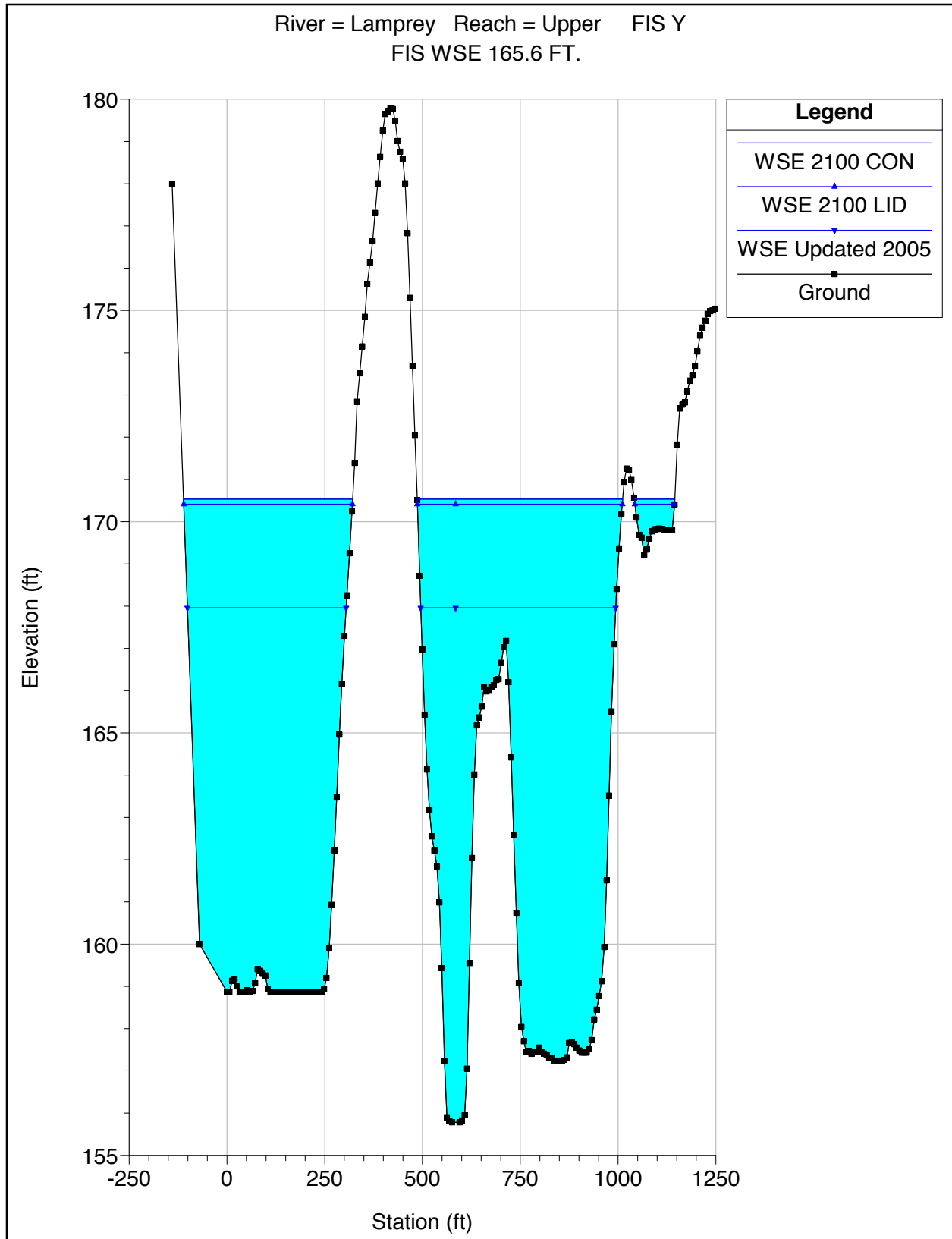
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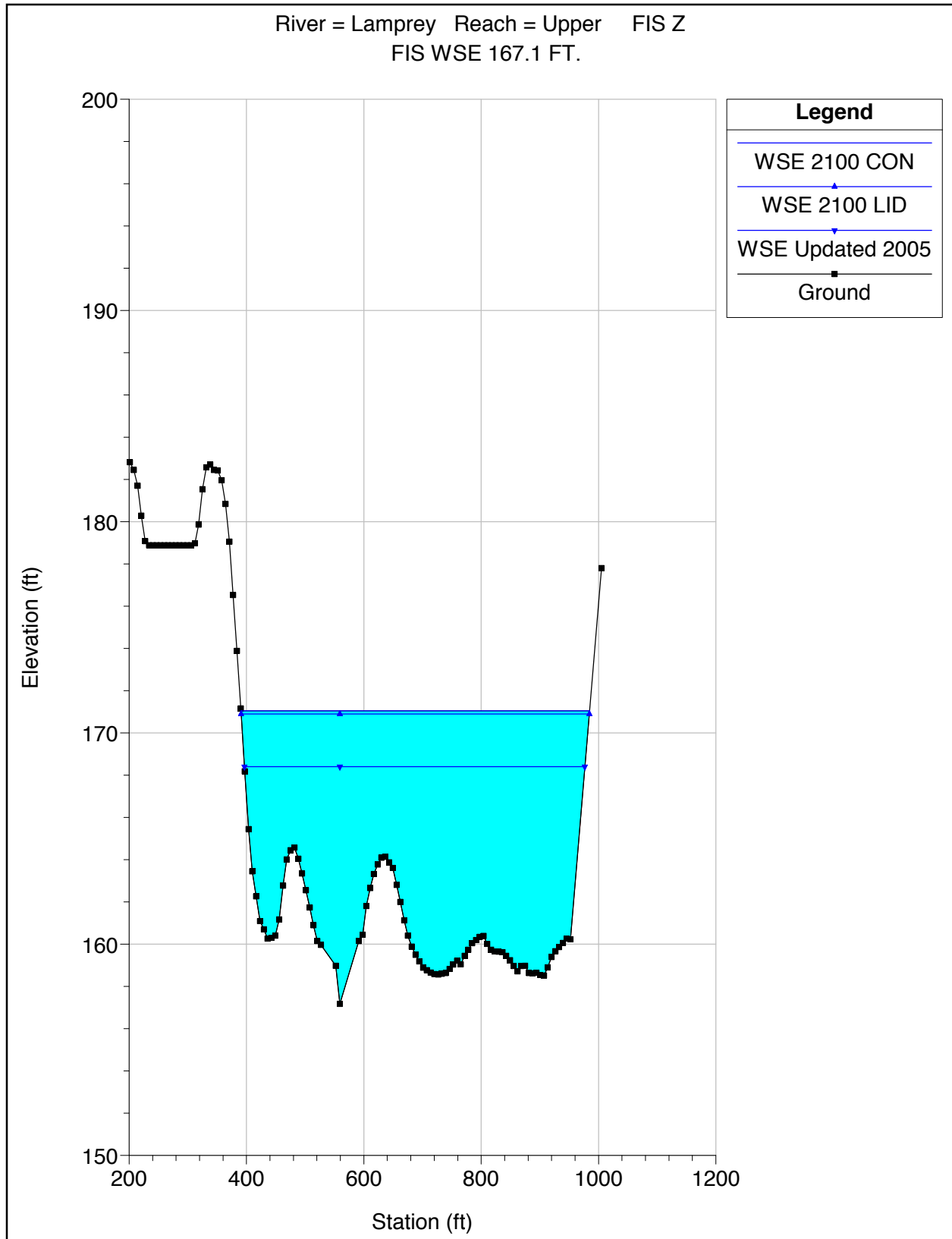
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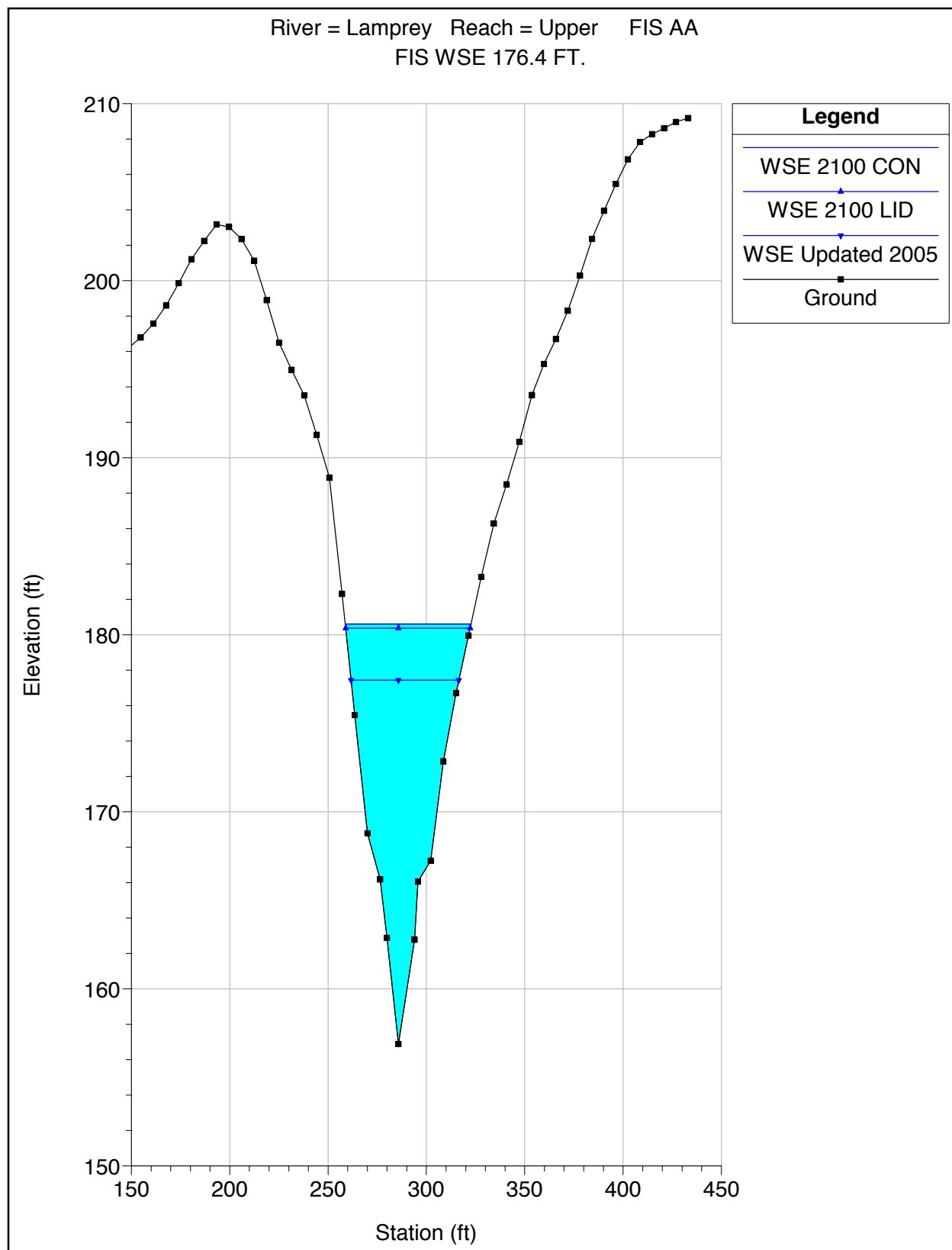
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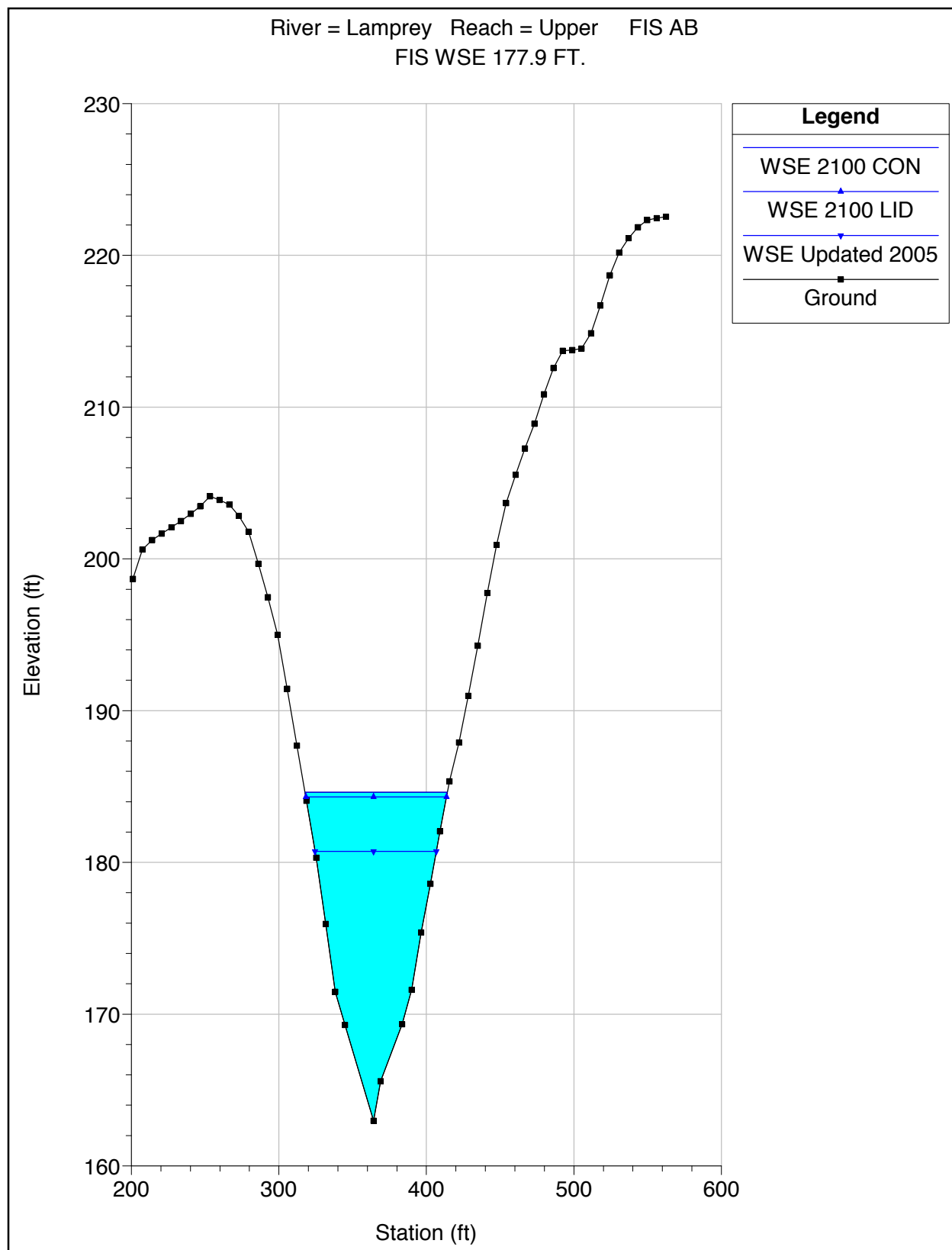
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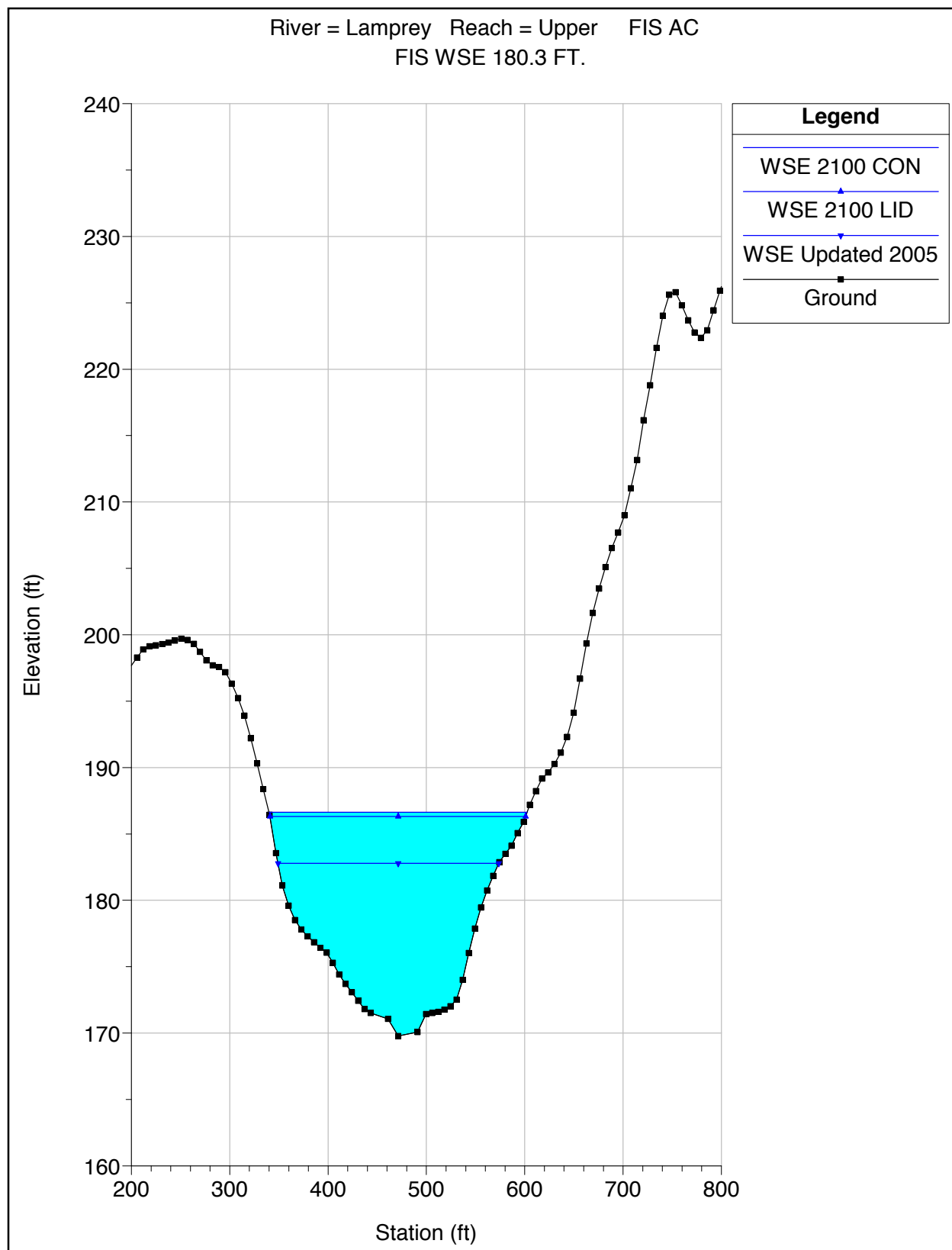


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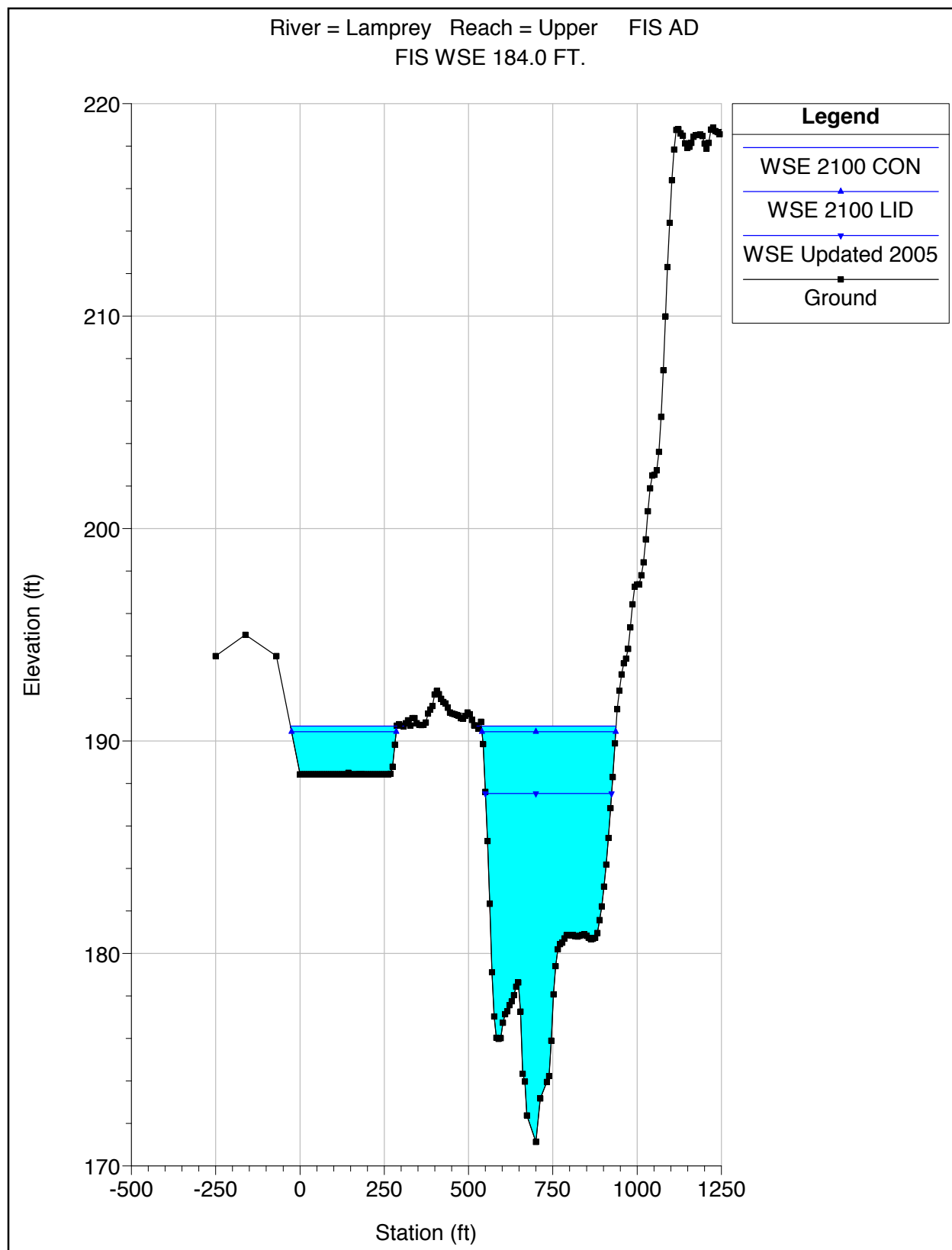




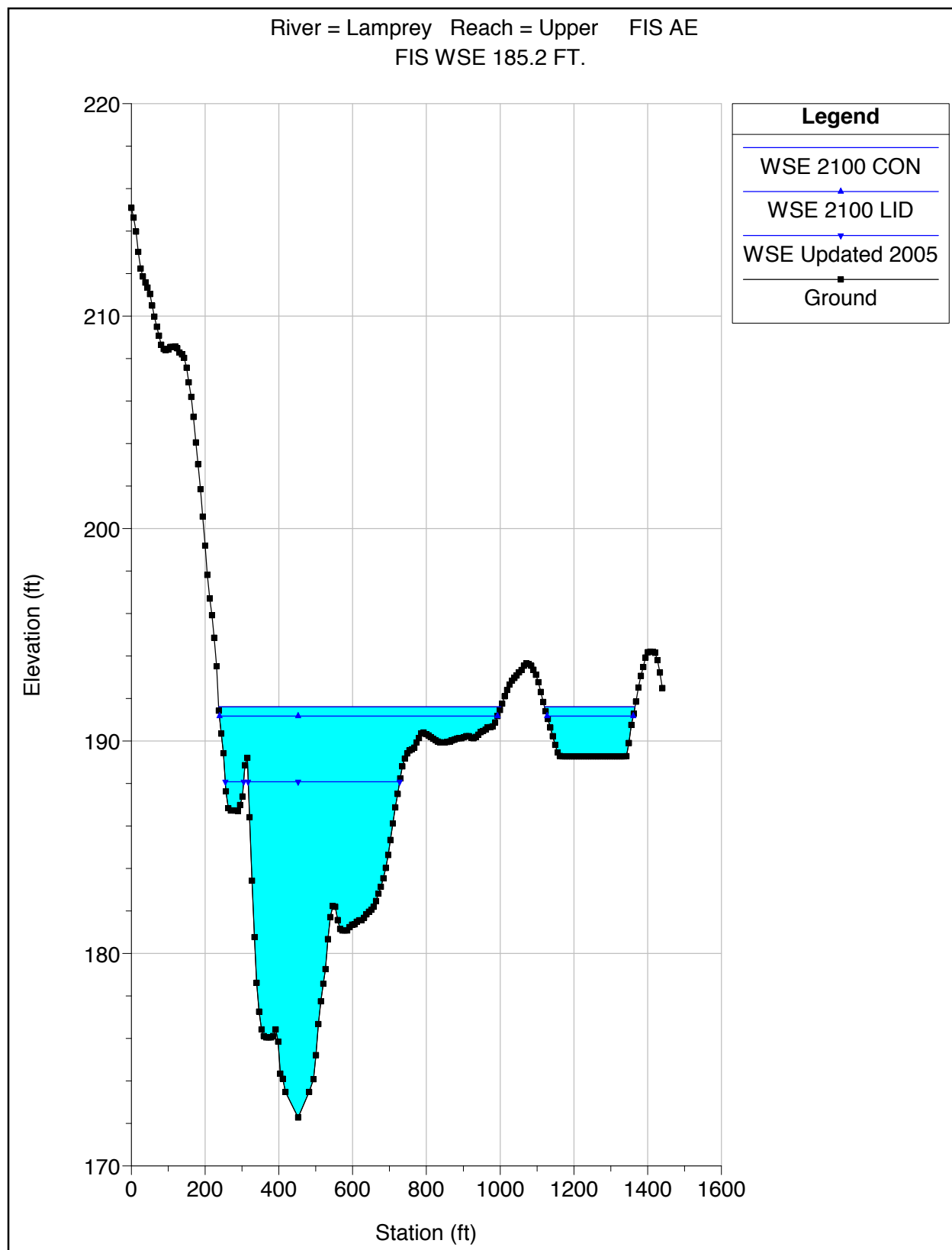
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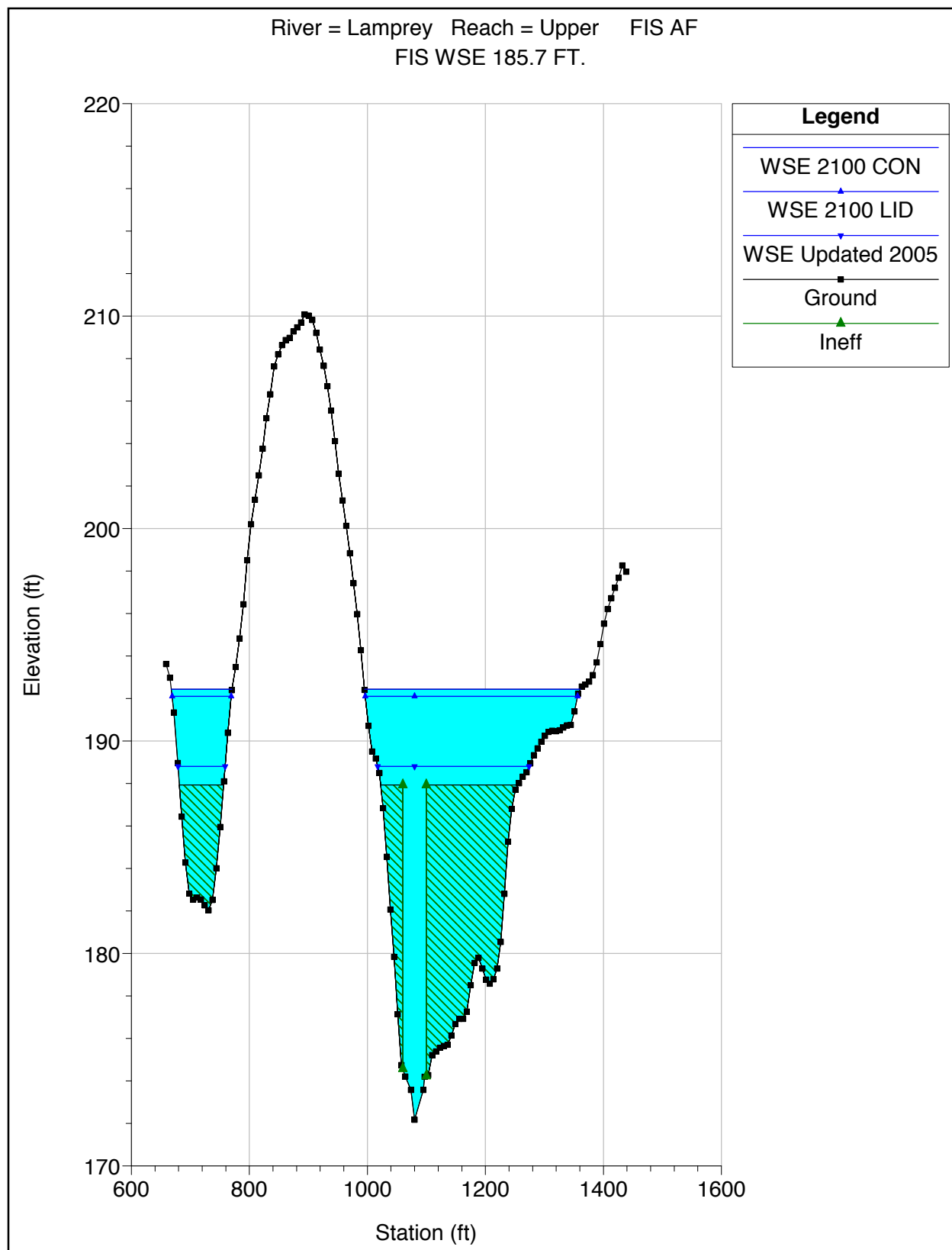
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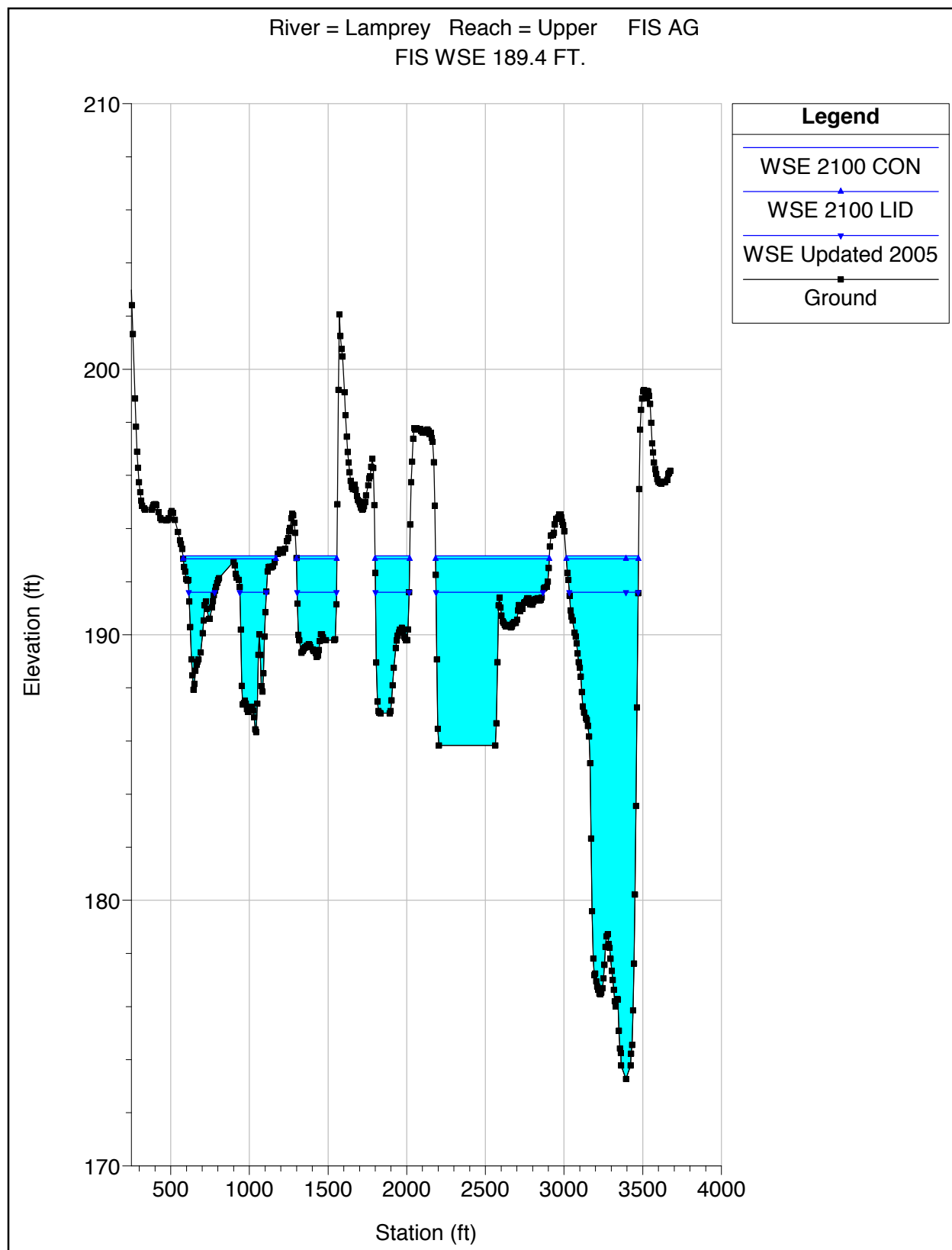
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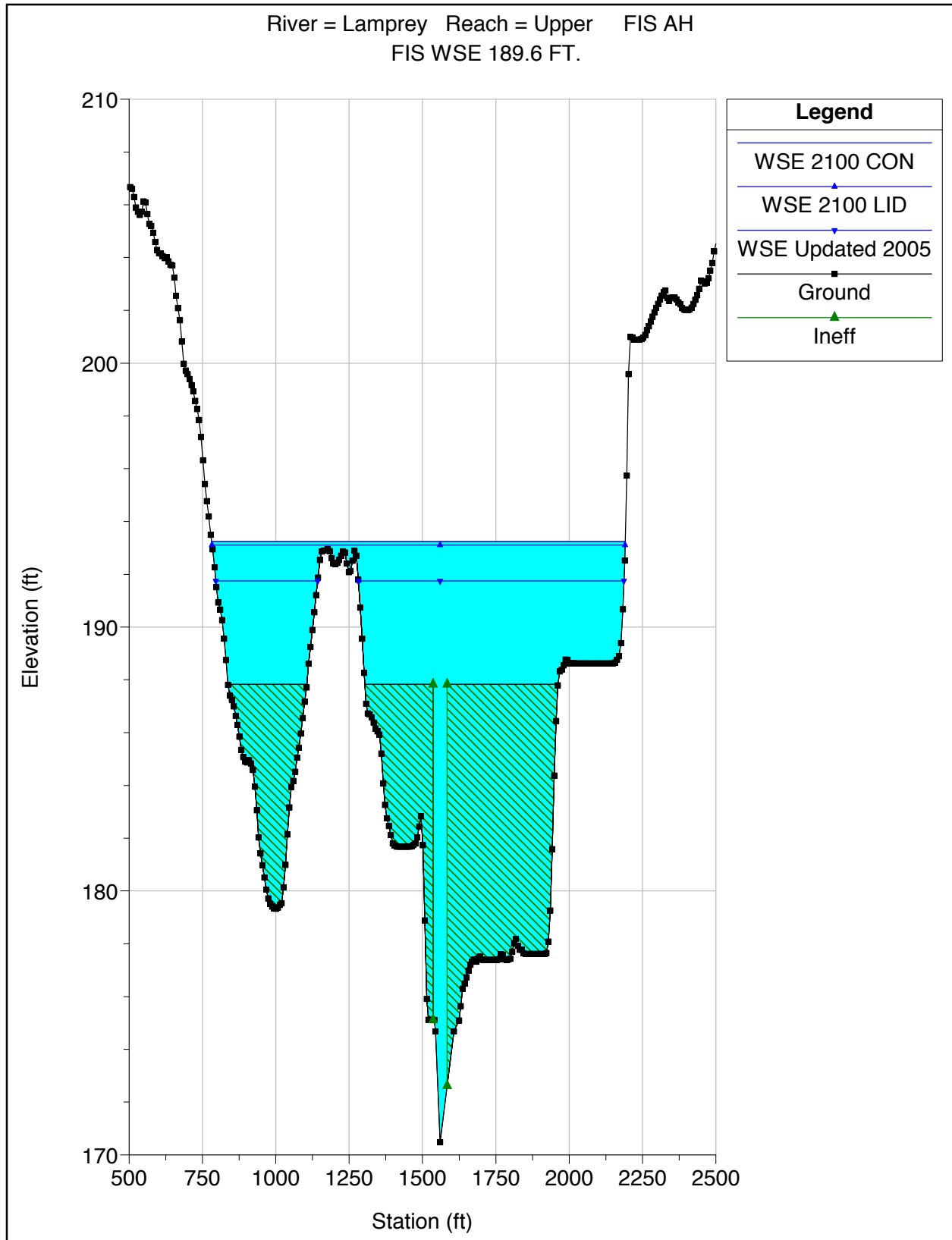
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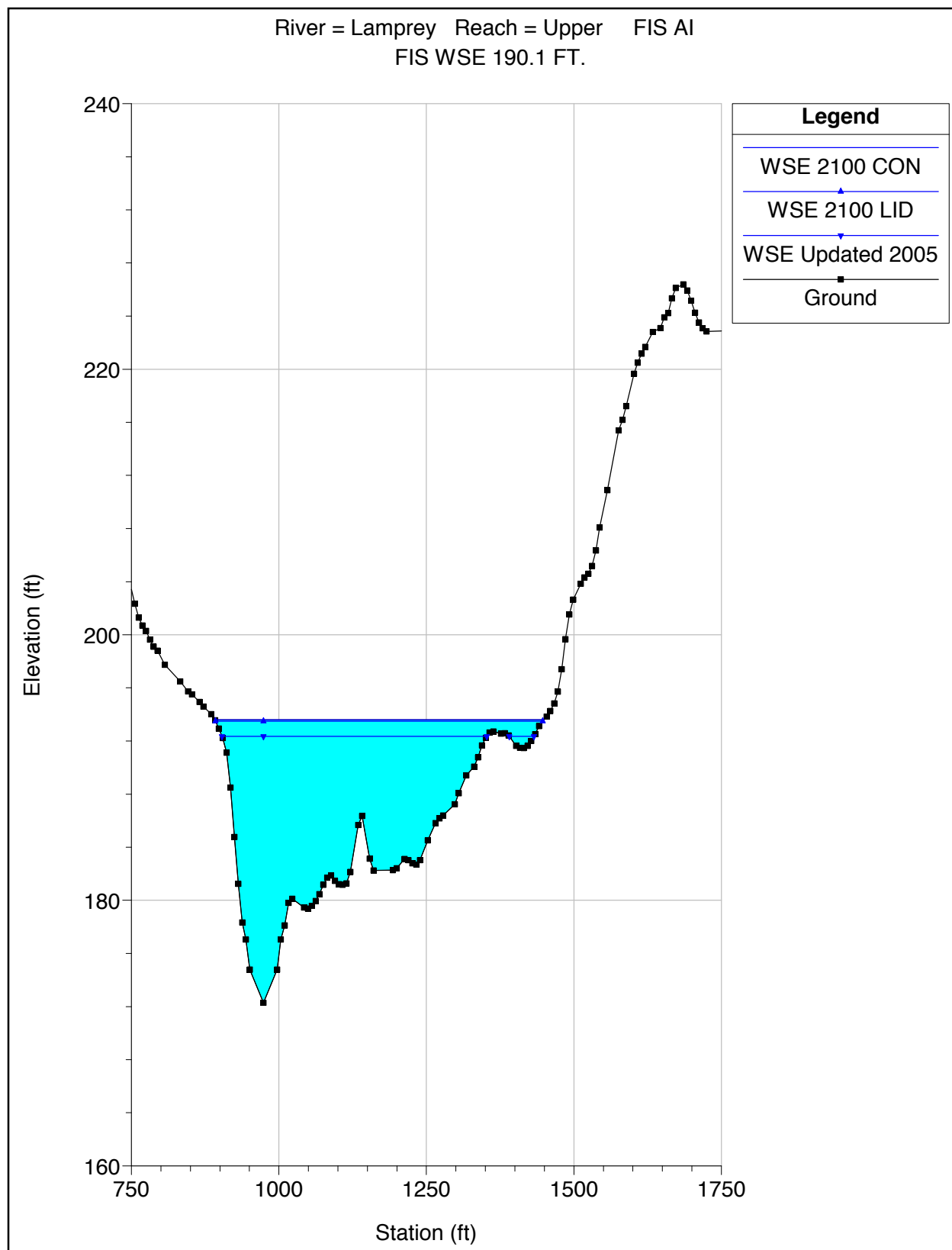
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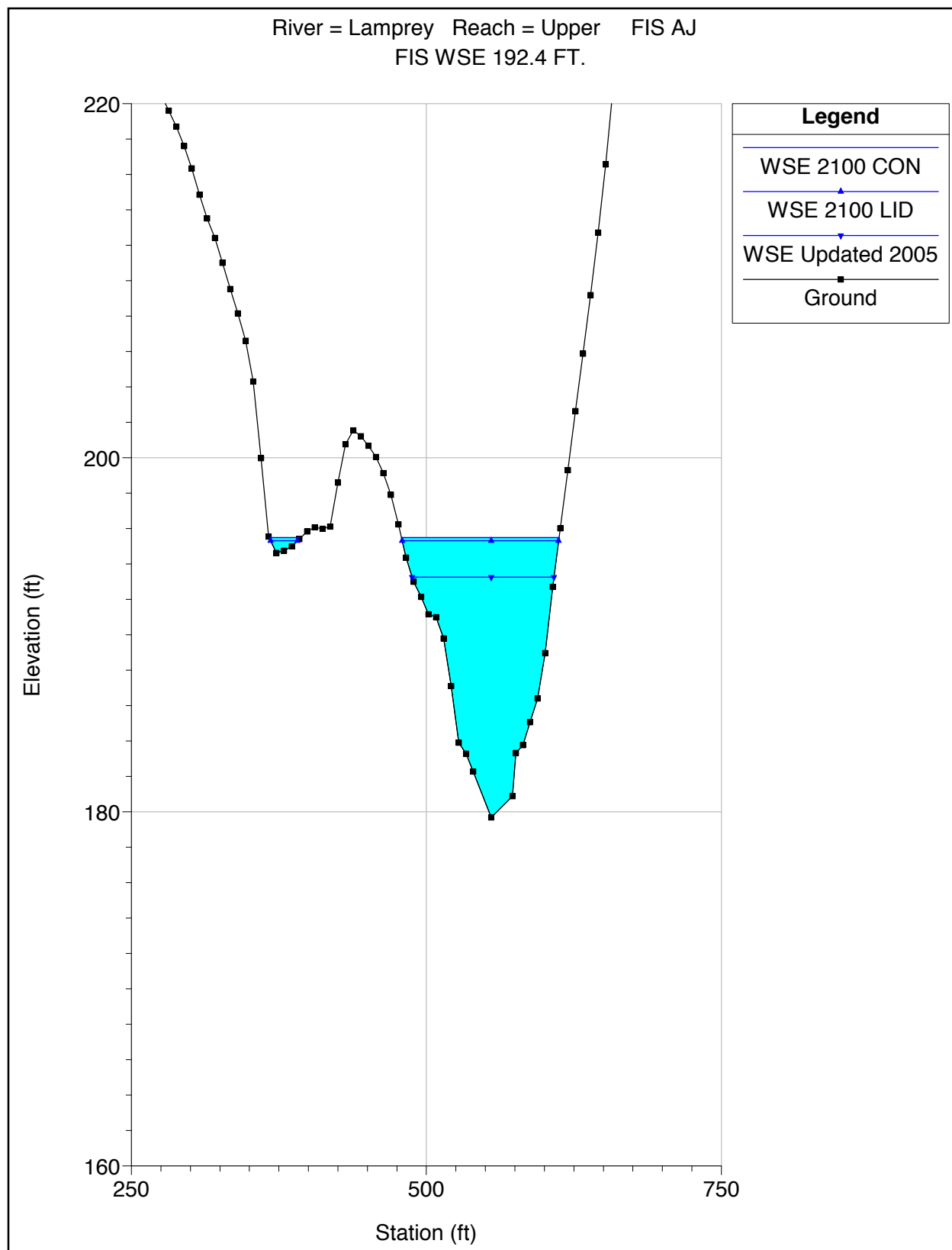
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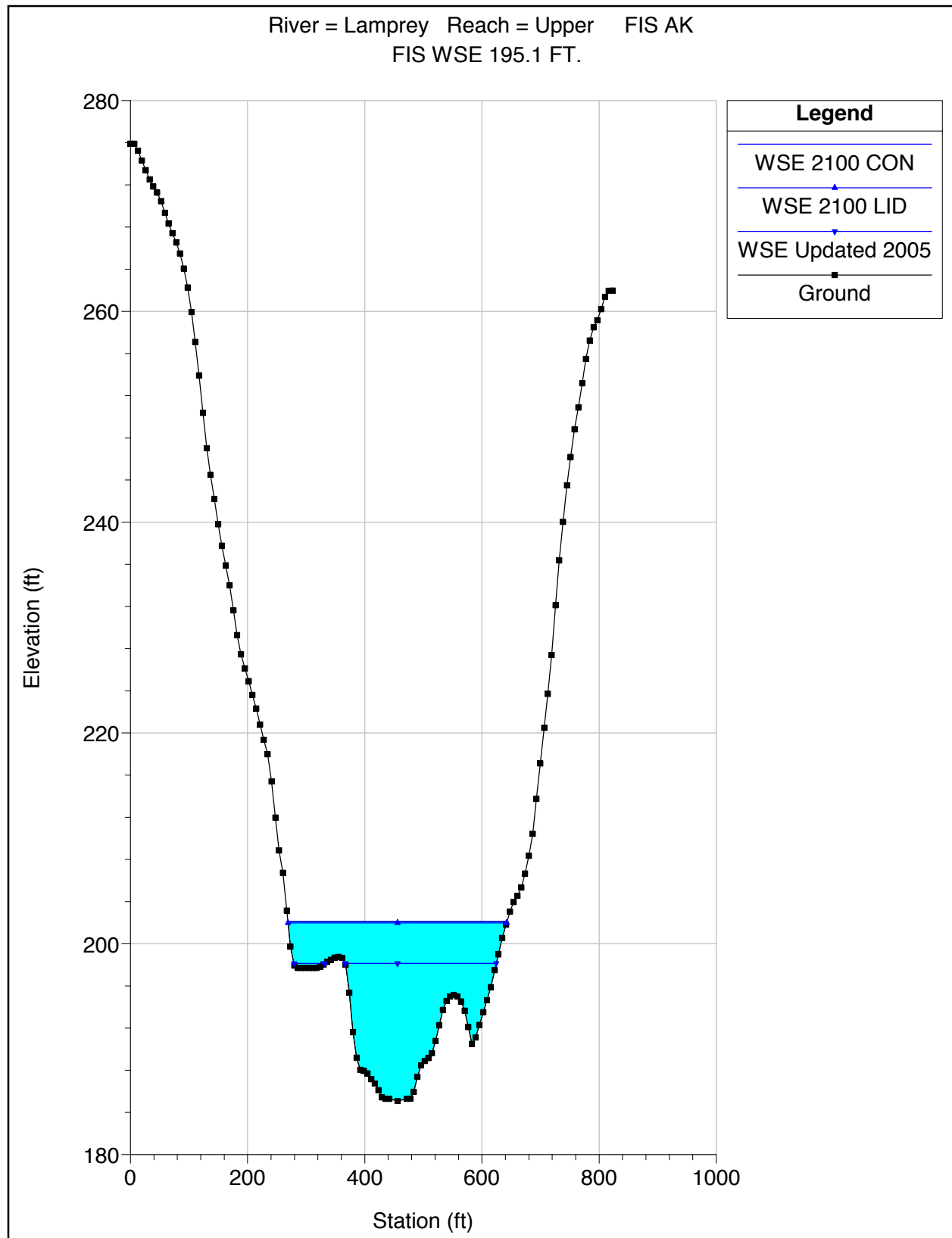


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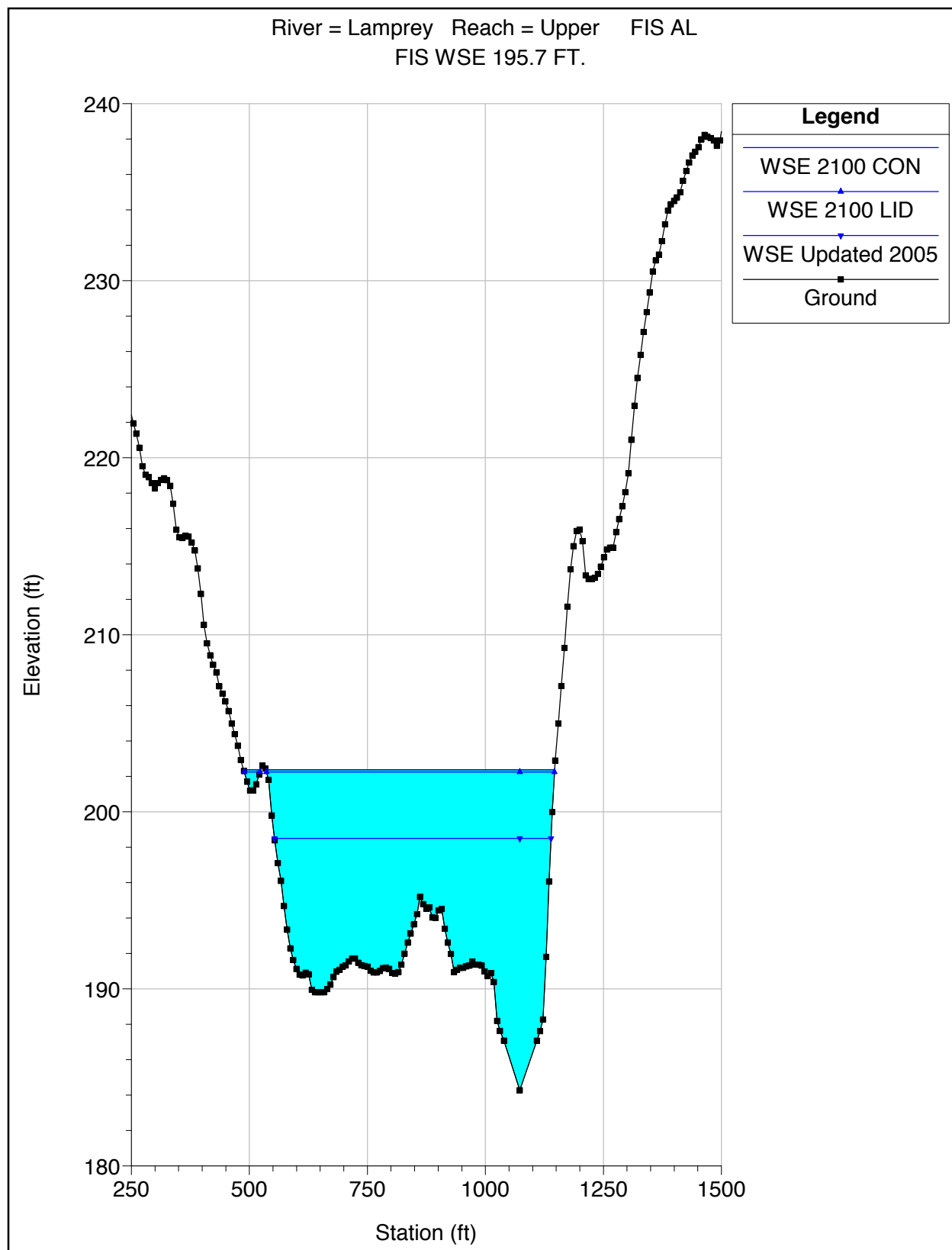




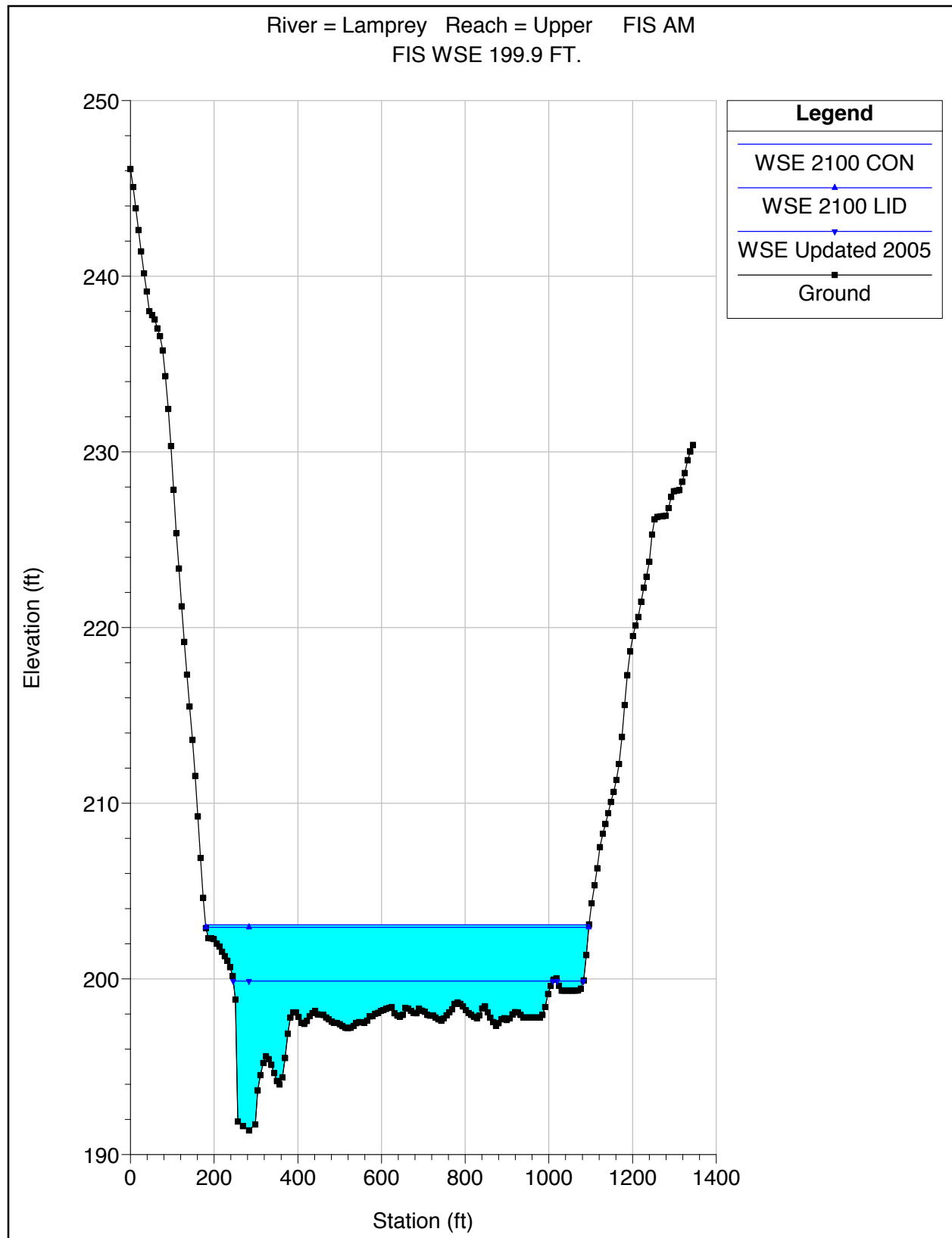
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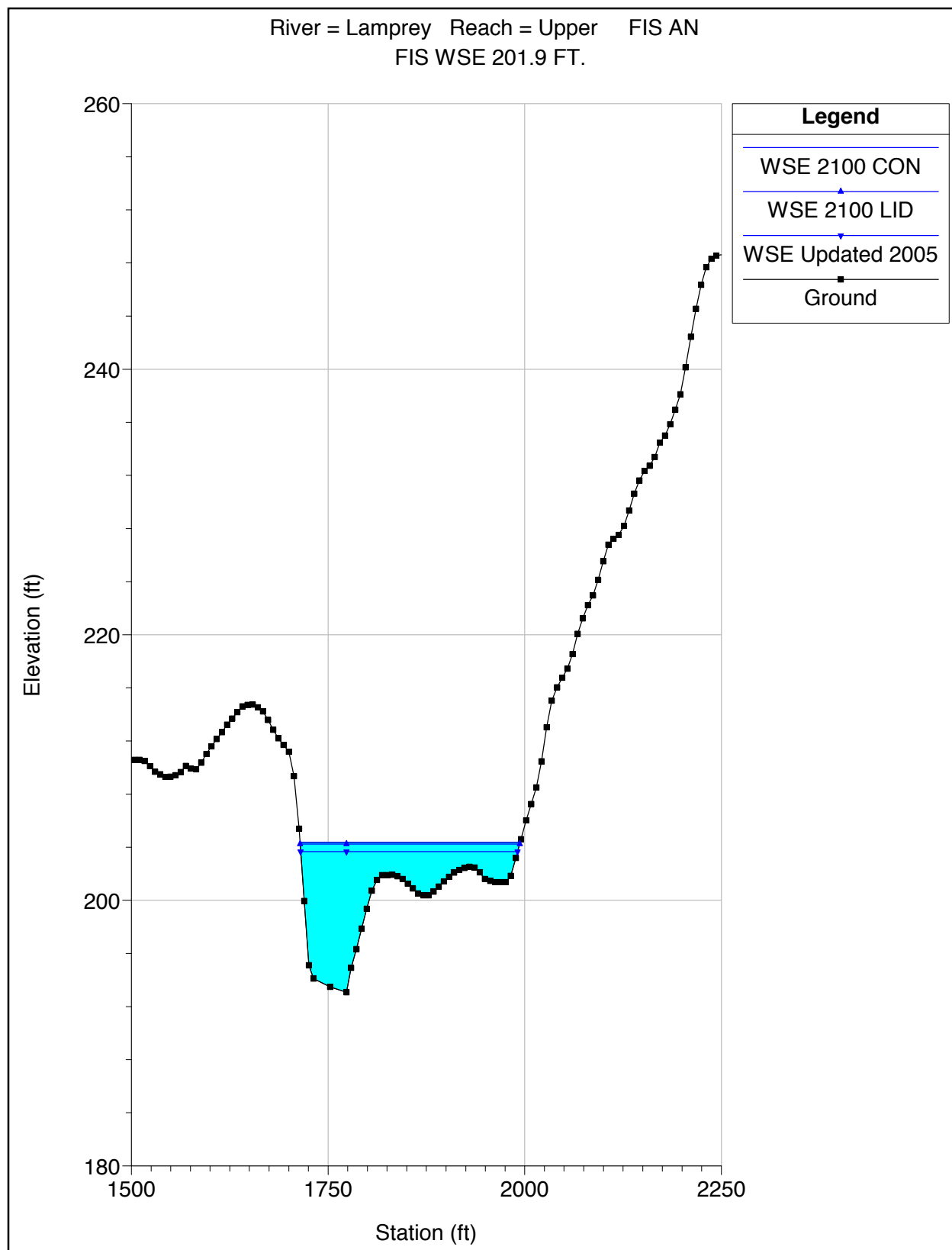
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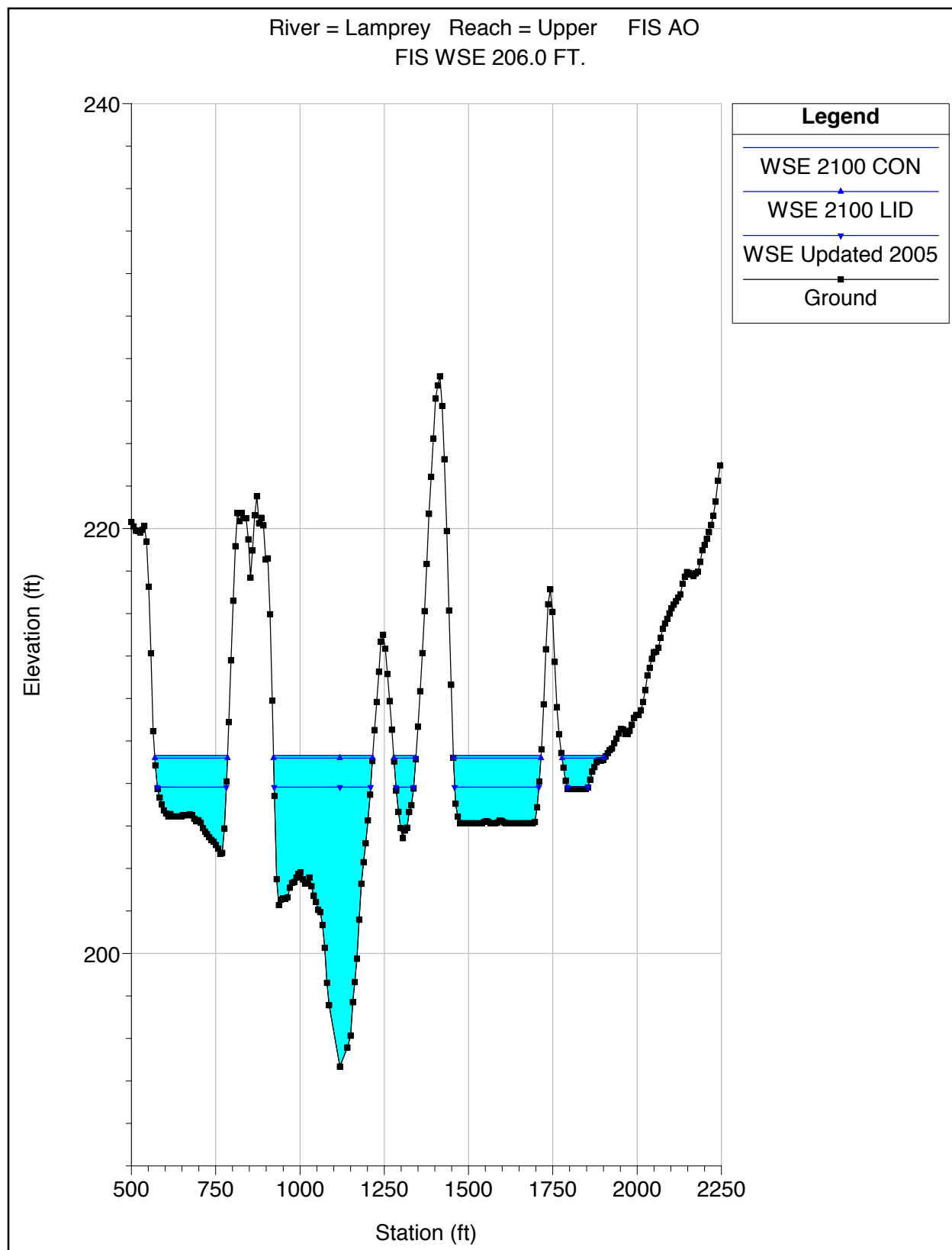
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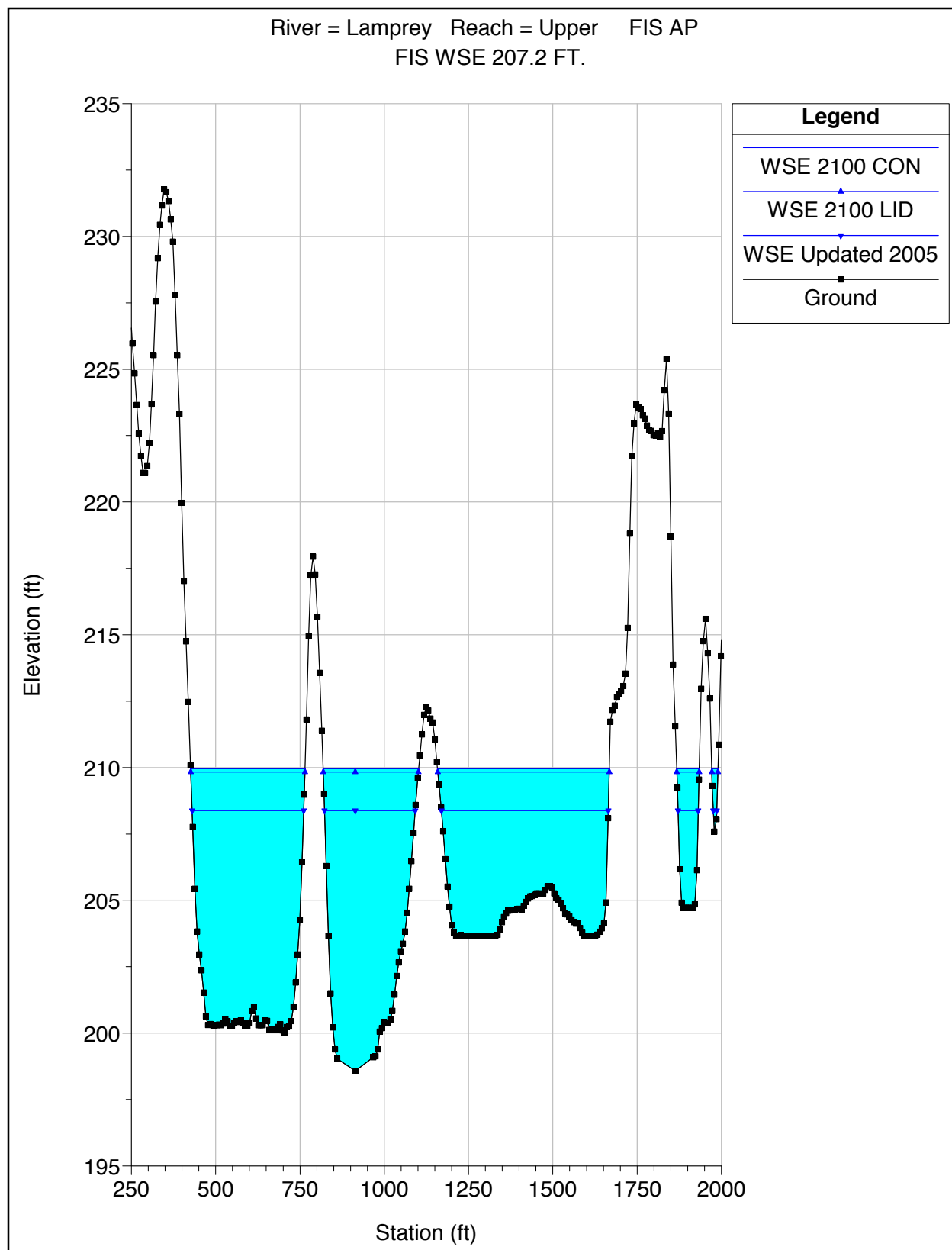
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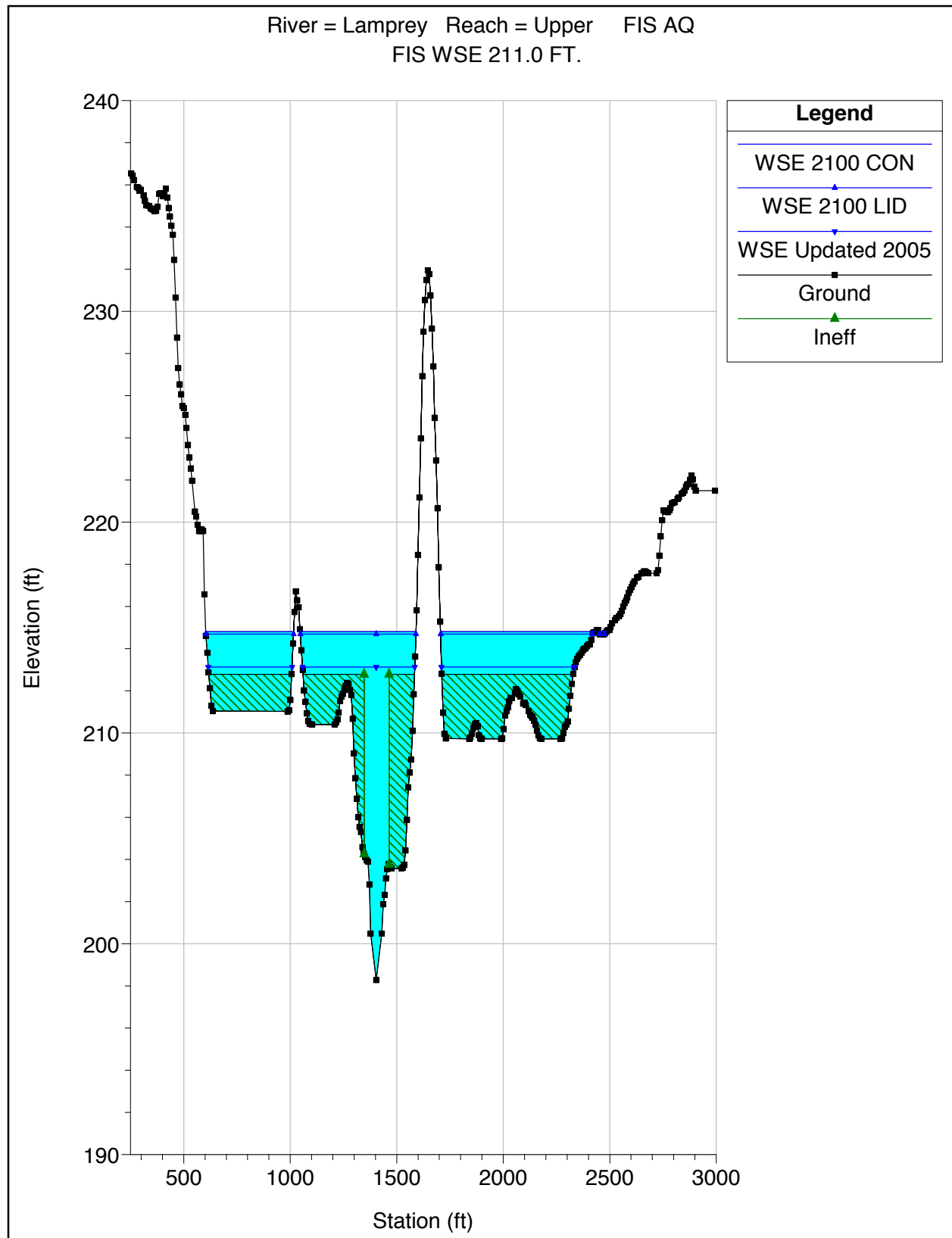
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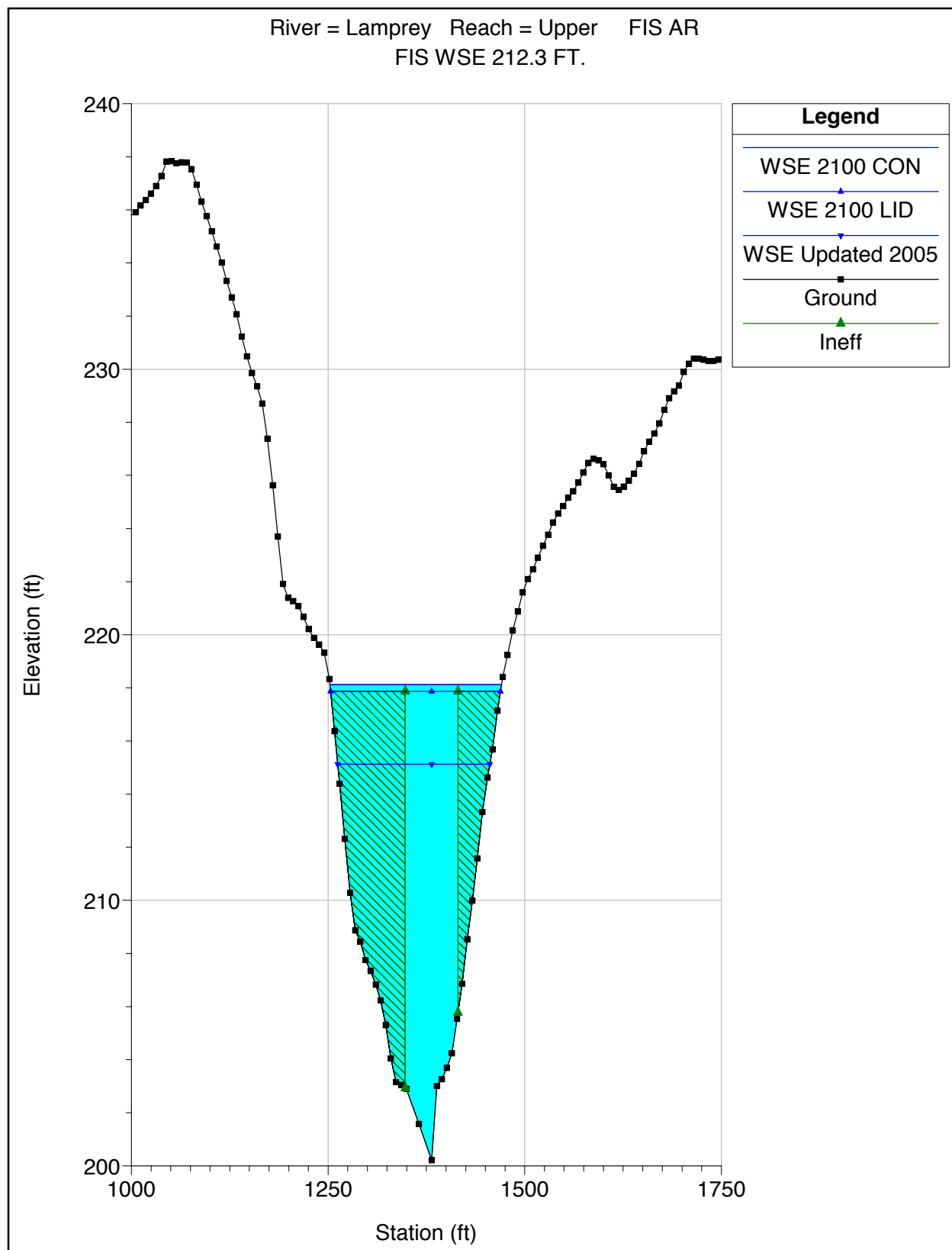
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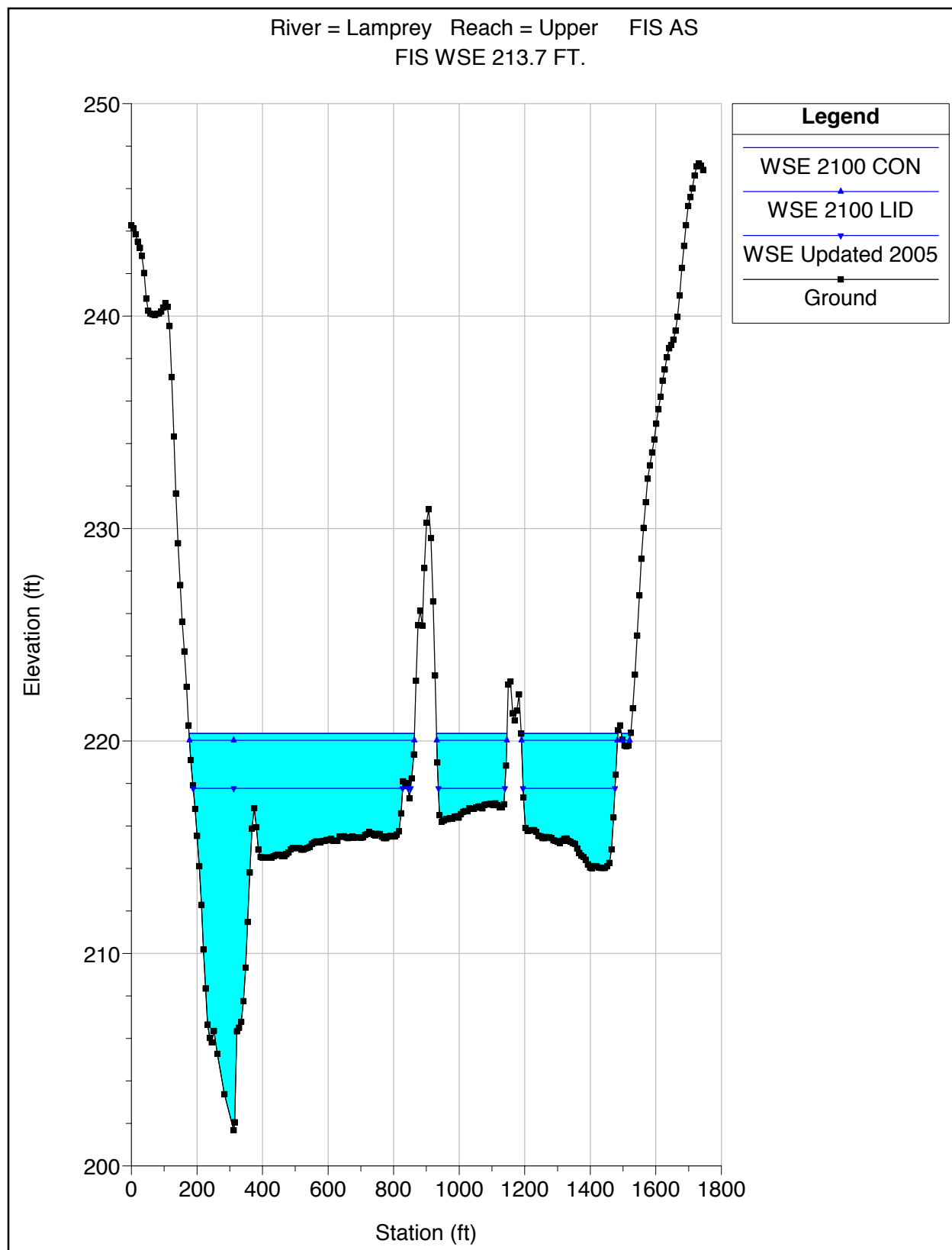


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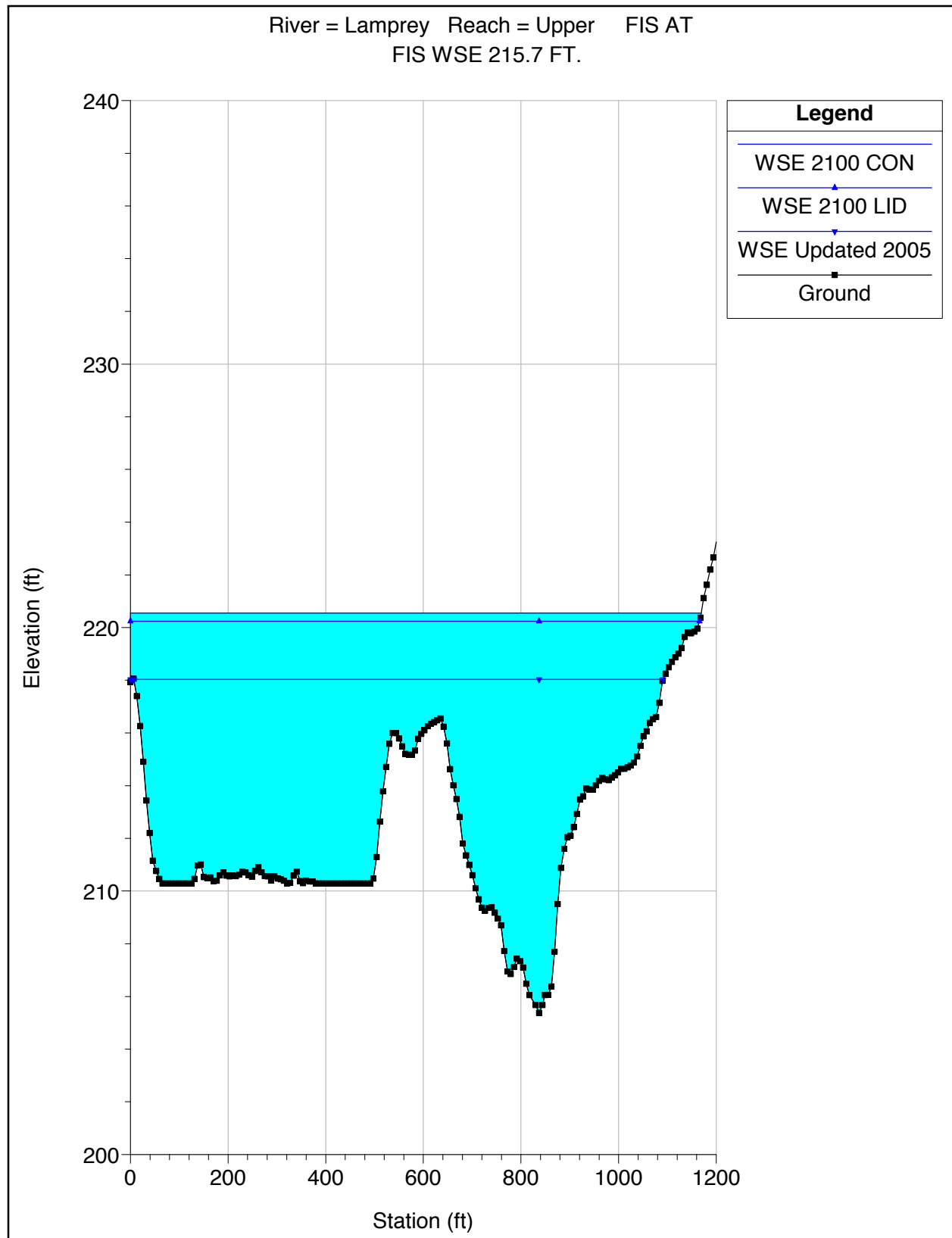




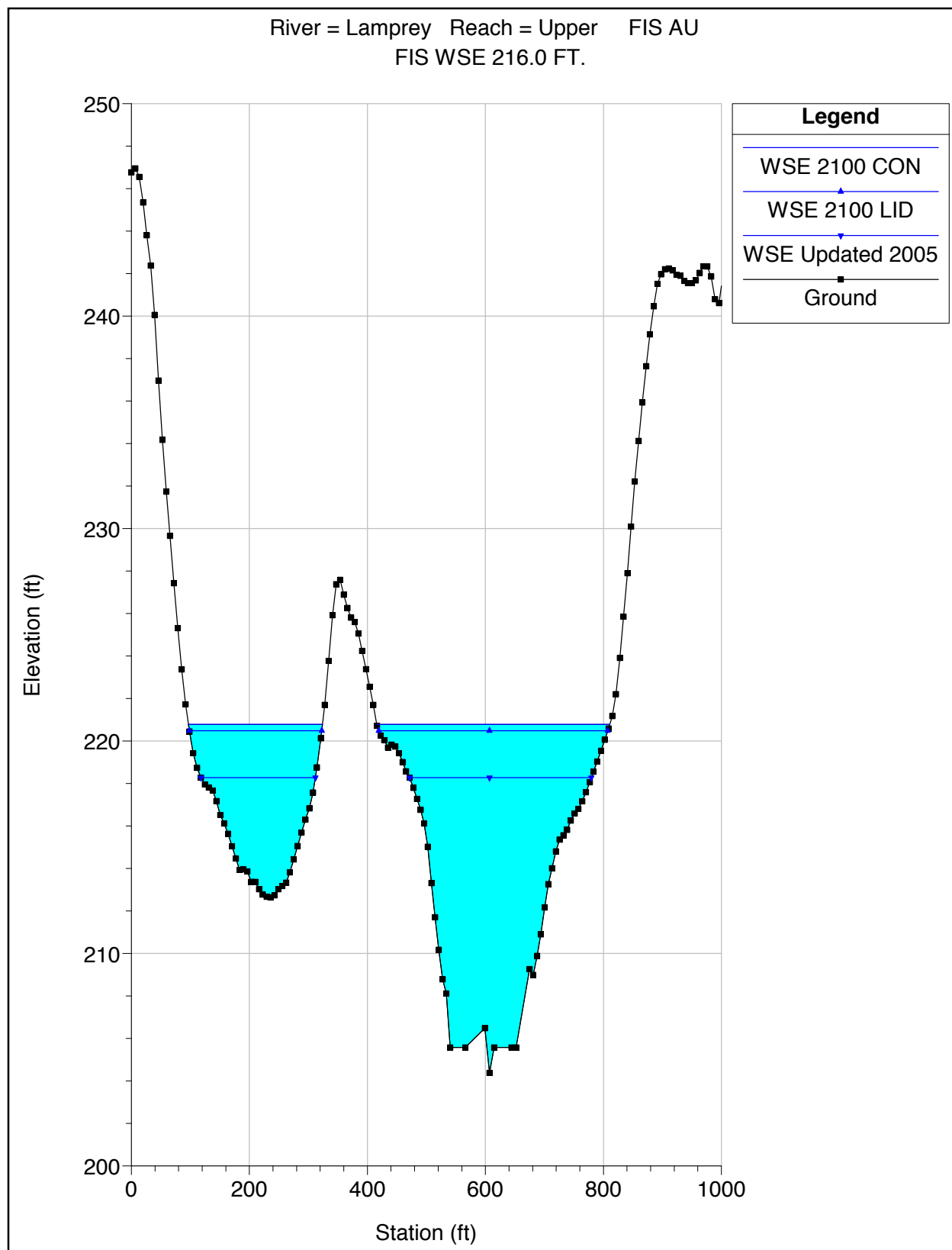
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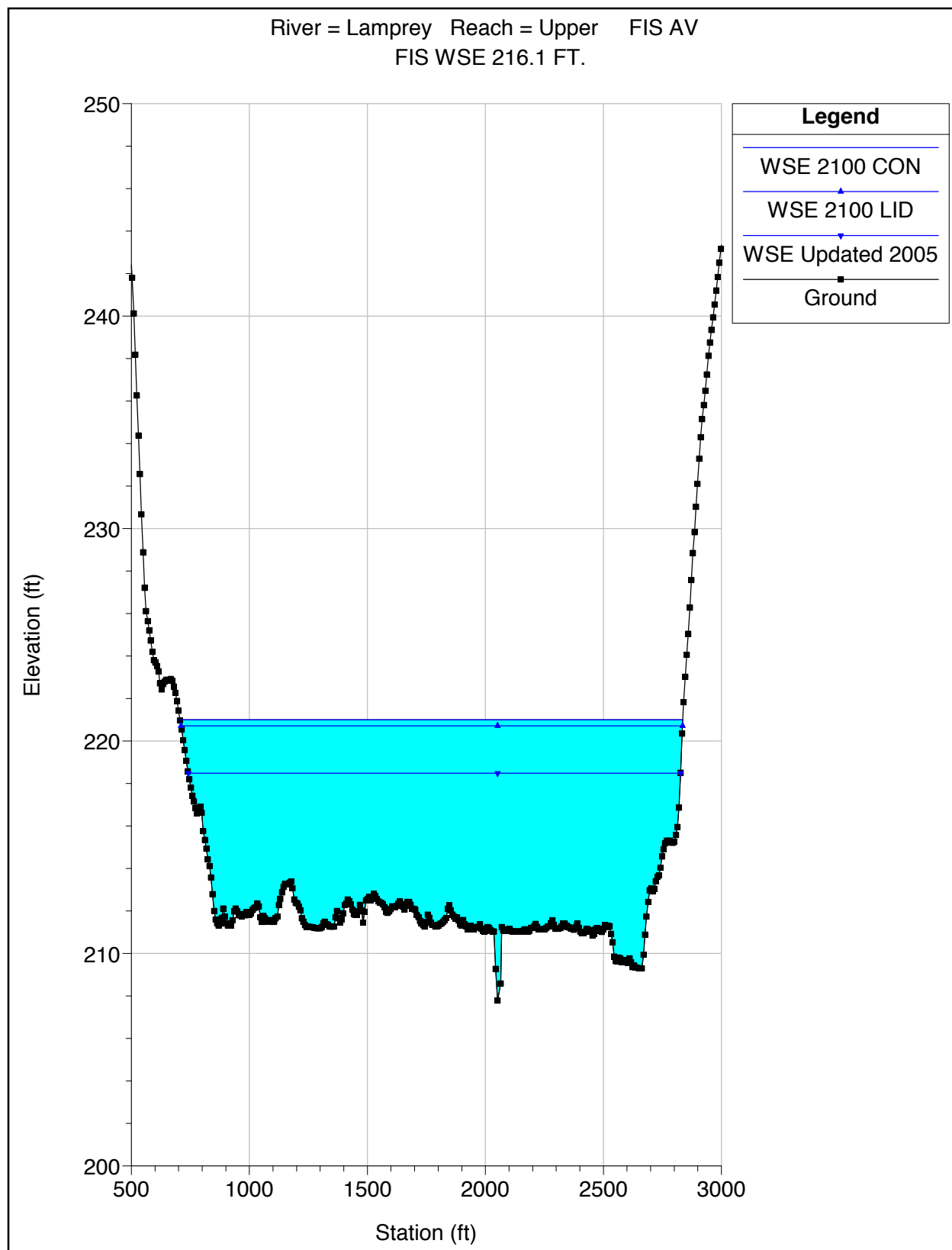
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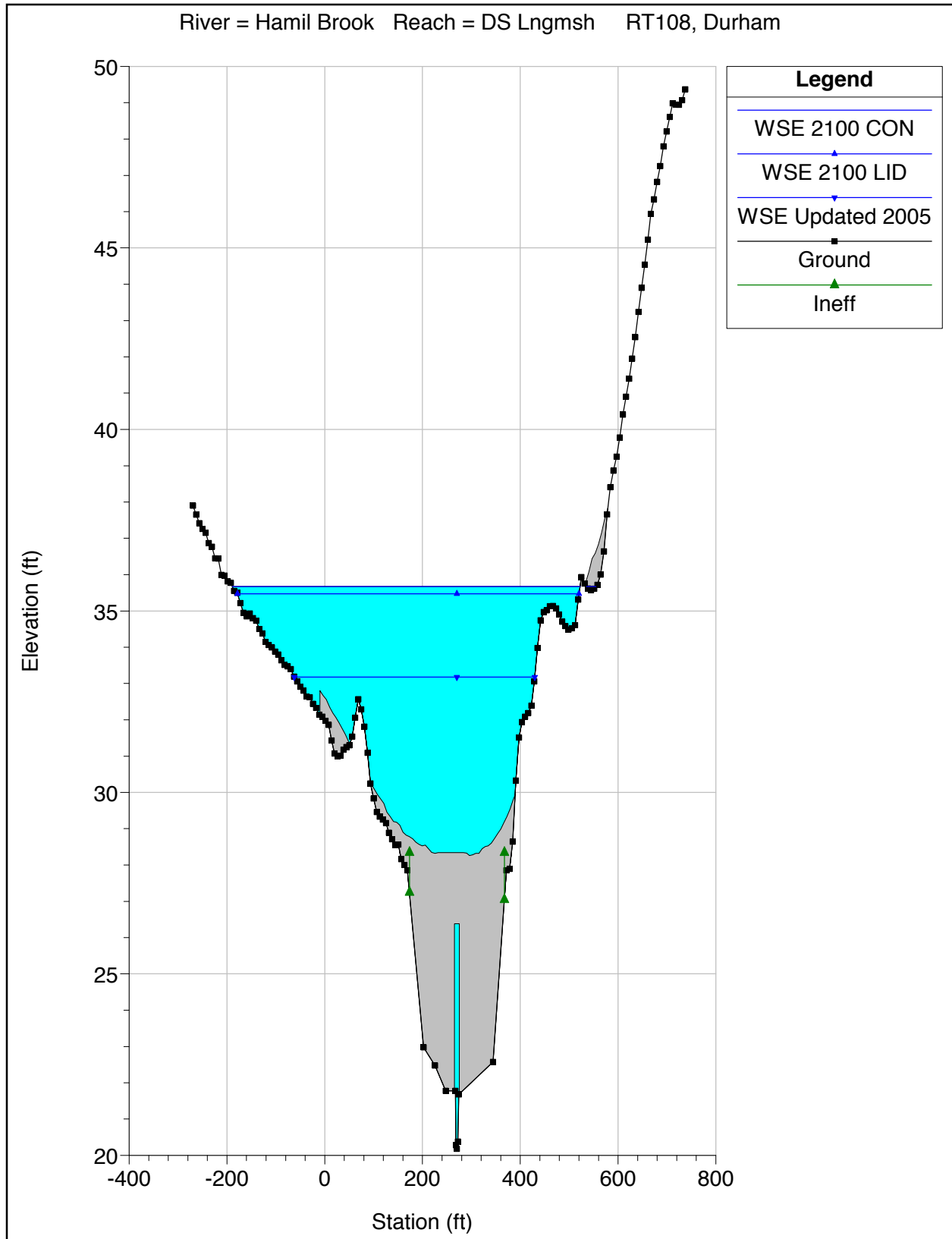
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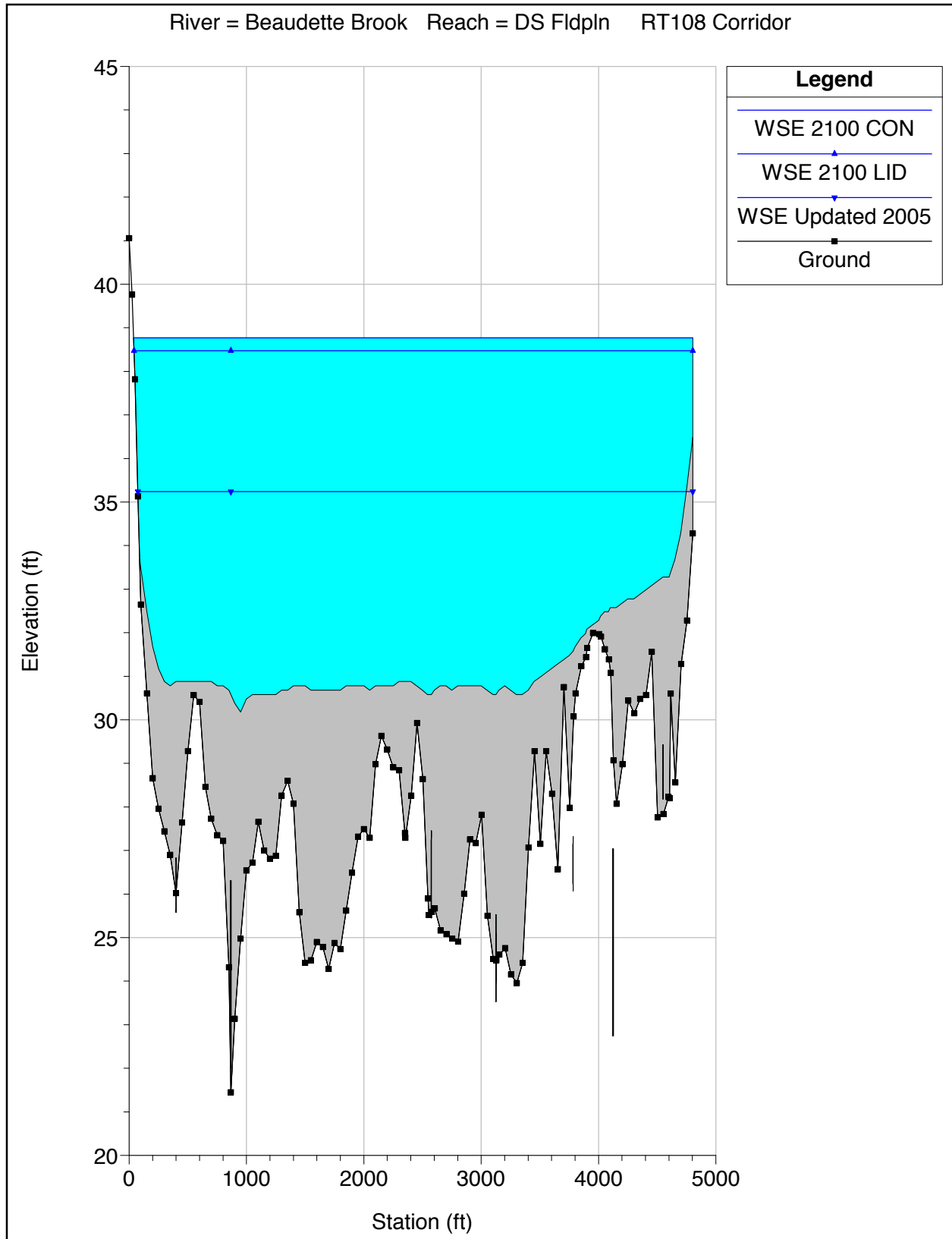
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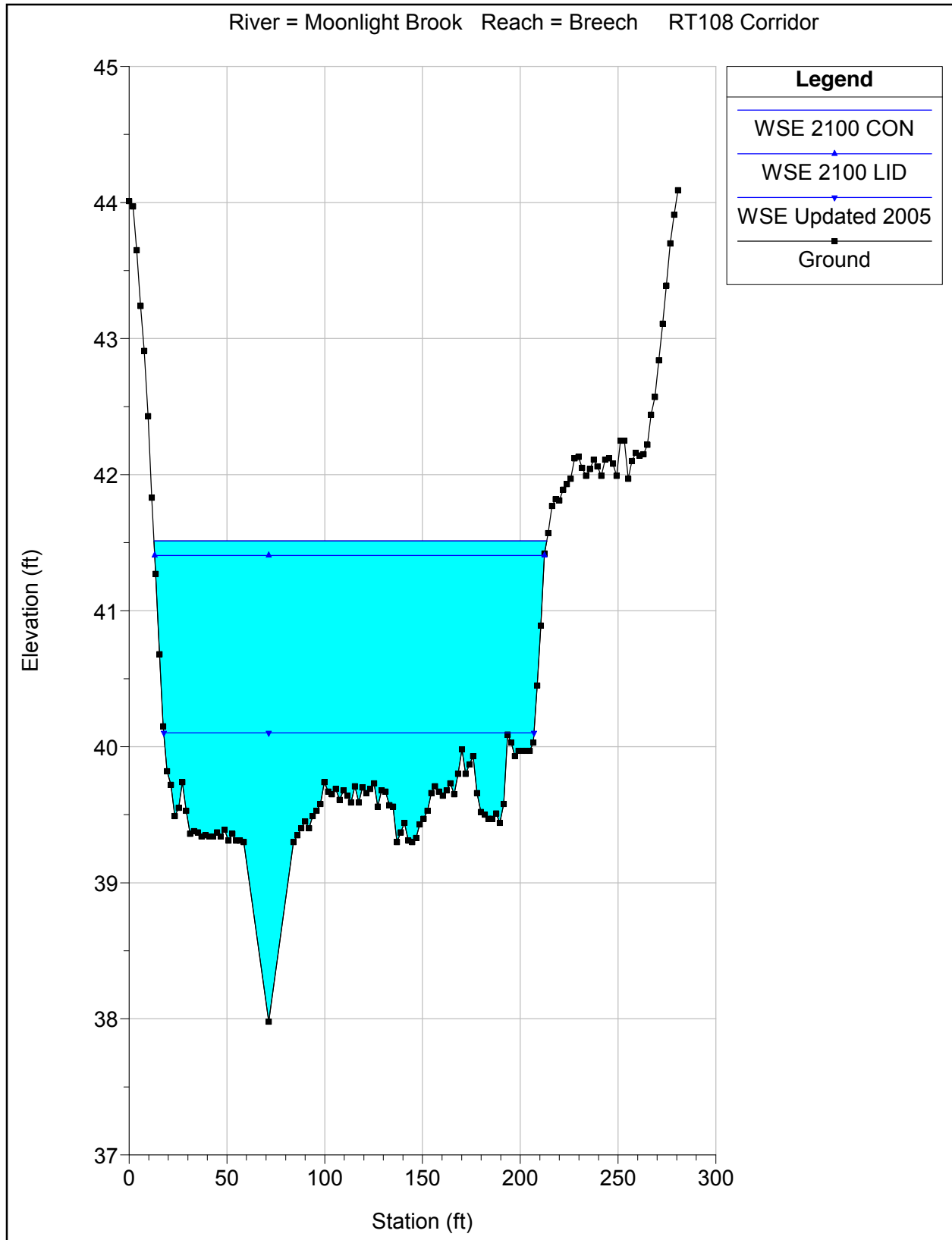
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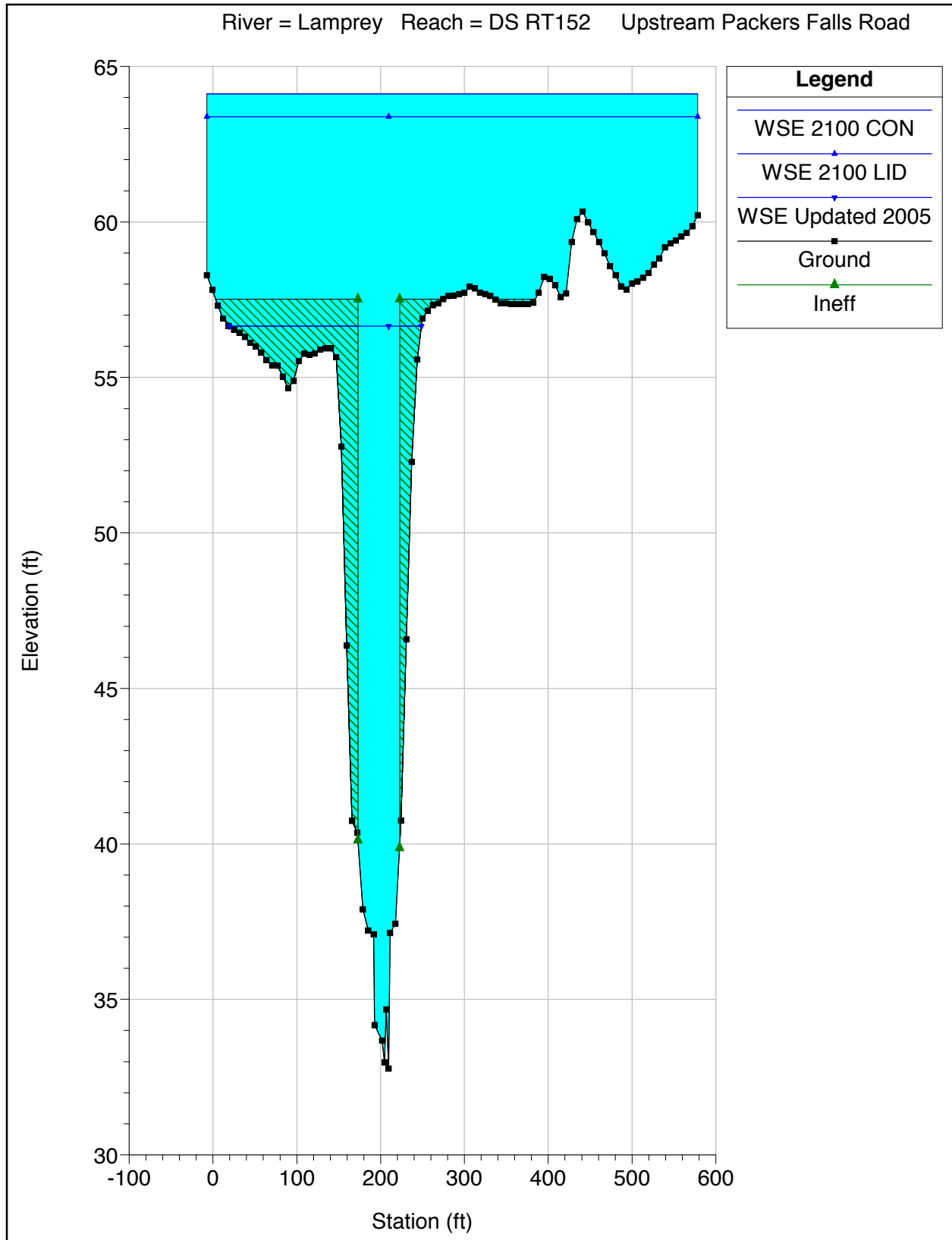
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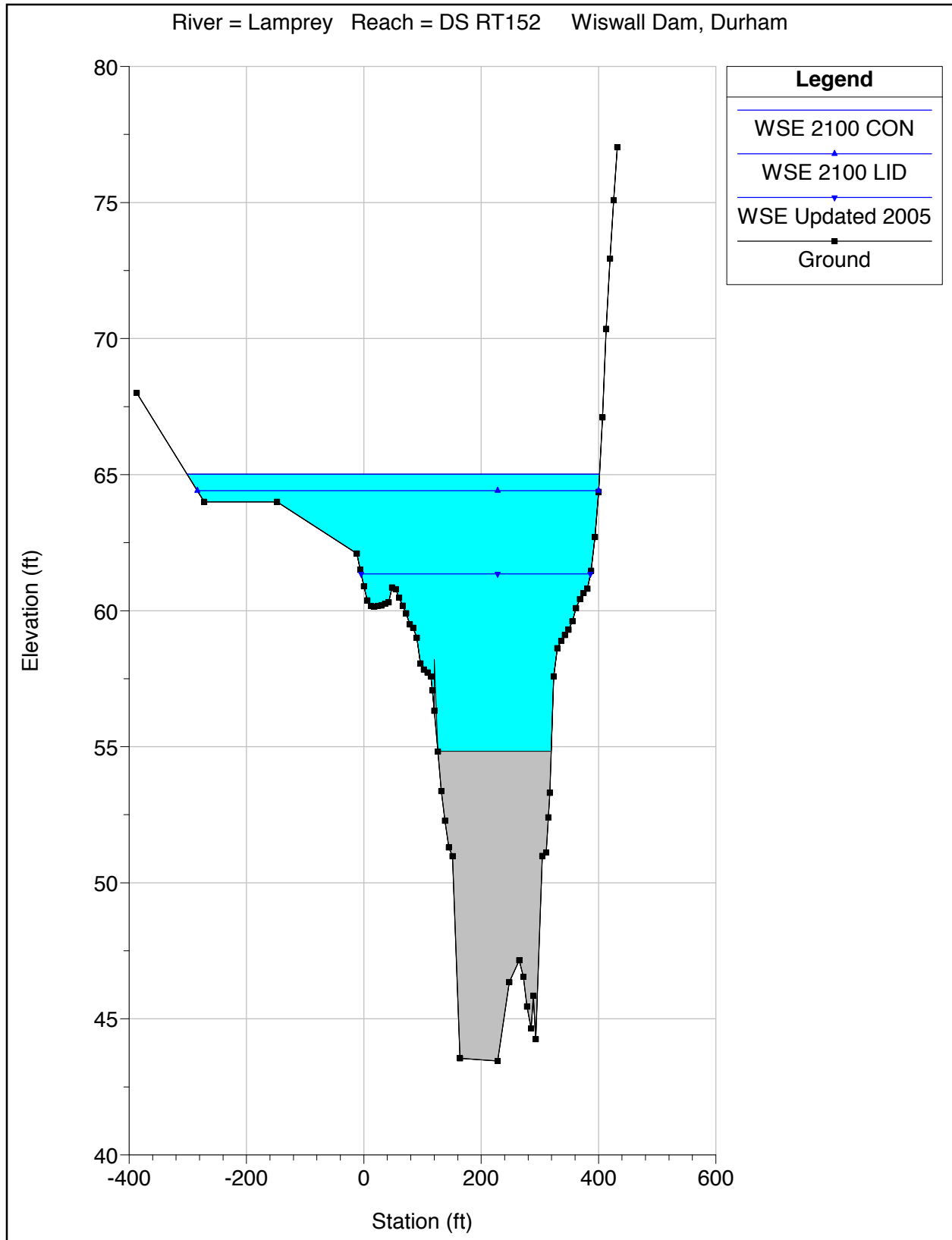


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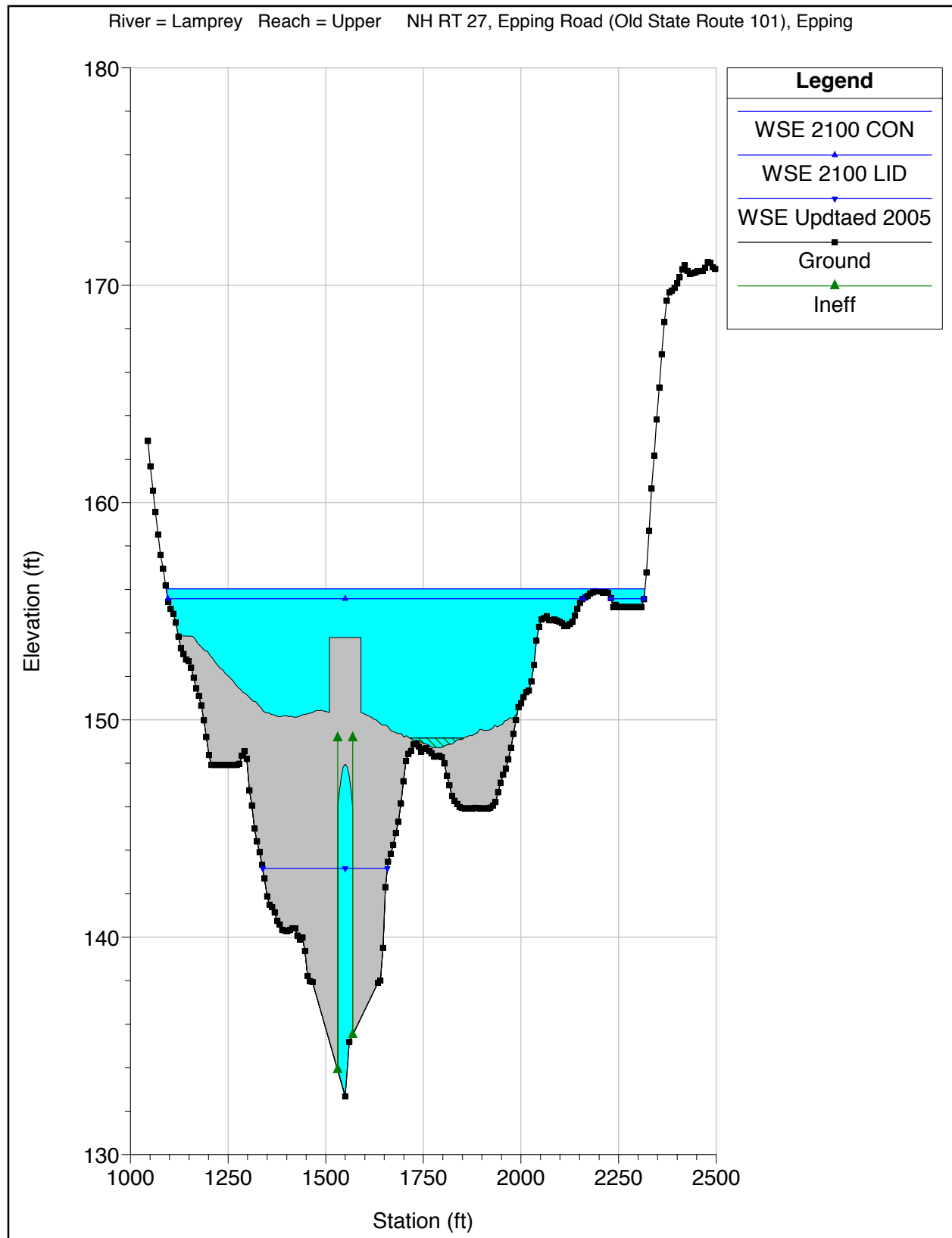


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