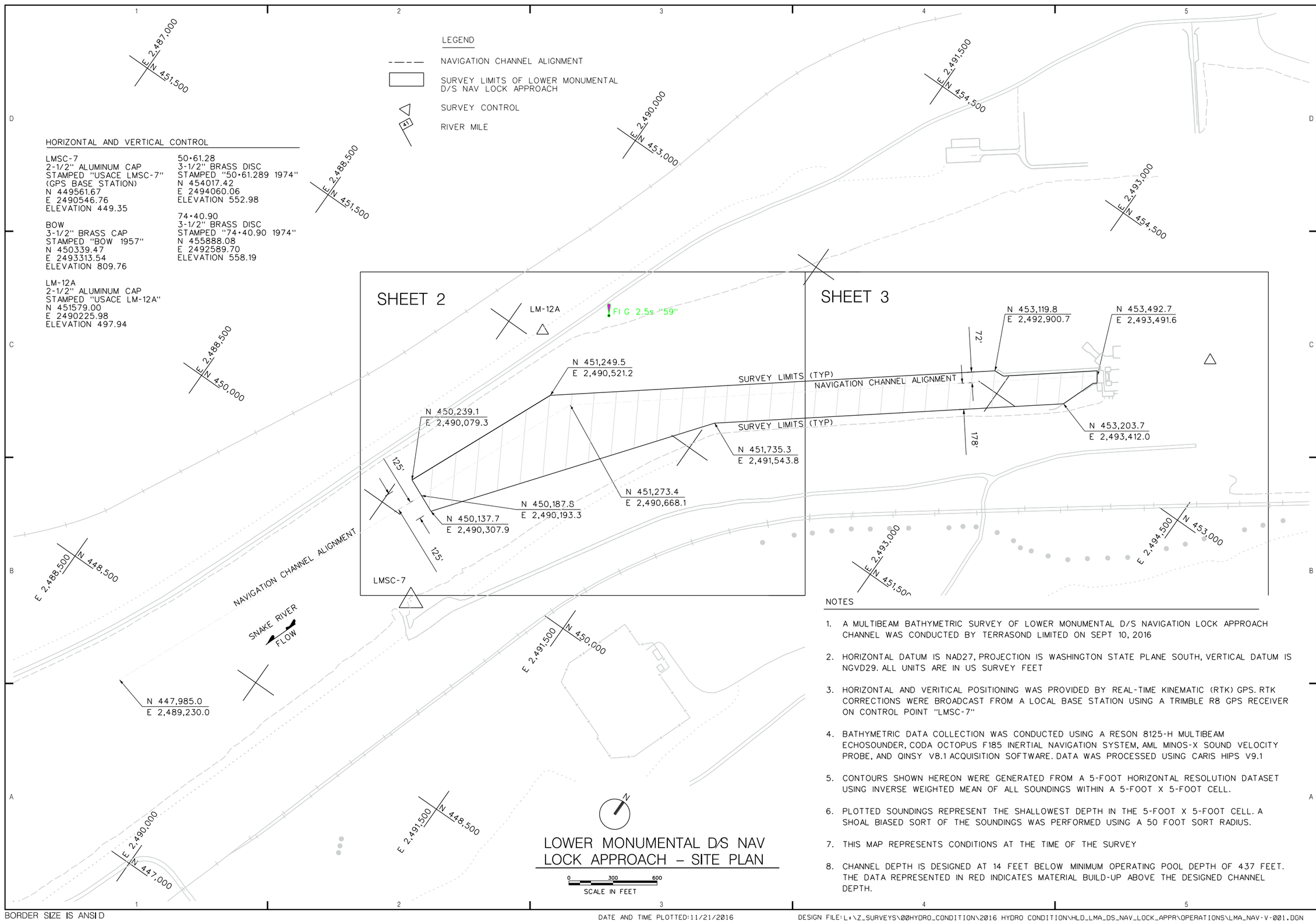
LOWER MONUMENTAL D/S NAV LOCK APPROACH – SITE PLAN



HORIZONTAL AND VERTICAL CONTROL

LMSC-7
2-1/2" ALUMINUM CAP
STAMPED "USACE LMSC-7"
(GPS BASE STATION)
N 449561.67
E 2490546.76
ELEVATION 449.35

BOW
3-1/2" BRASS CAP
STAMPED "BOW 1957"
N 450339.47
E 2493313.54
ELEVATION 809.76

LM-12A
2-1/2" ALUMINUM CAP
STAMPED "USACE LM-12A"
N 451579.00
E 2490225.98
ELEVATION 497.94

50+61.28
3-1/2" BRASS DISC
STAMPED "50+61.289 1974"
N 454017.42
E 2494060.06
ELEVATION 552.98

74+40.90
3-1/2" BRASS DISC
STAMPED "74+40.90 1974"
N 455888.08
E 2492589.70
ELEVATION 558.19

NOTES

1. A MULTIBEAM BATHYMETRIC SURVEY OF LOWER MONUMENTAL D/S NAVIGATION LOCK APPROACH CHANNEL WAS CONDUCTED BY TERRASOND LIMITED ON SEPT 10, 2016
2. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN US SURVEY FEET
3. HORIZONTAL AND VERITICAL POSITIONING WAS PROVIDED BY REAL-TIME KINEMATIC (RTK) GPS. RTK CORRECTIONS WERE BROADCAST FROM A LOCAL BASE STATION USING A TRIMBLE R8 GPS RECEIVER ON CONTROL POINT "LMSC-7"
4. BATHYMETRIC DATA COLLECTION WAS CONDUCTED USING A RESON 8125-H MULTIBEAM ECHOSOUNDER, CODA OCTOPUS F185 INERTIAL NAVIGATION SYSTEM, AML MINOS-X SOUND VELOCITY PROBE, AND QINSY V8.1 ACQUISITION SOFTWARE. DATA WAS PROCESSED USING CARIS HIPS V9.1
5. CONTOURS SHOWN HEREON WERE GENERATED FROM A 5-FOOT HORIZONTAL RESOLUTION DATASET USING INVERSE WEIGHTED MEAN OF ALL SOUNDINGS WITHIN A 5-FOOT X 5-FOOT CELL.
6. PLOTTED SOUNDINGS REPRESENT THE SHALLOWEST DEPTH IN THE 5-FOOT X 5-FOOT CELL. A SHOAL BIASED SORT OF THE SOUNDINGS WAS PERFORMED USING A 50 FOOT SORT RADIUS.
7. THIS MAP REPRESENTS CONDITIONS AT THE TIME OF THE SURVEY
8. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERATING POOL DEPTH OF 437 FEET. THE DATA REPRESENTED IN RED INDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH.

SCALE IN FEET 0 300 600

US Army Corps of Engineers
Walla Walla District

Symbol	Description	Date	Appr.

DESIGNED BY: METER
DWN. BY: L. LINDBLAD
CHKED. BY: K. MELDON
SUBMITTED BY:
DATE: 21 OCTOBER 2016
TASK ORDER NO.: 02
CONTRACT NO.: W912EF-16-D-0004
FILE NO.:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WALLA WALLA, WASHINGTON

TERRASOND
PHOTOGRAMMETRY • HYDROGRAPHY • LIDAR
841 NW 42ND STREET, SEATTLE, WA 98107
WWW.TERRASOND.COM

ICE HARBOR LOCK AND DAM
SNAKE RIVER, WASHINGTON
W912EF-16-D-0004, T.O. NO. 02
LOWER MONUMENTAL D/S NAVIGATION LOCK APP. CHANNEL
MULTIBEAM BATHYMETRIC SURVEY

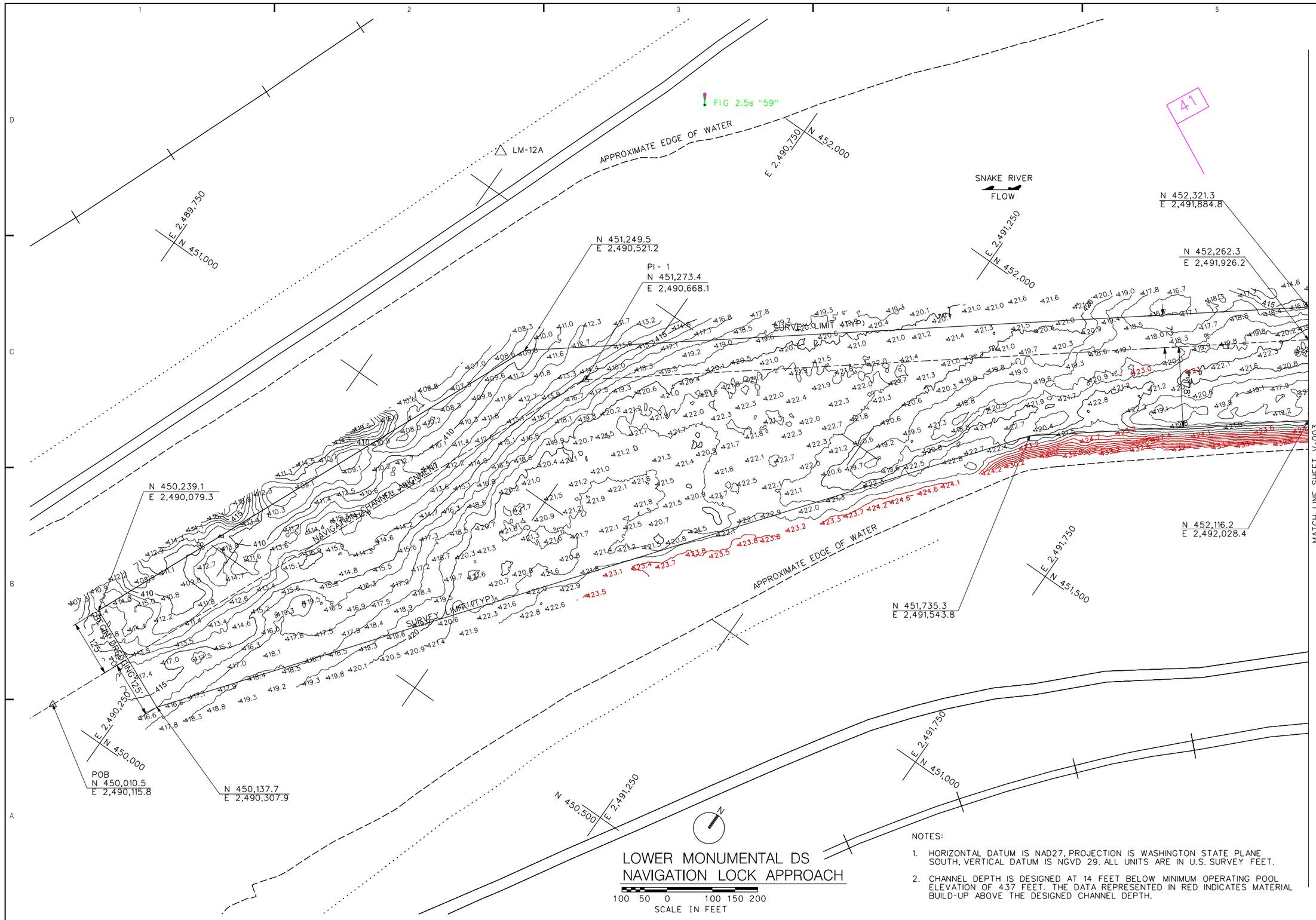
Plate number:
V-001
Sheet 1 of 3

L:\Z_SURVEYS\00HYDRO_CONDITION\2016 HYDRO CONDITION\HLD_LMA_DS_NAV_LOCK_APPR\OPERATIONS\LMA_NAV-V-001.DGN

BORDER SIZE IS ANSI D

DATE AND TIME PLOTTED: 11/21/2016

DESIGN FILE: L:\Z_SURVEYS\00HYDRO_CONDITION\2016 HYDRO CONDITION\HLD_LMA_DS_NAV_LOCK_APPR\OPERATIONS\LMA_NAV-V-001.DGN



NOTES:

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD 29. ALL UNITS ARE IN U.S. SURVEY FEET.
2. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERATING POOL ELEVATION OF 437 FEET. THE DATA REPRESENTED IN RED INDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH.

US Army Corps of Engineers
Walla Walla District

Symbol	Description	Date	Appr.

DESIGNED BY: MEYER
DRN BY: L LINDBLAD
CHKED BY: K MILDON
SUBMITTED BY:
DATE: 21 OCTOBER 2016
TASK ORDER NO.: 02
CONTRACT NO.: W912EF-16-D-0004
FILE NO.:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WALLA WALLA, WASHINGTON

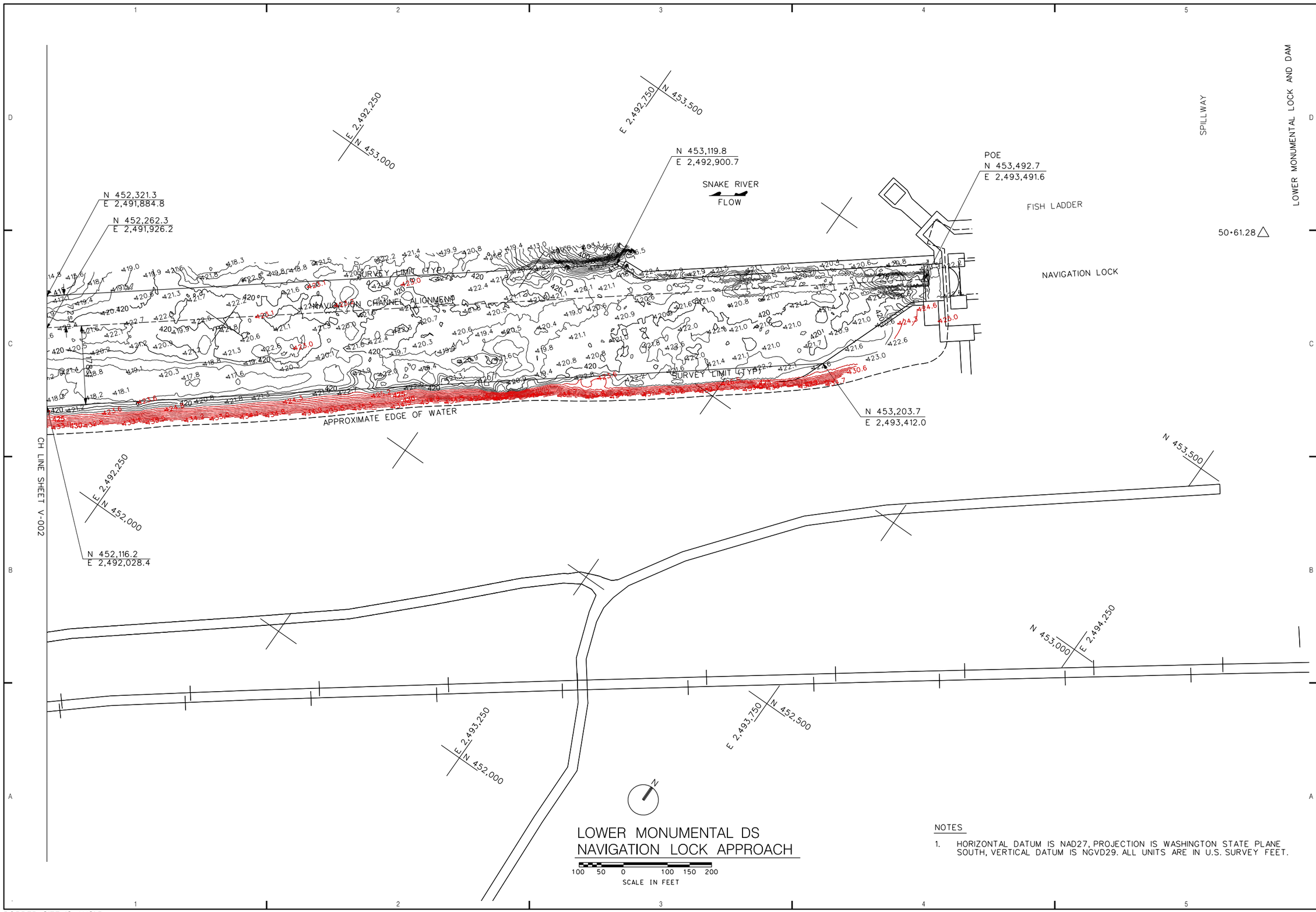
TERRASOND
PO BOX 1500 PASCO, WA 99301
841 NW KNOX STREET, SUITE 215, BEND, OR 97701
WWW.TERRASOND.COM

ICE HARBOR LOCK AND DAM
SNAKE RIVER, WASHINGTON
W912EF-16-D-0004, T.O. NO. 02
LOWER MONUMENTAL DS
NAVIGATION LOCK APP. CHANNEL
MULTIBEAM BATHYMETRIC SURVEY

Plate number:
V-002
Sheet 2 of 3

BORDER SIZE IS ANSI D
DATE AND TIME PLOTTED:11/15/2016
DESIGN FILE: L:\Z_SURVEYS\00HYDRO_CONDITION\2016 HYDRO CONTION\HLD_LMA_DS_NAV_LOCK_APPR\OPERATIONS\LMA_NAV-V-002.DGN

L:\Z_SURVEYS\00HYDRO_CONDITION\2016 HYDRO CONTION\HLD_LMA_DS_NAV_LOCK_APPR\OPERATIONS\LMA_NAV-V-002.DGN



LOWER MONUMENTAL DS NAVIGATION LOCK APPROACH

100 50 0 100 150 200
SCALE IN FEET

NOTES

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.

US Army Corps of Engineers
Walla Walla District

Symbol	Description	Date	Appr.

DESIGNED BY: MEYER
DWN. BY: L. LINDBLAD
CHKED. BY: K. MILDON
SUBMITTED BY:
DATE: 21 OCTOBER 2016
TASK ORDER NO.: 02
CONTRACT NO.: W912EF-16-D-0004
FILE NO.:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
WALLA WALLA, WASHINGTON

TERRASOND
PRECISION MARINE SURVEYING
601 MAYNARD STREET, SUITE 215, SEATTLE, WA 98107
WWW.TERRASOND.COM (206)624-5404

ICE HARBOR LOCK AND DAM
SNAKE RIVER, WASHINGTON
W912EF-16-D-0004, T.O. NO. 02
LOWER MONUMENTAL DS
NAVIGATION LOCK APP. CHANNEL
MULTIBEAM BATHYMETRIC SURVEY

Plate number:
V-003
Sheet 3 of 3

BORDER SIZE IS ANSI D

DATE AND TIME PLOTTED:11/21/2016

DESIGN FILE: L:\Z_SURVEYS\00HYDRO_CONDITION\2016 HYDRO CONDITION\HLD_LMA_DS_NAV_LOCK_APPR\OPERATIONS\LMA_NAV-V-003.DGN

L:\Z_SURVEYS\00HYDRO_CONDITION\2016 HYDRO CONDITION\HLD_LMA_DS_NAV_LOCK_APPR\OPERATIONS\LMA_NAV-V-003.DGN