HORIZONTAL CONTROL AND VERTICAL CONTROL

86-20-1
1" IRON PIPE WITH 1-3/4"
WASHER STAMPED 86-20-1
N 500,450.68
E 2,770,734.50
ELEV. 652.87'

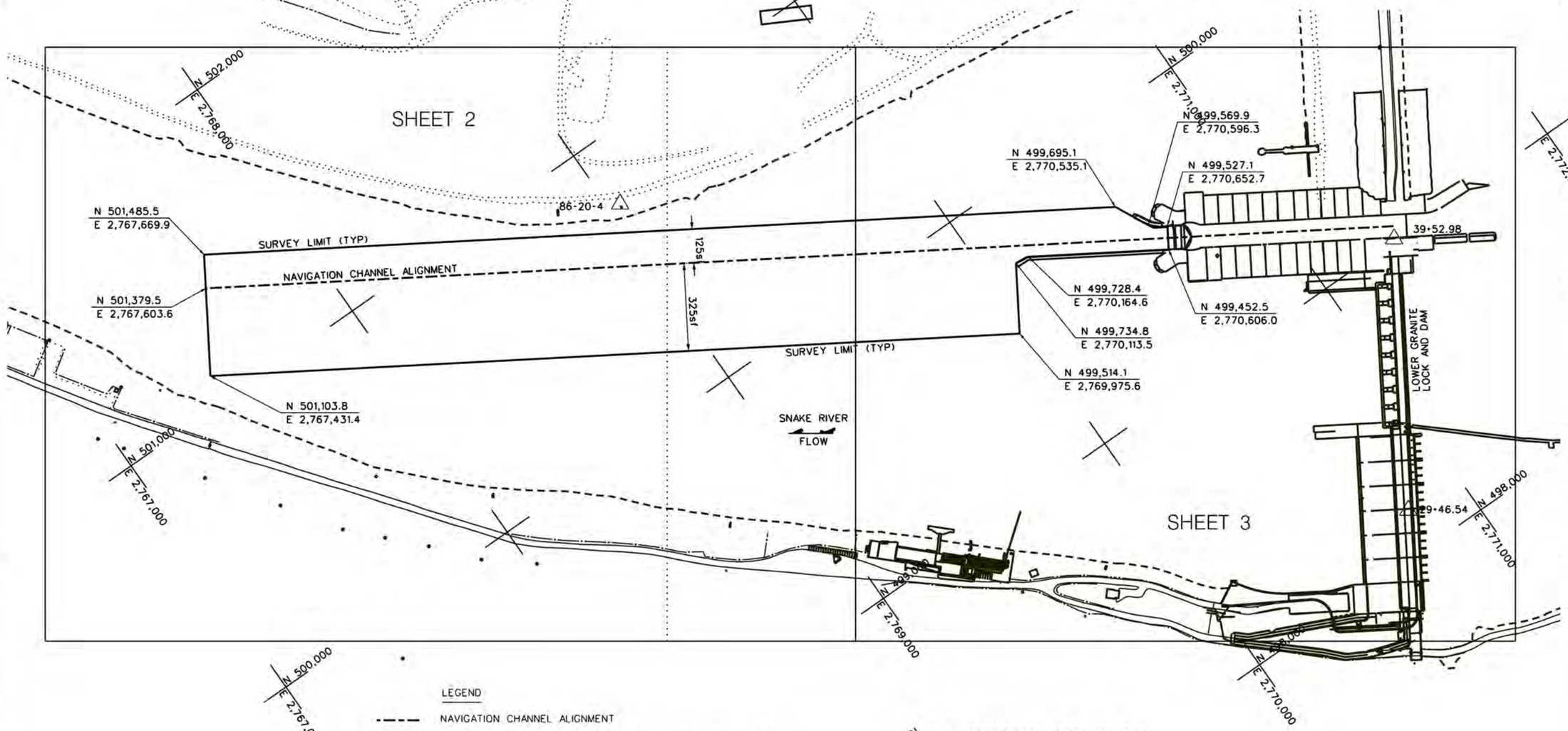
86-20-4
1" IRON PIPE WITH 1-3/4"
WASHER STAMPED 86-20-4
N 500,755.26
E 2,769,039.60
ELEV. 650.00'

CBL 39+52.98
3-½" BRASS DISC
STAMPED 39+52.98
N 499,006.23
E 2,771,32.88
ELEV. 750.87

CBL 29+46.54
3-½" BRASS DISC
STAMPED 29+46.54
N 498,152.82
E 2,770,779.61
ELEV. 750.840

NOTES

1. A MULTIBEAM BATHYMETRIC SURVEY OF THE LOWER GRANITE D/S NAVIGATION LOCK APPROACH WAS CONDUCTED BY TERRASOND LIMITED ON SEPTEMBER 12-13, 2015
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 VERTICAL POSITIONING WAS PROVIDED BY A REAL-TIME KINEMATIC (RTK) GPS. CORRECTIONS WERE BROADCAST FROM A LOCAL BASE STATION USING A TRIMBLE R8 GPS RECEIVER ON CONTROL POINT 86-20-1
4. BATHYMETRIC DATA COLLECTION WAS CONDUCTED USING AN R2 SONIC 2024 MULTIBEAM ECHOSOUNDER, CODA OCTOPUS F185+ INERTIAL NAVIGATION SYSTEM, AML MINOS-X SOUND VELOCITY PROFILER, AND QPS QINSY V8.1 ACQUISITION SOFTWARE. DATA WAS PROCESSED USING CARIS HIPS V9.0
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 DETECTED DEPTH IN A 3-FOOT BY 3-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



US Army Corps of Engineers
Walla Walla District

Symbol	Description	Date	Appr.	Symbol	Description	Date	Appr.

DESIGNED BY: MCYER
DWN BY: LML
CHKD BY: KMJ
SUBMITTED BY: S C
DATE: 15 OCTOBER 2015
FILE NO.: F
TASK ORDER NO.: 11
CONTRACT NO.: W912EF-10-D-0002

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

TERRASOND
TERRASOND LIMITED
PEAR BLOSSOM HALL, 24 BURLEY ROAD
HIGH WYCOMBE, BUCKINGHAMSHIRE, HP11 2PZ, UNITED KINGDOM
WWW.TERRASOND.COM

LOWER GRANITE LOCK AND DAM
SNAKE AND CLEARWATER RIVERS, WASHINGTON AND IDAHO
WA912EF-10-D-0002, T.O. NO. 11
LOWER GRANITE DS
NAVIGATION LOCK APPROACH
MULTIBEAM BATHYMETRIC SURVEY

Plate number:
V-001

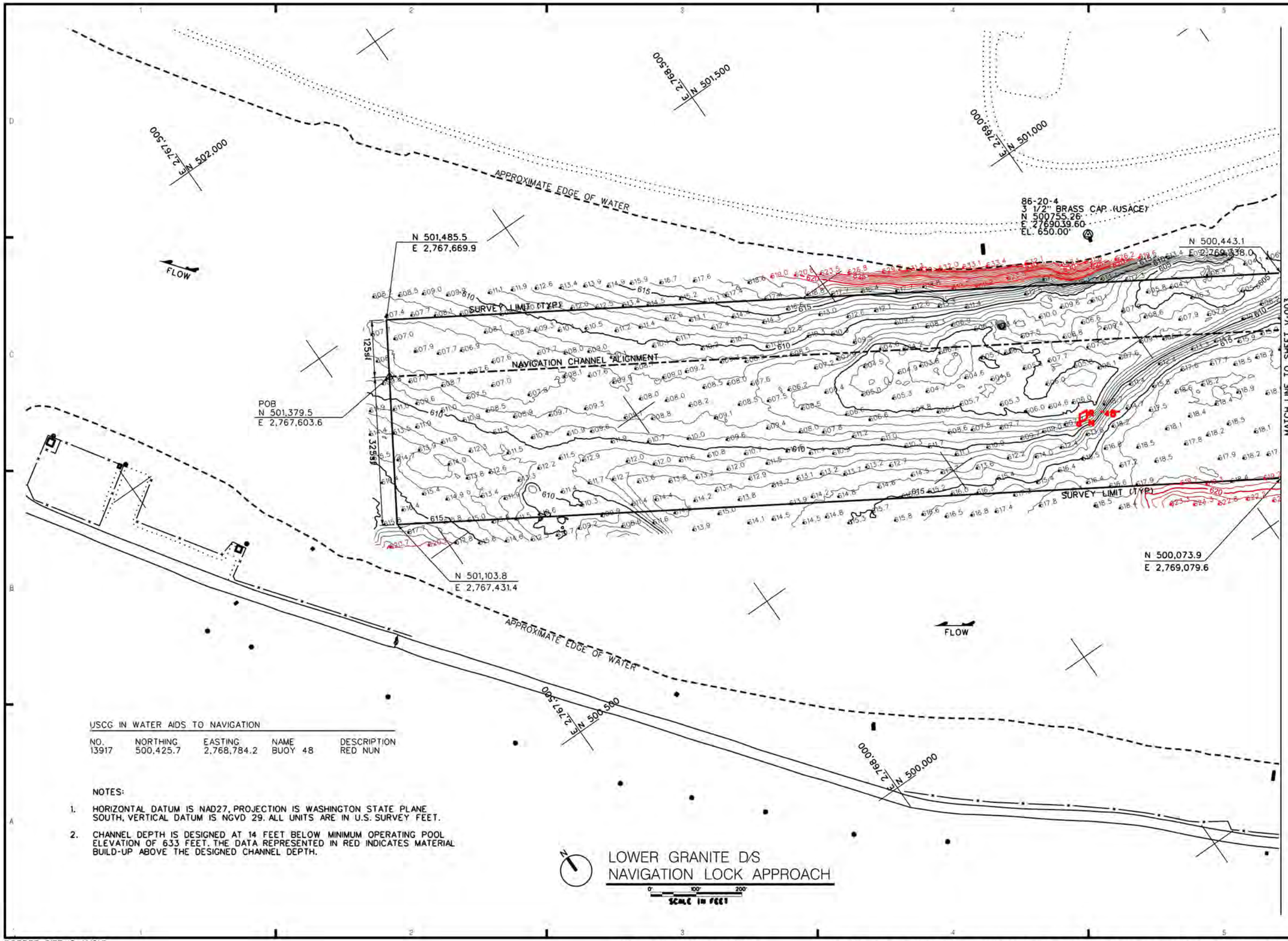
Sheet 1 of 3

L:\Z_SURVEYS\00HYDRO_CONDITION\2015 HYDRO_CONDITION\LGA_LLA_DS_NAV_LOCK_APPR\OPERATIONS\OPERATIONSV-001---.DGN

BORDER SIZE IS ANSI D

DATE AND TIME PLOTTED: 11/17/2015

DESIGN FILE: L:\Z_SURVEYS\00HYDRO_CONDITION\2015 HYDRO_CONDITION\LGA_LLA_DS_NAV_LOCK_APPR\OPERATIONS\OPERATIONSV-001---.DGN



USCG IN WATER AIDS TO NAVIGATION

NO.	NORTHING	EASTING	NAME	DESCRIPTION
13917	500,425.7	2,768,784.2	BUOY 48	RED NUN

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 633 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.	Symbol	Description	Date	Appr.

DATE: 15 OCTOBER 2015
DESIGNED BY: MEYER
DWN BY: LNL
CHKD BY: KMM
SUBMITTED BY: S C
CONTRACT NO. W912EF-10-D-0002
FILE NO.: F

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

TERRASOND
PROFESSIONAL SERVICES IN EARTH SCIENCE
MAP CONSULTING · SURVEYING

LOWER GRANITE LOCK AND DAM
SNAKE AND CLEARWATER RIVERS, WASHINGTON AND IDAHO
WA912EF-10-D-0002, T.O. NO. 11
LOWER GRANITE D/S
NAVIGATION LOCK APPROACH
MULTIBEAM BATHYMETRIC SURVEY

Plate number:
V-002

Sheet 2 of 3

L:\Z_SURVEYS\00HYDRO_CONDITION\LGA_LLA_DS_NAV_LOCK_APPR\OPERATIONS\OPERATIONSV-002---.DGN

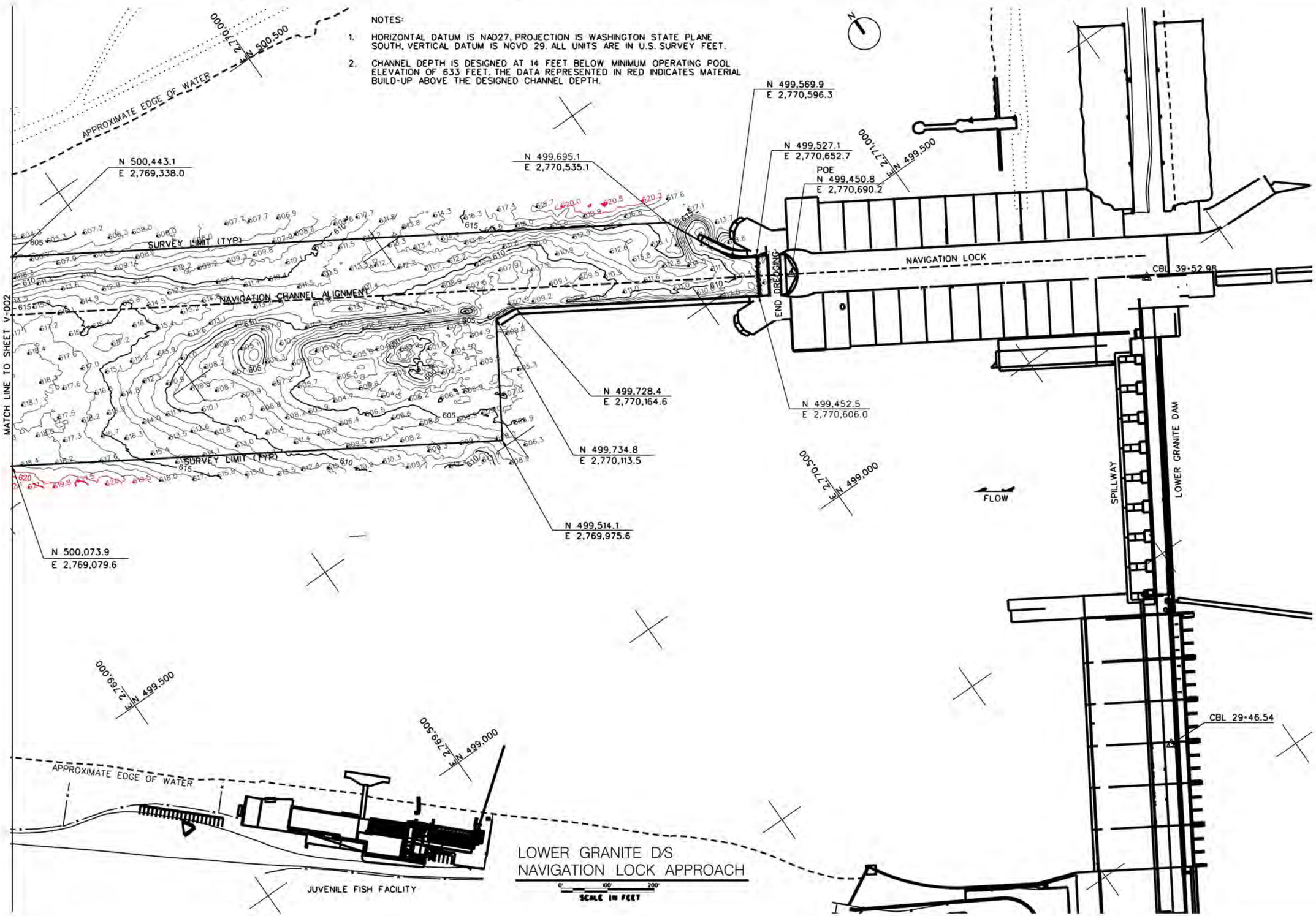
BORDER SIZE IS ANSI D

DATE AND TIME PLOTTED: 11/17/2015

DESIGN FILE: L:\Z_SURVEYS\00HYDRO_CONDITION\2015 HYDRO_CONDITION\LGA_LLA_DS_NAV_LOCK_APPR\OPERATIONS\OPERATIONSV-002---.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 633 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.	Symbol	Description	Date	Appr.

DATE: 15 OCTOBER 2015
DESIGNED BY: MEYER
DWN BY: LNL
CHKD BY: KMM
SUBMITTED BY: S C F
FILE NO.:
CONTRACT NO. W912EF-10-D-0002

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

TERRASOND
PROFESSIONAL SURVEYING & MAPPING SERVICES
1900 SOUTHWEST FIFTH AVENUE, PORTLAND, OREGON

LOWER GRANITE LOCK AND DAM
SNAKE AND LEWISTON RIVERS, WASHINGTON AND IDAHO

WA912EF-10-D-0002, T.O. NO. 11

LOWER GRANITE D/S
NAVIGATION LOCK APPROACH
MULTIBEAM BATHYMETRIC SURVEY

Plate number:
V-003

Sheet 3 of 3

L:\Z_SURVEYS\00HYDRO_CONDITION\2015 HYDRO_CONDITION\LGA_LLA_DS_NAV_LOCK_APPR\OPERATIONS\OPERATIONSV-003---.DGN

BORDER SIZE IS ANSI D

DATE AND TIME PLOTTED: 11/17/2015

DESIGN FILE: L:\Z_SURVEYS\00HYDRO_CONDITION\2015 HYDRO_CONDITION\LGA_LLA_DS_NAV_LOCK_APPR\OPERATIONS\OPERATIONSV-003---.DGN