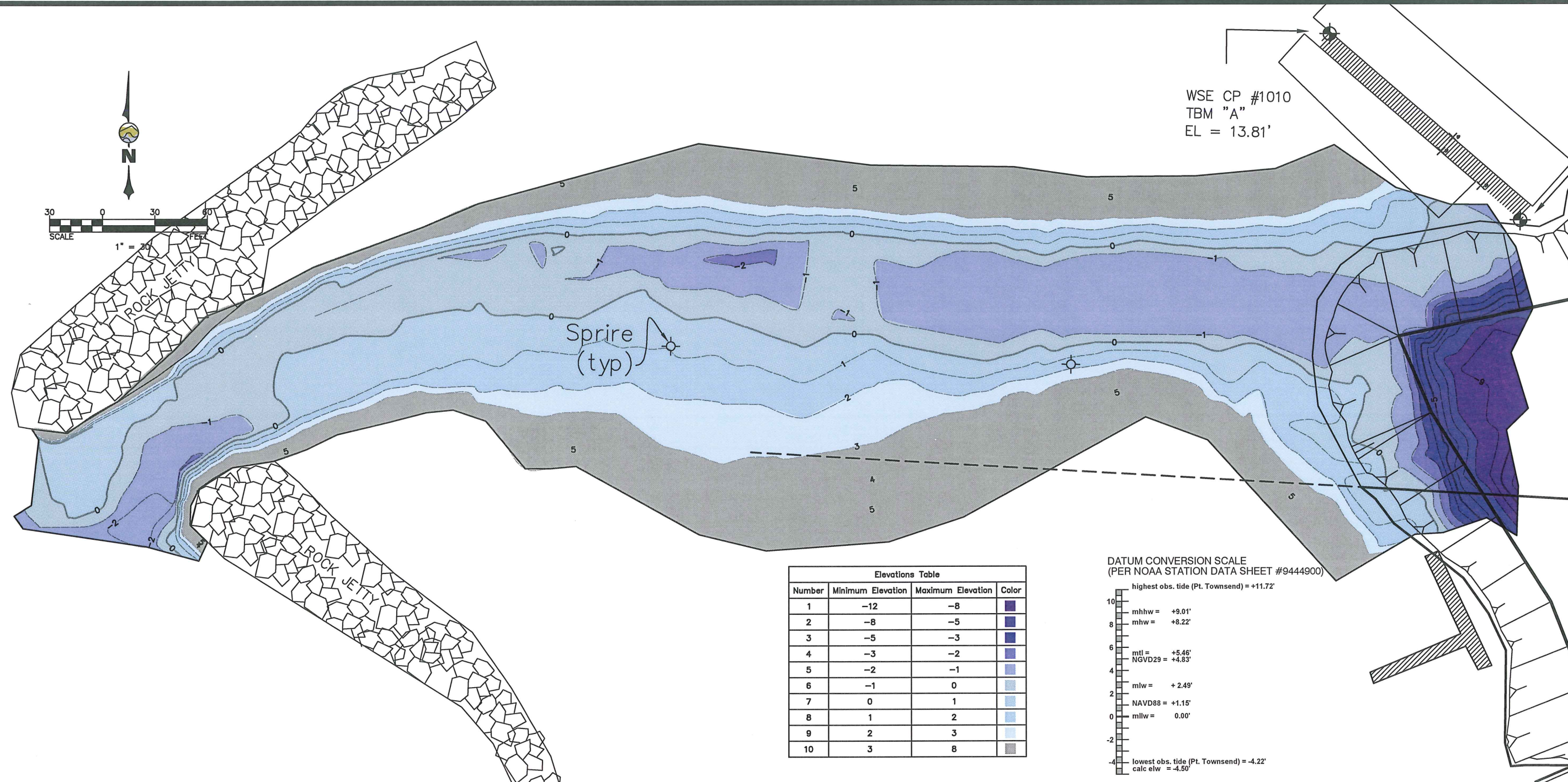


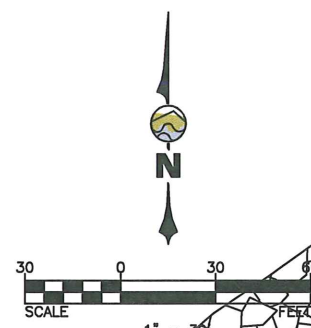
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DESIGNED BY: WASHINGTON
 DRAWN BY: JCS
 CHECKED BY:
 LAGOON POINT MARINA
 WASHINGTON
 ENTRANCE CHANNEL BATHYMETRY
 OCTOBER 2013
 DATE: NOV., 2013
 SCALE: AS SHOWN
 SHEET: 1 OF 1
 JOB NUMBER: 2013-102

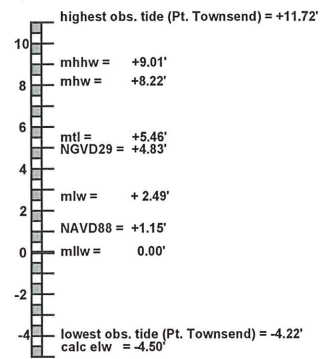


WSE CP #1010
 TBM "A"
 EL = 13.81'



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-12	-8	Dark Purple
2	-8	-5	Medium Purple
3	-5	-3	Light Purple
4	-3	-2	Blue-Gray
5	-2	-1	Light Blue
6	-1	0	Light Blue
7	0	1	Light Blue
8	1	2	Light Blue
9	2	3	Light Blue
10	3	8	Dark Gray

DATUM CONVERSION SCALE
 (PER NOAA STATION DATA SHEET #9444900)



CONTROL NOTES

1. HORIZONTAL DATUM: COORDINATE POSITIONS SHOWN ARE WASHINGTON STATE PLANE (NORTH ZONE) NAD83/2007 GRID VALUES, BASED UPON HOLDING THE PUBLISHED COORDINATES FOR ISLAND COUNTY SURVEY CONTROL POINT #1027, A CAPPED REBAR FLUSH WITH THE GROUND NORTH OF SEASHORE AVENUE APPROXIMATELY 100 FEET EAST OF THE MARINA BOAT LAUNCH, AS EXPRESSED IN THE CURRENT 2007 EPOCH OF NAD83. THE SURVEY CONTROL POINT WAS SET BY ISLAND COUNTY IN 2007, AND HAS AN ESTIMATED HORIZONTAL AMBIGUITY OF 2CM AND AN ESTIMATED VERTICAL AMBIGUITY OF 5CM. PUBLISHED VALUES HELD FOR THIS SURVEY.

2. VERTICAL DATUM: ELEVATIONS SHOWN ARE REFERENCED TO THE NOAA/TIDAL MLW = 0.00' DATUM, BASED UPON HOLDING THE PUBLISHED NAVD88 ELEVATION AT ISLAND COUNTY SURVEY CONTROL POINT #1027. CONVERSIONS FROM THE PUBLISHED NAVD88 VALUE TO LOCAL TIDAL (MLW = 0.00') DERIVED USING THE CURRENT (V. 3.2) VERSION OF NOAA'S TIDAL-DATUM CONVERSION SOFTWARE "VDATUM" FOR THE PUGET SOUND REGION. VERTICAL CONVERSION FROM NAVD88 TO MLW, PER THE CURRENT MEASUREMENT IS +1.15'. THAT IS, TO CONVERT A VALUE EXPRESSED IN NAVD88 TO ITS VALUE RELATIVE TO THE MLW DATUM, 1.15 FEET SHOULD BE ADDED TO THE NAVD88 VALUE. (A MONUMENT HAVING A NAVD88 ELEVATION OF 10.00', WOULD HAVE A MLW ELEVATION OF 11.15', FOR EXAMPLE.)

3. BASIS OF COORDINATES: LOCAL CONTROL AND TOPOGRAPHY IS BASED UPON HOLDING THE CURRENT NAD83(2007) COORDINATE VALUES FOR ISLAND COUNTY SURVEY CONTROL POINT #1027. THE MARK IS A REBAR AND RED PLASTIC CAP SET NORTH OF SEASHORE AVENUE EAST OF THE BOAT LAUNCH RAMP. THE COORDINATES FOR SAID MONUMENT ARE AS FOLLOWS:
 NORTHING = 398,690.120 USFT
 EASTING = 1,205,853.450 USFT

4. BASIS OF BEARINGS: BEARINGS FOR LOCAL CONTROL AND BATHYMETRY ARE WASHINGTON STATE PLANE (NORTH ZONE) GRID, BASED UPON HOLDING THE GPS-DERIVED INVERSE BETWEEN ISLAND COUNTY CONTROL POINT #1027, AND WILSON CONTROL POINT #1004, A CAPPED BRASS DISK MONUMENT MARKING THE SUBDIVISIONAL LINE BETWEEN THE LAGOON POINT PLATS, AND THE SOUTH LINE OF THE LAGOON POINT COMMUNITY WATERWAY. PER CURRENT RTK/RS MEASUREMENT THE DERIVED INVERSE BEARING BETWEEN ISLAND COUNTY #1027 AND WSE #1004 IS S 66° 40' 47" E A DISTANCE OF 709.35 FEET. THE MEASURED COORDINATES FOR WSE #1004 ARE AS FOLLOWS:
 NORTHING = 398,409.310 USFT
 EASTING = 1,206,504.850 USFT

5. BASIS OF ELEVATIONS: THE PUBLISHED NAVD88 ELEVATION FOR ISLAND COUNTY CONTROL POINT #1027 WAS HELD AS AUTHORITATIVE AS PUBLISHED. NAVD88 ELEVATION AND CONVERSIONS PER VDATUM FOR #1027 ARE AS FOLLOWS:
 NAVD88 ELEVATION: 10.97 FEET
 MLW ELEVATION: 12.12 FEET
 NGVD29 ELEVATION: 7.29 FEET

6. SITE BENCHMARKS:
 TBM "A": WILSON CONTROL POINT #1010, AN IRON TABLET NEAR THE TOP OF THE CONCRETE BOAT LAUNCH STAMPED "ELEV. = 10.41". PER WILSON CLOSED LEVEL LOOP, THE MLW ELEVATION AT CONTROL POINT #1010 IS 13.81 FEET. (THE NAVD88 ELEVATION FOR #1010 IS 12.66 FEET.)
 TBM "B": A BERTINSEN SURVEY SPIKE SET IN THE EAST SIDE OF THE SOUTHERNMOST PILING AT THE BOAT LAUNCH FLOAT PER WILSON CLOSED LEVEL LOOP, THE MLW ELEVATION AT TBM "B" IS 14.86 FEET. (THE NAVD88 ELEVATION FOR TBM "B" IS 13.71 FEET.)

SURVEY NOTES

1. THIS SURVEY MEETS OR EXCEEDS THE METHODOLOGY AND ACCURACY REQUIREMENTS FOR A U.S.A.C.E CLASS I HYDROGRAPHIC SURVEY. THIS BATHYMETRIC AND TOPOGRAPHIC SURVEY WAS PERFORMED IN MAY, 2013, AND REPRESENTS THE CONDITIONS EXISTING AT THAT TIME. INITIAL CONTROL WAS ESTABLISHED USING NETWORKED REAL-TIME KINEMATIC POSITIONING. BATHYMETRIC SURVEY DATA ACQUISITION WAS PERFORMED USING TRIMBLE 5700 SURVEY-GRADE GPS RECEIVERS, OPERATING IN REAL-TIME KINEMATIC MODE. SECONDARY AND SECTIONAL CONTROL WAS ESTABLISHED USING POST-PROCESSED STATIC BASELINES. UPLAND TOPOGRAPHY WAS ACQUIRED USING A TRIMBLE S6 3-SECOND ROBOTIC TOTAL STATION AND TRIMBLE 5700 RTK GPS RECEIVERS.

2. HYDROGRAPHIC/BATHYMETRIC DATA WAS COLLECTED USING TRIMBLE 5700 SURVEY-GRADE GPS RECEIVERS OPERATING IN REAL-TIME KINEMATIC MODE. FOR CONTROL OF POSITION, HEADING, AND TRANSDUCER ELEVATION. DEPTH SOUNDINGS WERE ACQUIRED USING AN CHMEX SONAR/MIKE SURVEY-GRADE FATHOMETER OPERATING AT A FREQUENCY OF 210kHz, WITH A 2hz SAMPLE RATE. SOUND VELOCITY CORRECTIONS FOR THE WATER COLUMN WERE RECORDED USING A VALEPORT SOUND/MIKE II SOUND VELOCITY PROFILER. HYDROGRAPHIC DATA WAS COMPILED, ANALYZED, VALIDATED, AND THINNED USING HYPACK 2012A HYDROGRAPHIC MAPPING SOFTWARE. FINAL ADJUSTMENTS TO CORRECT FOR TRANSDUCER REFERENCE FACTOR, AND CONVERSION TO MLW DATUM WERE PERFORMED USING CIVIL3D CIVIL ENGINEERING SOFTWARE. SPOT ELEVATIONS SHOWN ON THIS MAP REPRESENT APPROXIMATELY 4% OF THE DATA ORIGINALLY COLLECTED, AND APPROXIMATELY 40% OF THE DATA POINTS USED TO GENERATE THE "EXISTING CONDITIONS" SURFACE FOR VOLUME CALCULATIONS.

3. QUALITY CONTROL BARCHecks FOR THIS SURVEY WERE PERFORMED AT THE BEGINNING AND END OF SURVEY DATA COLLECTION. DIRECT-MEASURE GROUND TRUTH AS MEASURED AGAINST CONVERTED SOUNDING DATA WAS COLLECTED AT A VARIETY OF DEPTHS, AND LOCATIONS. VARIATION BETWEEN CONVENTIONAL ASBUILT VALUE AND BATHYMETRIC SURVEY DATA WAS FOUND TO BE LESS THAN OR EQUAL TO 0.10'.

4. THIS SURVEY IS INTENDED TO ACCURATELY REPRESENT THE SUBMERGED TOPOGRAPHY WITHIN THE BASINS OF THE LAGOON POINT MARINA. THE STRUCTURES DEPICTED HEREON ARE INTENDED TO PROVIDE VISUAL REFERENCE POINTS FOR THE CONTOUR INFORMATION, BUT ARE NOT AN AUTHORITATIVE AS-BUILT OF THE STRUCTURES. CONSIDER THE LOCATIONS OF FLOATS, DOCKS, AND RAMPS TO BE SCHEMATIC ONLY.

5. THIS POST-DREDGE SURVEY WAS ORIGINALLY INTENDED TO BE AN EXTENSION OF A SURVEY PREPARED BY AL BOWEN OF COASTAL GEOLOGIC SERVICES FOR THE LAGOON POINT COMMUNITY ASSOCIATION IN 2005 AND 2007. SINCE THAT TIME, ISLAND COUNTY HAS SET AN AUTHORITATIVE BENCHMARK (#1027) IN THE VICINITY OF THE PROJECT WHICH DISAGREES WITH THE CGS BASIS OF ELEVATIONS BY APPROXIMATELY 1.4'. IT APPEARS THAT AL BOWEN ACCEPTED THE VALUE STAMPED ON THE IRON TABLET AT THE TOP OF THE BOAT LAUNCH WALKWAY RAMP AT 10.41' (NGVD29). CONVERSIONS TO NAVD88 AND MLW WERE PERFORMED USING THE VDATUM UTILITY PROVIDED BY NOAA. WILSON AGREES WITH THE CONVERSIONS MR. BOWEN USED, BUT CANNOT HOLD THE PURPORTED NGVD29 ELEVATION AT THE TABLE AS STAMPED, GIVEN THE NEWLY-SET AUTHORITATIVE ISLAND COUNTY BENCHMARK IN THE VICINITY. ALSO, A HORIZONTAL OFFSET AND ROTATION DISCREPANCY BETWEEN THE 2005 CGS DATA, AND CURRENT MEASUREMENT, WAS DISCOVERED. THE DREGE PRISM, AND OTHER FIXED ELEMENTS WAS ROTATED AND TRANSLATED TO FIT CURRENT MEASUREMENT, AND MONUMENTS SET FOR THE ORIGINAL SURVEY MAY NOT CORRELATE TO THIS PRODUCT.

6. THE LINE SEGREGATING THE PLAT OF LAGOON POINT FROM THE PLAT OF LAGOON POINT No.2 - AND MARKING THE SOUTH MARGIN OF THE LAGOON POINT COMMUNITY WATERWAY - COMMENCES AT THE POINT #1004, DERIVED BY DIRECT MEASURE OF THE CAPPED BRASS DISK MONUMENT AT THE CENTERLINE OF SHOREWOOD AVENUE AND SHOWN ON THE FACE OF BOTH PLATS. THE WEST EXTENSION OF SAID WATERWAY LINE WAS CALCULATED USING PLAT VALUE MEASUREMENT FROM TWO FOUND CAPPED BRASS DISK MONUMENTS NEAR THE NORTH CUL-DE-SAC OF OCEAN SIDE DRIVE, AS SHOWN ON THE PLAT OF LAGOON POINT No.2. THIS LINE REPRESENTS THE DIVIDING PLANE BETWEEN THE "NORTH ZONE VOLUMES" AND THE "SOUTH ZONE VOLUMES" IN THE ACCOMPANYING CUT/FILL REPORT.

CUT/FILL REPORT

BASED UPON THE COMPARISON BETWEEN THE EXISTING SURFACE AS OF OCTOBER 17, 2013, AND THE EXISTING SURFACE AT THE TIME OF THE PRE-DREDGE SURVEY PERFORMED AND PREPARED BY WILSON ENGINEERING IN AUGUST, 2013, THE ACTUAL VOLUME OF MATERIAL REMOVED FROM THE PLANNED DREDGE PRISM HAS BEEN CALCULATED AS FOLLOWS:
 NORTH ZONE REMOVAL VOLUME*: 12,518 CY
 SOUTH ZONE REMOVAL VOLUME*: 9,669 CY
 TOTAL CUT: 22,187 CY

*THE ANTICIPATED CUT VOLUME ORIGINALLY SHOWN ON THE PRE-DREDGE SURVEY ALLOCATED THE PROJECTED VALUES INCORRECTLY, AND ASSIGNED THE NORTH ZONE'S ESTIMATE TO THE SOUTH, AND VICE VERSA. THE VALUES SHOWN HEREON REPRESENT THE ACTUAL PROPORTION OF SEDIMENT REMOVAL NORTH AND SOUTH OF THE DIVIDING PLAT LINE.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A LICENSED LAND SURVEYOR IN THE STATE OF WASHINGTON. THAT THIS MAP IS BASED ON AN ACTUAL FIELD SURVEY DONE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DATA SHOWN HEREON ACTUALLY EXISTS IN THE LOCATIONS SHOWN AT THE TIME OF THIS SURVEY. THIS TOPOGRAPHIC MAP WAS DONE AT THE REQUEST OF LAGOON POINT COMMUNITY ASSOCIATION IN OCTOBER OF 2013.

J. THOMAS BREWSTER, P.L.S. NO. 44335 DATE 11/12/2013

