

# Washington State Department of Transportation Project Datum Calculation Report

**Calculation Date:** 11/9/2022 **Entered BY:** NKJ **Checked BY:** \_\_\_\_\_

| Project Information      |                            | Reference Datum  | Factors                              | Combine Factor     |
|--------------------------|----------------------------|--|--------------------------------------|--------------------|
| SR3 MP32-35 Fish<br>Fish | SR 003<br>MP 31.500-34.840 | <b>Horizontal</b> NAD 83/11 4601 WA North<br><b>Vertical</b> NAVD 88 | SF = 0.999999717<br>EF = 0.999993112 | <b>0.999992829</b> |

| Calculated Values           |                          |                       | Calculations   |
|-----------------------------|--------------------------|-----------------------|--|
|                             | <b>Scale Factor (SF)</b> | <b>Ellip Elev (m)</b> | <b>Elevation Factor (EF)</b> $6,372,000 / (43.892 + 6,372,000) = 0.999993112$              |
| <b>Maximum</b>              | 0.999999250              | 112.178               | <b>Combined Factor (CF)</b> $0.999999717 * 0.999993112 = 0.999992829$                      |
| <b>Minimum</b>              | 0.999994420              | -17.686               | <b>Transform SPC to PDC</b> $((SPC \text{ US Feet} * (1/CF)) + (39.37/12) * 100000) = PDC$ |
| <b>Mid-range</b>            | 0.999996835              | 47.246                | <b>US Survey Foot</b> (1 foot = 12/39.37 meter)  |
| <b>Average</b>              | 0.999996500              | 40.1853               | <b>Datum Shift North</b> = 100000 m <b>Datum Shift East</b> = 100000 m                     |
| <b>User Defined Value</b>   | <b>0.999999717 *</b>     | <b>43.892*</b>        |  |
| <b>User Defined Comment</b> | NKJ                      | NKJ                   |  |

\* Value Used in Calculations

| Point Name | Designation | State Plane Northing (US feet) | State Plane Easting (US feet) | Ellip Elev (US feet) | Scale Factor | Project Datum Northing (US feet) | Project Datum Easting (US feet) | Ortho Elev (US feet) | Report of Survey Mark   |
|------------|-------------|--------------------------------|-------------------------------|----------------------|--------------|----------------------------------|---------------------------------|----------------------|-------------------------|
| MON2633    | GP18003-18  | 189770.490                     | 1166175.739                   | 368.037              | 0.999999250  | 517855.184                       | 1494267.435                     | 440.294              | <a href="#">MON2633</a> |
| MON9183    | HWY3-2      | 190336.929                     | 1166845.665                   | 357.804              | 0.999998950  | 518421.627                       | 1494937.366                     | 430.084              | <a href="#">MON9183</a> |
| MON2634    | GP18003-19  | 193235.575                     | 1169765.643                   | 354.468              | 0.999997460  | 521320.294                       | 1497857.365                     | 426.794              | <a href="#">MON2634</a> |
| MON9181    | GORST CREEK | 197319.274                     | 1178256.932                   | -23.425              | 0.999995330  | 525404.022                       | 1506348.714                     | 49.337               | <a href="#">MON9181</a> |
| MON9180    | HWY3-1      | 197455.839                     | 1178110.957                   | -28.419              | 0.999995270  | 525540.588                       | 1506202.739                     | 44.331               | <a href="#">MON9180</a> |
| MON7650    | GP18003-52  | 198337.579                     | 1179755.022                   | -47.552              | 0.999994820  | 526422.335                       | 1507846.816                     | 25.282               | <a href="#">MON7650</a> |
| MON7651    | GP18003-53  | 199129.041                     | 1180729.787                   | -58.025              | 0.999994420  | 527213.802                       | 1508821.588                     | 14.865               | <a href="#">MON7651</a> |

See next page for Primary Control Table and Basis of Bearing content.

| PRIMARY CONTROL TABLE   |            |             |  |             |                           |
|---|------------|-------------|--|-------------|---------------------------|
| HORIZONTAL DATUM<br>NAD 83/11 4601 WA North US FEET   |            |             | PROJECT DATUM<br>COMBINED FACTOR 0.999992829 |             | VERTICAL DATUM<br>NAVD 88 |
| DESIGNATION   | NORTHING   | EASTING     | PD NORTHING                                  | PD EASTING  | ELEVATION                 |
| GP18003-18  | 189770.490 | 1166175.739 | 517855.184                                   | 1494267.435 | 440.294                   |
| HWY3-2  | 190336.929 | 1166845.665 | 518421.627                                   | 1494937.366 | 430.084                   |
| GP18003-19  | 193235.575 | 1169765.643 | 521320.294                                   | 1497857.365 | 426.794                   |
| GORST CREEK   | 197319.274 | 1178256.932 | 525404.022                                   | 1506348.714 | 49.337                    |
| HWY3-1  | 197455.839 | 1178110.957 | 525540.588                                   | 1506202.739 | 44.331                    |
| GP18003-52  | 198337.579 | 1179755.022 | 526422.335                                   | 1507846.816 | 25.282                    |
| GP18003-53  | 199129.041 | 1180729.787 | 527213.802                                   | 1508821.588 | 14.865                    |
| TRANSFORM SPC TO PDC (SPC US FEET * (1/0.999992829)) + ((39.37/12) * 100000)=PDC<br>TRANSFORM PDC TO SPC (PDC US FEET - ((39.37/12) * 100000))*0.999992829=SPC<br>FOR REPORT OF SURVEY MARK <a href="https://www.wsdot.wa.gov/monument/search.aspx">https://www.wsdot.wa.gov/monument/search.aspx</a> |            |             |  |             |                           |

THE BASIS OF BEARINGS AND DISTANCES ARE DETERMINED FROM WASHINGTON COORDINATE SYSTEM NAD 83/11 4601 WA North.

THE DISTANCES SHOWN ARE GROUND DISTANCES. TO OBTAIN THE GRID DISTANCES, MULTIPLY THE GROUND DISTANCES BY THE COMBINED FACTOR OF 0.999992829. THE COMBINED FACTOR IS DERIVED BY MULTIPLYING THE ELEVATION FACTOR OF 0.999993112 BY THE SCALE FACTOR OF 0.99999717.