CROW SYNFUELS FEASIBILITY STUDY

FINAL REPORT - VOLUME IV

APPENDIX A-1

WATER ENVIRONMENTAL DATA

APPENDIX A-1

WATER QUALITY DATA

EPA STORET DATA FOR:

LITTLE BIGHORN RIVER NEAR HARDIN, MONTANA

BIGHORN RIVER NEAR ST. XAVIER, MONTANA

BIGHORN RIVER AT BIGHORN, MONTANA

# FLOW DURATION DATA

## DURATION TABLES OF DAILY DISCHARGE

LITTLE BIGHORN RIVER NEAR HARDIN, MONTANA
(WATER YEARS 1966-1979)

BIGHORN RIVER NEAR ST. XAVIER, MONTANA
(WATER YEARS 1966-1979)

BIGHORN RIVER AT BIGHORN, MONTANA
(WATER YEARS 1966-1979)

PRYOR CREEK AT PRYOR CREEK, MONTANA
(WATER YEARS 1968-1979)

STORET RETRIEVAL DATE 81/07/16 • INVENT - VERSION OF MAR, 1981

06294000
GARY PARKER
45 44 08.0 107 33 27.0 2
LITTLE BIGHORN RIVER NEAR HARDIN
30003 MONTANA
090191

/TYPA/AMBNT/STREAM
112WRD
0000 CLASS 00 CSN-HSP 003;377-0229295

INDEX 1021500 009490 36810 4430 5510
MILES 1149.40 1582.00 279.40 040.00 000.60

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00010 | WATER | TEMP | CENT | 131 | 9,69318 | 64,1163 | 8,00727 | ,826926 | ,699598 | 25,0000 | ,000000 | 69/10/09 | 79/11/07 |
| 00020 | AIR | TEMP | CENT | 1 | 22,0000 | | | | | 22,0000 | 22,0000 | 74/05/03 | 74/05/03 |
| 00027 | COLLECT | AGENCY | CODE | 3 | 1028;00 | ;500E+00 | ;000000 | | ;000000 | 1028;00 | 1028;00 | 73/12/03 | 74/06/04 |
| 00028 | ANALYZE | AGENCY | CODE | 17 | 80020,0 | ,409E+04 | ,000000 | | ,000000 | 80020,0 | 80020,0 | 78/07/20 | 79/11/07 |
| 00060 | STREAM | FLOW | CFS | 160 | 523,635 | 252497 | 502,491 | ,959621 | 39,7254 | 2160,00 | 81,9999 | 69/10/09 | 74/09/30 |
| 00061 | STREAM | FLOW; | INST-CFS | 85 | 489;527 | 272407 | 521;927 | 1;06610 | 56;6109 | 2370;00 | 57,9999 | 73/10/02 | 79/11/07 |
| 00080 | COLOR | PT-CO | UNITS | 33 | 8,49085 | 41,0286 | 6,40536 | ,754384 | 1,11503 | 33,0000 | ,200000 | 69/10/09 | 70/12/31 |
| 00095 | CNDUCTVY | AT 25C | MICROMHO | 193 | 772,465 | 31240,1 | 182,319 | ,236022 | 13,4774 | 1560,00 | 407,000 | 69/10/09 | 79/11/07 |
| 00400 | PH | | SU | 143 | 8;04607 | ;050534 | ;224737 | ;027939 | ;018798 | 8;50000 | 7;30000 | 69/10/09 | 79/10/17 |
| 00405 | CO2 | | MG/L | 55 | 4,94362 | 22,3466 | 4,72722 | ,956227 | ,637419 | 33,0000 | 1,70000 | 72/09/30 | 78/09/21 |
| 00410 | T ALK | CACO3 | MG/L | 184 | 215,700 | 957,284 | 30,9400 | ,143440 | 2,28093 | 336,000 | 133,000 | 69/10/09 | 79/11/07 |
| 00440 | HCO3 ION | HCO3 | MG/L | 170 | 261;740 | 1301;19 | 37;1643 | ;141989 | 2;85037 | 410;000 | 162;000 | 69/10/09 | 78/09/21 |
| 00445 | CO3 ION | CO3 | MG/L | 117 | ,059829 | ,316365 | ,561565 | 9,38616 | ,051917 | 6,00000 | ,000000 | 69/10/09 | 74/08/12 |
| 00618 | NO3-N | DISS | MG/L | 33 | ,033939 | ,003900 | ,062447 | 1,83996 | ,010871 | ,300000 | ,000000 | 69/10/09 | 70/12/31 |
| 00631 | NO2&NO3 | N-DISS | MG/L | 140 | ;125269 | ;019305 | ;138948 | 1;10916 | ;011421 | ;740001 | ,000000 | 71/01/31 | 79/11/07 |
| 00660 | ORTHOPO4 | PO4 | MG/L | 134 | ,023676 | ,000884 | ,029739 | 1,25605 | ,002569 | ,200000 | ,000000 | 71/01/31 | 78/09/21 |
| 00666 | PHOS-DIS | | MG/L P | 110 | ,020000 | ,000560 | ,023656 | 1,18284 | ,002256 | ,110000 | ,000000 | 70/08/06 | 79/11/07 |
| 00671 | PHOS-DIS | ORTHO | MG/L P | 105 | ;007810 | ;000079 | ;008877 | 1;13675 | ;000866 | ;040000 | ,000000 | 72/02/18 | 78/09/21 |
| 00900 | TOT HARD | CACO3 | MG/L | 185 | 310,924 | 3726,43 | 61,0445 | ,196333 | 4,48808 | 510,000 | 198,000 | 69/10/09 | 79/11/07 |
| 00902 | NC HARD | CACO3 | MG/L | 184 | 95,7334 | 1418,15 | 37,6503 | ,393366 | 2,77621 | 240,000 | 17,0000 | 69/10/09 | 79/11/07 |
| 00915 | CALCIUM | CA,DISS | MG/L | 185 | 66;7795 | 157;195 | 12;5378 | ;187889 | ;921794 | 100;000 | 44,0000 | 69/10/09 | 79/11/07 |
| 00925 | MGNSIUM | MG,DISS | MG/L | 185 | 35,0810 | 73,0448 | 8,54663 | ,243625 | ,628360 | 70,0000 | 17,0000 | 69/10/09 | 79/11/07 |
| 00930 | SODIUM | NA,DISS | MG/L | 185 | 51,9025 | 665,028 | 25,7703 | ,457980 | 1,74763 | 170,000 | 13,0000 | 69/10/09 | 79/11/07 |
| 00931 | SODIUM | ADSRTION | RATIO | 185 | 1;85891 | ;240038 | ;489937 | ;389175 | ;036021 | 3;30000 | ,400000 | 69/10/09 | 79/11/07 |
| 00932 | PERCENT | SODIUM | % | 185 | 25,2864 | 38,5221 | 6,20661 | ,245452 | ,456319 | 42,0000 | 12,0000 | 69/10/09 | 79/11/07 |
| 00933 | NAK | | MG/L | 6 | 54,3333 | 135,470 | 11,6392 | ,214218 | 4,75167 | 70,0000 | 35,0000 | 79/05/14 | 79/11/07 |
| 00935 | PTSSIUM | K,DISS | MG/L | 185 | 3;04487 | 1;87935 | 1;36893 | ;341270 | ;076383 | 5;90000 | ,900000 | 69/10/09 | 79/11/07 |
| 00940 | CHLORIDE | CL | MG/L | 185 | 3,57940 | 2,25673 | 1,50224 | ,419691 | ,110447 | 10,0000 | 1,00000 | 69/10/09 | 79/11/07 |
| 00945 | SULFATE | SO4-TOT | MG/L | 185 | 200,729 | 6631,02 | 81,4434 | ,405737 | 5,98783 | 630,000 | 80,0000 | 69/10/09 | 79/11/07 |
| 00950 | FLUORIDE | F;DISS | MG/L | 185 | ;219456 | ;008642 | ;092963 | ;423608 | ;006835 | ;700000 | ,000000 | 69/10/09 | 79/11/07 |
| 00955 | SILICA | DISOLVED | MG/L | 185 | 7,58262 | 1,92381 | 1,38701 | ,182920 | ,101975 | 13,0000 | 2,60000 | 69/10/09 | 79/11/07 |
| 01020 | BORON | B,DISS | UG/L | 47 | 98,2339 | 911,318 | 30,1880 | ,307308 | 4,40338 | 151,000 | 9,00000 | 69/10/09 | 74/06/04 |
| 01046 | IRON | FE,DISS | UG/L | 144 | 29;1736 | 1279;19 | 35;7658 | 1;22596 | 2;98048 | 200;000 | ,000000 | 69/10/09 | 78/09/21 |
| 01056 | MANGNESE | MN,DISS | UG/L | 138 | 9,15942 | 216,026 | 14,6637 | 1,60095 | 1,24826 | 87,0000 | ,000000 | 71/01/31 | 78/09/21 |
| 70300 | RESIDUE | DISS-180 | C MG/L | 33 | 492,754 | 12784,1 | 113,067 | ,229459 | 19,6824 | 768,000 | 269,000 | 69/10/09 | 70/12/31 |
| 70301 | DISS SOL | SUM | MG/L | 184 | 499;960 | 18051;8 | 134;354 | ;268729 | 9,90470 | 1150;00 | 251,000 | 69/10/09 | 79/11/07 |
| 70302 | DISS SOL | TONS/DAY | | 184 | 627,711 | 416997 | 645,753 | 1,02874 | 47,6055 | 4920,00 | 107,000 | 69/10/09 | 79/11/07 |
| 70303 | DISS SOL | TONS PER | ACRE-FT | 184 | ,683200 | ,033703 | ,183584 | ,268712 | ,013534 | 1,56000 | ,340000 | 69/10/09 | 79/11/07 |
| 70330 | SUSP SED | PARTSIZE | %<,004MM | 27 | 43,5924 | 292;033 | 17;0690 | ;392017 | 3,28877 | 90,9999 | 21,0000 | 71/01/10 | 77/05/13 |

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

06294000
GARY PARKER 45 44 08.0 107 33 27.0 2
LITTLE BIGHORN RIVER NEAR HARDIN
30003 MONTANA
090291

/TMPA/AMONT/STREAM 112WRD
0000 CLASS 00 C&H-REP 0031377-0229295

INDEX 1021500 009490 36810 4430 5810
MILES 1149.40 1582.00 279.40 040.00 000.60

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70340 | SUSP SED | PARTSIZE | %<.016MM | 27 | 61.0738 | 261.459 | 16.1697 | .264756 | 3.11186 | 97.9999 | 34.0000 | 71/03/10 | 77/05/13 |
| 70342 | SUSP SED | PARTSIZE | %<.062MM | 27 | 86.1479 | 71.1274 | 8.43371 | .097898 | 1.62307 | 100.0000 | 66.9999 | 71/03/10 | 77/05/13 |
| 70343 | SUSP SED | PARTSIZE | %<.125MM | 25 | 93.3998 | 23.1667 | 4.81317 | .051533 | .962635 | 100.0000 | 77.9999 | 71/03/10 | 77/05/13 |
| 70344 | SUSP SED | PARTSIZE | %<.250MM | 24 | 99.4998 | .692935 | .832427 | .008366 | .169918 | 100.0000 | 96.9999 | 71/03/10 | 77/05/13 |
| 70345 | SUSP SED | PARTSIZE | %<.500MM | 8 | 99.7498 | .223214 | .472456 | .004736 | .167039 | 99.9998 | 98.9999 | 72/03/08 | 77/05/13 |
| 70346 | SUSP SED | PARTSIZE | %<1.00MM | 8 | 99.9998 | .000000 | .000000 | | .000000 | 99.9998 | 99.9998 | 72/03/08 | 77/05/13 |
| 70507 | PHOS-T | ORTHO | MG/L P | 27 | .006296 | .000047 | .006877 | 1.09224 | .001323 | .020000 | .000000 | 71/02/19 | 72/03/08 |
| 71851 | NITRATE | DISS-NO3 | MG/L | 33 | .130303 | .059670 | .244291 | 1.87479 | .042526 | 1.20000 | .000000 | 69/10/09 | 70/12/31 |
| 80154 | SUSP SED | CONC | MG/L | 27 | 2073.28 | 3913491 | 1978.25 | .954195 | 380.715 | 8669.98 | 279.000 | 71/03/10 | 77/05/13 |
| 80155 | SUSP SED | DISCHARG | TONS/DAY | 27 | 6459.54 | .534E+08 | 7314.19 | 1.13231 | 1407.62 | 24100.0 | 271.000 | 71/03/10 | 77/05/13 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

05287000
GARY PARKER
45 19 00.0 107 55 05.0 2
BIGHORN RIVER NEAR ST. XAVIER, M
30003 MONTANA
090291

/TYPA/AHBUT/STREAM
112WRD
0000 CLASS 00 CSN-HSP 0018702-0229213

INDEX 1021500 009490 36810 4430
MILES 1149.40 1592.00 279.40 080.90

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00010 WATER | TEMP | CENT | | 155 | 8.23722 | 24.6476 | 4.96464 | .602708 | .398769 | 20.0000 | 1.00000 | 67/09/14 | 81/04/21 |
| 00020 AIR | TEMP | CENT | | 30 | 13.2833 | 102.961 | 10.1469 | .763889 | 1.85257 | 33.0000 | -.499E+01 | 69/07/23 | 81/04/21 |
| 00027 COLLECT | AGENCY | CODE | | 3 | 1028.00 | .500E+00 | .000000 | | .000000 | 1028.00 | 1028.00 | 73/12/05 | 74/06/06 |
| 00028 ANALYZE | AGENCY | CODE | | 32 | 80020.0 | .422E+04 | .000000 | | .000000 | 80020.0 | 80020.0 | 78/07/13 | 81/04/21 |
| 00041 WEATHER | WMO CODE | 4501 | | 18 | 1.80000 | .970589 | .985185 | .656790 | .232210 | 3.00000 | .000000 | 79/10/18 | 81/04/21 |
| 00060 STREAM | FLOW | CFS | | 199 | 4113.35 | 8384649 | 2292.28 | .557178 | 162.498 | 20240.0 | 358.000 | 66/10/31 | 74/09/30 |
| 00061 STREAM | FLOW, | INST-CFS | | 92 | 3527.92 | 3240647 | 1800.18 | .510266 | 187.692 | 10900.0 | 376.000 | 73/10/02 | 81/04/21 |
| 00070 TURB | JKSN | JTU | | 12 | 2.46666 | 1.76244 | 1.32757 | .538204 | .383236 | 6.00000 | 1.20000 | 69/07/23 | 70/06/02 |
| 00080 COLOR | PT-CO | UNITS | | 72 | 5.77771 | 11.7817 | 3.43248 | .594084 | .404518 | 17.0000 | .000000 | 66/10/31 | 70/12/31 |
| 00095 CNDUCTVY | AT 25C | MICROMHO | | 214 | 858.847 | 18210.5 | 134.946 | .157125 | 9.22172 | 1180.00 | 515.000 | 66/10/31 | 81/04/21 |
| 00300 DO | | MG/L | | 12 | 11.5167 | 1.39975 | 1.18311 | .102730 | .341534 | 13.2000 | 9.60000 | 69/07/23 | 70/06/02 |
| 00310 BOD | 5 DAY | MG/L | | 12 | 1.11083 | .589881 | .624405 | .933295 | .180250 | 2.70001 | .640808 | 69/07/23 | 70/06/02 |
| 00400 PH | | SU | | 175 | 7.90219 | .088227 | .297031 | .037588 | .022453 | 8.50000 | 6.60000 | 66/10/31 | 80/09/16 |
| 00403 LAB | PH | SU | | 8 | 8.17500 | .013602 | .116628 | .014266 | .041234 | 8.30000 | 8.00000 | 80/10/28 | 81/04/21 |
| 00405 CO2 | | MG/L | | 41 | 4.19024 | 9.63138 | 3.10345 | .740637 | .484677 | 16.0000 | 1.30000 | 73/09/30 | 78/09/20 |
| 00410 T ALK | CACO3 | MG/L | | 221 | 162.439 | 466.882 | 21.6074 | .133019 | 1.45347 | 215.000 | 107.000 | 66/10/31 | 80/09/16 |
| 00440 HCO3 ION | HCO3 | MG/L | | 188 | 197.313 | 716.091 | 26.7599 | .135621 | 1.95166 | 263.000 | 130.000 | 66/10/31 | 78/09/20 |
| 00445 CO3 ION | CO3 | MG/L | | 135 | .088889 | .365174 | .604296 | 6.79833 | .052010 | 6.00000 | .000000 | 66/10/31 | 74/10/01 |
| 00605 ORG N | N | MG/L | | 1 | .000000 | | | | .000000 | .000000 | 69/09/11 | 69/09/11 | |
| 00608 NH3+NH4- | N DISS | MG/L | | 12 | .024167 | .001299 | .036045 | 1.49151 | .010405 | .130000 | .000000 | 69/07/23 | 70/06/02 |
| 00613 NO2-N | DISS | MG/L | | 18 | .000833 | .000000 | .001887 | 3.46354 | .000833 | .010000 | .000000 | 69/07/23 | 70/06/02 |
| 00618 NO3-N | DISS | MG/L | | 40 | .214000 | .030296 | .174058 | .813357 | .027521 | .570000 | .000000 | 69/05/31 | 70/12/31 |
| 00631 NO2&NO3 | N-DISS | MG/L | | 145 | .393720 | .069159 | .262980 | .667931 | .021839 | 2.20000 | .000000 | 71/01/30 | 81/04/21 |
| 00660 ORTHOPO4 | PO4 | MG/L | | 114 | .030702 | .001293 | .035963 | 1.17136 | .003368 | .150000 | .000000 | 71/01/30 | 78/09/20 |
| 00665 PHOS-TOT | | MG/L P | | 12 | .045917 | .001322 | .036358 | .791819 | .010496 | .120000 | .000001 | 69/07/23 | 70/06/02 |
| 00666 PHOS-DIS | | MG/L P | | 140 | .025928 | .001775 | .042135 | 1.62507 | .003561 | .470000 | .000000 | 69/07/23 | 81/04/21 |
| 00671 PHOS-DIS | ORTHO | MG/L P | | 92 | .010870 | .000165 | .012894 | 1.18629 | .001344 | .050000 | .000000 | 72/02/29 | 78/09/20 |
| 00900 TOT HARD | CACO3 | MG/L | | 231 | 286.640 | 2595.96 | 50.9506 | .177781 | 3.35230 | 410.000 | 160.000 | 66/10/31 | 81/04/21 |
| 00902 NC HARD | CACO3 | MG/L | | 214 | 121.747 | 1123.36 | 33.5165 | .275296 | 2.29114 | 220.000 | 45.0000 | 66/10/31 | 81/02/23 |
| 00915 CALCIUM | CA,DISS | MG/L | | 219 | 73.1320 | 151.880 | 12.2882 | .168078 | .830360 | 110.000 | 43.0000 | 66/10/31 | 81/04/21 |
| 00925 MGNSIUM | MG,DISS | MG/L | | 219 | 24.0309 | 27.0527 | 5.20123 | .209465 | .351466 | 38.0000 | 13.0000 | 66/10/31 | 81/04/21 |
| 00930 SODIUM | NA,DISS | MG/L | | 219 | 77.2871 | 217.427 | 14.7454 | .190787 | .996401 | 118.000 | 40.0000 | 66/10/31 | 81/04/21 |
| 00931 SODIUM | ADSRTION | RATIO | | 219 | 1.99402 | .857825 | .240469 | .120595 | .016249 | 2.60000 | 1.40000 | 66/10/31 | 81/04/21 |
| 00932 PERCENT | SODIUM | % | | 219 | 36.6483 | 3.21514 | 1.97867 | .053991 | .133706 | 42.0000 | 30.0000 | 66/10/31 | 81/04/21 |
| 00933 NA+K | | MG/L | | 9 | 84.6666 | 76.0000 | 8.66076 | .102292 | 2.88692 | 95.0000 | 69.0000 | 79/05/08 | 80/02/18 |
| 00935 PTSSIUM | K,DISS | MG/L | | 221 | 3.03933 | 1.08390 | 1.37155 | .358431 | .092328 | 22.0000 | 1.30000 | 66/10/31 | 81/04/21 |
| 00940 CHLORIDE | CL | MG/L | | 220 | 10.7468 | 8.32160 | 2.88472 | .268427 | .194488 | 24.0000 | 3.30000 | 66/10/31 | 81/04/21 |
| 00945 SULFATE | SO4-TOT | MG/L | | 212 | 270.897 | 2910.82 | 53.9520 | .199190 | 3.54212 | 400.000 | 140.000 | 66/10/31 | 81/04/21 |
| 00950 FLURIDE | F,DISS | MG/L | | 220 | .425450 | .011962 | .109384 | .856961 | .007371 | .800000 | .100000 | 66/10/31 | 81/04/21 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

06287000

GARY PARKER

45 19 00.0 107 55 05.0 2
BIGHORN RIVER NEAR ST. XAVIER, M
30003 MONTANA

090291

/TYPA/AMBNT/STREAM

112WRD

0000 --CLASS 00 CSN-RSP 0015702-0229213

INDEX 1021500 009490 35810 4430
MILES 1149.40 1582.00 279.40 080.90

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN-DEV | COEF-VAR | STAND-ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00955 | SILICA | DISOLVED | MG/L | 219 | 10.2557 | 1.97228 | 1.40438 | .136937 | .094899 | 16.0000 | .200000 | 66/10/31 | 81/04/21 |
| 01020 | BORON | B,DISS | UG/L | 86 | 119.417 | 1311.45 | 36.2139 | .303255 | 3.90505 | 300.000 | 50.0000 | 66/10/31 | 74/06/06 |
| 01045 | IRON | FE;TOT | UG/L | 8 | 90;0000 | 16800;0 | 127;279 | 1.41421 | 90;0000 | 100;000 | ;000001 | 68/01/03 | 68/09/02 |
| 01046 | IRON | FE,DISS | UG/L | 126 | 25.0809 | 1250.22 | 35.3584 | 1.40977 | 3.14998 | 210.000 | .000000 | 68/12/12 | 78/09/20 |
| 01056 | MANGNESE | MN,DISS | UG/L | 117 | 9.29914 | 483.263 | 21.9832 | 2.36401 | 2.03235 | 160.000 | .000000 | 71/01/30 | 78/09/20 |
| 31501 | TOT COLI | MFIMENDO | /100ML | 12 | 210;916 | 78138;0 | 279;700 | 1;32618 | 80;7424 | 1000;000 | 0;00000 | 69/07/23 | 70/06/02 |
| 38260 | MBAS | | MG/L | 12 | .015834 | .000853 | .029375 | 1.85525 | .008480 | .100001 | .000000 | 69/07/23 | 70/06/02 |
| 39330 | ALDRIN | | TOT UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39340 | GAMMABHC | LINDANE | TOT;UG/L | 4 | ;374E-06 | ;562E-12 | ;749E-06 | 2;00000 | ;374E-06 | ;000001 | ;000000 | 69/07/23 | 70/04/20 |
| 39360 | DDD | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39365 | DDE | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39370 | DDT | WHL SMPL | UG/L | 4 | ;010000 | ;001600 | ;040001 | 2;00000 | ;010000 | ;080001 | ;000000 | 69/07/23 | 70/04/20 |
| 39380 | DIELDRIN | | TOTUG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39390 | ENDRIN | | TOT UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39410 | HEPTCHLR | | TOTUG/L | 4 | ;374E-06 | ;562E-12 | ;749E-06 | 2;00000 | ;374E-06 | ;000001 | ;000000 | 69/07/23 | 70/04/20 |
| 39420 | HPCHLREP | | TOTUG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39730 | 2,4-D | WHL SMPL | UG/L | 4 | .037500 | .000025 | .029723 | .765935 | .014361 | .070000 | .000000 | 69/07/23 | 70/04/20 |
| 39740 | 2,4,5-T | WHL SMPL | UG/L | 4 | ;374E-06 | ;562E-12 | ;749E-06 | 2;00000 | ;374E-06 | ;000001 | ;000000 | 69/07/23 | 70/04/20 |
| 39760 | SILVEX | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 70300 | RESIDUE | DISS-180 C | MG/L | 83 | 630.446 | 10818.1 | 104.010 | .164979 | 11.4166 | 842.000 | 363.000 | 66/10/31 | 70/12/31 |
| 70301 | DISS SOL | SUM | MG/L | 198 | 563;195 | 7963;56 | 89;1826 | ;158351 | 6;33793 | 792;000 | 332;000 | 67/10/18 | 81/04/21 |
| 70302 | DISS SOL | TONS/DAY | | 228 | 5909.90 | .115E+08 | 3400.83 | .575447 | 225.226 | 33120.0 | 511.000 | 66/10/31 | 81/04/21 |
| 70303 | DISS SOL | TONS PER | ACRE-FT | 228 | .792276 | .020473 | .143084 | .180599 | .009476 | 1.15000 | .440000 | 66/10/31 | 81/04/21 |
| 70507 | PHOS-T | ORTHO | MG/L P | 20 | ;887500 | ;808041 | ;896387 | ;851557 | ;001428 | ;020000 | ;006000 | 71/02/20 | 72/03/02 |
| 71851 | NITRATE | DISS-NO3 | MG/L | 84 | .942853 | .560073 | .748380 | .793740 | .081655 | 2.90000 | .000000 | 66/10/31 | 70/12/31 |
| 71856 | NITRITE | DISS-NO2 | MG/L | 11 | .020909 | .000049 | .007006 | .335077 | .002112 | .040000 | .010001 | 69/07/23 | 70/06/02 |
| 71885 | IRON | FE | UG/L | 8 | 5.00000 | 50.0000 | 7.07107 | 1.41421 | 5.00000 | 10.0000 | .49E-06 | 67/04/21 | 67/09/14 |
| 82068 | POTAS-40 | K-40,DIS | PC/LITER | 8 | 2.00000 | .034295 | .185190 | .066139 | .065474 | 3.10000 | 2.50000 | 80/10/20 | 81/04/21 |

STORET HISTORICAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

GARY PARKER

06294700
46 08 50.0 107 28 00.0 2
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA

090291

/TYPA/AMUNT/STREAM

112WRD
0000 CLASS 00 CSN-HSP 0015704-0229320

INDEX 1021500 009490 36810 4410
MILES 1149.40 1582.00 279.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00010 | WATER | TEMP | CENT | 211 | 12.4290 | 55.7028 | 7.46343 | .600484 | .513804 | 23.3300 | .000000 | 65/04/05 | 81/04/02 |
| 00020 | AIR | TEMP | CENT | 134 | 17.2760 | 129.419 | 11.3762 | .658501 | .982756 | 36.0000 | -.199E+02 | 74/04/01 | 81/04/02 |
| 00022 | LENGTH | OF EXPOS | URE-DAYS | 10 | 28.8999 | 52.6898 | 7.21802 | .249759 | 2.28254 | 43.9999 | 21.0000 | 75/10/20 | 79/10/18 |
| 00025 | BAROMTRC | PRESSURE | MM OF HG | 25 | 692.617 | 4.80000 | 2.12132 | .003063 | .424264 | 694.000 | 692.000 | 79/08/17 | 79/08/18 |
| 00028 | ANALYZE | AGENCY | CODE | 14 | 80014.6 | -.119E+05 | .000000 | | .000000 | 80020.0 | 80010.0 | 76/05/21 | 81/04/02 |
| 00041 | WEATHER | WMO CODE | 4501 | 79 | 5.77214 | 188.818 | 16.9941 | 2.94425 | 1.91205 | 74.9999 | .000000 | 76/10/18 | 81/04/02 |
| 00060 | STREAM | FLOW | CFS | 188 | 4693.72 | .187E+08 | 3974.69 | .846810 | 289.884 | 23000.0 | 685.000 | 65/01/19 | 73/08/31 |
| 00061 | STREAM | FLOW, | INST-CFS | 92 | 4300.53 | 6116976 | 2473.25 | .575104 | 257.854 | 20000.0 | 871.000 | 73/10/03 | 81/04/02 |
| 00070 | TURB | JKSN | JTU | 45 | 39.4222 | 3965.89 | 62.9753 | 1.59746 | 9.38780 | 330.000 | 3.00000 | 74/10/21 | 78/06/09 |
| 00076 | TURB | TRBIDMTR | HACH FTU | 34 | 48.6440 | 41650.9 | 204.105 | 4.19589 | 35.0037 | 1200.00 | 1.10000 | 78/05/21 | 81/04/02 |
| 00080 | COLOR | PT-CO | UNITS | 25 | 5.99999 | 11.3333 | 3.36650 | .561084 | .673300 | 12.0000 | 1.000000 | 65/06/27 | 70/12/01 |
| 00095 | CNDUCTVY | AT 25C | MICROMHO | 297 | 891.755 | 23875.3 | 151.906 | .170344 | 8.81445 | 1360.00 | 496.000 | 65/01/19 | 81/04/02 |
| 00300 | DO | | MG/L | 134 | 9.76259 | 3.66240 | 1.91376 | .196030 | .165324 | 14.8000 | 7.09999 | 74/04/01 | 81/04/02 |
| 00301 | DO | SATUR | PERCENT | 134 | 100.598 | 118.128 | 10.8687 | .108052 | .938909 | 137.000 | 82.9999 | 74/04/01 | 81/04/02 |
| 00310 | BOD | 5 DAY | MG/L | 14 | 1.66714 | .401103 | .633327 | .382181 | .169264 | 2.70000 | .899999 | 74/04/01 | 75/04/21 |
| 00400 | PH | | SU | 297 | 8.11540 | .135914 | .368665 | .045428 | .021392 | 8.80000 | 7.10000 | 65/01/19 | 81/04/02 |
| 00403 | LAB | PH | SU | 6 | 8.30000 | .024072 | .155152 | .018693 | .063341 | 8.50000 | 8.10000 | 80/11/05 | 81/04/02 |
| 00405 | CO2 | | MG/L | 69 | 2.04208 | 2.31540 | 1.52165 | .745166 | .183185 | 9.90000 | .500000 | 72/10/29 | 78/06/09 |
| 00410 | T ALK | CACO3 | MG/L | 228 | 172.118 | 426.242 | 20.6456 | .119958 | 1.36729 | 229.000 | 108.000 | 65/10/15 | 81/04/02 |
| 00440 | HCO3 ION | HCO3 | MG/L | 215 | 209.320 | 730.238 | 27.0229 | .129118 | 1.84295 | 279.000 | 106.000 | 65/01/19 | 78/06/09 |
| 00445 | CO3 ION | CO3 | MG/L | 207 | .570048 | 7.09094 | 2.66288 | 4.67133 | .185083 | 33.6000 | .000000 | 65/01/19 | 78/06/09 |
| 00572 | BIOMASS | PERPHYTN | G/SQ M | 11 | 9.42191 | 132.653 | 11.5175 | 1.22242 | 3.47265 | 32.2000 | .400000 | 75/04/21 | 79/10/18 |
| 00573 | BIOMASS | PERPHYTN | DW G/M2 | 11 | 11.4254 | 224.742 | 14.9914 | 1.31211 | 4.52008 | 46.7000 | .500000 | 75/04/21 | 79/10/18 |
| 00600 | TOTAL N | N | MG/L | 80 | .851180 | .104376 | .323073 | .379586 | .036181 | 2.00000 | .180000 | 74/04/01 | 81/04/02 |
| 00602 | DISS. | NITROGEN | MG/L N | 19 | .938737 | .069016 | .262710 | .281062 | .060270 | 1.30000 | .480000 | 79/09/14 | 81/04/02 |
| 00605 | ORG N | N | MG/L | 44 | .601588 | .078007 | .279297 | .464266 | .042106 | 1.40000 | .190000 | 76/04/01 | 81/04/02 |
| 00607 | ORG N | DISS-N | MG/L | 17 | .624706 | .036902 | .192098 | .307502 | .046591 | .960001 | .360000 | 79/10/18 | 81/04/02 |
| 00608 | NH3+NH4- | N DISS | MG/L | 17 | .035294 | .001001 | .031646 | .896637 | .007675 | .100000 | .000000 | 79/10/18 | 81/04/02 |
| 00610 | NH3+NH4- | N TOTAL | MG/L | 49 | .036122 | .001820 | .042662 | 1.18105 | .006095 | .190000 | .000000 | 74/04/01 | 81/04/02 |
| 00618 | NO3-N | DISS | MG/L | 14 | .190000 | .019831 | .140832 | .828360 | .037636 | .500000 | .010000 | 69/09/08 | 70/12/01 |
| 00623 | KJELDL N | DISS | MG/L | 42 | .469285 | .052227 | .228533 | .486982 | .035263 | 1.00000 | .050000 | 77/10/07 | 81/04/02 |
| 00624 | KJELDL N | SUSP | MG/L | 37 | .145675 | .025719 | .160373 | 1.10089 | .026365 | .810001 | .000000 | 78/02/06 | 81/04/02 |
| 00625 | TOT KJEL | N | MG/L | 80 | .563246 | .076260 | .276152 | .490287 | .030875 | 1.50000 | .070000 | 74/04/01 | 81/04/02 |
| 00630 | NO2&NO3 | N-TOTAL | MG/L | 86 | .292323 | .017172 | .131043 | .448280 | .014131 | .620001 | .000000 | 74/04/01 | 81/04/02 |
| 00631 | NO2&NO3 | N-DISS | MG/L | 64 | .257343 | .017359 | .131756 | .511903 | .016469 | .530000 | .000000 | 71/01/25 | 81/04/02 |
| 00650 | T PO4 | PO4 | MG/L | 3 | .110000 | .882100 | .045826 | .416600 | .026458 | .150000 | .060000 | 79/05/07 | 79/07/03 |
| 00660 | ORTHOPO4 | PO4 | MG/L | 46 | .036739 | .001591 | .039892 | 1.08581 | .005882 | .150000 | .000006 | 71/01/25 | 74/09/24 |
| 00665 | PHOS-TOT | | MG/L P | 86 | .081395 | .026666 | .163297 | 2.00623 | .017609 | 1.40000 | .000000 | 74/04/01 | 81/04/02 |
| 00666 | PHOS-DIS | | MG/L P | 43 | .013256 | .000161 | .012672 | .955947 | .001932 | .050000 | .000000 | 77/10/07 | 81/04/02 |

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION 01 MAR, 1981

GARY PARKER

06294700
46 08 50.0 107 28 00.0 2
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA

090291

/TYPA/AMBNT/STREAM

112HRD
0000 CLASS 00 CSN-HSP 0015704-0229320

INDEX 1021500 009490 36800 4430
MILES 1149.40 1502.00 279.00 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00671 | PHOS-DIS | ORTHO | MG/L P | 31 | .011935 | .000229 | .015140 | 1.26916 | .002721 | .050000 | .000000 | 72/04/14 | 74/09/24 |
| 00680 | T ORG C | C | MG/L | 42 | 6.64286 | 48.8992 | 6.99280 | 1.05268 | 1.07901 | 49.0000 | 3.00000 | 74/10/21 | 81/04/02 |
| 00681 | D ORG C | C | MG/L | 16 | 5.15000 | 2.70670 | 1.64521 | .319458 | .411302 | 8.20000 | 3.60000 | 77/10/07 | 81/03/04 |
| 00689 | S ORG C | C | MG/L | 13 | .807692 | .869101 | .932256 | 1.15422 | .258561 | 3.30000 | .200000 | 77/10/07 | 81/03/04 |
| 00900 | TOT HARD | CACO3 | MG/L | 249 | 309.445 | 2630.58 | 51.2892 | .165746 | 3.25032 | 430.000 | 169.000 | 65/01/19 | 81/04/02 |
| 00902 | NC HARD | CACO3 | MG/L | 249 | 137.968 | 1140.31 | 33.7685 | .244787 | 2.13999 | 220.000 | 50.0000 | 65/01/19 | 81/04/02 |
| 00915 | CALCIUM | CA,DISS | MG/L | 163 | 76.6257 | 134.221 | 11.5884 | .151234 | .907673 | 100.000 | 42.0000 | 65/01/19 | 81/04/02 |
| 00925 | MGNSIUM | MG,DISS | MG/L | 163 | 28.4785 | 35.9329 | 5.99440 | .210489 | .469518 | 47.0000 | 13.0000 | 65/01/19 | 81/04/02 |
| 00930 | SODIUM | NA,DISS | MG/L | 249 | 83.0036 | 276.786 | 16.6369 | .200436 | 1.05432 | 190.000 | 33.0000 | 65/01/19 | 81/04/02 |
| 00931 | SODIUM | ADSRTION | RATIO | 249 | 2.04694 | .081740 | .285902 | .139673 | .018118 | 2.70000 | .900000 | 65/01/19 | 81/04/02 |
| 00932 | PERCENT | SODIUM | % | 228 | 36.5789 | 6.07985 | 2.46573 | .067409 | .163297 | 42.0000 | 23.0000 | 65/10/15 | 81/04/02 |
| 00933 | NA+K | | MG/L | 9 | 93.6667 | 46.5078 | 6.74595 | .072021 | 2.24865 | 100.000 | 85.0000 | 72/06/12 | 80/02/18 |
| 00935 | PTSSIUM | K,DISS | MG/L | 160 | 3.82994 | .552940 | .743599 | .194154 | .058787 | 7.20000 | 1.40000 | 65/06/27 | 81/04/02 |
| 00940 | CHLORIDE | CL | MG/L | 160 | 11.0525 | 8.04572 | 2.83650 | .256640 | .224245 | 19.0000 | 3.50000 | 65/06/27 | 81/04/02 |
| 00945 | SULFATE | SO4-TOT | MG/L | 249 | 292.491 | 3603.29 | 60.0274 | .205224 | 3.80408 | 470.000 | 126.000 | 65/01/19 | 81/04/02 |
| 00950 | FLUORIDE | F,DISS | MG/L | 160 | .436245 | .012891 | .113539 | .260265 | .008976 | 1.00000 | .200000 | 65/06/27 | 81/04/02 |
| 00951 | FLUORIDE | F,TOTAL | MG/L | 1 | .900000 | | | | | .900000 | .900000 | 74/04/01 | 74/04/01 |
| 00955 | SILICA | DISOLVED | MG/L | 160 | 9.09741 | 6.15878 | 2.03931 | .224164 | .161221 | 21.0000 | 1.00000 | 65/06/27 | 81/04/02 |
| 01000 | ARSENIC | AS,DISS | UG/L | 27 | 1.51852 | .566963 | .752963 | .495853 | .144908 | 3.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01001 | ARSENIC | AS,SUSP | UG/L | 21 | .761905 | 1.09048 | 1.04426 | 1.37059 | .227876 | 4.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01002 | ARSENIC | AS,TOT | UG/L | 26 | 2.23077 | 1.38462 | 1.17670 | .527485 | .230769 | 6.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01005 | BARIUM | BA,DISS | UG/L | 15 | 52.6667 | 2763.81 | 52.5720 | .998202 | 13.5740 | 200.000 | .000000 | 77/10/07 | 81/03/04 |
| 01006 | BARIUM | BA,SUSP | UG/L | 15 | 114.667 | 39112.4 | 197.769 | 1.72472 | 51.0636 | 800.000 | .000000 | 77/10/07 | 81/03/04 |
| 01007 | BARIUM | BA,TOT | UG/L | 15 | 166.667 | 39523.8 | 198.806 | 1.19284 | 51.3315 | 800.000 | .000000 | 77/10/07 | 81/03/04 |
| 01020 | BORON | B,DISS | UG/L | 48 | 122.250 | 1249.92 | 35.3542 | .289196 | 5.10293 | 200.000 | 50.0000 | 65/06/27 | 74/03/05 |
| 01022 | BORON | B,TOT | UG/L | 1 | 460.000 | | | | | 460.000 | 460.000 | 74/04/01 | 74/04/01 |
| 01025 | CADMIUM | CD,DISS | UG/L | 26 | .615385 | .326154 | .571099 | .928036 | .112002 | 2.00000 | .000000 | 74/10/21 | 80/05/23 |
| 01026 | CADMIUM | CD,SUSP | UG/L | 21 | 5.80952 | 32.2619 | 5.67996 | .977697 | 1.23947 | 20.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01027 | CADMIUM | CD,TOT | UG/L | 27 | 5.29630 | 29.8319 | 5.46186 | 1.03126 | 1.05113 | 20.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01030 | CHROMIUM | CR,DISS | UG/L | 27 | 1.29630 | 10.7650 | 3.27948 | 2.52988 | .631136 | 10.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01031 | CHROMIUM | CR,SUSP | UG/L | 26 | 9.03846 | 269.038 | 16.3719 | 1.81136 | 3.21079 | 55.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01034 | CHROMIUM | CR,TOT | UG/L | 27 | 9.25926 | 276.353 | 16.6239 | 1.79530 | 3.19926 | 60.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01035 | COBALT | CO,DISS | UG/L | 27 | 1.00000 | 1.84615 | 1.35873 | 1.35873 | .261488 | 3.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01036 | COBALT | CO,SUSP | UG/L | 23 | 28.3478 | 707.419 | 26.5971 | .938250 | 5.54593 | 80.0000 | .000000 | 74/10/21 | 80/05/23 |
| 01037 | COBALT | CO,TOTAL | UG/L | 27 | 26.5185 | 684.183 | 26.1569 | .986164 | 5.03390 | 80.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01040 | COPPER | CU,DISS | UG/L | 27 | 1.48148 | 1.33619 | 1.15594 | .780257 | .222460 | 4.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01041 | COPPER | CU,SUSP | UG/L | 26 | 19.5384 | 663.639 | 25.7592 | 1.31839 | 5.05180 | 120.000 | 1.00000 | 74/10/21 | 81/03/04 |
| 01042 | COPPER | CU,TOT | UG/L | 28 | 20.2857 | 617.916 | 24.8579 | 1.22539 | 4.69770 | 120.000 | 3.00000 | 74/04/01 | 81/03/04 |
| 01044 | IRON | FE,SUSP | UG/L | 9 | 901.111 | 1076461 | 1037.53 | 1.15139 | 345.842 | 3300.00 | 130.000 | 78/07/18 | 81/03/04 |
| 01045 | IRON | FE,TOT | UG/L | 31 | 2717.42 | .832E+08 | 9132.22 | 3.35694 | 1639.40 | 51000.0 | .000000 | 68/01/01 | 81/03/04 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

05294700
GARY PARKER 46 08 30;0 107 28 00;0 2
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA
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/TYPA/AMONT/STREAM 112WRD
0000 CLASS 00 C&N-NSP 0015704-0229320

INDEX 1021500 009490 36010 4430
MILES 1149.40 1582.00 279.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN-DEV | COEF-VAR | STAND-ER | MAXIMUM | MINIMUM | BEG-DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01046 | IRON | FE,DISS | UG/L | 88 | 47.8295 | 3611.87 | 60.0988 | 1.25652 | 6.40655 | 370.000 | .000000 | 69/12/05 | 81/03/04 |
| 01049 | LEAD | PB,DISS | UG/L | 26 | 2.00000 | 2.00000 | 1.67332 | .836660 | .328165 | 6.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01050 | LEAD | PB,SUSP | UG/L | 25 | 54.2400 | 1965.61 | 44.3352 | .817389 | 8.86704 | 100.000 | .000000 | 74/10/21 | 81/03/04 |
| 01051 | LEAD | PB,TOT | UG/L | 28 | 58.1071 | 1961.80 | 44.2922 | .762251 | 9.37045 | 100.000 | 1.00000 | 74/04/01 | 81/03/04 |
| 01054 | MANGNESE | MN,SUSP | UG/L | 27 | 81.5926 | 44019.9 | 209.809 | 2.54029 | 40.3778 | 1100.00 | .000000 | 74/10/21 | 81/03/04 |
| 01055 | MANGNESE | MN | UG/L | 27 | 98.2222 | 43294.8 | 208.074 | 2.25623 | 40.0439 | 1100.00 | 20.0000 | 74/10/21 | 81/03/04 |
| 01056 | MANGNESE | MN,DISS | UG/L | 73 | 12.5616 | 499.083 | 22.3402 | 1.77844 | 2.61672 | 180.000 | .000000 | 71/01/25 | 81/03/04 |
| 01065 | NICKEL | NI,DISS | UG/L | 6 | 1.33333 | 1.46667 | 1.21106 | .908296 | .494413 | 3.00000 | .000000 | 79/10/18 | 81/03/04 |
| 01066 | NICKEL | NI,SUSP | UG/L | 6 | 4.33333 | 15.0667 | 3.88158 | .895750 | 1.58465 | 10.0000 | .000000 | 79/10/18 | 81/03/04 |
| 01067 | NICKEL | NI,TOTAL | UG/L | 6 | 5.16667 | 16.5667 | 4.07022 | .787784 | 1.66166 | 11.0000 | .000000 | 79/10/18 | 81/03/04 |
| 01075 | SILVER | AG,DISS | UG/L | 15 | .000000 | .000000 | .000000 | | .000000 | .000000 | .000000 | 77/10/07 | 81/03/04 |
| 01076 | SILVER | AG,SUSP | UG/L | 15 | .866667 | 6.55238 | 2.59976 | 2.95359 | .660928 | 10.0000 | .000000 | 77/10/07 | 81/03/04 |
| 01077 | SILVER | AG,TOT | UG/L | 19 | .694210 | 5.22807 | 2.28650 | 3.34180 | .524558 | 10.0000 | .000000 | 77/10/07 | 81/03/04 |
| 01090 | ZINC | ZN,DISS | UG/L | 27 | 8.29630 | 39.0627 | 6.25001 | .753360 | 1.20281 | 20.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01091 | ZINC | ZN,SUSP | UG/L | 24 | 31.2500 | 1637.50 | 40.4660 | 1.29491 | 8.26009 | 200.000 | .000000 | 74/10/21 | 80/05/23 |
| 01092 | ZINC | ZN,TOT | UG/L | 28 | 40.0000 | 1696.30 | 41.1861 | 1.02965 | 7.78144 | 220.000 | .000000 | 74/04/01 | 81/03/04 |
| 01105 | ALUMINUM | AL,TOT | UG/L | 1 | 800.000 | | | | | 800.000 | 800.000 | 74/04/01 | 74/04/01 |
| 01145 | SELENIUM | SE,DISS | UG/L | 27 | 9.03704 | .729367 | .854018 | .419245 | .164356 | 3.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01146 | SELENIUM | SE,SUSP | UG/L | 27 | .481481 | .981563 | .975483 | 2.02600 | .187732 | 4.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01147 | SELENIUM | SE,TOT | UG/L | 28 | 2.42857 | .476195 | .690069 | .284146 | .130411 | 4.00000 | 1.00000 | 74/04/01 | 81/03/04 |
| 31501 | TOT COLI | MFIRENDO | /100ML | 3 | 80.6665 | 432.340 | 20.5809 | .231777 | 11.8651 | 110.000 | 58.9999 | 74/10/21 | 76/05/15 |
| 31616 | FEC COLI | MFM-FCBR | /100ML | 24 | 60.4164 | 9445.94 | 97.1902 | 1.60867 | 19.8389 | 409.999 | .999999 | 74/10/21 | 76/09/20 |
| 31625 | FEC COLI | M-FCAGAR | /100 ML | 53 | 84.6032 | 38134.8 | 195.281 | 2.30820 | 26.8239 | 1300.00 | .999999 | 76/11/15 | 81/04/02 |
| 31673 | FECSTREP | MFMFAGAR | /100ML | 63 | 442.013 | 1660289 | 1288.64 | 2.90633 | 161.649 | 8799.98 | 8.00000 | 74/10/21 | 81/04/02 |
| 31679 | FECSTREP | MF M-ENT | /100ML | 23 | 162.521 | 76164.0 | 275.978 | 1.69810 | 57.5454 | 1100.00 | 6.99999 | 74/10/21 | 76/09/20 |
| 32226 | CHL B | PERIPHTH | MG/M2 | 5 | .706000 | .644681 | .802920 | 1.13728 | .359077 | 2.03000 | .100000 | 76/04/21 | 76/07/19 |
| 32228 | CHL A | PERIPHTH | MG/M2 | 5 | 3.97800 | 12.7039 | 3.56426 | .895993 | 1.59398 | 7.99999 | .600000 | 76/04/21 | 76/07/19 |
| 60050 | ALGAE | TOTAL | /ML | 55 | 1596.51 | 7229188 | 2688.71 | 1.68412 | 362.546 | 19000.0 | 58.0000 | 74/12/16 | 81/04/02 |
| 70299 | RES-SUSP | AT 180 C | MG/L | 7 | 89.4286 | 2746.96 | 52.4114 | .586070 | 19.8096 | 154.000 | 14.0000 | 74/04/01 | 74/09/24 |
| 70300 | RESIDUE | DISS-180 C | MG/L | 203 | 644.078 | 12387.3 | 111.028 | .172383 | 7.79266 | 918.000 | 338.000 | 65/01/19 | 81/04/02 |
| 70301 | DISS SOL | SUM | MG/L | 145 | 604.434 | 9167.89 | 95.7491 | .158411 | 7.95153 | 898.000 | 366.000 | 69/01/04 | 81/04/02 |
| 70302 | DISS SOL | TONS/DAY | | 249 | 7031.84 | .210E+08 | 4592.81 | .653154 | 291.062 | 35620.0 | 1220.00 | 65/01/19 | 81/04/02 |
| 70303 | DISS SOL | TONS PER | ACRE-FT | 249 | .855576 | .022997 | .151649 | .177247 | .009610 | 1.25000 | .460000 | 65/01/19 | 81/04/02 |
| 70311 | SUSP SED | PARTSIZE | %<.062MM | 59 | 19.1553 | 335.090 | 18.3065 | .230677 | 2.38317 | 98.9999 | 3.00000 | 74/10/21 | 81/03/04 |
| 70317 | SUSP SED | PARTSIZE | %<.002MM | 3 | 35.3333 | 214.334 | 14.6401 | .414344 | 8.45249 | 51.0000 | 22.0000 | 65/10/06 | 66/08/31 |
| 70338 | SUSP SED | PARTSIZE | %<.004MM | 18 | 39.6666 | 341.180 | 18.4711 | .465658 | 4.35367 | 68.9999 | 18.0000 | 65/04/05 | 78/05/21 |
| 70339 | SUSP SED | PARTSIZE | %<.008MM | 3 | 51.6667 | 660.336 | 25.6970 | .497361 | 14.8362 | 79.0000 | 28.0000 | 65/10/06 | 66/08/31 |
| 70340 | SUSP SED | PARTSIZE | %<.016MM | 18 | 58.6666 | 472.122 | 21.7284 | .370370 | 5.12142 | 90.9999 | 19.0000 | 65/04/05 | 78/05/21 |
| 70341 | SUSP SED | PARTSIZE | %<.031MM | 3 | 71.3333 | 614.336 | 24.7858 | .347464 | 14.3101 | 89.0000 | 43.0000 | 65/10/06 | 66/08/31 |
| 70342 | SUSP SED | PARTSIZE | %<.062MM | 30 | 79.5999 | 182.720 | 13.5174 | .169817 | 2.46793 | 96.0000 | 48.9999 | 65/04/05 | 78/05/21 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

GARY PARKER

06294700
46 08 50.0 107 28 00.0 2
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA

090291

/TYPA/AMOUNT/STREAM

112WRD
0000 CLASS 00 CSN-MSP 0015704-0229320

INDEX 1021500 009490 16810 4430
MILES 1149.40 1582.00 279.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70343 | SUSP SED | PARTSIZE | %<.125MM | 18 | 92.4444 | 64.4963 | 8.03096 | .086873 | 1.89291 | 100.000 | 71.0000 | 65/04/05 | 78/05/21 |
| 70344 | SUSP SED | PARTSIZE | %<.250MM | 16 | 99.0624 | 3.26250 | 1.80624 | .018233 | .451560 | 100.000 | 93.0000 | 65/04/05 | 78/05/21 |
| 70345 | SUSP SED | PARTSIZE | %<.500MM | 6 | 100.000 | .000000 | .000000 | .000000 | .000000 | 100.000 | 100.000 | 65/05/04 | 67/07/06 |
| 70507 | PHOS-T | ORTHO | MG/L P | 12 | .013333 | .000079 | .008876 | .665722 | .002562 | .030000 | .000000 | 71/04/13 | 72/03/06 |
| 70950 | BIOMASS- | CHLRATIO | PERIUNIT | 5 | 641.880 | 308271 | 555.221 | .864992 | 248.302 | 1418.00 | 64.4000 | 76/10/18 | 79/10/18 |
| 70955 | CHLRPHYL | A-PERIPH | CHSPUG/D | 1 | .922001 | | | | | .922001 | .922001 | 76/10/18 | 76/10/18 |
| 70956 | CHLRPHYL | B-PERIPH | CHSPUG/L | 1 | .388000 | | | | | .388000 | .388000 | 76/10/18 | 76/10/18 |
| 70957 | CHLRPHYL | A-PERIPH | CHFLUG/L | 7 | 3.09314 | 33.3999 | 5.77927 | 1.86841 | 2.18436 | 16.0000 | .000000 | 77/09/16 | 79/10/18 |
| 70958 | CHLRPHYL | B-PERIPH | CHFLUG/L | 7 | .175143 | .015274 | .214361 | 1.56649 | .103698 | .580001 | .000000 | 77/09/16 | 79/10/18 |
| 71845 | AMMONIA | TOT-NH4 | MG/L | 20 | .028000 | .000975 | .031221 | 1.11503 | .006981 | .130000 | .000000 | 79/05/07 | 81/01/07 |
| 71846 | AMMONIA | DISS-NH4 | MG/L | 38 | .907102 | .652558 | .807811 | .890540 | .131044 | 2.00000 | .000000 | 65/01/19 | 81/04/02 |
| 71851 | NITRATE | DISS-NO3 | MG/L | 35 | .865918 | .327030 | .571866 | .660573 | .096663 | 2.00000 | .000080 | 65/06/27 | 78/12/01 |
| 71856 | NITRITE | DISS-NO2 | MG/L | 10 | 4.27778 | 7.05950 | 2.80348 | .655359 | .660787 | 9.00000 | 1.00000 | 65/01/19 | 65/09/30 |
| 71870 | BROMIDE | BR | MG/L | 21 | .354762 | .000916 | .030269 | .085323 | .006605 | .400000 | .300000 | 65/01/19 | 65/09/30 |
| 71885 | IRON | FE | UG/L | 6 | 81.6667 | 28376.7 | 168.747 | 1.74792 | 68.8762 | 360.000 | .499E-06 | 65/06/27 | 67/09/06 |
| 71886 | TOTAL P | AS PO4 | MG/L | 23 | .123043 | .006377 | .079854 | .648994 | .016651 | .250000 | .000000 | 79/05/07 | 81/04/02 |
| 71887 | TOTAL N | AS NO3 | MG/L | 80 | 3.75123 | 1.99273 | 1.41164 | .376314 | .157826 | 8.70000 | .800001 | 74/04/01 | 81/04/02 |
| 71890 | MERCURY | HG,DISS | UG/L | 27 | .011111 | .001795 | .042366 | 3.81293 | .008153 | .100000 | .000000 | 74/10/21 | 81/03/04 |
| 71895 | MERCURY | HG,SUSP | UG/L | 26 | .042308 | .002538 | .050383 | 1.19087 | .009881 | .100000 | .000000 | 74/10/21 | 81/03/04 |
| 71900 | MERCURY | HG,TOTAL | UG/L | 28 | .050000 | .004815 | .069389 | 1.38778 | .013113 | .300000 | .000000 | 74/04/01 | 81/03/04 |
| 80154 | SUSP SED | CONC | MG/L | 92 | 399.660 | 837544 | 915.175 | 2.33011 | 95.4135 | 6460.00 | 8.00000 | 65/04/05 | 81/03/04 |
| 80155 | SUSP SED | DISCHARG | TONS/DAY | 92 | 10153.6 | .877E+09 | 29625.4 | 2.91773 | 3088.66 | 166000 | 24.0000 | 65/04/05 | 81/03/04 |
| 82068 | POTAS-40 | K-40,D18 | PC/LITER | 6 | 2.80000 | .212002 | .460437 | .164442 | .187973 | 3.70000 | 2.40000 | 80/11/05 | 81/04/02 |

STATION NUMBER 06294000

DURATION TABLE OF DAILY DISCHARGE FOR YEAR ENDING SEPTEMBER 30

LITTLE BIGHORN RIVER NEAR HARDIN, MT.

| CLASS | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| YEAR | NUMBER OF DAYS IN CLASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | CFS-DAYS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | | | 1 | 3 | 5 | 6 | 10 | 8 | 9 | 8 | 12 | 7 | 20 | 16 | 27 | 62 | 62 | 42 | 33 | 21 | 7 | 5 | 9 | 2 | | | | | | | | | | | 65975.0 |
| 1967 | | | | | | | | | | | | 2 | 17 | 38 | 45 | 56 | 68 | 21 | 13 | 12 | 8 | 6 | 6 | 5 | 20 | 6 | 3 | 5 | 1 | 2 | 1 | | | | | 118203.0 |
| 1968 | | | | | | | | | | | | 1 | | 3 | 16 | 50 | 75 | 66 | 57 | 14 | 12 | 8 | 9 | 18 | 12 | 4 | 4 | 10 | 4 | 1 | 2 | | | | | 155426.0 |
| 1969 | | | | | | | | | | | | | 5 | | 15 | 43 | 102 | 62 | 13 | 16 | 16 | 24 | 32 | 20 | 6 | 4 | 1 | 5 | 1 | | | | | | | 133331.0 |
| 1970 | | | | | | | | | | | | | | | 5 | 39 | 92 | 69 | 32 | 20 | 20 | 14 | 9 | 10 | 11 | 10 | 13 | 28 | 3 | | | | | | | 120643.0 |
| 1971 | | | | | | | | | | | | | | | 18 | 35 | 73 | 78 | 16 | 9 | 28 | 46 | 14 | 9 | 25 | 10 | 4 | 1 | | | | | | | | 146457.0 |
| 1972 | | | | | | | | | | | 2 | 1 | 3 | 9 | 23 | 44 | 75 | 51 | 30 | 41 | 15 | 11 | 21 | 11 | 12 | 10 | 5 | 2 | | | | | | | | 131550.0 |
| 1973 | | | | | | | | | | | | | | | 21 | 56 | 93 | 61 | 33 | 20 | 12 | 6 | 8 | 5 | 8 | 17 | 18 | 6 | 1 | | | | | | | 150117.0 |
| 1974 | | | | | | | | | | 1 | 8 | 7 | 8 | 17 | 31 | 60 | 93 | 40 | 10 | 23 | 19 | 12 | 5 | 11 | 12 | 7 | 1 | | | | | | | | | 126863.0 |
| 1975 | | | | | | | | | 1 | 2 | 2 | | 1 | 3 | 10 | 64 | 71 | 25 | 19 | 22 | 20 | 14 | 25 | 17 | 16 | 15 | 16 | 19 | 2 | 1 | | | | | | 246674.0 |
| 1976 | | | | | | | | | | | 2 | 5 | 11 | 26 | 15 | 30 | 69 | 77 | 36 | 24 | 23 | 12 | 21 | 12 | 3 | | | | | | | | | | | 126496.0 |
| 1977 | | | | | | | | | | | | 1 | 7 | 41 | 43 | 72 | 65 | 29 | 22 | 11 | 25 | 24 | 14 | 4 | 3 | 2 | 2 | | | | | | | | | 116010.0 |
| 1978 | | | | | | | | | | | | | | 37 | 75 | 69 | 29 | 29 | 18 | 11 | 10 | 7 | 8 | 9 | 13 | 19 | 18 | 7 | 1 | 1 | 1 | 1 | 1 | 1 | 227546.0 |
| 1979 | | | | | | | | | | | | | 12 | 51 | 21 | 26 | 32 | 74 | 11 | 28 | 27 | 32 | 27 | 16 | 4 | 2 | 2 | | | | | | | | | 146109.0 |

| CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.00 | 0 | 5113 | 100.0 | 9 | 41.00 | 17 | 5062 | 99.0 | 18 | 310.0 | 269 | 1653 | 32.3 | 27 | 2300 | 36 | 51 | .9 |
| 1 | 7.40 | 1 | 5113 | 100.0 | 10 | 54.00 | 23 | 5045 | 98.7 | 19 | 390.0 | 237 | 1384 | 27.1 | 28 | 2600 | 6 | 15 | .2 |
| 2 | 9.20 | 1 | 5112 | 100.0 | 11 | 67.00 | 58 | 5022 | 98.2 | 20 | 490.0 | 243 | 1147 | 22.4 | 29 | 3600 | 5 | 9 | .1 |
| 3 | 12.00 | 5 | 5109 | 99.9 | 12 | 84.00 | 105 | 4964 | 97.1 | 21 | 610.0 | 209 | 904 | 17.7 | 30 | 4400 | 1 | 4 | |
| 4 | 14.00 | 6 | 5104 | 99.8 | 13 | 100.00 | 375 | 4859 | 95.0 | 22 | 760.0 | 180 | 695 | 13.6 | 31 | 5500 | | 3 | |
| 5 | 18.00 | 10 | 5098 | 99.7 | 14 | 130.00 | 570 | 4484 | 87.7 | 23 | 950.0 | 163 | 515 | 10.1 | 32 | 6900 | 1 | 3 | |
| 6 | 22.00 | 8 | 5088 | 99.5 | 15 | 160.00 | 961 | 3914 | 76.5 | 24 | 1200.0 | 112 | 352 | 6.9 | 33 | 8600 | 1 | 2 | |
| 7 | 28.00 | 9 | 5080 | 99.4 | 16 | 200.00 | 799 | 2953 | 57.8 | 25 | 1500.0 | 91 | 240 | 4.7 | 34 | 11000 | 1 | 1 | |
| 8 | 35.00 | 9 | 5071 | 99.2 | 17 | 250.00 | 501 | 2154 | 42.1 | 26 | 1800.0 | 26 | 147 | 2.9 | | | | | |

STATION NUMBER 06207000

DURATION TABLE OF DAILY DISCHARGE FOR YEAR ENDING SEPTEMBER 30

BIGHORN RIVER NEAR ST. XAVIER, MT.

| CLASS | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| YEAR | NUMBER OF DAYS IN CLASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | CFS-DAYS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | | | 1 | 8 | 1 | 2 | 17 | 9 | 5 | 10 | 38 | 1 | 7 | 21 | 33 | 73 | 21 | 18 | 6 | 6 | 29 | 26 | 5 | 28 | | | | | | | | | | | | 571123.0 |
| 1967 | | 1 | 1 | | | | | 1 | | | 1 | | 1 | 3 | 1 | 9 | 19 | 66 | 26 | 33 | 66 | 26 | 30 | 11 | 2 | 8 | 8 | 2 | 1 | 4 | | 4 | 12 | 12 | | 1514280.0 |
| 1968 | | | | | | | | | | 1 | | | | | 1 | | 2 | 5 | 21 | 16 | 34 | 35 | 16 | 36 | 52 | 29 | 5 | 4 | 1 | 8 | 2 | | | | | 1542285.0 |
| 1969 | | | | | | | | | | | | | | | | | 22 | 32 | 10 | 4 | 17 | 28 | 33 | 22 | 33 | 12 | | | 1 | 1 | | | | | | 1273400.0 |
| 1970 | | | | | | | | | | | | 31 | 1 | | 1 | 2 | | 28 | 24 | 40 | 14 | 47 | 23 | 30 | 3 | 1 | 6 | 3 | 6 | 1 | 2 | 3 | | | | 1229917.0 |
| 1971 | | | | | | | | | | | | | | 1 | 1 | | | 1 | 2 | 10 | 70 | 36 | 68 | 50 | 43 | 29 | 23 | 31 | | | | | | | | 1645787.0 |
| 1972 | | | | | | | | | | | | | | | | | | 3 | 1 | | 17 | 62 | 84 | 44 | 76 | 69 | 10 | | | | | | | | | 1683140.0 |
| 1973 | | | | | | | | | | | | | | | | | 5 | 26 | 2 | 17 | 53 | 17 | 95 | 73 | 40 | 28 | 9 | | | | | | | | | 1608720.0 |
| 1974 | | | | | | | | | | | | | | 1 | | | 1 | 8 | 1 | 7 | 101 | 28 | 21 | 63 | 88 | 14 | 14 | 15 | 3 | 3 | | | | | | 1684419.0 |
| 1975 | | | | | | | | | | | | | | | | | 2 | | | 4 | 12 | 67 | 115 | 56 | 30 | 25 | 25 | 30 | | | | | | | | | 1684100.0 |
| 1976 | | | | | | | | | | | | | | | | | 2 | 1 | | 4 | 69 | 37 | 33 | 111 | 76 | 43 | | | | | | | | | | 1518720.0 |
| 1977 | | | | | | | | | | | | 1 | | 1 | | 2 | 8 | 86 | 67 | 49 | 45 | 9 | 81 | 26 | | | | | | | | | | | | | 952483.0 |
| 1978 | | | | | | | | | | | 1 | | | 19 | 4 | 26 | 16 | 9 | 23 | 39 | 36 | 36 | 42 | 20 | 1 | 72 | 42 | 9 | 2 | 20 | | | | | | | 1454690.0 |
| 1979 | | | | | | | | | | | | 2 | | 1 | | | | 2 | | 34 | 60 | 37 | 162 | 78 | 9 | | | | | | | | | | | | 1269380.0 |

| CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.00 | 0 | 5113 | 100.0 | 9 | 410.00 | 11 | 5067 | 99.1 | 18 | 1800.0 | 213 | 6402 | 86.1 | 27 | 7900 | 94 | 180 | 3.5 |
| 1 | 112.00 | 1 | 5113 | 100.0 | 10 | 490.00 | 71 | 5056 | 98.9 | 19 | 2100.0 | 251 | 4189 | 81.9 | 28 | 9300 | 14 | 86 | 1.6 |
| 2 | 130.00 | 2 | 5112 | 100.0 | 11 | 580.00 | 5 | 4985 | 97.5 | 20 | 2500.0 | 602 | 3938 | 77.0 | 29 | 11000 | 17 | 72 | 1.4 |
| 3 | 160.00 | 8 | 5110 | 99.9 | 12 | 680.00 | 9 | 4980 | 97.4 | 21 | 3000.0 | 530 | 3336 | 65.2 | 30 | 13000 | 4 | 55 | .6 |
| 4 | 180.00 | 1 | 5102 | 99.8 | 13 | 800.00 | 47 | 4971 | 97.2 | 22 | 3500.0 | 1108 | 2804 | 54.8 | 31 | 15000 | 7 | 31 | .6 |
| 5 | 220.00 | 2 | 5101 | 99.8 | 14 | 940.00 | 42 | 4924 | 96.3 | 23 | 4100.0 | 645 | 1696 | 33.2 | 32 | 18000 | 12 | 24 | .4 |
| 6 | 250.00 | 17 | 5099 | 99.7 | 15 | 1100.00 | 110 | 4882 | 95.5 | 24 | 4800.0 | 460 | 1051 | 20.6 | 33 | 21000 | 12 | 12 | .2 |
| 7 | 300.00 | 10 | 5082 | 99.4 | 16 | 1300.00 | 98 | 4772 | 93.3 | 25 | 5700.0 | 270 | 591 | 11.6 | 34 | 25000 | | | |
| 8 | 350.00 | 5 | 5072 | 99.2 | 17 | 1500.00 | 272 | 4674 | 91.4 | 26 | 6700.0 | 111 | 321 | 6.3 | | | | | |

STATION NUMBER 06294700

DURATION TABLE OF DAILY DISCHARGE FOR YEAR ENDING SEPTEMBER 30

YELLOWSTONE RIVER AT BILLINGS, MT.

| CLASS | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| YEAR | NUMBER OF DAYS IN CLASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | CFS_DAYS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | | | 1 | 1 | 12 | 25 | 37 | 69 | 47 | 21 | 20 | 14 | 7 | 12 | 1 | 8 | 18 | 21 | 17 | 4 | 29 | 1 | | | | | | | | | | | | | | 625062.0 |
| 1967 | | 1 | 1 | | | 2 | | 1 | 2 | | | 11 | 20 | 18 | 85 | 9 | 22 | 51 | 30 | 29 | 9 | 4 | 14 | 6 | 4 | 5 | 2 | 7 | 1 | 3 | 1 | 1 | 11 | 4 | 9 | 2 | 1604867.0 |
| 1968 | | | | | | | | 1 | | | | | 4 | 7 | 16 | 22 | 18 | 26 | 33 | 87 | 41 | 38 | 36 | 18 | 1 | 3 | 5 | 1 | 2 | 4 | 1 | 1 | 2 | | | | 1693650.0 |
| 1969 | | | | | | | | | | | | | | 8 | 16 | 21 | 16 | 60 | 73 | 88 | 23 | 27 | 5 | 16 | 3 | | 5 | 1 | | | 1 | | | | | | 1452670.0 |
| 1970 | | | | | | | | | 6 | 1 | 8 | 7 | 5 | 15 | 16 | 15 | 21 | 40 | 34 | 88 | 26 | 14 | 28 | 7 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | | | | | | 1427170.0 |
| 1971 | | | | | | | | | | 1 | | 1 | | 2 | | 9 | 48 | 41 | 39 | 26 | 46 | 21 | 47 | 22 | 18 | 16 | 6 | 1 | 1 | | | | | | | | 1832150.0 |
| 1972 | | | | | | | | | | | | | | | | 3 | 6 | 55 | 21 | 67 | 32 | 45 | 49 | 56 | 14 | 6 | | | | | | | | | | | 1848970.0 |
| 1973 | | | | | | | | | | | 3 | 11 | 8 | 2 | 3 | 13 | 6 | 41 | 43 | 80 | 45 | 42 | 31 | 13 | 15 | 9 | | | | | | | | | | | 1603210.0 |
| 1974 | | | | | | | | 1 | | | | | 1 | 5 | 6 | 12 | 36 | 48 | 24 | 16 | 68 | 46 | 24 | 33 | 27 | 12 | 6 | | | | | | | | | | | 1758747.0 |
| 1975 | | | | | | | | | | | | | | | | 1 | 10 | 30 | 38 | 76 | 55 | 41 | 11 | 8 | 38 | 33 | 20 | 2 | | | | | | | | | 1976610.0 |
| 1976 | | | | | | | | | | | 1 | 1 | | 1 | 17 | 32 | 24 | 32 | 14 | 38 | 86 | 61 | 43 | 12 | 4 | | | | | | | | | | | | 1690620.0 |
| 1977 | | | | | | | 1 | | | 1 | | | 7 | 31 | 66 | 18 | 44 | 39 | 21 | 41 | 63 | 16 | 14 | | | | | | | | | | | | | | 1074008.0 |
| 1978 | | | | | 2 | | | 2 | 2 | 13 | 8 | 4 | 22 | 14 | 5 | 7 | 28 | 26 | 21 | 34 | 25 | 20 | 12 | 27 | 8 | 10 | 20 | 33 | 19 | | | | | 1 | 2 | | 1818187.0 |
| 1979 | | | | | | | | | | 3 | | | | | 1 | 25 | 10 | 11 | 27 | 61 | 59 | 113 | 37 | 10 | 2 | 4 | 2 | | | | | | | | | | 1507320.0 |

| CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.00 | 0 | 5213 | 100.0 | 9 | 1100.00 | 31 | 4883 | 95.5 | 18 | 3400.0 | 601 | 3203 | 62.6 | 27 | 11000 | 29 | 83 | 1.6 |
| 1 | 400.00 | 1 | 5213 | 100.0 | 10 | 1200.00 | 47 | 4852 | 94.9 | 19 | 3800.0 | 726 | 2702 | 52.8 | 28 | 12000 | 10 | 54 | 1.0 |
| 2 | 450.00 | 2 | 5212 | 100.0 | 11 | 1400.00 | 81 | 4805 | 94.0 | 20 | 4400.0 | 611 | 1976 | 38.6 | 29 | 14000 | 6 | 44 | .9 |
| 3 | 510.00 | 1 | 5210 | 99.9 | 12 | 1600.00 | 91 | 4722 | 92.4 | 21 | 5000.0 | 413 | 1365 | 26.7 | 30 | 15000 | 6 | 38 | .7 |
| 4 | 580.00 | 14 | 5209 | 99.9 | 13 | 1800.00 | 229 | 4631 | 90.6 | 22 | 5600.0 | 314 | 952 | 18.6 | 31 | 17000 | 12 | 32 | .6 |
| 5 | 660.00 | 28 | 5195 | 99.6 | 14 | 2100.00 | 136 | 4402 | 86.1 | 23 | 6400.0 | 199 | 638 | 12.5 | 32 | 20000 | 6 | 20 | .3 |
| 6 | 750.00 | 40 | 5067 | 99.1 | 15 | 2300.00 | 240 | 4266 | 83.4 | 24 | 7200.0 | 148 | 439 | 8.6 | 33 | 22000 | 10 | 14 | .2 |
| 7 | 850.00 | 73 | 5027 | 98.3 | 16 | 2600.00 | 330 | 4026 | 78.7 | 25 | 8200.0 | 125 | 291 | 5.7 | 34 | 25000 | 4 | 4 | |
| 8 | 960.00 | 71 | 4954 | 96.9 | 17 | 3000.00 | 491 | 3696 | 72.3 | 26 | 9300.0 | 83 | 166 | 3.2 | | | | | |

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

STATION NUMBER 06216000

DURATION TABLE OF DAILY DISCHARGE FOR YEAR ENDING SEPTEMBER 30

PRYOR CREEK AT PRYOR, MT.

| CLASS | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| YEAR | NUMBER OF DAYS IN CLASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | CFS_DAYS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1968 | | | 11 | 14 | 5 | 6 | 20 | 27 | 49 | 103 | 78 | 19 | 18 | 10 | 2 | 1 | 2 | | | 1 | | | | | | | | | | | | | | | | 8674.1 |
| 1969 | | | | | 1 | 3 | 21 | 33 | 52 | 81 | 121 | 29 | 2 | 4 | 1 | 1 | 5 | 1 | 1 | 1 | 1 | | 1 | 1 | | 1 | | 2 | | | | | | | | | 10627.0 |
| 1970 | | | | | | | | | 12 | 101 | 101 | 49 | 12 | 7 | 11 | 7 | 4 | 6 | 7 | 4 | 6 | 9 | 4 | 4 | 2 | 2 | 1 | | | | | | | | | | 16547.0 |
| 1971 | | | | | | | | 1 | 11 | 16 | 22 | 18 | 31 | 76 | 124 | 21 | 8 | 9 | 6 | | | | 1 | | 1 | | | | | | | | | | | | 14129.0 |
| 1972 | | | | | | | | 2 | 23 | 25 | 42 | 60 | 144 | 43 | 14 | 3 | 3 | 5 | 2 | | | | | | | | | | | | | | | | | | 12996.0 |
| 1973 | | | | | | | | | 22 | 23 | 71 | 69 | 14 | 17 | 7 | 9 | 7 | 4 | 6 | 10 | 6 | | | | | | | | | | | | | | | | 15369.0 |
| 1974 | | | | | | | | | | 2 | 16 | 26 | 103 | 64 | 18 | 23 | 12 | 7 | 6 | 5 | 2 | 1 | | | | | | | | | | | | | | | 18603.0 |
| 1975 | | | | | | | | | | | 1 | 10 | 101 | 128 | 44 | 10 | 10 | 4 | 10 | 12 | 9 | 22 | 3 | 1 | | | | | | | | | | | | | 24217.0 |
| 1976 | | | | | | | | | | | | 2 | 12 | 40 | 44 | 67 | 122 | 58 | 12 | 2 | 5 | 1 | 1 | | | | | | | | | | | | | | 20135.0 |
| 1977 | | | | | 4 | 1 | 8 | 17 | 18 | 5 | 22 | 33 | 133 | 80 | 12 | 16 | 10 | 3 | 1 | | | | | | | | | | | | | | | | | | 13535.0 |
| 1978 | | | | | | | | | | 1 | 9 | 11 | 16 | 43 | 16 | 8 | 24 | 16 | 8 | 7 | 9 | 7 | 1 | 5 | 2 | 1 | 2 | 1 | 1 | 1 | | 1 | | | 2 | | 21882.0 |
| 1979 | | | | | | | | | 21 | 5 | 17 | 50 | 14 | 30 | 123 | 85 | 12 | 5 | 1 | | | 1 | 1 | | | | | | | | | | | | | | 17058.0 |

| CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT | CLASS | CFS | TOTAL | ACCUM | PERCT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.00 | 0 | 4383 | 100.0 | 9 | 25.00 | 537 | 3723 | 84.9 | 18 | 100.0 | 42 | 178 | 4.1 | 27 | 410 | 1 | 4 | |
| 1 | 2.50 | 11 | 4383 | 100.0 | 10 | 30.00 | 607 | 3186 | 72.7 | 19 | 120.0 | 42 | 136 | 3.1 | 28 | 490 | | 3 | |
| 2 | 5.00 | 14 | 4372 | 99.7 | 11 | 35.00 | 587 | 2499 | 57.0 | 20 | 140.0 | 32 | 94 | 2.1 | 29 | 560 | | 3 | |
| 3 | 10.00 | 10 | 4358 | 99.4 | 12 | 40.00 | 656 | 1912 | 43.6 | 21 | 160.0 | 33 | 62 | 1.4 | 30 | 650 | 1 | 3 | |
| 4 | 12.00 | 12 | 4348 | 99.2 | 13 | 47.00 | 408 | 1256 | 28.7 | 22 | 180.0 | 11 | 29 | 0.7 | 31 | 760 | | 2 | |
| 5 | 14.00 | 50 | 4336 | 98.9 | 14 | 55.00 | 318 | 708 | 16.0 | 23 | 220.0 | 4 | 18 | 0.4 | 32 | 880 | | 2 | |
| 6 | 16.00 | 90 | 4286 | 97.8 | 15 | 64.00 | 161 | 450 | 10.3 | 24 | 260.0 | 5 | 14 | 0.3 | 33 | 1000 | | 2 | |
| 7 | 19.00 | 191 | 4196 | 95.7 | 16 | 75.00 | 75 | 289 | 6.6 | 25 | 300.0 | 2 | 9 | 0.2 | 34 | 1200 | 2 | 2 | |
| 8 | 22.00 | 282 | 4005 | 91.4 | 17 | 87.00 | 15 | 214 | 4.9 | 26 | 350.0 | 1 | 7 | 0.2 | | | | | |

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

STORET RETRIEVAL DATE 81/07/16 • INVENT - VERSION OF MAR, 1981

GARY PARKER

06294000
45 44 08.0 107 33 27.0 2
LITTLE BIGHORN RIVER NEAR HARDIN
30001 MONTANA

090291

/TYPA/AMUNT/STREAM

112WRD
0000--CLASS 00 CSN-RSP 0031377-0229295

INDEX 1021500 009490 36810 4430 5510
MILES 1149.40 1582.00 279.40 040.00 000.60

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN-DEV | COEF-VAR | STAND-ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00010 | WATER | TEMP | CENT | 131 | 9.68318 | 64.1163 | 8.00727 | .826926 | .699598 | 25.0000 | .000000 | 69/10/09 | 79/11/07 |
| 00020 | AIR | TEMP | CENT | 1 | 22.0000 | | | | | 22.0000 | 22.0000 | 74/05/03 | 74/05/03 |
| 00027 | COLLECT | AGENCY | CODE | 3 | 1028.00 | .500E+00 | .000000 | | .000000 | 1028.00 | 1028.00 | 73/12/03 | 74/06/04 |
| 00028 | ANALYZE | AGENCY | CODE | 17 | 80020.0 | .409E+04 | .000000 | | .000000 | 80020.0 | 80020.0 | 78/07/20 | 79/11/07 |
| 00060 | STREAM | FLOW | CFS | 160 | 523.635 | 252497 | 502.491 | .959621 | 39.7254 | 2160.00 | 81.9999 | 69/10/09 | 74/09/30 |
| 00061 | STREAM | FLOW, | INST-CFS | 85 | 489.527 | 272407 | 521.927 | 1.06618 | 56.6109 | 2370.00 | 67.9999 | 73/10/02 | 79/11/07 |
| 00080 | COLOR | PT-CO | UNITS | 33 | 8.49085 | 41.0296 | 6.40536 | .754384 | 1.11503 | 23.0000 | .200000 | 69/10/09 | 70/12/31 |
| 00095 | CNDUCTVY | AT 25C | MICROMHO | 183 | 772.465 | 33240.1 | 182.319 | .236022 | 13.4774 | 1660.00 | 407.000 | 69/10/09 | 79/11/07 |
| 00400 | PH | | SU | 143 | 8.04607 | .050514 | .224787 | .027939 | .018798 | 8.50000 | 7.30000 | 69/10/09 | 79/10/17 |
| 00405 | CO2 | | MG/L | 55 | 4.94362 | 22.3465 | 4.72722 | .956227 | .637419 | 31.0000 | 1.70000 | 72/09/30 | 78/09/21 |
| 00410 | T ALK | CACO3 | MG/L | 184 | 215.700 | 957.284 | 30.9400 | .143440 | 2.28093 | 336.000 | 133.000 | 69/10/09 | 79/11/07 |
| 00440 | HCO3 ION | HCO3 | MG/L | 170 | 261.140 | 1381.19 | 37.1643 | .141989 | 2.85037 | 410.000 | 162.000 | 69/10/09 | 78/09/21 |
| 00445 | CO3 ION | CO3 | MG/L | 117 | .059829 | .316365 | .562565 | 9.38616 | .051917 | 6.00000 | .000000 | 69/10/09 | 74/08/12 |
| 00618 | NO3-N | DISS | MG/L | 33 | .011919 | .003900 | .062447 | 1.83996 | .010871 | .300000 | .000000 | 69/10/09 | 70/12/31 |
| 00631 | NO3&NO2 | N-DISS | MG/L | 148 | .125269 | .019305 | .138944 | 1.10916 | .011421 | .740001 | .000000 | 71/01/31 | 79/11/07 |
| 00660 | ORTHOPO4 | PO4 | MG/L | 134 | .023676 | .000884 | .029739 | 1.25605 | .002569 | .200000 | .000000 | 71/01/31 | 78/09/21 |
| 00666 | PHOS-DIS | | MG/L P | 110 | .020008 | .000560 | .023656 | 1.18284 | .002256 | .110000 | .000000 | 70/08/06 | 79/11/07 |
| 00671 | PHOS-DIS | ORTHO | MG/L P | 105 | .007810 | .000879 | .008877 | 1.13675 | .000866 | .040000 | .000000 | 72/02/18 | 78/09/21 |
| 00900 | TOT HARD | CACO3 | MG/L | 185 | 310.924 | 3726.43 | 61.0445 | .196333 | 4.48808 | 510.000 | 190.000 | 69/10/09 | 79/11/07 |
| 00902 | NC HARD | CACO3 | MG/L | 184 | 95.7334 | 1418.15 | 37.6563 | .393366 | 2.77621 | 240.000 | 17.0000 | 69/10/09 | 79/11/07 |
| 00915 | CALCIUM | CA,DISS | MG/L | 185 | 66.7295 | 157.195 | 12.5378 | .187889 | .921794 | 100.000 | 44.8080 | 69/10/09 | 79/11/07 |
| 00925 | MGNSIUM | MG,DISS | MG/L | 185 | 35.0810 | 73.0448 | 8.54663 | .243625 | .628360 | 70.0000 | 17.0000 | 69/10/09 | 79/11/07 |
| 00930 | SODIUM | NA,DISS | MG/L | 185 | 51.9026 | 565.028 | 23.7703 | .457980 | 1.74763 | 170.000 | 13.0000 | 69/10/09 | 79/11/07 |
| 00931 | SODIUM | ADSRTION | RATIO | 185 | 1.85891 | .240038 | .489937 | .389175 | .036021 | 3.30000 | .400000 | 69/10/09 | 79/11/07 |
| 00932 | PERCENT | SODIUM | % | 185 | 25.2864 | 38.5221 | 6.20661 | .245452 | .456319 | 42.0000 | 12.0000 | 69/10/09 | 79/11/07 |
| 00933 | NASK | | MG/L | 6 | 54.3333 | 135.470 | 11.6392 | .214218 | 4.75167 | 70.0000 | 35.0000 | 79/06/14 | 79/11/07 |
| 00935 | POTASIUM | K,DISS | MG/L | 185 | 3.04487 | 1.07936 | 1.03898 | .341270 | .076383 | 5.90000 | .900000 | 69/10/09 | 79/11/07 |
| 00940 | CHLORIDE | CL | MG/L | 185 | 3.57940 | 2.25673 | 1.50224 | .419691 | .110467 | 10.0000 | 1.00000 | 69/10/09 | 79/11/07 |
| 00945 | SULFATE | SO4-TOT | MG/L | 185 | 200.729 | 6433.02 | 80.1434 | .405737 | 5.98783 | 630.000 | 50.0000 | 69/10/09 | 79/11/07 |
| 00950 | FLURIDE | F,DISS | MG/L | 186 | .219456 | .008648 | .092963 | .423606 | .006835 | .700000 | .000000 | 69/10/09 | 79/11/07 |
| 00955 | SILICA | DISSOLVED | MG/L | 185 | 7.58262 | 1.92381 | 1.38701 | .182920 | .101975 | 13.0000 | 2.60000 | 69/10/09 | 79/11/07 |
| 01020 | BORON | B,DISS | UG/L | 47 | 98.2339 | 911.318 | 30.1880 | .307308 | 4.40338 | 151.000 | 9.00000 | 69/10/09 | 74/06/04 |
| 01046 | IRON | FE,DISS | UG/L | 144 | 29.1736 | 1279.19 | 35.7658 | 1.22596 | 2.98048 | 200.000 | .000000 | 69/10/09 | 78/09/21 |
| 01056 | MANGNESE | MN,DISS | UG/L | 139 | 9.15942 | 215.026 | 14.6637 | 1.60095 | 1.24826 | 87.0000 | .000000 | 71/01/31 | 78/09/21 |
| 70300 | RESIDUE | DISS-180 | C MG/L | 33 | 492.754 | 12784.1 | 113.067 | .229459 | 19.6824 | 768.000 | 269.000 | 69/10/09 | 70/12/31 |
| 70301 | DISS SOL | SUM | MG/L | 184 | 499.960 | 18051.8 | 134.354 | .268729 | 9.90470 | 1150.00 | 251.000 | 69/10/09 | 79/11/07 |
| 70302 | DISS SOL | TONS/DAY | | 184 | 627.711 | 416997 | 645.753 | 1.02874 | 47.6055 | 4920.00 | 107.000 | 69/10/09 | 79/11/07 |
| 70303 | DISS SOL | TONS PER | ACRE-FT | 184 | .693200 | .033703 | .183584 | .268712 | .013534 | 1.56000 | .340000 | 69/10/09 | 79/11/07 |
| 70330 | SUSP SED | PARTSIZE | 0<.004MM | 27 | 43.5924 | 292.083 | 17.0890 | .392017 | 3.28877 | 90.9999 | 21.0000 | 71/01/10 | 77/05/11 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

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DANY PARKER

45 44 00;0 107 33 27;0 2
LITTLE BIGHORN RIVER NEAR HARDIN
30003 MONTANA

090291

/TYPA/AMONT/STREAM

112WRD

0000 CLASS 00 CSN-RSP 003|377-0229295

INDEX 1021500 009490 36810 4430 5510
MILES 1149.40 1582.00 279.40 040.00 000.60

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70340 | SUSP SED | PARTSIZE | %<.016MM | 27 | 61.0738 | 261.459 | 16.1697 | .264756 | 3.11186 | 97.9999 | 34.0000 | 71/03/10 | 77/05/13 |
| 70342 | SUSP SED | PARTSIZE | %<.062MM | 27 | 86.1419 | 71.1274 | 8.43371 | .097898 | 1.62307 | 100.0000 | 66.9999 | 71/03/10 | 77/05/13 |
| 70343 | SUSP SED | PARTSIZE | %<.125MM | 25 | 93.3998 | 23.1667 | 4.81317 | .051533 | .962635 | 100.0000 | 77.9999 | 71/03/10 | 77/05/13 |
| 70344 | SUSP SED | PARTSIZE | %<.250MM | 24 | 99.4998 | .692935 | .832427 | .008366 | .169918 | 100.0000 | 96.9999 | 71/03/10 | 77/05/13 |
| 70345 | SUSP SED | PARTSIZE | %<.500MM | 8 | 99.7498 | .223214 | .472456 | .004736 | .161039 | 99.9998 | 98.9999 | 72/03/08 | 77/05/13 |
| 70346 | SUSP SED | PARTSIZE | %<1.00MM | 8 | 99.9998 | .000000 | .000000 | | .000000 | 99.9998 | 99.9998 | 72/03/08 | 77/05/13 |
| 70507 | PHOS-T | ORTHO | MG/L P | 27 | .086296 | .000047 | .006877 | 1.09224 | .001323 | .020000 | .000000 | 71/02/19 | 72/03/08 |
| 71851 | NITRATE | DISS-NO3 | MG/L | 31 | .130103 | .059678 | .244291 | 1.87479 | .042526 | 1.20000 | .000000 | 69/10/09 | 70/12/31 |
| 80154 | SUSP SED | CONC | MG/L | 27 | 2011.32 | 3913491 | 1978.25 | .954195 | 380.715 | 8669.98 | 279.000 | 71/03/10 | 77/05/13 |
| 80155 | SUSP SED | DISCHARG | TONS/DAY | 27 | 6459.56 | .534E+08 | 7314.19 | 1.13231 | 1401.62 | 24100.0 | 271.000 | 71/03/10 | 77/05/13 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

06287000
GARY PARKER
45 19 00.0 107 55 05.0 2
BIGHORN RIVER NEAR ST. XAVIER, M
30003 MONTANA
090291

/TYPA/AMOUNT/STREAM
T12WRD
0000 CLASS 00 CSN-NSP 0018702-0229213

INDEX 1021500 009490 36810 4430
MILES 1149.40 1502.00 279.40 000.90

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00010 | WATER | TEMP | CENT | 155 | 8.21722 | 24.6476 | 4.96464 | .602708 | .398769 | 20.0000 | 1.00000 | 67/09/14 | 81/04/21 |
| 00020 | AIR | TEMP | CENT | 30 | 13.2833 | 102.961 | 10.1469 | .763889 | 1.85257 | 33.0000 | -.499E+01 | 69/07/23 | 81/04/21 |
| 00021 | COLLECT | AGENCY | CODE | 1 | 1028.00 | .500E+00 | .000000 | | .000000 | 1028.00 | 1028.00 | 73/10/05 | 74/06/06 |
| 00020 | ANALYZE | AGENCY | CODE | 32 | 80020.0 | .422E+04 | .000000 | | .000000 | 80020.0 | 80020.0 | 78/07/13 | 81/04/21 |
| 00041 | WEATHER | WMO CODE | 4501 | 18 | 1.88888 | .970588 | .985185 | .656790 | .232210 | 3.00000 | .000000 | 79/10/10 | 81/04/21 |
| 00060 | STREAM | FLOW | CFS | 199 | 4113.35 | 6284549 | 2292.20 | .557278 | 162.495 | 20240.0 | 358.000 | 66/10/31 | 74/09/30 |
| 00061 | STREAM | FLOW, | INST-CFS | 92 | 3527.92 | 3240647 | 1800.18 | .510266 | 187.682 | 10900.0 | 374.000 | 73/10/02 | 81/04/21 |
| 00070 | TURB | JKSN | JTU | 12 | 2.66666 | 1.76264 | 1.32757 | .538204 | .383236 | 6.00000 | 1.20000 | 69/07/23 | 70/06/02 |
| 00080 | COLOR | PT-CO | UNITS | 72 | 5.77771 | 11.7817 | 3.43248 | .594084 | .404518 | 17.0000 | .000000 | 66/10/31 | 70/12/31 |
| 00095 | CNDUCTVY | AT 25C | MICROMHO | 236 | 650.847 | 18210.8 | 134.946 | .157125 | 8.82172 | 1180.00 | 315.000 | 66/10/31 | 81/04/21 |
| 00300 | DO | | MG/L | 12 | 11.5167 | 1.39915 | 1.18311 | .102730 | .341534 | 13.2000 | 9.60000 | 69/07/23 | 70/06/02 |
| 00310 | BOD | 5 DAY | MG/L | 18 | 1.61666 | .589881 | .624405 | .833195 | .180250 | 2.70000 | .640000 | 69/07/23 | 70/06/02 |
| 00400 | PH | | SU | 175 | 7.90219 | .088227 | .297031 | .037588 | .022453 | 8.50000 | 6.60000 | 66/10/31 | 80/09/16 |
| 00403 | LAB | PH | SU | 8 | 8.17500 | .013602 | .116628 | .014266 | .041234 | 8.30000 | 8.00000 | 80/10/28 | 81/04/21 |
| 00405 | CO2 | | MG/L | 41 | 4.19024 | 9.63130 | 3.10345 | .740631 | .484677 | 16.0000 | 1.30000 | 72/09/30 | 78/09/20 |
| 00410 | T ALK | CACO3 | MG/L | 221 | 162.439 | 466.082 | 21.6074 | .133019 | 1.45347 | 216.000 | 107.000 | 66/10/31 | 80/09/16 |
| 00440 | HCO3 ION | HCO3 | MG/L | 188 | 197.313 | 716.091 | 26.7599 | .135621 | 1.95166 | 263.000 | 130.000 | 66/10/31 | 78/09/20 |
| 00445 | CO3 ION | CO3 | MG/L | 135 | .000889 | .368174 | .606796 | 6.79833 | .052010 | 6.00000 | .000000 | 66/10/31 | 74/10/01 |
| 00605 | ORG N | N | MG/L | 1 | .000000 | | | | .000000 | .000000 | .000000 | 69/09/11 | 69/09/11 |
| 00608 | NH3+NH4- | N DISS | MG/L | 12 | .024167 | .001299 | .036045 | 1.49151 | .010405 | .130000 | .000000 | 69/07/23 | 70/06/02 |
| 00613 | NO2-N | DISS | MG/L | 12 | .000833 | .000000 | .002887 | 3.46354 | .000833 | .010000 | .000000 | 69/07/23 | 70/06/02 |
| 00618 | NO3-N | DISS | MG/L | 40 | .214000 | .030296 | .174058 | .813357 | .027521 | .570000 | .000000 | 69/05/31 | 70/12/31 |
| 00631 | NO2&NO3 | N-DISS | MG/L | 145 | .393720 | .069159 | .262980 | .667933 | .021839 | 2.20000 | .000000 | 71/01/30 | 81/04/21 |
| 00660 | ORTHOPO4 | PO4 | MG/L | 114 | .030788 | .001293 | .035963 | 1.17136 | .003368 | .150000 | .000000 | 71/01/30 | 78/09/20 |
| 00665 | PHOS-TOT | | MG/L P | 12 | .045917 | .001322 | .036350 | .791819 | .010496 | .120000 | .000081 | 69/07/23 | 70/06/02 |
| 00666 | PHOS-DIS | | MG/L P | 140 | .025928 | .001775 | .042136 | 1.62507 | .003561 | .470000 | .000000 | 69/07/23 | 81/04/21 |
| 00671 | PHOS-DIS | ORTHO | MG/L P | 92 | .018870 | .000166 | .012894 | .683629 | .001344 | .050000 | .000000 | 72/02/29 | 78/09/20 |
| 00900 | TOT HARD | CACO3 | MG/L | 231 | 206.640 | 2595.96 | 50.9506 | .177751 | 3.35230 | 410.000 | 160.000 | 66/10/31 | 81/04/21 |
| 00902 | NC HARD | CACO3 | MG/L | 214 | 121.767 | 1123.36 | 33.5165 | .275296 | 2.29114 | 220.000 | 45.0000 | 66/10/31 | 81/02/23 |
| 00915 | CALCIUM | CA,DISS | MG/L | 219 | 53.1398 | 151.000 | 12.2882 | .160028 | .830360 | 110.000 | 13.0000 | 66/10/31 | 81/04/21 |
| 00925 | MGNSIUM | MG,DISS | MG/L | 219 | 24.8309 | 27.0527 | 5.20121 | .209465 | .351466 | 38.0000 | 11.0000 | 66/10/31 | 81/04/21 |
| 00930 | SODIUM | NA,DISS | MG/L | 219 | 77.2871 | 217.427 | 14.7454 | .190787 | .996401 | 110.000 | 40.0000 | 66/10/31 | 81/04/21 |
| 00931 | SODIUM | ADSORTION | RATIO | 219 | 1.99402 | .057825 | .240469 | .120595 | .016249 | 2.60000 | 1.40000 | 66/10/31 | 81/04/21 |
| 00932 | PERCENT | SODIUM | % | 219 | 36.6483 | 3.91614 | 1.97867 | .053991 | .133706 | 42.0000 | 30.0000 | 66/10/31 | 81/04/21 |
| 00933 | NA+K | | MG/L | 9 | 84.6666 | 75.0000 | 8.66026 | .102292 | 2.88692 | 95.0000 | 69.0000 | 79/05/08 | 80/02/19 |
| 00935 | POTSSIUM | K,DISS | MG/L | 221 | 3.89933 | 1.88390 | 1.37256 | .358431 | .092328 | 28.0000 | 1.30000 | 66/10/31 | 81/04/21 |
| 00940 | CHLORIDE | CL | MG/L | 220 | 10.7468 | 8.32160 | 2.88472 | .268427 | .194488 | 24.0000 | 3.30000 | 66/10/31 | 81/04/21 |
| 00945 | SULFATE | SO4-TOT | MG/L | 212 | 270.857 | 2910.82 | 53.9520 | .199190 | 3.54212 | 400.000 | 140.000 | 66/10/31 | 81/04/21 |
| 00950 | FLUORIDE | F,DISS | MG/L | 210 | .425450 | .011952 | .109384 | .256961 | .007371 | .800000 | .100000 | 66/10/31 | 81/04/21 |

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

STORET RETRIEVAL DATE 01/07/16 - INVENT - VERSION OF MAR. 1981

06287000

GARY PARKER

45 19 00.0 107 55 05.0 2

BIGHORN RIVER NEAR ST. XAVIER, M

30003 MONTANA

090291

/TYPA/AHBNT/STREAM

112WRD

0000 CLASS 00 CON-REP 0015702-0229213

INDEX 1021500 009490 36910 4410

MILES 1149.40 1582.00 379.40 080.90

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN-DEV | COEF-VAR | STAND-ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00955 | SILICA | DISSOLVED | MG/L | 219 | 10.2557 | 1.97228 | 1.40438 | .136937 | .094892 | 16.0000 | .200000 | 66/10/31 | 81/04/21 |
| 01020 | BORON | B,DISS | UG/L | 86 | 119.417 | 1511.45 | 38.2139 | .303255 | 3.90505 | 300.000 | 60.0000 | 66/10/31 | 74/06/06 |
| 01045 | IRON | FE;TOT | UG/L | 8 | 90.0000 | 16800.0 | 129.679 | 1.41421 | 90.0000 | 180.000 | .000001 | 69/01/03 | 69/09/02 |
| 01046 | IRON | FE,DISS | UG/L | 126 | 25.0809 | 1250.22 | 35.3584 | 1.40977 | 3.14998 | 210.000 | .000000 | 69/12/12 | 78/09/20 |
| 01056 | MANGNESE | MN,DISS | UG/L | 117 | 9.29914 | 483.263 | 21.9832 | 2.36401 | 2.03235 | 160.000 | .000000 | 71/01/10 | 78/09/20 |
| 31501 | TOT COLI | MFINENDO | /100ML | 18 | 210.916 | 78232.0 | 279.700 | 1.32618 | 80.7424 | 1000.000 | 2.00000 | 69/07/23 | 70/06/02 |
| 38260 | MBAS | | MG/L | 12 | .015834 | .000853 | .029375 | 1.85525 | .008480 | .100001 | .000000 | 69/07/23 | 70/06/02 |
| 39330 | ALDRIN | | TOT UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39340 | GAMMABHC | LINDANE | TOT;UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39360 | DDD | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39365 | DDE | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39370 | DDT | WHL SMPL | UG/L | 4 | .020000 | .001600 | .040001 | 2.00000 | .020000 | .080001 | .000000 | 69/07/23 | 70/04/20 |
| 39380 | DIELDRIN | | TOTUG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39390 | ENDRIN | | TOT UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39410 | HEPTCHLR | | TOTUG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39420 | HPCHLREP | | TOTUG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39730 | 2,4-D | WHL SMPL | UG/L | 4 | .037500 | .000025 | .020723 | .765935 | .014361 | .070000 | .000000 | 69/07/23 | 70/04/20 |
| 39740 | 2,4,5-T | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 39760 | SILVEX | WHL SMPL | UG/L | 4 | .374E-06 | .562E-12 | .749E-06 | 2.00000 | .374E-06 | .000001 | .000000 | 69/07/23 | 70/04/20 |
| 70300 | RESIDUE | DISS-180 | C MG/L | 81 | 630.444 | 10818.5 | 104.010 | .164979 | 11.4166 | 842.000 | 363.000 | 66/10/31 | 70/12/31 |
| 70301 | DISS SOL | SUM | MG/L | 198 | 563.195 | 7953.54 | 89.1886 | .158351 | 6.33793 | 792.000 | 322.000 | 67/10/18 | 81/04/21 |
| 70302 | DISS SOL | TONS/DAY | | 228 | 5909.90 | .115E+08 | 3400.83 | .575447 | 225.226 | 33120.0 | 511.000 | 66/10/31 | 81/04/21 |
| 70303 | DISS SOL | TONS PER | ACRE-FT | 228 | .792275 | .020473 | .143084 | .180599 | .009476 | 1.15000 | .440000 | 66/10/31 | 81/04/21 |
| 70507 | PHOS-T | ORTHO | MG/L P | 80 | .007500 | .0006641 | .006397 | .851857 | .001428 | .020000 | .000000 | 71/02/28 | 72/03/02 |
| 71851 | NITRATE | DISS-NO3 | MG/L | 84 | .942853 | .560073 | .748390 | .793740 | .081655 | 2.90000 | .000000 | 66/10/31 | 70/12/31 |
| 71856 | NITRITE | DISS-NO2 | MG/L | 11 | .020909 | .000049 | .007006 | .335077 | .002112 | .040000 | .010001 | 69/01/23 | 70/06/02 |
| 71885 | IRON | FE | UG/L | 8 | 5.00000 | 80.0000 | 8.97187 | 1.41421 | 5.00000 | 10.0000 | .489E-06 | 67/04/21 | 67/09/14 |
| 82068 | POTAS-40 | K-40,DIS | PC/LITER | 8 | 2.80000 | .034295 | .185190 | .066139 | .065474 | 3.10000 | 2.50000 | 80/10/28 | 81/04/21 |

STORET RETRIEVAL DATE 81/07/16 - INVENT - VERSION OF MAR. 1981

06294700
GARY PARKER
46 08 50.0 107 28 00.0 2
BIGHORN RIVER AT BIGHORN, MT.
30101 MONTANA
090291

/TYPA/AMOUNT/STREAM
112WQD
0000 CLASS 00 CSN-NSP 0015704-0229320

INDEX 1021500 009490 36910 4430
MILES 1149.40 1502.00 219.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00010 | WATER | TEMP | CENT | 211 | 12.4290 | 55.7028 | 7.46343 | .600484 | .513804 | 23.3300 | .000000 | 65/04/05 | 81/04/07 |
| 00020 | AIR | TEMP | CENT | 134 | 17.2760 | 129.419 | 11.3762 | .658501 | .982766 | 36.0000 | -.199E+02 | 74/04/01 | 81/04/02 |
| 00022 | LENGTH | OF EXPOS | UNE-DAYS | 10 | 28.8999 | 53.6998 | 7.31801 | .249759 | 2.28254 | 43.9999 | 21.0000 | 75/10/20 | 79/10/18 |
| 00025 | BAROMTRC | PRESSURE | MM OF HG | 25 | 692.637 | 6.50000 | 2.12132 | .003063 | .424264 | 694.000 | 692.000 | 79/08/17 | 79/08/18 |
| 00028 | ANALYZE | AGENCY | CODE | 34 | 80014.6 | .139E+05 | .000000 | | .000000 | 80020.0 | 80010.0 | 76/05/21 | 81/04/02 |
| 00041 | WEATHER | WMO CODE | 4501 | 79 | 5.77214 | 288.818 | 16.9947 | 2.94425 | 1.91205 | 74.9999 | .000000 | 76/10/18 | 81/04/02 |
| 00060 | STREAM | FLOW | CFS | 188 | 1693.72 | .157E+08 | 3974.69 | .846910 | 289.884 | 23000.0 | 685.000 | 65/01/19 | 73/08/31 |
| 00061 | STREAM | FLOW, | INST-CFS | 92 | 4300.53 | 6116976 | 2473.25 | .575104 | 257.854 | 20000.0 | 871.000 | 73/10/03 | 81/04/02 |
| 00070 | TURB | UKJN | JTU | 45 | 39.4222 | 3965.89 | 62.9753 | 1.59746 | 9.38780 | 330.000 | 3.00000 | 74/10/21 | 78/06/09 |
| 00076 | TURB | TRBIDMTR | HACH FTU | 34 | 48.6440 | 41688.9 | 204.105 | 4.19589 | 35.0037 | 1200.00 | 1.10000 | 78/05/21 | 81/04/02 |
| 00080 | COLOR | PT-CO | UNITS | 25 | 5.99999 | 11.3333 | 3.36650 | .561084 | .673300 | 12.0000 | 1.00000 | 65/06/27 | 70/12/01 |
| 00095 | CNDUCTVY | AT 25C | MICROMHO | 297 | 891.755 | 23875.3 | 154.506 | .170344 | 8.81445 | 1360.00 | 496.000 | 65/01/19 | 81/04/02 |
| 00300 | DO | | MG/L | 134 | 9.76259 | 3.66248 | 1.91376 | .196030 | .165324 | 14.8000 | 7.09999 | 74/04/01 | 81/04/02 |
| 00301 | DO | SATUR | PERCENT | 134 | 100.588 | 110.128 | 10.4967 | .108052 | .938909 | 137.000 | 82.9999 | 74/04/01 | 81/04/02 |
| 00310 | BOD | 5 DAY | MG/L | 14 | 1.65714 | .401103 | .633327 | .382181 | .169264 | 2.70000 | .899999 | 74/04/01 | 75/04/29 |
| 00400 | PH | | SU | 297 | 8.11540 | .136914 | .368665 | .045428 | .021392 | 8.80000 | 7.10000 | 65/01/19 | 81/04/02 |
| 00401 | LAB | PH | SU | 6 | 8.30000 | .024072 | .155152 | .018693 | .063341 | 8.50000 | 8.10000 | 80/11/05 | 81/04/02 |
| 00405 | CO2 | | MG/L | 69 | 2.84988 | 2.31548 | 1.52165 | .745126 | .183185 | 9.90000 | .600000 | 72/10/29 | 78/06/09 |
| 00410 | T ALK | CACO3 | MG/L | 228 | 172.118 | 426.242 | 20.6456 | .119950 | 1.36729 | 229.000 | 108.000 | 65/10/15 | 81/04/02 |
| 00440 | HCO3 ION | HCO3 | MG/L | 215 | 209.320 | 730.238 | 27.0229 | .179718 | 1.84295 | 279.000 | 136.000 | 65/01/19 | 78/06/09 |
| 00445 | CO3 ION | CO3 | MG/L | 207 | .570048 | 7.09094 | 2.66288 | 4.67133 | .185083 | 33.0000 | .000000 | 65/01/19 | 78/06/09 |
| 00572 | BIOMASS | PERPHYTN | G/SQ M | 11 | 9.42191 | 132.653 | 11.5175 | 1.22242 | 3.47265 | 32.2000 | .400000 | 75/04/21 | 79/10/18 |
| 00573 | BIOMASS | PERPHYTN | DW G/M2 | 11 | 11.4254 | 224.742 | 14.9914 | 1.31211 | 4.52008 | 46.7000 | .500000 | 75/04/21 | 79/10/18 |
| 00600 | TOTAL N | N | MG/L | 80 | .851120 | .184376 | .429273 | .370586 | .036181 | 2.00000 | .100000 | 74/04/01 | 81/04/02 |
| 00602 | DISS. | NITROGEN | MG/L N | 19 | .934737 | .069016 | .262710 | .281052 | .060270 | 1.30000 | .480000 | 79/09/14 | 81/04/02 |
| 00605 | ORG N | N | MG/L | 44 | .601568 | .078007 | .279297 | .464266 | .042106 | 1.40000 | .190000 | 74/04/01 | 81/04/02 |
| 00607 | AMO N | DISS-N | MG/L | 17 | .624706 | .036902 | .192098 | .307502 | .046591 | .960001 | .360000 | 79/10/18 | 81/04/02 |
| 00608 | NH3+NH4- | N DISS | MG/L | 17 | .035294 | .001001 | .031646 | .896637 | .007675 | .100000 | .000000 | 79/10/18 | 81/04/02 |
| 00610 | NH3+NH4- | N TOTAL | MG/L | 49 | .036122 | .001820 | .042662 | 1.18105 | .006095 | .190000 | .000000 | 74/04/01 | 81/04/02 |
| 00618 | NO3-N | DISS | MG/L | 14 | .170000 | .019831 | .140832 | .828368 | .037636 | .500000 | .010000 | 69/09/08 | 70/12/01 |
| 00623 | KJELDL N | DISS | MG/L | 42 | .469285 | .052227 | .228533 | .486982 | .035263 | 1.00000 | .050000 | 77/10/07 | 81/04/02 |
| 00624 | KJELDL N | SUSP | MG/L | 37 | .145675 | .025719 | .160373 | 1.10089 | .026365 | .810001 | .000000 | 78/02/06 | 81/04/02 |
| 00625 | TOT KJEL | N | MG/L | 80 | .563246 | .076260 | .276162 | .490287 | .030875 | 1.50000 | .070000 | 74/04/01 | 81/04/02 |
| 00630 | NO2&NO3 | N-TOTAL | MG/L | 86 | .292323 | .017172 | .131043 | .448280 | .014131 | .620001 | .000000 | 74/04/01 | 81/04/02 |
| 00631 | NO2&NO3 | N-DISS | MG/L | 64 | .257343 | .017359 | .131756 | .511983 | .016469 | .530000 | .000000 | 71/01/25 | 81/04/02 |
| 00650 | T PO4 | PO4 | MG/L | 3 | .110000 | .882100 | .845826 | .416600 | .026458 | .150000 | .060000 | 79/05/07 | 79/07/03 |
| 00660 | ORTHOPO4 | PO4 | MG/L | 46 | .036739 | .001591 | .039892 | 1.08581 | .005882 | .150000 | .000000 | 71/01/25 | 74/09/24 |
| 00665 | PHOS-TOT | | MG/L P | 86 | .081395 | .026666 | .163297 | 2.00623 | .017609 | 1.40000 | .000000 | 74/04/01 | 81/04/02 |
| 00666 | PHOS-DIS | | MG/L P | 43 | .013256 | .000161 | .012678 | .955947 | .001932 | .050000 | .000000 | 77/10/07 | 81/04/02 |

STORET RETRIEVAL DATE 84/03/14 - 84/03/14 - VERSION OF MAR. 1981

06294/00
46 08 50.0 107 28 00.0 2
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA
090291

GARY PARKER

/TYPA/AMOUNT/STREAM

112WRD
0000 CLASS 00 USN-WSP 0015704-0229320

INDEX 1021500 009490 36010 4430
MILES 1549.40 1582.00 219.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00671 | PHOS-DIS | ORTHO | MG/L P | 31 | .011935 | .000229 | .015148 | 1.26916 | .002721 | .050000 | .000000 | 72/04/14 | 74/09/24 |
| 00680 | T ORG C | C | MG/L | 42 | 6.64286 | 48.8992 | 6.99280 | 1.05268 | 1.07901 | 49.0000 | 3.00000 | 74/10/21 | 84/04/02 |
| 00681 | D ORG C | C | MG/L | 16 | 5.15000 | 2.10670 | 1.64521 | .319358 | .411302 | 8.20000 | 2.60000 | 77/10/07 | 81/03/04 |
| 00689 | S ORG C | C | MG/L | 13 | .807692 | .869101 | .932256 | 1.15422 | .258561 | 3.30000 | .200000 | 77/10/07 | 81/03/04 |
| 00900 | TOT HARD | CACO3 | MG/L | 249 | 109.446 | 2630.58 | 51.2892 | .165746 | 3.25032 | 410.000 | 169.000 | 65/01/19 | 84/04/02 |
| 00902 | NC HARD | CACO3 | MG/L | 249 | 137.960 | 1140.31 | 33.7685 | .244751 | 2.13999 | 220.000 | 50.0000 | 65/01/19 | 84/04/02 |
| 00915 | CALCIUM | CA,DISS | MG/L | 163 | 76.6257 | 134.291 | 11.5884 | .151234 | .907673 | 100.000 | 42.0000 | 65/01/19 | 84/04/02 |
| 00925 | MGNESIUM | MG,DISS | MG/L | 163 | 28.4785 | 35.9329 | 5.99440 | .210489 | .469518 | 41.0000 | 13.0000 | 65/01/19 | 84/04/02 |
| 00930 | SODIUM | NA,DISS | MG/L | 249 | 63.0036 | 278.786 | 16.6969 | .300436 | 1.05832 | 110.000 | 33.0000 | 65/01/19 | 84/04/02 |
| 00931 | SODIUM | ADSRTION | RATIO | 249 | 2.04694 | .081740 | .285902 | .139673 | .018118 | 2.70000 | .900000 | 65/01/19 | 84/04/02 |
| 00932 | PERCENT | SODIUM | % | 228 | 36.5789 | 6.07985 | 2.46573 | .067409 | .163297 | 62.0000 | 23.0000 | 65/10/15 | 84/04/02 |
| 00933 | NA+K | | MG/L | 9 | 83.6667 | 45.5078 | 6.74595 | .071031 | 2.24865 | 100.000 | 65.0000 | 79/06/12 | 80/02/19 |
| 00935 | POTASSIUM | K,DISS | MG/L | 160 | 1.82994 | .552940 | .743599 | .398151 | .058787 | 7.20000 | 1.40000 | 65/06/27 | 81/04/02 |
| 00940 | CHLORIDE | CL | MG/L | 160 | 11.0325 | 6.04572 | 2.83650 | .256640 | .224245 | 19.0000 | 3.50000 | 65/06/27 | 81/04/02 |
| 00945 | SULFATE | SO4-TOT | MG/L | 249 | 291.497 | 3603.29 | 60.0274 | .205824 | 3.80408 | 470.000 | 126.000 | 65/01/19 | 84/04/02 |
| 00950 | FLUORIDE | F,DISS | MG/L | 160 | .436245 | .012891 | .113539 | .260265 | .008976 | 1.00000 | .200000 | 65/06/27 | 81/04/02 |
| 00951 | FLUORIDE | F,TOTAL | MG/L | 1 | .900000 | | | | | .900000 | .900000 | 74/04/01 | 74/04/01 |
| 00955 | SILICA | DISOLVED | MG/L | 160 | 9.09741 | 4.15878 | 2.03931 | .224164 | .161221 | 21.0000 | 1.00000 | 65/06/27 | 81/04/02 |
| 01000 | ARSENIC | AS,DISS | UG/L | 27 | 1.51852 | .566553 | .752963 | .495853 | .144908 | 3.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01001 | ARSENIC | AS,SUSP | UG/L | 21 | .761905 | 1.09048 | 1.04426 | 1.37059 | .227876 | 4.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01002 | ARSENIC | AS,TOT | UG/L | 26 | 2.23077 | 1.38462 | 1.17670 | .527485 | .230769 | 6.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01005 | BARIUM | BA,DISS | UG/L | 18 | 52.6667 | 2763.81 | 52.5720 | .998202 | 13.5140 | 200.000 | .000000 | 77/10/07 | 81/03/04 |
| 01006 | BARIUM | BA,SUSP | UG/L | 15 | 114.667 | 39112.4 | 197.769 | 1.72472 | 51.0636 | 800.000 | .000000 | 77/10/07 | 81/03/04 |
| 01007 | BARIUM | BA,TOT | UG/L | 15 | 166.667 | 39523.8 | 198.806 | 1.19284 | 51.3315 | 800.000 | 50.0000 | 77/10/07 | 81/03/04 |
| 01020 | BORON | B,DISS | UG/L | 48 | 122.250 | 1249.92 | 35.3542 | .289196 | 5.10293 | 200.000 | 50.0000 | 65/06/27 | 74/01/05 |
| 01022 | BORON | B,TOT | UG/L | 1 | 460.000 | | | | | 460.000 | 460.000 | 74/04/01 | 74/04/01 |
| 01025 | CADMIUM | CD,DISS | UG/L | 26 | .615385 | .326154 | .571099 | .928036 | .112002 | 2.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01026 | CADMIUM | CD,SUSP | UG/L | 21 | 5.80952 | 32.2619 | 5.67996 | .977697 | 1.23947 | 20.0000 | .000000 | 74/10/21 | 80/05/23 |
| 01027 | CADMIUM | CD,TOT | UG/L | 27 | 5.29630 | 29.8319 | 5.46186 | 1.03126 | 1.05113 | 20.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01030 | CHROMIUM | CR,DISS | UG/L | 27 | 1.29630 | 10.7550 | 3.27948 | 2.52980 | .631136 | 10.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01031 | CHROMIUM | CR,SUSP | UG/L | 26 | 9.03846 | 268.038 | 16.3719 | 1.81136 | 3.21079 | 55.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01034 | CHROMIUM | CR,TOT | UG/L | 27 | 9.25926 | 276.363 | 16.6239 | 1.79538 | 3.19926 | 60.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01035 | COBALT | CO,DISS | UG/L | 27 | 1.00000 | 1.04615 | 1.02871 | 1.02871 | .261488 | 3.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01036 | COBALT | CO,SUSP | UG/L | 23 | 28.3478 | 707.419 | 26.5973 | .938250 | 5.54593 | 80.0000 | .000000 | 74/10/21 | 80/05/23 |
| 01037 | COBALT | CO,TOTAL | UG/L | 27 | 26.5185 | 684.183 | 26.1569 | .986164 | 5.03390 | 80.0000 | .000000 | 74/10/21 | 81/03/04 |
| 01040 | COPPER | CU,DISS | UG/L | 27 | 1.48148 | 1.33619 | 1.15594 | .780257 | .222460 | 4.00000 | .000000 | 74/10/21 | 81/03/04 |
| 01041 | COPPER | CU,SUSP | UG/L | 26 | 19.5384 | 663.539 | 25.7592 | 1.31839 | 5.05180 | 120.000 | 1.00000 | 74/10/21 | 81/03/04 |
| 01042 | COPPER | CU,TOT | UG/L | 28 | 20.2857 | 617.916 | 24.8579 | 1.22539 | 4.69770 | 120.000 | 3.00000 | 74/04/01 | 81/03/04 |
| 01044 | IRON | FE,SUSP | UG/L | 9 | 901.111 | 1076461 | 1037.53 | 1.15139 | 345.842 | 3300.00 | 130.000 | 79/07/10 | 81/03/04 |
| 01045 | IRON | FE,TOT | UG/L | 31 | 2717.42 | .832E+08 | 9122.22 | 3.35694 | 1638.40 | 51000.0 | .000000 | 68/01/04 | 81/03/04 |

STORET RETRIEVAL DATE 91/07/16 - INVENT - VERSION OF MAR, 1981

GARY PARKER

06294700
46 08 30.0 107 28 00.0 3
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA

090291

/TYPA/AMBNT/STREAM

112WRD
0000 CLASS 08 CAN-NSP 00185704-0229330

INDEX 1021500 009490 36010 4430
MILES 1149.40 1502.00 279.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01046 | IRON | FE,DISS | UG/L | 80 | 47.8295 | 3611.87 | 60.0988 | 1.25652 | 6.40655 | 370.000 | .000000 | 60/12/05 | 81/03/0 |
| 01049 | LEAD | PB,DISS | UG/L | 26 | 2.00000 | 2.80000 | 1.67332 | .836660 | .328165 | 6.00000 | .000000 | 74/10/21 | 81/03/0 |
| 01050 | LEAD | PB,SUSP | UG/L | 25 | 56.2400 | 1955.61 | 44.2332 | .817389 | 8.86704 | 180.000 | .000000 | 74/10/21 | 81/03/0 |
| 01051 | LEAD | PB,TOT | UG/L | 28 | 58.1071 | 1961.80 | 44.2912 | .762251 | 8.37045 | 180.000 | 1.00000 | 74/04/01 | 81/03/0 |
| 01054 | MANGNESE | MN,SUSP | UG/L | 27 | 82.5926 | 44019.9 | 209.809 | 2.54029 | 40.3778 | 1100.00 | .000000 | 74/10/21 | 81/03/0 |
| 01055 | MANGNESE | MN | UG/L | 21 | 92.2222 | 43894.8 | 209.474 | 2.35623 | 40.8439 | 1100.00 | 20.0000 | 74/10/21 | 81/03/0 |
| 01056 | MANGNESE | MN,DISS | UG/L | 73 | 12.5616 | 499.083 | 22.3402 | 1.77846 | 2.61472 | 180.000 | .000000 | 71/01/25 | 81/03/0 |
| 01065 | NICKEL | NI,DISS | UG/L | 6 | 1.33333 | 1.46667 | 1.21106 | .908296 | .494413 | 3.00000 | .000000 | 79/10/18 | 81/03/0 |
| 01066 | NICKEL | NI,SUSP | UG/L | 6 | 6.33333 | 15.0667 | 3.88158 | .895756 | 1.58469 | 10.0000 | .000000 | 79/10/18 | 81/03/0 |
| 01067 | NICKEL | NI,TOTAL | UG/L | 6 | 5.16667 | 16.5667 | 4.07022 | .787781 | 1.66166 | 11.0000 | .000000 | 79/10/18 | 81/03/0 |
| 01075 | SILVER | AG,DISS | UG/L | 15 | .000000 | .000000 | .000000 | | .000000 | .000000 | .000000 | 77/10/07 | 81/03/0 |
| 01076 | SILVER | AG,SUSP | UG/L | 15 | .866667 | 6.55238 | 2.55976 | 2.95357 | .660928 | 10.0000 | .000000 | 77/10/07 | 81/03/0 |
| 01077 | SILVER | AG,TOT | UG/L | 19 | .684210 | 5.22807 | 2.28650 | 3.34180 | .524558 | 10.0000 | .000000 | 77/10/07 | 81/03/0 |
| 01090 | ZINC | ZN,DISS | UG/L | 27 | 8.29630 | 39.0627 | 6.25001 | .753350 | 1.20281 | 20.0000 | .000000 | 74/10/21 | 81/03/0 |
| 01091 | ZINC | ZN,SUSP | UG/L | 24 | 31.2500 | 1637.50 | 40.4660 | 1.29491 | 8.26009 | 200.000 | .000000 | 74/10/21 | 80/06/2 |
| 01092 | ZINC | ZN,TOT | UG/L | 28 | 40.0000 | 1696.30 | 41.1861 | 1.02965 | 7.78144 | 220.000 | .000000 | 74/04/01 | 81/03/0 |
| 01105 | ALUMINUM | AL,TOT | UG/L | 1 | 800.000 | | | | | 800.000 | 800.000 | 74/04/01 | 74/04/0 |
| 01145 | SELENIUM | SE,DISS | UG/L | 27 | 2.03704 | .729347 | .854010 | .419245 | .164356 | 3.00000 | .000000 | 74/10/21 | 81/03/0 |
| 01146 | SELENIUM | SE,SUSP | UG/L | 27 | .481481 | .981567 | .975483 | 2.02600 | .187732 | 4.00000 | .000000 | 74/10/21 | 81/03/0 |
| 01147 | SELENIUM | SE,TOT | UG/L | 28 | 2.42857 | .476195 | .690069 | .284116 | .130411 | 4.00000 | 1.00000 | 74/04/01 | 81/03/0 |
| 31501 | TOT COLI | MFIMENDO | /100ML | 3 | 88.6665 | 422.340 | 20.5509 | .231777 | 11.8651 | 110.000 | 68.9999 | 74/10/21 | 76/05/1 |
| 31616 | FEC COLI | MFM-FCBR | /100ML | 24 | 60.4164 | 9448.94 | 97.1902 | 1.60867 | 19.8389 | 409.999 | .999999 | 74/10/21 | 76/09/2 |
| 31625 | FEC COLI | M-FCAGAR | /100 ML | 53 | 84.6032 | 36134.8 | 190.261 | 2.30820 | 26.1239 | 1100.00 | .999999 | 76/11/15 | 81/04/0 |
| 31673 | FECSTREP | MFMFAGAR | /100ML | 63 | 442.813 | 1660289 | 1284.64 | 2.90633 | 161.849 | 8799.98 | 6.00000 | 74/10/21 | 81/04/0 |
| 31679 | FECSTREP | MF M-ENT | /100ML | 23 | 162.521 | 76164.0 | 275.978 | 1.69810 | 57.5454 | 1100.00 | 6.99999 | 74/10/21 | 76/09/2 |
| 32226 | CHL D | PERIPHYTH | MG/M2 | 5 | .706000 | .644681 | .802920 | 1.13728 | .359077 | 2.03000 | .100000 | 76/04/21 | 76/07/1 |
| 32228 | CHL A | PERIPHYTH | MG/M2 | 5 | 3.97800 | 12.7039 | 3.56426 | .895991 | 1.59398 | 7.99999 | .600000 | 76/04/21 | 76/07/1 |
| 60050 | ALGAE | TOTAL | /ML | 55 | 1596.51 | 7229188 | 2688.71 | 1.68412 | 362.546 | 19000.0 | 58.0000 | 74/12/16 | 81/04/0 |
| 70299 | DES-SUSP | AT 180 C | MG/L | 7 | 89.4286 | 2746.96 | 52.4114 | .586070 | 19.8096 | 154.000 | 14.0000 | 74/04/01 | 74/09/2 |
| 70300 | RESIDUE | DISS-180 C | MG/L | 803 | 644.010 | 18387.3 | 114.020 | .178383 | 7.79866 | 918.000 | 335.000 | 65/01/19 | 81/04/0 |
| 70301 | DISS SOL | SUM | MG/L | 145 | 604.414 | 9167.89 | 95.7491 | .158411 | 7.95153 | 890.000 | 365.000 | 68/01/04 | 81/04/0 |
| 70302 | DISS SOL | TONS/DAY | | 249 | 7031.84 | .210E+08 | 4592.87 | .653156 | 291.062 | 35620.0 | 1220.00 | 65/01/19 | 81/04/0 |
| 70303 | DISS SOL | TONS PER | ACRE-FT | 249 | .855876 | .028997 | .151649 | .177247 | .009610 | 1.25000 | .460000 | 65/01/19 | 81/04/0 |
| 70331 | SUSP SED | PARTSIZE | %<.062MM | 59 | 79.1553 | 335.090 | 18.3055 | .230677 | 2.38317 | 98.9999 | 5.00000 | 74/10/21 | 81/03/0 |
| 70337 | SUSP SED | PARTSIZE | %<.002MM | 3 | 35.3333 | 214.334 | 14.6401 | .414344 | 8.45249 | 51.0000 | 22.0000 | 65/10/06 | 66/08/3 |
| 70338 | SUSP SED | PARTSIZE | %<.004MM | 10 | 39.6666 | 341.180 | 18.4711 | .465658 | 6.38367 | 68.9999 | 18.0000 | 68/04/05 | 78/05/2 |
| 70339 | SUSP SED | PARTSIZE | %<.008MM | 3 | 51.6667 | 660.336 | 25.6970 | .497361 | 14.8362 | 79.0000 | 28.0000 | 65/10/06 | 66/08/3 |
| 70340 | SUSP SED | PARTSIZE | %<.016MM | 10 | 58.6666 | 472.122 | 21.7284 | .370376 | 5.12142 | 90.9999 | 19.0000 | 65/04/05 | 78/05/2 |
| 70341 | SUSP SED | PARTSIZE | %<.031MM | 3 | 71.3333 | 614.336 | 24.7856 | .347464 | 14.3101 | 89.0000 | 43.0000 | 65/10/06 | 66/08/3 |
| 70342 | SUSP SED | PARTSIZE | %<.062MM | 10 | 79.8999 | 182.720 | 13.5174 | .169217 | 2.46793 | 96.0000 | 48.9999 | 65/04/05 | 78/05/2 |

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

NICHOLS RETRIEVAL DATE 91/07/16 - INVENT - VERSION OF MAR. 1991

06294700
GARY PARKER
46 08 50.0 107 28 00.0 3
BIGHORN RIVER AT BIGHORN, MT.
30103 MONTANA

090291

/TYPA/AMOUNT/STREAM

112WRD
0000 CLASS 00 CSN-USP 0015704-0229320

INDEX $021500 009490 36810 4410
MILES $149.40 $502.00 279.40 000.70

| PARAMETER | | | | NUMBER | MEAN | VARIANCE | STAN DEV | COEF VAR | STAND ER | MAXIMUM | MINIMUM | BEG DATE | END DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70343 | SUSP SED | PARTSIZE | %<.125MM | 10 | 92.4444 | 64.4963 | 8.03096 | .086873 | 1.89291 | 100.000 | 71.0000 | 65/06/05 | 78/05/21 |
| 70344 | SUSP SED | PARTSIZE | %<.250MM | 16 | 99.0624 | 1.26250 | 1.80624 | .018233 | .451560 | 100.000 | 93.0000 | 65/04/05 | 78/05/21 |
| 70345 | SUSP SED | PARTSIZE | %<.500MM | 6 | 100.000 | .000000 | .000000 | .000000 | .000000 | 100.000 | 100.000 | 65/05/04 | 67/07/06 |
| 70507 | PHOS-T | ORTHO | MG/L P | 12 | .013333 | .000079 | .008876 | .665722 | .002562 | .030000 | .000000 | 71/01/13 | 72/03/06 |
| 70950 | BIOMASS- | CHLRATIO | PERIUNIT | 5 | 641.880 | 308271 | 855.221 | .864992 | 248.302 | 1418.00 | 64.4000 | 76/10/18 | 79/10/10 |
| 70955 | CHLRPHYL | A-PERIPH | CHPPUG/D | 1 | .922001 | | | | | .922001 | .922001 | 76/10/18 | 76/10/18 |
| 70956 | CHLRPHYL | B-PERIPH | CHPPUG/L | 1 | .388000 | | | | | .388000 | .388000 | 76/10/18 | 76/10/18 |
| 70957 | CHLRPHYL | A-PERIPH | CHPLUG/L | 7 | 3.09314 | 33.3999 | 5.77927 | 1.86841 | 2.18436 | 16.0000 | .000000 | 77/09/16 | 79/10/10 |
| 70958 | CHLRPHYL | B-PERIPH | CHPLUG/L | 7 | .175141 | .018274 | .274361 | 1.56649 | .103698 | .960001 | .000000 | 77/09/16 | 79/10/10 |
| 71845 | AMMONIA | TOT-NH4 | MG/L | 20 | .028000 | .000975 | .031221 | 1.11503 | .006981 | .130000 | .000000 | 79/05/07 | 81/01/07 |
| 71846 | AMMONIA | DISS-NH4 | MG/L | 38 | .907102 | .852558 | .807811 | .890540 | .131044 | 2.00000 | .000000 | 65/01/19 | 81/04/02 |
| 71851 | NITRATE | DISS-NO3 | MG/L | 35 | .866718 | .317030 | .571866 | .660593 | .096661 | 2.00000 | .000000 | 65/06/27 | 70/12/01 |
| 71856 | NITRITE | DISS-NO2 | MG/L | 18 | 4.27778 | 1.85950 | 2.80348 | .655359 | .660787 | 9.00000 | 1.00000 | 65/01/19 | 65/09/30 |
| 71870 | BROMIDE | BR | MG/L | 21 | .354762 | .000916 | .030269 | .085323 | .006605 | .400000 | .300000 | 65/01/19 | 65/09/30 |
| 71885 | IRON | FE | UG/L | 6 | 81.6667 | 10376.7 | 148.741 | 1.74792 | 58.8762 | 360.000 | .499E-06 | 65/05/27 | 67/09/06 |
| 71886 | TOTAL P | AS PO4 | MG/L | 23 | .123043 | .006377 | .079854 | .648994 | .016651 | .250000 | .000000 | 79/05/01 | 81/04/02 |
| 71887 | TOTAL N | AS NO3 | MG/L | 60 | 3.75123 | 1.99273 | 1.41164 | .376314 | .182226 | 8.70000 | .800001 | 74/01/01 | 81/04/02 |
| 71890 | MERCURY | HG,DISS | UG/L | 27 | .011111 | .001795 | .042366 | 3.81293 | .008153 | .200000 | .000006 | 74/10/21 | 81/03/04 |
| 71895 | MERCURY | HG,SUSP | UG/L | 26 | .042308 | .002539 | .050383 | 1.19087 | .009881 | .100000 | .000000 | 74/10/21 | 81/03/04 |
| 71900 | MERCURY | HG,TOTAL | UG/L | 28 | .050000 | .004815 | .069389 | 1.38778 | .013113 | .300000 | .000030 | 74/01/01 | 81/03/04 |
| 80154 | SUSP SED | CONC | MG/L | 92 | 592.660 | 811544 | 915.175 | 1.33071 | 95.4135 | 6860.00 | 8.00000 | 65/05/05 | 81/03/04 |
| 80155 | SUSP SED | DISCHARG | TONS/DAY | 92 | 10151.6 | .877E+09 | 29625.4 | 2.91773 | 3088.66 | 166000 | 24.0000 | 65/05/05 | 81/03/04 |
| 82069 | POTAS-40 | K-40,DIS | PC/LITER | 6 | 2.80000 | .212002 | .460437 | .164442 | .187973 | 3.70000 | 2.40000 | 80/11/05 | 81/04/02 |

## APPENDIX A-2

## SUPPLEMENTARY WILDLIFE INFORMATION

**TABLE A2-1**
**PRELIMINARY LIST OF BIRDS KNOWN TO OCCUR WITHIN OR ADJACENT TO THE PROPOSED PROJECT REGION, CROW RESERVATION, MONTANA**

| Order - Common Name |
|---|
| **Gaviiformes** |
| Common loon |
| **Podicipediformes** |
| Horned grebe |
| Eared grebe |
| Western grebe |
| Pied-billed grebe |
| **Pelecaniformes** |
| White pelican |
| Double-crested cormorant |
| **Ciconiiformes** |
| Great Blue heron |
| Black-crowned night heron |
| American bittern |
| **Anseriformes** |
| Canada goose |
| White-fronted goose |
| Snow goose |
| Mallard |
| Gadwall |
| Pintail |
| Green-winged teal |
| Blue-winged teal |
| Cinnamon teal |
| American Wigeon |

| Order - Common Name |
|---|
| Shoveler |
| Redhead |
| Ring-necked Duck |
| Canvasback |
| Greater Scaup |
| Lesser Scaup |
| Common Goldeneye |
| Bufflehead |
| Ruddy Duck |
| Hooded Merganser |
| Common Merganser |
| Red-breasted Merganser |
| **Falconiformes** |
| Turkey vulture |
| Goshawk |
| Sharp-shinned hawk |
| Cooper's hawk |
| Red-tailed hawk |
| Swainson's hawk |
| Rough-legged hawk |
| Ferruginous hawk |
| Golden eagle |
| Bald eagle |
| Marsh hawk |
| Osprey |
| Prairie falcon |
| Peregrine falcon |
| Merlin (Pigeon hawk) |
| American kestrel |
| **Galliformes** |
| Ruffed grouse |
| Sharp-tailed grouse |
| Sage grouse |
| Ring-necked pheasant |
| Hungarian (Gray) partridge |
| Wild turkey |

| Order - Common Name | |
|---|---|
| Gruiformes | Greater Yellowlegs |
| | Lesser Yellowlegs |
| Sandhill crane | Willet |
| Sora | Pectoral sandpiper |
| Yellow rail | White-rumped sandpiper |
| American coot | Baird's sandpiper |
| | Least sandpiper |
| | Semipalmated sandpiper |
| Charadriiformes | Western sandpiper |
| | Sanderling |
| Semipalmated polver | Long-billed dowitcher |
| Killdeer | Stilt sandpiper |
| Mountain plover | Buff-breasted sandpiper |
| Black-bellied plover | Marbled godwit |
| Common snipe | Hudsonian godwit |
| Long-billed curlew | American avocet |
| Upland sandpiper | Wilson's phalarope |
| Spotted sandpiper | Herring gull |
| Solitary sandpiper | California gull |

| Order - Common Name |
|---|
| Ring-billed gull |
| Franklin's gull |
| Bonaparte's gull |
| Forster's Tern |
| Caspian Tern |
| Black Tern |
| **Columbiformes** |
| Rock dove |
| Mourning dove |
| **Cuculiformes** |
| Yellow-billed cuckoo |
| Black-billed cuckoo |
| **Strigiformes** |
| Screech owl |
| Great horned owl |
| Long-eared owl |
| Short-eared owl |
| Snowy owl |
| Barred owl |
| Burrowing owl |
| Saw-whet owl |
| **Caprimulgiformes** |
| Poor-will |
| Common nighthawk |
| **Apodiformes** |
| White-throated swift |
| Ruby-throated hummingbird |
| Black-chinned hummingbird |
| Rufous hummingbird |

| Order - Common Name |
|---|
| Coraciiformes |
| Belted kingfisher |
| Piciformes |
| Common flicker |
| Red-headed woodpecker |
| Lewis' woodpecker |
| Yellow-bellied sapsucker |
| Williamson's sapsucker |
| Hairy woodpecker |
| Downy woodpecker |
| Passeriformes |
| Eastern kingbird |
| Western kingbird |
| Eastern phoebe |
| Say's phoebe |
| Willow flycatcher |
| Least flycatcher |
| Western flycatcher |
| Western Wood Peewee |
| Olive-sided Flycatcher |
| Horned lark |
| Violet-green swallow |
| Tree swallow |
| Bank swallow |
| Rough-winged swallow |
| Barn swallow |
| Cliff swallow |
| Purple martin |
| Gray jay |
| Black-billed magpie |
| Common crow |
| Pinyon jay |
| Clark's nutcracker |
| Black-capped chickadee |
| Dipper |
| White-breasted nuthatch |

| Order - Common Name | |
|---|---|
| Brown creeper | Cedar waxwing |
| House wren | Northern shrike |
| Long-billed marsh wren | Loggerhead shrike |
| Rock wren | Starling |
| Gray catbird | Solitary vireo |
| Brown thrasher | Red-eyed vireo |
| Sage thrasher | Warbling vireo |
| American robin | Black-and-white warbler |
| Wood thrush | Tennessee warbler |
| Swainson's thrush | Orange-crowned warbler |
| Gray-cheeked thrush | Nashville warbler |
| Veery | Yellow warbler |
| Eastern bluebird | Magnolia warbler |
| Mountain bluebird | Yellow-rumped warbler |
| Townsend's solitaire | Townsend's warbler |
| Golden-crowned kinglet | Black-throated green warbler |
| Ruby-crowned kinglet | Chestnut-sided warbler |
| Water pipit | Blackpoll warbler |
| Sprague's pipit | Palm warbler |
| Bohemian waxwing | Ovenbird |

| Order - Common Name | |
|---|---|
| Northern waterthrush | Evening grosbeak |
| MacGillivray's warbler | Purple finch |
| Yellowthroat | House finch |
| Yellow-breasted Chat | Pine grosbeak |
| Wilson's warbler | Gray-crowned rosy finch |
| American Redstart | Black rosy finch |
| House sparrow | Common Redpoll |
| Bobolink | Pine Siskin |
| Western Meadowlark | American goldfinch |
| Yellow-headed blackbird | Red Crossbill |
| Red-winged blackbird | Green-tailed Towhee |
| Orchard Oriole | Rufous-sided Towhee |
| Northern Oriole | Lark bunting |
| Brewer's blackbird | Savannah sparrow |
| Common Grackle | Grasshopper sparrow |
| Brown-headed cowbird | Baird's sparrow |
| Western tanager | Sharp-tailed sparrow |
| Indigo bunting | Vesper sparrow |
| Lazuli bunting | Lark sparrow |
| Dickcissel | Slate-colored junco |
| Black-headed grosbeak | |

| Order - Common Name |
|---|
| Gray-headed junco |
| Tree sparrow |
| Chipping sparrow |
| Clay-colored sparrow |
| Brewer's sparrow |
| Field sparrow |
| Harris's sparrow |
| White-crowned sparrow |
| White-throated sparrow |
| Fox sparrow |
| Lincoln's sparrow |
| Song sparrow |
| McCown's longspur |
| Lapland longspur |
| Smith's longspur |
| Chestnut-collared longspur |
| Snow bunting |

Source: U. S. Geological Survey, 1976; VTN Wyoming Inc., 1978; and Coeneberg and DePuit, 1979.

**TABLE A2-2**
**PRELIMINARY LIST OF MAMMALS KNOWN TO OCCUR WITHIN OR ADJACENT TO THE PROPOSED PROJECT REGION, CROW RESERVATION, MONTANA**

| Order - Common Name |
|---|
| **Insectivora** |
| Masked shrew |
| Merriam's shrew |
| **Chiroptera** |
| Little brown bat |
| Long-eared bat |
| Yuma bat |
| Long-legged bat |
| Masked, or least bat |
| Hoary bat |
| Silver-haired bat |
| Spotted bat |
| Big brown bat |
| Red bat |
| Western big-eared bat |
| **Carnivora** |
| Black bear |
| Racoon |
| Long-tailed weasel |
| Mink |
| Black-footed ferret |
| Western spotted skunk |
| Striped skunk |
| Badger |
| Coyote |
| Swift fox |

| Order - Common Name |
|---|
| Red fox |
| Bobcat |
| Mountain lion |
| **Rodentia** |
| Yellow-bellied marmot |
| Black-tailed prairie dog |
| Richardson's ground squirrel |
| Thirteen-lined ground squirrel |
| Least Chipmunk |
| Red Squirrel |
| Northern pocket gopher |
| Wyoming or olive-backed pocket mouse |
| Ord's Kangaroo rat |
| Beaver |
| Western harvest mouse |
| Deer mouse |
| White-footed mouse |
| Northern grasshopper mouse |
| Bushy-tailed woodrat |
| Mountain vole |
| Meadow vole |
| Prairie vole |
| Long-tailed vole |
| Sagebrush vole |
| Muskrat |
| Norway rat |
| House mouse |
| Meadow jumping mouse |
| Porcupine |
| **Lagomorpha** |
| White-tailed jack rabbit |
| Mountain cottontail |
| Desert cottontail |

| Order - Common Name |
|---|
| Artiodactyla |
| White-tailed deer |
| Mule deer |
| Pronghorn antelope |
| Elk |

Source: Bureau of Indian Affairs, 1976, VTN Wyoming, Inc. 1978, and Coenenberg and DePuit 1979

**TABLE A2-3**
**PRELIMINARY LIST OF AMPHIBIANS AND REPTILES KNOWN TO OCCUR WITHIN OR ADJACENT TO THE PROPOSED PROTECT REGION, CROW RESERVATION, MONTANA**

| Common Name | |
|---|---|
| Tiger salamander | Eastern short-horned lizard |
| Plains spadefoot toad | Western hognose snake |
| Woodhouse's Toad | Eastern yellowbellied racer |
| Leopard frog | Gopher snake (bull snake) |
| Chorus frog | Milk snake |
| Snapping turtle | Common garter snake (Red-sided garter) |
| Painted turtle | Western terrestrial garter snake (wandering garter) |
| Spiny softshell | Western plains garter snake |
| Northern sagebrush lizard | Prairie rattlesnake |

Source: Bureau of Indian Affairs, 1976; VTN Wyoming, Inc., 1978; and Coenenberg and DePuit, 1979.

**TABLE A2-4**
**PRELIMINARY LIST OF FISH SPECIES KNOWN TO OCCUR IN SELECTED SURFACE WATERS WITHIN THE PROPOSED REGION, CROW RESERVATION, MONTANA**

| Surface Water | Species of Fish |
|---|---|
| Bighorn River (Below Yellowtail Dam) | Brown trout |
| | Cutthroat trout |
| | Rainbow trout |
| | Walleye |
| | Northern pike |
| | Mountain whitefish |
| | Yellow perch |
| | Burbot |
| | Longnose dace |
| | Flathead chub |
| | Black bullhead |
| | Goldeye |
| | Carp |
| | River carpsucker |
| | Longnose sucker |
| | Mountain sucker |
| | Shorthead redhorse |

| Surface Water | Species of Fish |
|---|---|
| Little Bighorn River | Brown trout |
| | Rainbow trout |
| | Whitefish |
| | Longnose sucker |
| Young's Creek | Brook trout |
| | White sucker |
| | Mountain sucker |
| | Fathead minnow |
| | Plains minnow |
| | Lake Chub |
| | Longnose dace |
| | Flathead chub |
| | Golden shiner |
| | Sand shiner |
| | Longnose sucker |

| Surface Water | Species of Fish |
|---|---|
| Tanner Creek | Fathead minnow |
| | Lake chub |
| | White sucker |
| | Longnose dace |
| Tongue River (near Wyoming-Montana border) | Carp |
| | Northern redhorse |
| | White Sucker |
| | Stonecat |
| | Rock bass |
| | Sauger |

Source: Stevenson 1975, U. S. Fish and Wildlife Service, 1980; VTN Wyoming Inc., 1978; and Wesche and Johnson, 1981.

# APPENDIX A-3

## EARTHQUAKE DATA FILE

320-km RADIUS OF 45.75N, 107.75W
(Approximate Location - Hardin, Montana)

PREPARED BY THE NATIONAL GEOPHYSICAL AND SOLAR-TERRESTRIAL DATA CENTER

ENVIRONMENTAL DATA SERVICE----------NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NOTE: A full description of the data appearing in the Earthquake Data File accompanies the printout of each search. Following are brief definitions of some of the column heads and abbreviations in the sample above:

SOURCE: Source of the epicenter calculation.
EQH = Earthquake History of the U.S., Pub. 41-1
CGS = Coast and Geodetic Survey.
USE = United States Earthquakes annual report.
G-R = Gutenberg-Richter.
NOS = National Ocean Survey.
ERL = Environmental Research Laboratories.

SEC: Z = Noninstrumental location.
* = Epicenter determined from incomplete data.

MAGNITUDES: BODY = Body-wave magnitude (MB), as determined by USGS and predecessor agencies.
SURF = Surface-wave magnitude (MS).
OTHER = Magnitudes from other institutions (e.g., PAS = California Institute of Technology, Pasadena, Calif.).
LOCAL = Magnitude (ML) for local earthquakes, and the source as defined above.

INT MAP: Intensity (isoseismal) map is available and, if so, where.
USE = United States Earthquakes annual report.

INT MAX: Maximum intensity reported.

PHENOM: Phenomena reported. D = damage; T = tsunami; V = volcanism;
DTSVNO N = nontectonic; O = waves generated.

RN: Geographic region number according to E.A. Flinn, E.R. Engdahl, and A. Hill in "Seismic and Geographic Regionalization," BSSA, Vol. 64, No. 3, Part II.

CE: Cultural effects.
F = Felt.
D = Damage.

Q/S: Epicenter quality: number of stations used in determining epicenter.

MAR DG: Marsden/Degree Square.
Numbering system dividing the world into 10° squares (MAR) and subdivided into 1° squares (DG).

DIST: Radial distance from epicenter to point of interest.

## SOURCES OF DATA

SOURCES OF LISTINGS IN THE EARTHQUAKE DATA FILE ARE SUMMARIZED BELOW. THE SOURCE IS INDICATED FOR EACH ENTRY BY A 2- OR 3-CHARACTER CODE OR ABBREVIATION; THESE ARE IDENTIFIED IN THE LIST IN APPENDIX FOUR(4). THE ORIGINAL SOURCE SHOULD BE ACKNOWLEDGED IN STUDIES USING LARGE BLOCKS OF DATA FROM THE FILE.

### PRELIMINARY DETERMINATION OF EPICENTERS

THE PRINCIPAL DATA SOURCE, WHICH INCLUDES SOME 90,000 EARTHQUAKES, IS THE PRELIMINARY DETERMINATION OF EPICENTERS (PDE) PROGRAM. THIS IS A SYSTEMATIC, CONTINUING ACTIVITY INITIATED IN 1937 BY THE U.S. COAST AND GEODETIC SURVEY AND CONDUCTED SINCE 1973 BY THE U.S. GEOLOGICAL SURVEY. THE EPICENTERS ARE COMPUTED FROM ARRIVAL-TIME INFORMATION PROVIDED BY AT LEAST SEVERAL OF THE 400 OR SO COOPERATING SEISMOGRAPH STATIONS OF THE GLOBAL NETWORK. THESE STATIONS ARE OPERATED BY USGS, NOAA, OTHER GOVERNMENT AGENCIES, COLLEGES AND UNIVERSITIES, AND MANY FOREIGN INSTITUTIONS; MANY OF THEM ARE PART OF THE WORLD-WIDE NETWORK OF STANDARD SEISMOGRAPHS (WWSSN).

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EARTHQUAKE DATA FILE

GLEN LANE  COUNCIL ON ENERGY RES. TRIBES/320-KM RADIUS OF 45.75 N., 107.75 W.  82/03/16. 09.54.18.

PRINTED OUTPUT WILL BE DISPOSED TO THE EDIS SITE LINE PRINTER

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM | RN | CE | Q/B | NAR | DQ | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| GS | 1973 | 11 | 13 | 05 | 59 | 50.1* | 45.591N | 106.560W | 0100 | | | | | | | 456 | | 007 | 155 | 56 | 96. |
| GS | 1973 | 11 | 23 | 23 | 43 | 11.3* | 88.810N | 107.205W | 0000 | | | | | | F | 460 | | 010 | 155 | 47 | 107. |
| GS | 1976 | 08 | 10 | 13 | 54 | 57.5* | 45.029N | 106.569W | 005G | | | | 3.40ML G8 | | | 456 | | 10 | 155 | 56 | 122. |
| PDE | 1925 | 11 | 18 | 01 | 50 | 00.0Z | 44.600N | 107.000W | | | | | | V | | 460 | F | | 155 | 47 | 141. |
| PGS | 1963 | 08 | 03 | 09 | 55 | 12.6 | 85.100N | 109.800W | 033 | 3.90MB | | | | | | 456 | | 005 | 155 | 59 | 174. |
| PGS | 1966 | 04 | 13 | 05 | 58 | 02.1 | 44.200N | 107.100W | 033 | | | | | | | 460 | | 006 | 155 | 47 | 180. |
| PGS | 1967 | 03 | 28 | 20 | 31 | 35.4 | 85.163N | 109.909W | 033N | 3.60MB | | | | | | 456 | | 006 | 155 | 59 | 181. |
| GS | 1978 | 09 | 19 | 15 | 36 | 11.8 | 84.110N | 107.380W | 010G | 4.80MB | | | | V | | 460 | F | 15 | 155 | 47 | 185. |
| PGS | 1963 | 03 | 22 | 05 | 58 | 52.8 | 44.900N | 109.900W | 033 | | | | | | | 459 | | 007 | 155 | 49 | 193. |
| PGS | 1967 | 01 | 21 | 00 | 18 | 16.0 | 44.748N | 109.769W | 033N | 3.60MB | | | | | | 459 | | 007 | 155 | 49 | 194. |
| GS | 1973 | 09 | 26 | 16 | 58 | 24.68 | 87.120N | 106.133W | 025 | | | | 2.80LG G8 | | | 456 | | 008 | 155 | 76 | 196. |
| PGS | 1965 | 08 | 06 | 15 | 39 | 49.2 | 44.700N | 109.800W | 033 | 3.90MB | | | | | | 459 | | 008 | 155 | 49 | 199. |
| NDE | 1970 | 12 | 12 | 15 | 57 | 19.1 | 83.958N | 107.545W | 015G | 4.90MB | | | | | | 460 | | 016 | 155 | 37 | 200. |
| PGS | 1965 | 01 | 25 | 12 | 28 | 19.2 | 85.500N | 110.300W | 033 | 4.00MB | | | | | | 456 | | 005 | 156 | 50 | 200. |
| GS | 1978 | 04 | 14 | 09 | 18 | 06.8* | 45.302N | 110.255W | 005G | | | | 2.80ML G8 | | | 456 | | 8 | 156 | 50 | 201. |
| PGS | 1944 | 10 | 03 | 02 | 27 | 42.0 | 44.200N | 109.200W | | | | | | | | 459 | F | | 155 | 49 | 207. |
| PGS | 1961 | 10 | 01 | 19 | 59 | 52.2 | 85.000N | 110.200W | 010 | | | | | | | 456 | | | 156 | 50 | 209. |
| PGS | 1962 | 07 | 15 | 11 | 59 | 21.9 | 45.600N | 110.200W | 025 | | | | | IV | | 456 | F | 008 | 156 | 50 | 209. |
| PGS | 1963 | 03 | 17 | 22 | 10 | 35.8 | 44.800N | 110.100W | 020 | | | | | | | 459 | | 007 | 156 | 40 | 212. |
| PGS | 1963 | 03 | 21 | 16 | 09 | 47.0 | 85.000N | 110.300W | 033 | | | | | | | 456 | | 006 | 156 | 50 | 216. |
| PGS | 1965 | 02 | 19 | 17 | 35 | 21.0 | 44.700N | 110.100W | 022 | 4.00MB | | | | | | 459 | | 011 | 156 | 40 | 218. |
| PGS | 1961 | 05 | 05 | 14 | 52 | 33.6 | 44.800N | 110.200W | 026 | | | | | | | 459 | | | 156 | 40 | 219. |
| PGS | 1961 | 05 | 06 | 22 | 03 | 28.5 | 44.800N | 110.200W | 036 | | | | | | | 459 | | | 156 | 40 | 219. |
| PGS | 1963 | 03 | 06 | 08 | 15 | 48.9 | 44.800N | 110.200W | 033 | 3.80MB | | | | VI | | 459 | D | 010 | 156 | 40 | 219. |
| PGS | 1963 | 12 | 09 | 05 | 39 | 25.7 | 44.900N | 110.300W | 033 | 3.70MB | | | | | | 459 | | 008 | 156 | 40 | 221. |
| PGS | 1965 | 04 | 15 | 08 | 22 | 47.5 | 88.900N | 110.300W | 033 | 3.10MB | | | | | | 459 | | 007 | 156 | 40 | 221. |
| USE | 1930 | 07 | 17 | 12 | 15 | 00.0Z | 45.600N | 110.600W | | | | | | | | 456 | F | | 156 | 50 | 222. |
| PGS | 1963 | 05 | 11 | 02 | 55 | 59.0 | 45.000N | 110.400W | 033 | | | | | | | 456 | | 006 | 156 | 50 | 223. |
| PGS | 1965 | 04 | 18 | 10 | 03 | 16.9 | 88.800N | 110.300W | 033 | | | | | V | | 459 | F | 005 | 156 | 40 | 226. |
| PGS | 1963 | 04 | 27 | 04 | 53 | 50.9 | 44.800N | 110.300W | 033 | 4.40MB | | | | | | 459 | | 011 | 156 | 40 | 226. |
| PRL | 1972 | 06 | 22 | 04 | 39 | 41.7* | 44.570N | 110.096W | 0100 | 3.90MB | | | | | | 459 | | 007 | 156 | 40 | 226. |
| PGS | 1964 | 08 | 18 | 06 | 47 | 18.2 | 85.100N | 110.500W | 033 | 4.20MB | | | | | | 456 | | 006 | 156 | 50 | 226. |
| GS | 1976 | 09 | 03 | 04 | 18 | 16.2 | 44.041N | 106.154W | 010G | 4.8 MB | | | 4.20ML G8 | | | 460 | F | 30 | 155 | 46 | 228. |
| PRL | 1973 | 04 | 21 | 07 | 26 | 10.7 | 44.545N | 110.133W | 010G | 4.40MB | | | | | | 459 | F | 028 | 156 | 40 | 230. |
| PGS | 1959 | 06 | 14 | 11 | 23 | 00.0 | 85.000N | 110.500W | | | | | | | | 456 | | | 156 | 50 | 230. |
| PGS | 1959 | 08 | 18 | 07 | 56 | 18.0 | 85.000N | 110.500W | | | | 6.50BRK | | VI | | 456 | D | | 156 | 50 | 230. |
| PGS | 1959 | 08 | 19 | 19 | 43 | 47.5 | 85.000N | 110.500W | | | | | | | | 456 | | | 156 | 50 | 230. |
| PGS | 1959 | 09 | 13 | 20 | 40 | 41.0 | 85.000N | 110.500W | | | | | | | | 456 | | | 156 | 50 | 230. |
| PGS | 1959 | 12 | 13 | 07 | 50 | 20.0 | 85.000N | 110.500W | | | | | | V | | 456 | F | | 156 | 50 | 230. |
| PGS | 1960 | 02 | 18 | 01 | 43 | 27.0 | 85.000N | 110.500W | | | | | | | | 456 | F | | 156 | 50 | 230. |
| USE | 1928 | 06 | 19 | 10 | 40 | 00.0Z | 83.700N | 108.300W | | | | | | | | 460 | F | | 155 | 38 | 232. |
| PGS | 1963 | 04 | 16 | 05 | 34 | 34.6 | 44.800N | 110.400W | 033 | 3.70MB | | | | | | 459 | | | 156 | 40 | 233. |
| GS | 1975 | 06 | 30 | 21 | 15 | 26.8* | 45.040N | 110.567W | 005G | | | | 3.10ML G8 | | | 456 | | 9 | 156 | 50 | 238. |
| PGS | 1969 | 10 | 26 | 13 | 59 | 51.1* | 84.661N | 110.319W | 033N | 8.30MB | | | | | | 459 | | 006 | 156 | 40 | 235. |
| GS | 1978 | 06 | 06 | 21 | 23 | 38.7* | 43.632N | 107.826W | 005G | 4.0 MB | | | 3.70ML G8 | | | 460 | | 15 | 155 | 37 | 236. |
| PGS | 1970 | 03 | 22 | 15 | 36 | 50.7* | 44.737N | 110.010W | 033N | | | | | | | 459 | | 007 | 156 | 40 | 237. |
| GS | 1974 | 10 | 20 | 15 | 51 | 25.2 | 45.710N | 110.803W | 005G | | | | | | | 456 | | 7 | 156 | 50 | 237. |
| PGS | 1965 | 01 | 13 | 23 | 23 | 58.8 | 44.500N | 110.200W | 033 | | | | | | | 459 | | 006 | 156 | 40 | 237. |
| PGS | 1963 | 06 | 15 | 13 | 15 | 50.6 | 45.000N | 110.600W | 033 | 4.10MB | | | | | | 456 | | 008 | 156 | 50 | 238. |
| PRL | 1972 | 12 | 08 | 18 | 47 | 39.8 | 83.651N | 108.392W | 020 | 4.10MB | | | | | | 460 | D | 019 | 155 | 38 | 239. |

82/03/16.  PAGE 1

USE OR DISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESTRICTION ON THE NOTICE PAGE AT THE FRONT OF THIS REPORT

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT | PHENOM MAX | DTRVNO | RMS | Q/S | AMP | PER | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *AN INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| GS | 1975 | 07 | 03 | 03 | 21 | 36.0 | 44.752N | 110.457W | 005G | 4.5 MB | | | 3.80ML GS | | | | 459 | 16 | 156 | 40 | 239. |
| PGS | 1965 | 05 | 15 | 13 | 08 | 11.3 | 44.300N | 110.000W | 033 | 3.60MB | | | | | | | 459 | 006 | 156 | 40 | 239. |
| PGS | 1970 | 09 | 20 | 06 | 34 | 57.3* | 44.694N | 110.418W | 010G | 4.20MB | | | | | | | 459 | 008 | 156 | 40 | 240. |
| PGS | 1963 | 03 | 10 | 15 | 16 | 57.5 | 44.800N | 110.500W | 033 | | | | | | | | 459 | 006 | 156 | 40 | 240. |
| PGS | 1963 | 03 | 22 | 00 | 38 | 42.9 | 44.800N | 110.500W | 033 | 4.10MB | | | | | V | | 459 F | 023 | 156 | 40 | 240. |
| PGS | 1965 | 05 | 11 | 18 | 32 | 41.8 | 44.800N | 110.500W | 033 | | | | | | | | 459 F | 006 | 156 | 40 | 240. |
| GS | 1975 | 07 | 01 | 04 | 16 | 22.5 | 44.882N | 110.577W | 005G | 4.8 MB | | | 4.40ML GS | | | | 459 | 25 | 156 | 40 | 241. |
| PGS | 1963 | 07 | 19 | 19 | 26 | 33.1 | 44.900N | 110.600W | 033 | | | | | | | | 459 | 005 | 156 | 40 | 242. |
| USE | 1950 | 06 | 28 | 04 | 31 | 04.0 | 44.750N | 110.500W | | | | | | | VI | | 459 F | | 156 | 40 | 242. |
| GS | 1975 | 06 | 30 | 18 | 47 | 57.7 | 44.796N | 110.542W | 005G | 4.6 MB | | | 4.80ML GS | | | | 459 | 35 | 156 | 40 | 243. |
| GS | 1975 | 06 | 30 | 18 | 28 | 11.9* | 44.784N | 110.535W | 005G | | | | 3.50ML GS | | | | 459 | 9 | 156 | 40 | 243. |
| PGS | 1970 | 09 | 20 | 06 | 40 | 50.0* | 44.602N | 110.405W | 015G | | | | | | | | 459 | 005 | 156 | 40 | 244. |
| GS | 1975 | 06 | 30 | 19 | 17 | 04.8* | 44.924N | 110.653W | 005G | | | | 4.20ML GS | | | | 459 | 10 | 156 | 40 | 245. |
| PGS | 1963 | 08 | 02 | 15 | 29 | 42.6 | 44.700N | 110.500W | 033 | 4.00MB | | | | | | | 459 | | 156 | 40 | 245. |
| PGS | 1961 | 01 | 08 | 09 | 09 | 08.8 | 45.000N | 110.700W | 025N | | | | | | | | 456 | | 156 | 50 | 245. |
| PGS | 1963 | 08 | 03 | 09 | 35 | 08.7 | 45.000N | 110.700W | 033 | | | | | | | | 456 | 005 | 156 | 50 | 245. |
| PGS | 1965 | 05 | 11 | 20 | 29 | 43.6 | 45.000N | 110.700W | 033 | | | | | | | | 456 F | 006 | 156 | 50 | 245. |
| GS | 1975 | 02 | 22 | 21 | 15 | 31.3 | 44.940N | 110.677W | 010G | | | | | | | | 459 | 17 | 156 | 40 | 246. |
| GS | 1975 | 06 | 30 | 19 | 56 | 33.7 | 44.712N | 110.524W | 005G | 4.7 MB | | | 4.50ML GS | | | | 459 | 27 | 156 | 40 | 246. |
| GS | 1975 | 07 | 07 | 00 | 51 | 27.9 | 44.757N | 110.567W | 005G | 4.3 MB | | | 3.60ML GS | | | | 459 | 15 | 156 | 40 | 247. |
| PGS | 1963 | 03 | 21 | 03 | 00 | 24.2 | 44.800N | 110.600W | 033 | | | | | | | | 459 | 005 | 156 | 40 | 247. |
| PGS | 1963 | 07 | 19 | 20 | 56 | 45.4 | 44.800N | 110.600W | 033 | 3.40MB | | | | | | | 459 | 008 | 156 | 40 | 247. |
| PGS | 1963 | 11 | 12 | 04 | 57 | 12.1 | 44.800N | 110.600W | 033 | | | | | | | | 459 | 005 | 156 | 40 | 247. |
| PGS | 1969 | 12 | 06 | 09 | 19 | 48.1 | 44.493N | 110.348W | 033N | | | | | | | | 459 | 007 | 156 | 40 | 247. |
| PRL | 1973 | 04 | 06 | 23 | 46 | 08.7* | 44.725N | 110.556W | 005G | | | | | | | | 459 | 012 | 156 | 40 | 247. |
| GS | 1975 | 06 | 30 | 20 | 46 | 43.5 | 45.030N | 110.752W | 005G | | | | 3.40ML GS | | | | 456 | 10 | 156 | 50 | 248. |
| GS | 1973 | 08 | 06 | 06 | 24 | 15.2* | 44.737N | 110.569W | 005G | | | | | | | | 459 | 011 | 156 | 40 | 248. |
| GS | 1978 | 11 | 11 | 20 | 46 | 20.80 | 44.392N | 110.252W | 006 | | | | 3.20ML GS | | | | 459 | 10 | 156 | 40 | 248. |
| PGS | 1967 | 01 | 14 | 06 | 50 | 18.1 | 45.093N | 110.785W | 033N | | | | | | | | 456 | 006 | 156 | 50 | 248. |
| GS | 1979 | 01 | 05 | 14 | 08 | 38.80 | 44.402N | 110.265W | S | | | | 3.50ML GS | | | | 459 | 11 | 156 | 40 | 248. |
| PGS | 1963 | 05 | 11 | 03 | 00 | 58.7 | 45.100N | 110.800W | 015 | | | | | | | | 456 | 008 | 156 | 50 | 249. |
| GS | 1975 | 07 | 02 | 19 | 54 | 56.7 | 44.719N | 110.571W | 005G | 4.2 MB | | | 3.90ML GS | | | | 459 | 21 | 156 | 40 | 249. |
| GS | 1973 | 08 | 20 | 10 | 35 | 12.5* | 44.514N | 110.396W | 033N | | | | | | | | 459 F | 007 | 156 | 40 | 249. |
| PDH | 1915 | 05 | 08 | 16 | 10 | 00.0Z | 44.900N | 110.700W | | | | | | | V | | 459 F | | 156 | 40 | 249. |
| PGS | 1963 | 03 | 12 | 03 | 41 | 28.4 | 44.900N | 110.700W | 021 | | | | | | | | 459 | 005 | 156 | 40 | 249. |
| GS | 1975 | 06 | 30 | 18 | 54 | 13.40 | 44.745N | 110.605W | 007 | 5.6 MB | 5.9MS6.1 | BRK | 4.10ML BRK | | VII | | 459 D | 157 | 156 | 40 | 250. |
| PGS | 1963 | 12 | 30 | 03 | 28 | 53.5 | 44.400N | 110.300W | 033 | 4.00MB | | | | | | | 459 | 006 | 156 | 40 | 250. |
| PGS | 1966 | 03 | 08 | 01 | 03 | 18.5 | 44.600N | 110.500W | 033 | | | | | | | | 459 | 005 | 156 | 40 | 251. |
| GS | 1975 | 06 | 30 | 20 | 20 | 56.6 | 44.692N | 110.586W | 005G | 4.9 MB | | | 4.60ML GS | | | | 459 | 25 | 156 | 40 | 251. |
| GS | 1975 | 07 | 05 | 20 | 08 | 29.7 | 44.758N | 110.636W | 005G | 3.5 MB | | | 3.50ML GS | | | | 459 | 10 | 156 | 40 | 251. |
| PGS | 1963 | 03 | 20 | 12 | 32 | 28.5 | 44.700N | 110.600W | 033 | 4.00MB | | | | | | | 459 | 015 | 156 | 40 | 252. |
| PGS | 1963 | 03 | 23 | 12 | 21 | 39.0 | 44.700N | 110.600W | 033 | | | | | | | | 459 | 009 | 156 | 40 | 252. |
| PGS | 1959 | 08 | 18 | 15 | 26 | 06.5 | 44.883N | 110.733W | | | | 6.50PAS | | | V | | 459 F | | 156 | 40 | 252. |
| GS | 1978 | 09 | 15 | 13 | 45 | 44.8* | 44.658N | 110.489W | 005G | | | | 2.50ML GS | | V | | 459 F | 6 | 156 | 40 | 252. |
| PGS | 1961 | 09 | 28 | 18 | 50 | 09.3 | 45.000N | 110.800W | 033N | | | | | | | | 456 | | 156 | 50 | 252. |
| PGS | 1963 | 01 | 30 | 05 | 50 | 59.5 | 45.000N | 110.800W | 033 | | | | | | V | | 456 F | 008 | 156 | 50 | 252. |
| GS | 1974 | 10 | 20 | 22 | 49 | 46.9* | 44.733N | 110.636W | 005G | | | | | | | | 459 | 12 | 156 | 40 | 253. |
| USE | 1928 | 02 | 13 | 14 | 00 | 00.0Z | 43.500N | 108.200W | | | | | | | V | | 460 F | | 155 | 38 | 253. |
| GS | 1975 | 07 | 05 | 19 | 17 | 39.0 | 44.713N | 110.624W | 005G | 4.5 MB | | | 4.30ML GS | | | | 459 F | 37 | 156 | 40 | 253. |
| PGS | 1965 | 06 | 03 | 21 | 06 | 51.0 | 45.200N | 110.900W | 033 | 4.20MB | | | | | | | 456 | 007 | 156 | 50 | 253. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM | RN | CE | Q/S | NAR | OG | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *=N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| PGS | 1959 | 08 | 18 | 08 | 41 | 50.0 | 44.800N | 110.700W | | | | 6.00RRK | | VI | | 459 | D | | 156 | 40 | 254. |
| PGS | 1963 | 03 | 20 | 11 | 38 | 31.3 | 44.800N | 110.700W | 033 | 4.10MB | | | | | | 459 | | 009 | 156 | 40 | 254. |
| PGS | 1963 | 04 | 02 | 13 | 40 | 13.4 | 44.800N | 110.700W | 033 | 4.00MB | | | | | | 459 | | 008 | 156 | 40 | 254. |
| PS | 1976 | 10 | 19 | 07 | 24 | 34.6 | 44.795N | 110.697W | 005G | 5.3 MB | | | 4.10ML GS | IV | | 459 | F | 22 | 156 | 40 | 254. |
| PRL | 1973 | 03 | 28 | 02 | 19 | 55.3 | 44.820N | 110.791W | 008 | 5.00MB | | | | | | 459 | F | 038 | 156 | 40 | 254. |
| PGS | 1959 | 09 | 16 | 21 | 43 | 57.0 | 45.500N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 254. |
| PGS | 1959 | 12 | 18 | 09 | 11 | 55.0 | 45.500N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 254. |
| PGS | 1963 | 02 | 16 | 03 | 01 | 41.0 | 44.100N | 111.000W | 033 | 4.50MB | | | | V | | 456 | F | 021 | 156 | 61 | 254. |
| PRL | 1973 | 03 | 30 | 01 | 59 | 16.5* | 44.584N | 110.553W | 010G | | | | | | | 459 | | 007 | 156 | 40 | 255. |
| PRL | 1973 | 03 | 31 | 20 | 33 | 35.5 | 44.513N | 110.491W | 010G | 5.10MB | | | | | | 459 | | 020 | 156 | 40 | 255. |
| PGS | 1970 | 03 | 22 | 18 | 08 | 25.7* | 44.880N | 110.772W | 033N | 3.80MB | | | | | | 459 | | 006 | 156 | 40 | 255. |
| PS | 1975 | 07 | 06 | 05 | 12 | 17.7 | 44.722N | 110.677W | 005G | | | | | | | 459 | | 12 | 156 | 40 | 256. |
| PRL | 1973 | 03 | 25 | 16 | 33 | 13.1 | 44.870N | 110.465W | 010G | 3.40MB | | | | | | 459 | | 015 | 156 | 40 | 256. |
| PRL | 1973 | 03 | 30 | 00 | 32 | 57.6 | 44.361N | 110.355W | 011 | 4.60MB | | | | | | 459 | F | 033 | 156 | 40 | 256. |
| USE | 1954 | 07 | 04 | 07 | 40 | 00.0Z | 44.900N | 110.800W | | | | | | V | | 459 | F | | 156 | 40 | 256. |
| PGS | 1954 | 07 | 04 | 16 | 32 | 50.0 | 44.900N | 110.800W | | | | | | V | | 459 | F | | 156 | 40 | 256. |
| PGS | 1968 | 10 | 30 | 17 | 00 | 00.0E | 47.929N | 106.682W | 000 | 5.00MB | | | | | F | 456 | | 031 | 155 | 76 | 257. |
| PS | 1975 | 07 | 13 | 10 | 01 | 07.2 | 44.705N | 110.672W | 005G | 4.4 MB | | | 3.80ML GS | | | 459 | | 17 | 156 | 40 | 257. |
| USE | 1930 | 08 | 25 | 02 | 40 | 00.0Z | 44.500N | 110.500W | | | | | | | | 459 | F | | 156 | 40 | 257. |
| USE | 1953 | 06 | 04 | 17 | 02 | 50.0 | 44.500N | 110.500W | | | | | | IV | | 459 | F | | 156 | 40 | 257. |
| PGS | 1958 | 11 | 15 | 22 | 18 | 57.0 | 44.500N | 110.500W | | | | | | | | 459 | | | 156 | 40 | 257. |
| PGS | 1960 | 01 | 21 | 22 | 37 | 28.0 | 44.500N | 110.500W | | | | | | | | 459 | F | | 156 | 40 | 257. |
| PGS | 1960 | 07 | 19 | 11 | 28 | 58.0 | 44.500N | 110.500W | | | | | | | | 459 | | | 156 | 40 | 257. |
| PGS | 1960 | 07 | 18 | 23 | 17 | 30.0 | 44.500N | 110.500W | | | | | | | | 459 | F | | 156 | 40 | 257. |
| PS | 1975 | 06 | 30 | 19 | 00 | 27.4* | 44.766N | 110.718W | 005G | 5.1 MB | | | 5.30ML GS | | | 459 | | 8 | 156 | 40 | 257. |
| PS | 1975 | 07 | 01 | 19 | 57 | 47.8* | 44.794N | 110.743W | 005G | | | | 3.90ML GS | | | 459 | | 13 | 156 | 40 | 257. |
| PGS | 1962 | 11 | 04 | 06 | 18 | 31.5 | 44.300N | 110.300W | 033 | | | | | | | 459 | | 008 | 156 | 40 | 257. |
| PRL | 1973 | 04 | 12 | 03 | 24 | 18.2 | 44.439N | 110.451W | 010 | 4.20MB | | | | | | 459 | | 022 | 156 | 40 | 257. |
| PRL | 1973 | 03 | 30 | 06 | 59 | 17.0* | 44.199N | 110.413W | 010G | | | | | | | 459 | | 008 | 156 | 40 | 257. |
| PRL | 1973 | 04 | 01 | 09 | 44 | 08.1 | 44.364N | 110.385W | 009G | | | | | | | 459 | | 012 | 156 | 40 | 258. |
| PRL | 1973 | 03 | 30 | 01 | 32 | 18.4 | 44.389N | 110.414W | 010G | 3.70MB | | | | | | 459 | | 015 | 156 | 40 | 258. |
| PRL | 1973 | 04 | 21 | 08 | 00 | 11.5 | 44.828N | 110.850W | 010G | 3.60MB | | | | | | 459 | | 011 | 156 | 40 | 258. |
| PS | 1975 | 07 | 02 | 08 | 29 | 29.6* | 44.787N | 110.756W | 005G | 4.6 MB | | | 3.30ML GS | | | 459 | | 11 | 156 | 40 | 258. |
| PRL | 1973 | 03 | 30 | 02 | 13 | 27.9* | 44.580N | 110.600W | 010G | | | | | | | 459 | | 009 | 156 | 40 | 259. |
| PGS | 1965 | 06 | 03 | 19 | 30 | 25.8 | 43.600N | 106.500W | 033 | 4.70MB | | | | | | 460 | | 011 | 155 | 36 | 259. |
| PRL | 1973 | 03 | 27 | 10 | 03 | 10.2 | 44.379N | 110.413W | 010G | | | | | | | 459 | | 012 | 156 | 40 | 259. |
| PDS | 1971 | 02 | 03 | 19 | 52 | 40.6 | 45.098N | 110.937W | 015G | 4.90MB | | | | | | 456 | | 014 | 156 | 50 | 259. |
| PPL | 1973 | 04 | 12 | 03 | 15 | 06.9 | 44.826N | 110.867W | 010 | | | | | | | 459 | | 020 | 156 | 40 | 259. |
| P[illegible] | 1973 | 03 | 28 | 10 | 07 | 02.9 | 44.422N | 110.465W | 010G | 4.00MB | | | | | | 459 | | 014 | 156 | 40 | 259. |
| PS | 1974 | 10 | 30 | 09 | 14 | 48.8 | 44.823N | 110.792W | 005G | 3.90MB | | | | | | 459 | | 17 | 156 | 40 | 259. |
| PS | 1974 | 10 | 20 | 06 | 45 | 34.3* | 44.937N | 110.863W | 005G | | | | | | | 459 | | 10 | 156 | 40 | 260. |
| PRL | 1973 | 04 | 05 | 16 | 30 | 28.7 | 44.427N | 110.476W | 005G | | | | | | | 459 | | 013 | 156 | 40 | 260. |
| PRL | 1973 | 03 | 27 | 12 | 31 | 06.7 | 44.383N | 110.432W | 010G | | | | | | | 459 | | 011 | 156 | 40 | 260. |
| PRL | 1973 | 04 | 21 | 07 | 45 | 09.7* | 44.933N | 110.883W | 010G | | | | | | | 459 | | 005 | 156 | 40 | 260. |
| PS | 1974 | 10 | 18 | 06 | 25 | 28.1 | 44.733N | 110.737W | 005G | 4.40MB | | | | III | | 459 | F | 39 | 156 | 40 | 260. |
| PS | 1974 | 10 | 18 | 06 | 59 | 11.5 | 44.738N | 110.742W | 005G | 3.50MB | | | | II | | 459 | F | 21 | 156 | 40 | 260. |
| PRL | 1973 | 03 | 28 | 01 | 02 | 30.1* | 44.363N | 110.413W | 010G | 4.50MB | | | | | | 459 | | 015 | 156 | 40 | 260. |
| PRL | 1973 | 04 | 12 | 03 | 19 | 59.7 | 44.420N | 110.479W | 010G | | | | | | | 459 | | 009 | 156 | 40 | 260. |
| PGS | 1969 | 10 | 26 | 14 | 03 | 00.3* | 44.479N | 110.539W | 033N | | | | | | | 459 | | 006 | 156 | 40 | 260. |
| PRL | 1973 | 03 | 26 | 09 | 09 | 12.1* | 44.365N | 110.429W | 010G | | | | | | | 459 | | 006 | 156 | 40 | 261. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES: BODY | SURF | OTHER | LOCAL | INT | PHENOM | RMS | GP | AZM | GAP | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *=N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | MAX | DIR | VND | | | | |
| GS | 1976 | 12 | 20 | 01 | 34 | 16.7 | 44.842N | 110.827W | 005G | 4.4 MB | | | 4.30ML | GS | | 459 | F | 25 | 156 | 40 | 261. |
| PRL | 1973 | 03 | 30 | 20 | 18 | 59.0 | 44.810N | 110.806W | 010G | | | | | | | 459 | | 015 | 156 | 40 | 261. |
| GS | 1976 | 12 | 09 | 22 | 15 | 05.40 | 44.770N | 110.787W | 006 | 4.9 MB | | | 4.20ML | MSO | | 459 | | 23 | 156 | 40 | 261. |
| GS | 1975 | 07 | 11 | 05 | 37 | 41.2 | 44.705N | 110.742W | 005G | 3.7 MB | | | 3.30ML | GS | | 459 | | 16 | 156 | 40 | 262. |
| PGS | 1970 | 09 | 20 | 07 | 36 | 13.6* | 44.582N | 110.648W | 015G | 4.00MB | | | | | | 459 | | 007 | 156 | 40 | 262. |
| PRL | 1973 | 03 | 27 | 19 | 02 | 19.3 | 44.443N | 110.524W | 010G | | | | | | | 459 | | 013 | 156 | 40 | 262. |
| PRL | 1973 | 04 | 02 | 18 | 57 | 43.1* | 44.363N | 110.447W | 005G | | | | | | | 459 | | 007 | 156 | 40 | 262. |
| PRL | 1973 | 03 | 27 | 12 | 43 | 51.3* | 44.366N | 110.451W | 010G | | | | | | | 459 | | 008 | 156 | 40 | 262. |
| PRL | 1973 | 04 | 02 | 19 | 48 | 40.3* | 44.362N | 110.448W | 005G | | | | | | | 459 | | 008 | 156 | 40 | 262. |
| GS | 1976 | 12 | 19 | 17 | 10 | 15.60 | 44.772N | 110.800W | 005 | 4.9 MB | | | 4.90ML | GS | | 459 | F | 33 | 156 | 40 | 262. |
| GS | 1976 | 12 | 09 | 22 | 36 | 23.70 | 44.768N | 110.798W | 005 | 4.5 MB | | | 5.10ML | GS | V | 459 | F | 36 | 156 | 40 | 262. |
| GS | 1976 | 12 | 08 | 14 | 40 | 59.10 | 44.760N | 110.793W | 005 | 5.5 MB | | | 4.60ML | GS | V | 459 | F | 38 | 156 | 40 | 262. |
| GS | 1978 | 10 | 02 | 13 | 39 | 10.7 | 44.739N | 110.784W | 005G | | | 3.50MBO | 3.90ML | GS | | 459 | | 17 | 156 | 40 | 263. |
| PRL | 1972 | 02 | 16 | 11 | 43 | 38.1* | 44.292N | 105.116W | 005G | 4.30MB | | | | | | 460 | | 010 | 155 | 45 | 263. |
| PRL | 1973 | 04 | 04 | 15 | 14 | 30.0* | 44.560N | 110.649W | 005G | | | | | | | 459 | | 008 | 156 | 40 | 263. |
| PGS | 1959 | 09 | 02 | 00 | 05 | 05.0 | 44.000N | 110.000W | | | | | | | | 459 | F | | 156 | 40 | 263. |
| PGS | 1963 | 06 | 25 | 15 | 51 | 49.6 | 44.000N | 110.000W | 033 | 4.20MB | | | | | | 459 | | 018 | 156 | 40 | 263. |
| PRL | 1973 | 03 | 30 | 00 | 10 | 40.7 | 44.287N | 110.388W | 010G | | | | | | | 459 | | 009 | 156 | 40 | 264. |
| PGS | 1963 | 01 | 20 | 09 | 24 | 39.7 | 44.900N | 110.900W | 028 | | | | | | | 459 | | 005 | 156 | 40 | 264. |
| PGS | 1963 | 03 | 10 | 11 | 26 | 06.8 | 44.900N | 110.900W | 033 | | | | | | | 459 | | 005 | 156 | 40 | 264. |
| PGS | 1963 | 03 | 27 | 15 | 15 | 46.3 | 44.900N | 110.900W | 033 | | | | | | | 459 | | 006 | 156 | 40 | 264. |
| PGS | 1963 | 08 | 08 | 23 | 33 | 20.8 | 44.900N | 110.900W | 033 | 4.00MB | | | | | | 459 | | 007 | 156 | 40 | 264. |
| GS | 1974 | 02 | 06 | 07 | 26 | 13.0* | 45.110N | 111.009W | 033N | | | | | | | 456 | | 7 | 156 | 51 | 264. |
| GS | 1977 | 04 | 02 | 23 | 03 | 52.2 | 44.749N | 110.816W | 005G | | | | 3.90ML | GS | | 459 | F | 14 | 156 | 40 | 265. |
| PGS | 1967 | 04 | 26 | 10 | 15 | 04.5 | 43.531N | 108.959W | 005G | 4.20MB | | | | | | 460 | | 006 | 155 | 38 | 265. |
| GS | 1974 | 10 | 22 | 08 | 43 | 07.1 | 44.739N | 110.813W | 005G | 4.60MB | | | | | IV | 459 | F | 9 | 156 | 40 | 265. |
| GS | 1976 | 10 | 19 | 06 | 18 | 35.30 | 44.735N | 110.813W | 004 | 5.3 MB | | | 4.00ML | GS | IV | 459 | F | 33 | 156 | 40 | 265. |
| GS | 1978 | 10 | 02 | 23 | 55 | 42.6 | 44.710N | 110.799W | 005G | | | 3.70MBO | 3.60ML | GS | | 459 | | 12 | 156 | 40 | 265. |
| PRL | 1973 | 03 | 31 | 16 | 13 | 15.2* | 44.483N | 110.580W | 010G | | | | | | | 459 | | 009 | 156 | 40 | 265. |
| PRL | 1973 | 03 | 29 | 10 | 40 | 26.3* | 44.081N | 110.166W | 010G | | | | | | | 459 | | 006 | 156 | 40 | 266. |
| **1 GS | 1980 | 02 | 20 | 12 | 07 | 23.5* | 44.840N | 110.893W | 001G | | | | | | | 459 | | 12 | 156 | 40 | 266. |
| **2 GS | 1980 | 02 | 20 | 12 | 07 | 52.8G | 44.805N | 110.917W | 001 | | | | 3.30 | | IV | 459 | F | 9 | 156 | 40 | 266. |
| PGS | 1964 | 12 | 24 | 22 | 51 | 36.7 | 44.700N | 110.800W | 033 | 4.00MB | | | | | | 459 | | 007 | 156 | 40 | 266. |
| GS | 1976 | 11 | 17 | 14 | 57 | 38.6* | 44.740N | 110.829W | 005G | | | | 3.00ML | ERD | | 459 | | 7 | 156 | 40 | 266. |
| GS | 1978 | 08 | 30 | 16 | 41 | 59.1 | 44.702N | 110.803W | 001 | 4.50MB | | | 4.50ML | GS | V | 459 | F | 40 | 156 | 40 | 266. |
| PGS | 1968 | 07 | 27 | 07 | 02 | 26.1 | 44.662N | 110.778W | 033N | | | | | | | 459 | | 006 | 156 | 40 | 266. |
| GS | 1978 | 08 | 30 | 19 | 46 | 54.0 | 44.640N | 110.765W | 002 | 4.50MB | | | | | III | 459 | | 10 | 156 | 40 | 267. |
| PGS | 1959 | 08 | 18 | 07 | 54 | 32.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 08 | 20 | 10 | 59 | 11.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 08 | 20 | 19 | 11 | 27.0 | 45.000N | 111.000W | | | | | | | V | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 07 | 11 | 39 | 30.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 13 | 19 | 49 | 36.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 13 | 21 | 23 | 31.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 13 | 23 | 39 | 46.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 14 | 06 | 22 | 59.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 14 | 09 | 34 | 52.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 14 | 13 | 36 | 12.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 16 | 21 | 15 | 28.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 16 | 23 | 20 | 05.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 17 | 02 | 29 | 53.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM DTSVND | RM | CE | Q/B | NAR | DQ | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| PGS | 1959 | 09 | 24 | 18 | 25 | 47.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 24 | 18 | 55 | 09.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 28 | 08 | 05 | 42.0 | 45.000N | 111.000W | | | | | | V | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 09 | 30 | 01 | 36 | 08.0 | 45.000N | 111.000W | | | | | | VI | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 11 | 01 | 23 | 03 | 25.0 | 45.000N | 111.000W | | | | | | V | | 456 | F | | 156 | 51 | 267. |
| PGS | 1959 | 12 | 15 | 09 | 38 | 25.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 01 | 03 | 20 | 37 | 48.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 02 | 17 | 16 | 52 | 35.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 04 | 21 | 17 | 49 | 30.0 | 45.000N | 111.000W | | | | | | V | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 04 | 21 | 17 | 57 | 55.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1960 | 05 | 15 | 11 | 30 | 50.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 05 | 20 | 17 | 54 | 02.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 06 | 13 | 12 | 38 | 45.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1960 | 06 | 13 | 18 | 59 | 58.0 | 45.000N | 111.000W | | | | | | | | 456 | F | | 156 | 51 | 267. |
| PGS | 1960 | 06 | 17 | 21 | 49 | 17.0 | 45.000N | 111.000W | | | | | | | | 456 | | | 156 | 51 | 267. |
| PGS | 1961 | 11 | 05 | 09 | 53 | 08.3 | 45.000N | 111.000W | 025N | | | | | IV | | 456 | F | | 156 | 51 | 267. |
| PGS | 1963 | 04 | 18 | 18 | 59 | 12.6 | 45.000N | 111.000W | 033 | | | | | III | | 456 | F | 006 | 156 | 51 | 267. |
| BS | 1976 | 11 | 17 | 18 | 34 | 33.4 | 44.752N | 110.857W | 005G | | | | 3.00HL ERD | | | 459 | F | 11 | 156 | 40 | 267. |
| BS | 1980 | 02 | 22 | 10 | 18 | 27.70 | 44.808N | 110.900W | 001 | 4.5 MB | | | 4.70HL | IV | | 459 | F | 32 | 156 | 40 | 268. |
| PGS | 1966 | 09 | 19 | 10 | 06 | 02.5 | 45.900N | 111.200W | 007 | 4.00MB | | | | V | | 456 | F | 020 | 156 | 51 | 268. |
| BS | 1974 | 10 | 20 | 22 | 57 | 04.4* | 44.783N | 110.885W | 005G | | | | | | | 459 | | 6 | 156 | 40 | 268. |
| BS | 1977 | 03 | 04 | 14 | 19 | 21.5* | 44.841N | 110.923W | 005G | | | | 3.80HL MBO | | | 459 | | 6 | 156 | 40 | 268. |
| PGS | 1967 | 06 | 08 | 03 | 08 | 36.7 | 45.200N | 111.100W | 008 | | | | | | | 456 | | 006 | 156 | 51 | 268. |
| PRL | 1973 | 03 | 28 | 15 | 38 | 43.04 | 44.196N | 110.360W | 010G | | | | | | | 459 | | 006 | 156 | 40 | 268. |
| PDH | 1925 | 07 | 10 | 14 | 45 | 00.0Z | 46.000N | 111.200W | | | | | | VI | | 456 | F | | 156 | 61 | 269. |
| BS | 1978 | 03 | 24 | 15 | 07 | 59.0* | 44.640N | 110.795W | 033N | | | | | | | 459 | | 8 | 156 | 40 | 269. |
| BS | 1974 | 03 | 24 | 15 | 08 | 45.6 | 44.630N | 110.792W | 033N | 3.80MB | | | | | | 459 | | 17 | 156 | 40 | 269. |
| PGS | 1968 | 01 | 28 | 10 | 14 | 32.9 | 44.400N | 110.600W | 033 | 3.80MB | | | | | | 459 | | 009 | 156 | 40 | 269. |
| PDH | 1926 | 12 | 13 | 00 | 00 | 00.0Z | 46.100N | 111.200W | | | | | | V | | 456 | F | | 156 | 61 | 270. |
| PRL | 1973 | 04 | 07 | 19 | 16 | 49.9* | 44.866N | 110.217W | 005G | | | | | | | 459 | | 008 | 156 | 40 | 270. |
| BS | 1976 | 11 | 27 | 01 | 09 | 35.2 | 44.656N | 110.825W | 005G | | | | 3.50HL ERD | | | 459 | F | 9 | 156 | 40 | 270. |
| PGS | 1970 | 06 | 23 | 02 | 30 | 00.8 | 44.700N | 110.919W | 033N | 4.00MB | | | | | | 459 | | 012 | 156 | 40 | 270. |
| BS | 1977 | 04 | 03 | 04 | 43 | 52.3* | 44.713N | 110.880W | 005G | | | | 2.90HL ERD | | | 459 | | 9 | 156 | 40 | 271. |
| BS | 1976 | 11 | 27 | 19 | 18 | 57.9 | 44.846N | 110.967W | 005G | | | | 3.60HL ERD | II | | 458 | F | 17 | 156 | 40 | 271. |
| PGS | 1963 | 09 | 24 | 06 | 35 | 52.1 | 44.900N | 111.000W | 033 | 4.70MB | | | | V | | 458 | F | 006 | 156 | 41 | 271. |
| PGS | 1963 | 12 | 28 | 08 | 22 | 21.1 | 44.900N | 111.000W | 033 | 4.30MB | | | | | | 458 | | 009 | 156 | 41 | 271. |
| PGS | 1965 | 05 | 15 | 10 | 41 | 06.2 | 44.900N | 111.000W | 033 | | | | | | | 458 | | 007 | 156 | 41 | 271. |
| PGE | 1967 | 07 | 28 | 12 | 50 | 55.8 | 44.900N | 111.000W | 033 | | | | | | | 458 | | 008 | 156 | 41 | 271. |
| PRL | 1973 | 03 | 30 | 14 | 36 | 25.24 | 44.087N | 110.271W | 010G | | | | | | | 459 | | 006 | 156 | 40 | 271. |
| NUB | 1971 | 02 | 03 | 03 | 16 | 58.5 | 44.895N | 111.007W | 015G | | | | | | | 458 | | 008 | 156 | 41 | 272. |
| PRL | 1973 | 01 | 25 | 09 | 56 | 21.50 | 44.052N | 110.233W | 010G | | | | | | | 459 | | 008 | 156 | 40 | 272. |
| NUB | 1971 | 02 | 03 | 11 | 25 | 48.9 | 44.897N | 111.015W | 015G | | | | | | | 458 | | 010 | 156 | 41 | 272. |
| PGS | 1967 | 04 | 26 | 10 | 17 | 59.4* | 43.408N | 108.774W | 005G | 4.70MB | | | | | | 460 | | 005 | 155 | 38 | 273. |
| PGS | 1965 | 06 | 01 | 09 | 42 | 03.5 | 44.700N | 110.900W | 033 | 3.90MB | | | | | | 459 | | 006 | 156 | 40 | 273. |
| BS | 1978 | 04 | 14 | 13 | 32 | 15.6 | 44.846N | 110.999W | 003 | | | | | | | 459 | | 16 | 156 | 40 | 273. |
| PGS | 1960 | 11 | 01 | 22 | 26 | 52.7 | 45.300N | 111.200W | 038 | | | | | | | 456 | F | | 156 | 51 | 273. |
| PGS | 1965 | 05 | 12 | 10 | 16 | 06.9 | 45.300N | 111.200W | 015 | 3.60MB | | | | | | 456 | | 005 | 156 | 51 | 273. |
| BS | 1981 | 05 | 22 | 07 | 56 | 41.0G | 44.830N | 110.997W | 007G | | | | 4.20HL GS | IV | | 459 | F | 20 | 156 | 40 | 274. |
| NUB | 1970 | 12 | 09 | 23 | 56 | 01.0* | 44.757N | 110.953W | 010G | | | | | | | 459 | | 007 | 156 | 40 | 274. |
| PGS | 1967 | 05 | 11 | 21 | 15 | 06.6 | 43.663N | 105.899W | 033N | 4.80MB | | | | | | 460 | | 009 | 155 | 35 | 274. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM DTSVNO | RMS | GE | Q/S | NAR | DQ | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| PGS | 1964 | 05 | 09 | 14 | 18 | 39.0 | 45.000N | 111.100W | 033 | | | | | | | 456 | | 006 | 156 | 51 | 275. |
| PGS | 1969 | 10 | 06 | 08 | 03 | 51.6 | 44.157N | 110.426W | 033N | 3.90MB | | | | | | 459 | | 010 | 156 | 40 | 275. |
| GS | 1975 | 06 | 23 | 19 | 23 | 13.7* | 44.934N | 111.076W | 033N | | | | | | | 458 | | 8 | 156 | 41 | 275. |
| PGS | 1963 | 09 | 24 | 04 | 11 | 50.5 | 44.800N | 111.000W | 033 | 3.10MB | | | | | | 458 | | 007 | 156 | 41 | 275. |
| PGS | 1964 | 11 | 15 | 23 | 09 | 53.8 | 44.800N | 111.000W | 010 | 3.10MB | | | | | | 458 | | 006 | 156 | 41 | 275. |
| USE | 1929 | 06 | 11 | 12 | 00 | 00.0Z | 45.900N | 111.300W | | | | | | | | 456 | F | | 156 | 51 | 276. |
| **1 YSS | 1925 | 06 | 28 | 01 | 20 | 59 | 46.4 N | 111.2 W | | | | | | | | 456 | | | 156 | 61 | 276. |
| **2 G=R | 1925 | 06 | 28 | 01 | 21 | 06.0 | 46.000N | 111.500W | | | | 6.75PAS | | VIII | | 456 | D | | 156 | 61 | 276. |
| YSS | 1925 | 06 | 28 | 02 | 05 | 35 | 46.4 N | 111.2 W | | | | | | | | 456 | | | 156 | 61 | 276. |
| YSS | 1925 | 06 | 28 | 03 | 40 | 45 | 46.4 N | 111.2 W | | | | | | | | 456 | | | 156 | 61 | 276. |
| YSS | 1925 | 06 | 28 | 22 | 31 | 50 | 46.4 N | 111.2 W | | | | | | | | 456 | | | 156 | 61 | 276. |
| PGS | 1962 | 02 | 25 | 17 | 17 | 38.9 | 45.200N | 111.200W | 025 | | | | | V | | 456 | F | 008 | 156 | 51 | 276. |
| PRL | 1973 | 06 | 17 | 09 | 17 | 26.0 | 44.736N | 110.962W | 010G | | | | | | | 459 | | 011 | 156 | 40 | 276. |
| PGS | 1967 | 11 | 28 | 15 | 06 | 58.7 | 44.300N | 110.600W | 033 | | | | | | | 459 | | 005 | 156 | 40 | 276. |
| PS | 1977 | 03 | 24 | 13 | 20 | 11.9 | 45.709N | 111.313W | 005G | | | | 3.20ML ERD | | | 456 | F | 10 | 156 | 51 | 277. |
| PRL | 1973 | 03 | 24 | 23 | 20 | 04.5* | 43.986N | 110.228W | 010G | | | | | | | 460 | | 007 | 156 | 30 | 277. |
| PS | 1977 | 03 | 04 | 10 | 05 | 59.6 | 44.829N | 111.038W | 005G | 3.9 MB | | | 3.80ML GS | | | 458 | F | 16 | 156 | 41 | 277. |
| PRL | 1973 | 06 | 09 | 12 | 37 | 26.2 | 44.935N | 111.109W | 005G | | | | | | | 458 | | 009 | 156 | 41 | 277. |
| PGS | 1967 | 01 | 06 | 00 | 24 | 07.4 | 44.873N | 111.069W | 021 | | | | | | | 458 | | 005 | 156 | 41 | 277. |
| USE | 1929 | 02 | 15 | 03 | 00 | 00.0Z | 46.100N | 111.300W | | | | | | | | 456 | F | | 156 | 61 | 277. |
| PS | 1977 | 03 | 04 | 17 | 10 | 40.6 | 44.763N | 111.005W | 005G | 4.0 MB | | | 3.80ML GS | | | 458 | | 8 | 156 | 41 | 277. |
| PS | 1977 | 03 | 04 | 15 | 00 | 20.1* | 44.824N | 111.051W | 005G | | | | 3.80ML MSO | | | 458 | | 5 | 156 | 41 | 278. |
| PGS | 1964 | 11 | 17 | 10 | 11 | 00.1 | 44.400N | 110.900W | 033 | 3.90MB | | | | | | 459 | | 007 | 156 | 40 | 278. |
| PGS | 1960 | 08 | 10 | 06 | 20 | 01.9 | 44.900N | 111.100W | 018 | | | | | | | 458 | | | 156 | 41 | 278. |
| PGS | 1963 | 07 | 24 | 10 | 57 | 46.9 | 44.900N | 111.100W | 033 | | | | | | | 458 | | 006 | 156 | 41 | 278. |
| PGS | 1966 | 10 | 09 | 19 | 41 | 49.0 | 44.900N | 111.100W | 033 | 4.20MB | | | | | | 458 | | 006 | 156 | 41 | 278. |
| PGS | 1966 | 10 | 11 | 07 | 10 | 04.5 | 44.900N | 111.100W | 022 | 4.00MB | | | | V | | 458 | F | 012 | 156 | 41 | 278. |
| PGS | 1966 | 10 | 11 | 11 | 38 | 50.7 | 44.900N | 111.100W | 016 | 4.50MB | | | | | | 458 | | 018 | 156 | 41 | 278. |
| PGS | 1966 | 10 | 11 | 16 | 27 | 27.6 | 44.900N | 111.100W | 011 | | | | | | | 458 | | 006 | 156 | 41 | 278. |
| PGS | 1967 | 12 | 31 | 18 | 46 | 28.2 | 44.900N | 111.100W | 033 | | | | | | | 458 | | 007 | 156 | 41 | 278. |
| PGS | 1966 | 10 | 11 | 20 | 02 | 13.0 | 45.100N | 111.200W | 033 | | | | | | | 456 | | 005 | 156 | 51 | 279. |
| PS | 1975 | 02 | 06 | 03 | 10 | 29.8 | 45.952N | 111.392W | 005G | | | | 4.00ML GS | IV | | 456 | F | 22 | 156 | 51 | 279. |
| PS | 1974 | 06 | 09 | 00 | 50 | 42.0 | 44.799N | 111.054W | 005G | | | | 4.90ML GS | III | | 458 | F | 14 | 156 | 41 | 279. |
| PS | 1977 | 03 | 04 | 16 | 12 | 28.2 | 44.789N | 111.054W | 005G | | | | 3.40ML GS | | | 458 | | 12 | 156 | 41 | 280. |
| PGS | 1959 | 08 | 18 | 06 | 37 | 15.0 | 44.833N | 111.083W | | | | 7.10PAS | | V | | 456 | C | | 156 | 41 | 280. |
| PRL | 1973 | 04 | 09 | 10 | 30 | 58.7 | 44.140N | 110.485W | 005G | 3.60MB | | | | | | 459 | | 009 | 156 | 40 | 280. |
| PS | 1977 | 03 | 04 | 14 | 19 | 48.8 | 44.779N | 111.051W | 005G | 4.0 MB | | | 4.00ML GS | | | 458 | F | 12 | 156 | 41 | 280. |
| GS | 1980 | 02 | 27 | 06 | 05 | 49.5* | 44.764N | 111.042W | 005G | | | 3.30MBO | 3.40ML | | | 458 | F | 8 | 156 | 41 | 280. |
| PGS | 1965 | 05 | 11 | 18 | 17 | 29.0 | 44.700N | 111.000W | 033 | 4.20MB | | | | | | 458 | F | 017 | 156 | 41 | 280. |
| PGS | 1969 | 04 | 10 | 09 | 33 | 07.0* | 44.772N | 111.055W | 033N | | | | | | | 458 | | 006 | 156 | 41 | 281. |
| PS | 1974 | 07 | 16 | 06 | 38 | 49.8 | 45.838N | 111.368W | 010G | 4.40MB | | | | V | | 456 | F | 26 | 156 | 51 | 281. |
| PS | 1977 | 03 | 04 | 13 | 00 | 58.9 | 44.804N | 111.078W | 005G | 4.1 MB | | | 4.10ML GS | IV | | 458 | F | 18 | 156 | 41 | 281. |
| PS | 1977 | 03 | 04 | 11 | 01 | 50.2 | 44.799N | 111.076W | 005G | 3.9 MB | | | 3.60ML GS | | | 458 | F | 14 | 156 | 41 | 281. |
| PGS | 1968 | 12 | 25 | 00 | 56 | 02.1 | 44.491N | 110.862W | 033N | | | | | | | 459 | | 006 | 156 | 40 | 281. |
| PS | 1976 | 12 | 08 | 22 | 10 | 42.3* | 44.746N | 111.054W | 005G | | | | 3.50ML GS | | | 458 | F | 11 | 156 | 41 | 282. |
| PS | 1977 | 03 | 04 | 13 | 04 | 21.4* | 44.822N | 111.102W | 005G | 4.0 MB | | | 3.70ML GS | | | 458 | | 7 | 156 | 41 | 282. |
| PS | 1979 | 05 | 08 | 1 | 23 | 18.1* | 44.785N | 111.083W | SG | | | 3.50MBO | 3.40ML | | | 458 | | 12 | 156 | 41 | 282. |
| PGS | 1963 | 05 | 03 | 16 | 32 | 55.9 | 45.000N | 111.200W | 033 | | | | | | | 456 | | 006 | 156 | 51 | 282. |
| PGS | 1963 | 05 | 31 | 11 | 37 | 53.6 | 45.000N | 111.200W | 015 | | | | | | | 456 | | 007 | 156 | 51 | 282. |
| NOS | 1970 | 11 | 13 | 00 | 45 | 45.1* | 44.000N | 110.909W | 033N | 3.90MB | | | | | | 459 | | 010 | 156 | 40 | 282. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM DTSVND | RMS | GP | AZM | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | |
| PGS | 1963 | 03 | 27 | 07 | 22 | 09.8 | 44.300N | 110.700W | 033 | 4.20MB | | | | | | 459 | 018 | 156 40 | 282. |
| PGS | 1969 | 08 | 15 | 17 | 36 | 05.1 | 44.300N | 110.700W | 033 | | | | | | | 459 | 006 | 156 40 | 282. |
| PGS | 1959 | 08 | 18 | 11 | 03 | 52.0 | 44.800N | 111.100W | | | | 5.63HRK | | | | 458 | F | 156 41 | 283. |
| PGS | 1963 | 12 | 24 | 17 | 54 | 19.7 | 44.800N | 111.100W | 033 | 4.70MB | | | | | | 458 | 007 | 156 41 | 283. |
| PGS | 1965 | 10 | 08 | 19 | 34 | 59.4 | 44.800N | 111.100W | 001 | 4.90MB | | | | | V | 458 | F 020 | 156 41 | 283. |
| PGS | 1966 | 10 | 09 | 04 | 18 | 24.5 | 44.800N | 111.100W | 016 | 3.90MB | | | | | | 458 | 007 | 156 41 | 283. |
| USE | 1930 | 08 | 26 | 11 | 00 | 00.0Z | 44.400N | 110.800W | | | | | | | | 459 | F | 156 40 | 283. |
| USE | 1930 | 12 | 22 | 16 | 15 | 00.0Z | 44.400N | 110.800W | | | | | | | | 459 | F | 156 40 | 283. |
| GS | 1976 | 06 | 11 | 06 | 43 | 39.3 | 45.617N | 111.400W | 005G | | | | 3.10ML AEC | | | 456 | 9 | 156 51 | 283. |
| GS | 1977 | 03 | 04 | 11 | 33 | 06.9 | 44.835N | 111.129W | 005G | 3.7 MB | | | 3.60ML GS | | | 458 | F 13 | 156 41 | 283. |
| PGS | 1962 | 10 | 22 | 05 | 03 | 03.9 | 45.200N | 111.300W | 033 | | | | | | | 456 | 005 | 156 51 | 283. |
| PGS | 1966 | 10 | 10 | 20 | 09 | 53.4 | 45.200N | 111.300W | 033 | | | | | | | 456 | 005 | 156 51 | 283. |
| GS | 1978 | 03 | 07 | 01 | 10 | 47.6G | 44.433N | 110.843W | 005 | | | | 3.50ML GS | | | 459 | 17 | 156 40 | 284. |
| GS | 1975 | 06 | 20 | 10 | 58 | 44.0* | 45.001N | 111.220W | 005G | | | | | | IV | 456 | F 9 | 156 51 | 284. |
| PRL | 1971 | 06 | 23 | 05 | 01 | 50.5* | 44.040N | 110.422W | 015G | | | | | | | 459 | 005 | 156 40 | 284. |
| PRL | 1973 | 03 | 01 | 06 | 00 | 19.2 | 44.812N | 111.122W | 005G | 4.30MB | | | | | | 458 | 015 | 156 41 | 284. |
| GS | 1976 | 12 | 11 | 21 | 57 | 12.8 | 44.660N | 111.081W | 005G | | | | 3.10ML ERD | | | 458 | 8 | 156 41 | 284. |
| PAH | 1926 | 05 | 31 | 12 | 25 | 00.0Z | 46.000N | 111.400W | | | | | | | V | 456 | F | 156 61 | 284. |
| GS | 1978 | 02 | 02 | | 36 | 25.6G | 44.391N | 110.815W | 005 | 3.7 MB | | | 3.40ML GS | | | 459 | F 15 | 156 40 | 284. |
| GS | 1978 | 02 | 02 | | 49 | 01.0G | 44.392N | 110.816W | 004 | | | | 2.80ML GS | | | 459 | 18 | 156 40 | 284. |
| PGS | 1969 | 04 | 06 | 19 | 46 | 04.2 | 44.736N | 111.086W | 033N | | | | | | | 458 | 009 | 156 41 | 284. |
| PGS | 1961 | 10 | 12 | 14 | 27 | 39.9 | 43.300N | 108.800W | 025N | | | | | | | 460 | | 155 38 | 285. |
| GS | 1978 | 03 | 10 | 07 | 07 | 11.8* | 43.842N | 110.167W | 005G | | | | 3.20ML GS | | | 460 | 9 | 156 30 | 285. |
| PGS | 1967 | 02 | 09 | 13 | 16 | 57.4 | 46.245N | 111.374W | 019 | 3.90MB | | | | | | 456 | 006 | 156 61 | 285. |
| GS | 1977 | 03 | 04 | 16 | 47 | 43.5 | 44.772N | 111.124W | 005G | | | | 3.70ML GS | | | 458 | 15 | 156 41 | 286. |
| GS | 1978 | 02 | 02 | 12 | 35 | 56.2G | 44.388N | 110.830W | 008 | 3.1 MB | | | 3.10ML GS | | | 459 | F 14 | 156 40 | 286. |
| GS | 1979 | 05 | 08 | | 56 | 34.1* | 44.766N | 111.121W | 5G | | | 3.50MBG | 3.30ML | | | 458 | 11 | 156 41 | 286. |
| PGS | 1961 | 12 | 23 | 06 | 51 | 36.5 | 44.900N | 111.200W | 023 | | | | | | | 458 | | 156 41 | 286. |
| PGS | 1969 | 09 | 18 | 22 | 01 | 20.3 | 44.900N | 111.200W | 001 | | | | | | | 458 | 008 | 156 41 | 286. |
| PGS | 1965 | 05 | 11 | 21 | 40 | 34.1 | 44.900N | 111.200W | 035 | | | | | | | 458 | F 005 | 156 41 | 286. |
| PGS | 1966 | 07 | 07 | 05 | 26 | 16.3 | 44.900N | 111.200W | 033 | | | | | | | 458 | 005 | 156 41 | 286. |
| PGS | 1966 | 10 | 11 | 16 | 30 | 41.0 | 44.900N | 111.200W | 025 | 3.90MB | | | | | | 458 | F 010 | 156 41 | 286. |
| PGS | 1966 | 10 | 11 | 16 | 39 | 51.1 | 44.900N | 111.200W | 020 | 4.00MB | | | | | IV | 458 | F 009 | 156 41 | 286. |
| PGS | 1969 | 02 | 02 | 22 | 50 | 36.1 | 44.900N | 111.200W | 033 | | | | | | | 458 | 006 | 156 41 | 286. |
| GS | 1981 | 03 | 12 | 17 | 09 | 09.0G | 44.292N | 110.786W | 001G | | | | 3.10ML GS | | III | 459 | F 5 | 156 40 | 286. |
| GS | 1974 | 10 | 20 | 19 | 23 | 13.7* | 45.980N | 111.427W | 005G | | | | | | | 456 | 11 | 156 51 | 286. |
| GS | 1981 | 03 | 12 | 14 | 23 | 55.2G | 44.295N | 110.750W | 005G | | | | 2.50ML GS | | | 459 | 3 | 156 40 | 286. |
| PGS | 1961 | 08 | 19 | 17 | 02 | 08.9 | 45.100N | 111.300W | 033N | | | | | | | 456 | | 156 51 | 286. |
| PGS | 1963 | 07 | 20 | 10 | 41 | 02.5 | 45.100N | 111.300W | 033 | 3.40MB | | | | | | 456 | 006 | 156 51 | 286. |
| GS | 1981 | 03 | 12 | 14 | 29 | 32.1G | 44.288N | 110.749W | 004G | | | | 2.60ML GS | | III | 459 | F 3 | 156 40 | 286. |
| USE | 1952 | 04 | 22 | 16 | 58 | 42.5 | 46.200N | 111.400W | | | | | | | VI | 456 | F | 156 61 | 286. |
| PGS | 1968 | 02 | 05 | 17 | 08 | 31.3 | 46.200N | 111.400W | 005 | 3.80MB | | | | | | 456 | 006 | 156 61 | 286. |
| GS | 1976 | 12 | 16 | 00 | 28 | 21.4* | 44.641N | 111.050W | 005G | | | | 3.00ML ERD | | | 458 | F 7 | 156 41 | 286. |
| GS | 1981 | 03 | 12 | 15 | 12 | 02.2G | 44.290N | 110.755W | 001G | | | | 2.50ML GS | | II | 459 | F 1 | 156 40 | 287. |
| GS | 1981 | 03 | 12 | 14 | 22 | 44.6G | 44.296N | 110.761W | 004G | | | | 2.50ML GS | | III | 459 | F 3 | 156 40 | 287. |
| PGS | 1969 | 04 | 27 | 08 | 18 | 57.5* | 44.673N | 111.077W | 033N | | | | | | | 458 | 005 | 156 41 | 287. |
| GS | 1981 | 03 | 12 | 14 | 19 | 38.2G | 44.288N | 110.759W | 002G | | | | 1.10ML GS | | II | 459 | F 4 | 156 40 | 287. |
| GS | 1976 | 10 | 26 | 10 | 08 | 50.3* | 44.614N | 111.043W | 005G | | | | 3.00ML ERD | | | 458 | 7 | 156 41 | 287. |
| GS | 1981 | 03 | 12 | 14 | 41 | 12.6G | 44.272N | 110.750W | 000G | | | | 2.60ML GS | | | 459 | 3 | 156 40 | 287. |
| GS | 1981 | 03 | 12 | 15 | 55 | 41.9G | 44.280N | 110.759W | 001G | | | | 3.90ML GS | | III | 459 | F 8 | 156 40 | 287. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT | PHENOM | RN | CE | Q/S | NAR | DG | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *=N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| GS | 1977 | 03 | 06 | 05 | 01 | 04.0* | 44.742N | 111.132W | 005G | | | | 2.90ML ERD | | | 458 | | 10 | 156 | 41 | 287. |
| GS | 1979 | 05 | 07 | 17 | 15 | 43.8* | 44.759N | 111.103W | 5G | | | 3.60MBO | 3.20ML | | | 458 | | 11 | 156 | 41 | 288. |
| PRL | 1972 | 11 | 02 | 07 | 27 | 52.0 | 46.165N | 111.424W | 005G | | | | 3.50ML ERL | | | 456 | F | 006 | 156 | 61 | 288. |
| GS | 1981 | 03 | 12 | 14 | 48 | 13.7G | 44.276N | 110.760W | 002G | | | | 3.00ML GS | III | | 459 | F | 6 | 156 | 40 | 288. |
| GS | 1981 | 03 | 12 | 15 | 00 | 22.6G | 44.265N | 110.752W | 001G | | | | 2.60ML GA | III | | 459 | F | 1 | 156 | 40 | 288. |
| GS | 1978 | 02 | 02 | 04 | 30 | 25.9G | 44.358N | 110.843W | 004 | | | | 2.60ML GS | | | 459 | F | 9 | 156 | 40 | 288. |
| GS | 1981 | 03 | 12 | 14 | 12 | 02.2G | 44.273N | 110.762W | 001G | | | | 3.80ML GS | IV | | 459 | F | 17 | 156 | 40 | 288. |
| GS | 1980 | 11 | 14 | 21 | 08 | 10.4G | 44.592N | 111.090W | 011 | | | | 3.20ML GA | III | | 458 | F | 6 | 156 | 41 | 288. |
| GS | 1974 | 08 | 30 | 17 | 44 | 45.9* | 44.654N | 111.089W | 005G | | | | | III | | 458 | | 6 | 156 | 41 | 289. |
| GS | 1975 | 05 | 02 | 08 | 56 | 58.6 | 46.175N | 111.437W | 005G | 3.9 MB | | | 4.00ML GS | V | | 456 | F | 21 | 156 | 61 | 289. |
| GS | 1976 | 10 | 20 | 08 | 55 | 59.4 | 44.608N | 111.041W | 005G | | | | 3.20ML ERD | | | 458 | | 6 | 156 | 41 | 289. |
| GS | 1975 | 08 | 17 | 10 | 24 | 14.3 | 44.669N | 111.106W | 005G | | | | | | | 458 | | 12 | 156 | 41 | 289. |
| PGS | 1963 | 09 | 18 | 04 | 45 | 07.5 | 45.000N | 111.300W | 033 | 3.1OMB | | | | | | 456 | | 007 | 156 | 51 | 290. |
| PGS | 1966 | 10 | 11 | 07 | 31 | 12.0 | 45.000N | 111.300W | 033 | | | | | | | 456 | F | 005 | 156 | 51 | 290. |
| GS | 1976 | 04 | 19 | 22 | 05 | 52.0 | 44.755N | 111.172W | 005G | | | | 3.30ML ERD | | | 458 | | 29 | 156 | 41 | 290. |
| PGS | 1965 | 05 | 13 | 06 | 47 | 38.5 | 44.800N | 111.200W | 033 | | | | | | | 458 | | 006 | 156 | 41 | 290. |
| PGS | 1966 | 10 | 11 | 08 | 23 | 05.2 | 44.800N | 111.200W | 016 | | | | | | | 458 | F | 010 | 156 | 41 | 290. |
| PGS | 1966 | 10 | 11 | 17 | 41 | 49.9 | 44.800N | 111.200W | 033 | | | | | IV | | 458 | F | 007 | 156 | 41 | 290. |
| PGS | 1966 | 10 | 11 | 17 | 52 | 31.1 | 44.800N | 111.200W | 008 | 4.6OMB | | | | V | | 458 | F | 013 | 156 | 41 | 290. |
| PGS | 1966 | 10 | 15 | 05 | 01 | 02.8 | 44.800N | 111.200W | 015 | | | | | | | 458 | | 008 | 156 | 41 | 290. |
| PGS | 1968 | 12 | 18 | 11 | 33 | 45.5 | 44.345N | 110.860W | 033N | 3.5OMB | | | | | | 459 | | 006 | 156 | 40 | 290. |
| GS | 1974 | 08 | 30 | 16 | 55 | 48.2* | 44.526N | 111.017W | 005G | | | | | | | 458 | | 6 | 156 | 41 | 290. |
| PGS | 1943 | 02 | 03 | 15 | 16 | 18.0 | 44.500N | 111.000W | | | | | | | | 458 | | | 156 | 41 | 290. |
| PGS | 1949 | 03 | 24 | 17 | 09 | 55.0 | 44.500N | 111.000W | | | | | | | | 458 | F | | 156 | 41 | 290. |
| PGS | 1959 | 11 | 01 | 12 | 13 | 10.0 | 44.500N | 111.000W | | | | | | | | 458 | F | | 156 | 41 | 290. |
| PGS | 1959 | 12 | 10 | 14 | 03 | 01.0 | 44.500N | 111.000W | | | | | | | | 458 | F | | 156 | 41 | 290. |
| PGS | 1960 | 01 | 03 | 19 | 40 | 48.0 | 44.500N | 111.000W | | | | | | | | 458 | F | | 156 | 41 | 290. |
| PGS | 1960 | 03 | 08 | 14 | 13 | 45.0 | 44.500N | 111.000W | | | | | | | | 458 | F | | 156 | 41 | 290. |
| PGS | 1960 | 03 | 23 | 03 | 15 | 13.0 | 44.500N | 111.000W | | | | | | | | 458 | | | 156 | 41 | 290. |
| PGS | 1960 | 04 | 26 | 16 | 23 | 01.0 | 44.500N | 111.000W | | | | | | | | 458 | | | 156 | 41 | 290. |
| PGS | 1960 | 04 | 26 | 16 | 30 | 19.0 | 44.500N | 111.000W | | | | | | V | | 458 | F | | 156 | 41 | 290. |
| PGS | 1960 | 04 | 27 | 08 | 32 | 30.0 | 44.500N | 111.000W | | | | | | | | 456 | | 17 | 156 | 51 | 290. |
| GS | 1975 | 11 | 03 | 04 | 56 | 39.7 | 45.814N | 111.495W | 019 | | | | 3.40ML ERD | | | 456 | F | | 156 | 61 | 292. |
| PGS | 1960 | 05 | 05 | 03 | 39 | 50.0 | 46.000N | 111.500W | | | | | | VI | | 456 | D | 26 | 156 | 61 | 292. |
| GS | 1977 | 03 | 11 | 05 | 09 | 37.2 | 46.12GN | 111.484W | 005G | 4.4 MB | | | 4.80ML GS | | | 456 | F | 007 | 156 | 61 | 292. |
| PRL | 1972 | 11 | 02 | 10 | 40 | 52.4 | 46.164N | 111.479W | 005G | | | | 3.50ML ERL | | | 458 | | 5 | 156 | 41 | 292. |
| GS | 1977 | 03 | 04 | 16 | 51 | 48.3* | 44.767N | 111.212W | 005G | | | | 4.00ML MBO | | | 456 | F | 010 | 156 | 61 | 292. |
| NDS | 1971 | 03 | 13 | 07 | 33 | 13.4 | 44.895N | 111.207W | 033N | | | | | | | 458 | | 10 | 156 | 41 | 292. |
| GS | 1979 | 05 | 08 | | 57 | 42.9* | 44.742N | 111.200W | 5G | | | 4.20MBO | 3.90ML | III | | 458 | F | 13 | 156 | 41 | 293. |
| GS | 1978 | 10 | 20 | 02 | 14 | 55.0* | 44.472N | 111.013W | 005G | | | | | | | 456 | F | 009 | 156 | 61 | 293. |
| PRL | 1972 | 11 | 02 | 03 | 41 | 31.3 | 46.147N | 111.497W | 005G | 4.2OMB | | | 4.50ML ERL | | | 458 | F | 10 | 156 | 41 | 293. |
| GS | 1976 | 11 | 27 | 00 | 28 | 46.1* | 44.639N | 111.142W | 009 | | | | 3.30ML ERD | | | 458 | | 19 | 156 | 41 | 293. |
| GS | 1974 | 07 | 01 | 18 | 23 | 07.5 | 44.568N | 111.089W | 005G | 4.8OMB | | | 5.10ML GS | | | 458 | | 006 | 156 | 41 | 293. |
| PGS | 1966 | 06 | 23 | 00 | 46 | 42.4 | 44.900N | 111.300W | 033 | 3.7OMB | | | | | | 458 | | 005 | 156 | 41 | 293. |
| PGS | 1966 | 10 | 10 | 13 | 08 | 03.0 | 44.900N | 111.300W | 033 | | | | | | | 458 | F | 006 | 156 | 41 | 293. |
| PGS | 1966 | 10 | 11 | 14 | 17 | 39.3 | 44.900N | 111.300W | 003 | | | | | | | 458 | F | 007 | 156 | 41 | 293. |
| PGS | 1966 | 10 | 11 | 23 | 02 | 29.2 | 44.900N | 111.300W | 015 | | | | | IV | | 458 | | 007 | 156 | 41 | 293. |
| PGS | 1966 | 11 | 23 | 07 | 42 | 23.9 | 44.900N | 111.300W | 033 | 3.7OMB | | | | | | 458 | | 008 | 156 | 41 | 293. |
| PGS | 1967 | 07 | 28 | 11 | 33 | 11.4 | 44.900N | 111.300W | 033 | 4.2OMB | | | | | | 458 | | 006 | 156 | 41 | 293. |
| PGS | 1967 | 09 | 01 | 14 | 53 | 13.0 | 44.900N | 111.300W | 033 | | | | | | | | | | | | |



82/03/16.

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM | RMS | ERR | GAP | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *=N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | |
| GS | 1963 | 08 | 06 | 05 | 20 | 32.0 | 45.100N | 111.400W | 033 | 3.70MB | | | | | | 456 | 006 | 156 51 | 294. |
| GS | 1965 | 07 | 10 | 07 | 18 | 17.0 | 45.100N | 111.400W | 033 | | | | | | | 456 | 008 | 156 51 | 294. |
| GS | 1967 | 08 | 08 | 13 | 56 | 15.1 | 45.100N | 111.400W | 033 | | | | | | | 456 | 006 | 156 51 | 294. |
| ISE | 1970 | 10 | 18 | 20 | 06 | 32.6 | 46.200N | 111.500W | 015G | 4.30MB | | | | V | | 456 F | 022 | 156 61 | 294. |
| GS | 1978 | 11 | 09 | 15 | 49 | 03.80 | 44.750N | 111.230W | 005 | | | | 3.50ML GS | IV | | 458 F | 7 | 156 41 | 294. |
| GS | 1975 | 06 | 06 | 00 | 15 | 36.6* | 45.900N | 111.587W | 005G | | | | | | | 456 | 12 | 156 51 | 295. |
| GS | 1976 | 07 | 11 | 16 | 22 | 27.4* | 44.530N | 111.086W | 005G | | | | 3.20ML AEC | | | 458 | 12 | 156 41 | 295. |
| GS | 1979 | 08 | 30 | 17 | 41 | 20.9* | 44.579N | 111.123W | 005G | | | | | III | | 458 | 5 | 156 41 | 295. |
| GS | 1974 | 06 | 09 | 01 | 44 | 23.5* | 44.926N | 111.335W | 005G | | | | | | | 458 | 7 | 156 41 | 295. |
| GS | 1977 | 03 | 04 | 06 | 10 | 12.7* | 44.709N | 111.213W | 005G | | | | 3.00ML ERD | | | 458 | 12 | 156 41 | 295. |
| GS | 1976 | 12 | 20 | 17 | 07 | 10.5G | 44.500N | 111.068W | 009 | | | | 3.30ML ERD | | | 458 | 7 | 156 41 | 295. |
| GS | 1976 | 10 | 11 | 21 | 46 | 58.7 | 44.632N | 111.166W | 005G | | | | 3.20ML ERD | | | 458 | 8 | 156 41 | 295. |
| GS | 1975 | 03 | 08 | 09 | 48 | 55.7* | 45.721N | 111.555W | 005G | | | | | | | 456 | 12 | 156 51 | 295. |
| GS | 1979 | 11 | 30 | 7 | 07 | 28.9* | 45.750N | 111.561W | SG | | | | 3.10ML MBO | | | 456 | 9 | 156 51 | 296. |
| GS | 1966 | 03 | 07 | 18 | 09 | 42.6 | 46.300N | 111.500W | 013 | 4.80MB | | | | V | | 456 F | 031 | 156 61 | 296. |
| NOS | 1971 | 04 | 21 | 08 | 52 | 02.6 | 44.753N | 111.257W | 015G | 3.90MB | | | | | | 458 | 010 | 156 41 | 296. |
| GS | 1979 | 03 | 24 | 22 | 57 | 07.7* | 44.697N | 111.080W | 033N | | | | | | | 458 | 9 | 156 41 | 296. |
| GS | 1974 | 08 | 30 | 17 | 01 | 59.5* | 44.700N | 111.228W | 005G | | | | | | | 458 | 8 | 156 41 | 296. |
| GS | 1978 | 03 | 07 | 07 | 39 | 33.10 | 44.304N | 110.918W | 005 | | | | 3.10ML GS | | | 459 | 13 | 156 40 | 296. |
| GS | 1978 | 10 | 06 | 19 | 57 | 59.1* | 45.960N | 111.571W | 005G | | | | | | | 456 | 12 | 156 51 | 297. |
| GS | 1978 | 03 | 06 | 11 | 06 | 21.5* | 44.220N | 110.846W | 005G | | | | 2.90ML GS | | | 459 | 12 | 156 40 | 297. |
| GS | 1959 | 08 | 19 | 19 | 06 | 29.0 | 45.000N | 111.400W | | | | 5.00BRK | | | | 456 F | | 156 51 | 297. |
| GS | 1963 | 08 | 27 | 13 | 19 | 33.9 | 45.000N | 111.400W | 033 | 4.00MB | | | | | | 456 | 008 | 156 51 | 297. |
| GS | 1964 | 08 | 28 | 10 | 18 | 58.5 | 45.000N | 111.400W | 033 | 4.30MB | | | | | | 456 | 006 | 156 51 | 297. |
| GS | 1967 | 10 | 13 | 18 | 08 | 54.1 | 45.000N | 111.400W | 033 | | | | | | | 456 | 006 | 156 51 | 297. |
| GS | 1975 | 05 | 03 | 03 | 28 | 52.6 | 44.262N | 111.526W | 005G | | | | 3.70ML GS | | | 456 | 13 | 156 61 | 297. |
| GS | 1942 | 11 | 01 | 15 | 41 | 06.0 | 44.800N | 111.300W | | | | | | | | 458 | | 156 41 | 297. |
| GS | 1966 | 10 | 09 | 21 | 08 | 20.0 | 44.800N | 111.300W | 016 | | | | | | | 458 | 007 | 156 41 | 297. |
| GS | 1966 | 10 | 12 | 01 | 42 | 18.7 | 44.800N | 111.300W | 033 | | | | | | | 458 | 008 | 156 41 | 297. |
| GS | 1967 | 07 | 28 | 04 | 09 | 58.0 | 44.800N | 111.300W | 033 | 4.00MB | | | | | | 458 | 011 | 156 41 | 297. |
| GS | 1967 | 07 | 28 | 19 | 28 | 36.0 | 44.800N | 111.300W | 033 | | | | | | | 458 | 006 | 156 41 | 297. |
| GS | 1968 | 01 | 08 | 09 | 08 | 05.0 | 44.800N | 111.300W | 033 | | | | | | | 458 | 005 | 156 41 | 297. |
| GS | 1966 | 11 | 05 | 02 | 23 | 10.8 | 44.500N | 111.100W | 033 | 3.60MB | | | | | | 458 | 008 | 156 41 | 297. |
| GS | 1980 | 05 | 10 | 23 | 41 | 47.9 | 44.757N | 111.278W | 005G | | | 4.00MBO | 4.20ML | III | | 458 F | 12 | 156 41 | 297. |
| GS | 1976 | 10 | 11 | 21 | 44 | 12.8 | 44.480N | 111.204W | 005G | | | | 3.00ML ERD | | | 458 | 8 | 156 41 | 297. |
| FRL | 1973 | 06 | 27 | 03 | 22 | 25.7* | 44.629N | 111.200W | 033N | | | | | | | 458 | 005 | 156 41 | 298. |
| GS | 1978 | 08 | 30 | 13 | 24 | 47.9* | 44.986N | 111.099W | 005G | | | | | | | 458 | 8 | 156 41 | 298. |
| GS | 1961 | 06 | 16 | 18 | 38 | 30.4 | 45.200N | 111.500W | 033N | | | | | | | 456 | | 156 51 | 299. |
| GS | 1963 | 08 | 08 | 09 | 54 | 42.8 | 45.200N | 111.500W | 033 | | | | | IV | | 456 F | 005 | 156 51 | 299. |
| GS | 1965 | 08 | 29 | 03 | 00 | 19.7 | 45.700N | 111.600W | 017 | 3.70MB | | | | | | 456 | | 156 51 | 299. |
| GS | 1977 | 05 | 27 | 10 | 52 | 31.6* | 44.476N | 111.111W | 005G | | | | 3.00ML ERD | | | 458 | 6 | 156 41 | 299. |
| GS | 1974 | 08 | 30 | 13 | 35 | 51.0* | 44.465N | 111.105W | 005G | | | | | | | 458 | 7 | 156 41 | 300. |
| GS | 1974 | 07 | 03 | 03 | 13 | 43.3 | 44.637N | 111.232W | 005G | | | | | | | 458 | 11 | 156 41 | 300. |
| GS | 1976 | 08 | 15 | 18 | 28 | 10.1* | 44.916N | 111.066W | 005G | | | | 2.90ML ERD | | | 458 | 8 | 156 41 | 300. |
| GS | 1970 | 09 | 15 | 06 | 20 | 45.7* | 44.934N | 111.807W | 015G | | | | | | | 458 | 005 | 156 41 | 300. |
| GS | 1975 | 01 | 29 | 20 | 08 | 23.9* | 45.06AN | 111.471W | 005G | 4.20MB | | | | | | 456 F | 18 | 156 51 | 300. |
| GS | 1966 | 10 | 11 | 17 | 48 | 47.5 | 44.900N | 111.400W | 014 | | | | | | | 458 | 007 | 156 41 | 301. |
| GS | 1967 | 07 | 28 | 10 | 21 | 02.3 | 44.900N | 111.400W | 033 | | | | | | | 458 | 005 | 156 41 | 301. |
| GS | 1967 | 11 | 11 | 09 | 07 | 53.0 | 44.900N | 111.400W | 033 | | | | | | | 458 | 007 | 156 41 | 301. |
| GS | 1976 | 09 | 16 | 15 | 08 | 28.3 | 45.631N | 111.617W | 005G | | | 3.20MBO | 3.00ML ERD | | | 456 | 22 | 156 51 | 301. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT MAX | PHENOM OTAVND | RN | CE | Q/S | NAR | DG | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| GS | 1975 | 05 | 03 | 03 | 23 | 08.6* | 46.207N | 111.587W | 005G | | | | | | | 456 | | 10 | 156 | 61 | 301. |
| PGS | 1967 | 12 | 20 | 07 | 13 | 23.6 | 43.800N | 110.800W | 033 | | | | | | | 460 | | 009 | 156 | 30 | 301. |
| PGS | 1965 | 07 | 10 | 06 | 52 | 12.6 | 45.100N | 111.500W | 033 | | | | | | | 456 | | 007 | 156 | 51 | 301. |
| PGS | 1969 | 08 | 26 | 11 | 13 | 46.9 | 44.966N | 111.444W | 033N | 3.70MB | | | | | | 458 | | 006 | 156 | 41 | 301. |
| GS | 1978 | 08 | 30 | 19 | 33 | 20.5* | 46.361N | 111.453W | 005G | | | | | III | | 458 | | 6 | 156 | 41 | 302. |
| PRL | 1973 | 01 | 15 | 08 | 41 | 13.3 | 44.642N | 111.270W | 033N | | | | | | | 458 | | 012 | 156 | 41 | 302. |
| PGS | 1963 | 12 | 09 | 01 | 45 | 18.2 | 43.600N | 110.100W | 033 | 4.00MB | | | | | | 460 | | 017 | 156 | 30 | 303. |
| GS | 1975 | 03 | 11 | 13 | 30 | 59.9* | 46.982N | 111.451W | 005G | | | | | | | 458 | | 13 | 156 | 41 | 303. |
| GS | 1974 | 07 | 04 | 03 | 10 | 56.2* | 44.418N | 111.112W | 005G | | | | | | | 458 | | 9 | 156 | 41 | 303. |
| PGS | 1968 | 11 | 16 | 03 | 51 | 22.4 | 43.660N | 110.213W | 033N | 3.90MB | | | | | | 460 | | 010 | 156 | 30 | 303. |
| GS | 1977 | 03 | 04 | 18 | 58 | 05.5* | 46.749N | 111.354W | 005G | | | | 3.70ML H80 | | | 458 | | 5 | 156 | 41 | 303. |
| GS | 1977 | 11 | 08 | 11 | 10 | 32.4 | 46.071N | 111.655W | 005G | | | | 3.20ML ERD | | | 456 | | 9 | 156 | 61 | 304. |
| GS | 1975 | 05 | 02 | 09 | 22 | 56.5 | 46.161N | 111.644W | 005G | | | | | | | 456 | F | 16 | 156 | 61 | 304. |
| PGS | 1968 | 10 | 02 | 10 | 39 | 33.2 | 48.800N | 111.800W | 033 | 3.80MB | | | | | | 458 | | 005 | 156 | 41 | 304. |
| PGS | 1965 | 05 | 16 | 17 | 36 | 14.7 | 44.800N | 111.400W | 015 | 4.20MB | | | | | | 458 | | 005 | 156 | 41 | 304. |
| PGS | 1966 | 10 | 11 | 16 | 58 | 06.0 | 44.800N | 111.400W | 033 | | | | | IV | | 458 | F | 006 | 156 | 41 | 304. |
| PGS | 1967 | 07 | 26 | 17 | 00 | 58.3 | 44.800N | 111.400W | 033 | | | | | | | 458 | | 007 | 156 | 41 | 304. |
| PGS | 1959 | 08 | 19 | 21 | 45 | 57.0 | 45.000N | 111.500W | | | 4.75BRK | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1959 | 09 | 04 | 19 | 09 | 48.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1959 | 09 | 08 | 07 | 09 | 48.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1959 | 09 | 19 | 21 | 53 | 38.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1959 | 10 | 05 | 11 | 33 | 14.0 | 45.000N | 111.500W | | | | | | | | 456 | | | 156 | 51 | 305. |
| PGS | 1959 | 10 | 06 | 11 | 37 | 21.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1959 | 12 | 21 | 02 | 23 | 58.0 | 45.000N | 111.500W | | | | | | | | 456 | | | 156 | 51 | 305. |
| PGS | 1960 | 01 | 02 | 04 | 09 | 35.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1960 | 01 | 03 | 00 | 17 | 05.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1960 | 01 | 23 | 15 | 03 | 20.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1960 | 02 | 28 | 09 | 17 | 10.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1960 | 04 | 09 | 20 | 15 | 43.0 | 45.000N | 111.500W | | | | | | | | 456 | | | 156 | 51 | 305. |
| PGS | 1960 | 05 | 20 | 18 | 36 | 06.0 | 45.000N | 111.500W | | | | | | | | 456 | | | 156 | 51 | 305. |
| PGS | 1960 | 05 | 25 | 18 | 39 | 46.0 | 45.000N | 111.500W | | | | | | | | 456 | | | 156 | 51 | 305. |
| PGS | 1960 | 06 | 09 | 11 | 19 | 10.0 | 45.000N | 111.500W | | | | | | | | 456 | F | | 156 | 51 | 305. |
| PGS | 1965 | 07 | 09 | 21 | 01 | 16.5 | 45.000N | 111.500W | 033 | | | | | | | 456 | | 005 | 156 | 51 | 305. |
| GS | 1975 | 06 | 27 | 13 | 40 | 08.9* | 44.916N | 111.463W | 005G | | | | | | | 458 | | 10 | 156 | 41 | 305. |
| GS | 1978 | 10 | 29 | 01 | 48 | 31.7 | 44.629N | 111.307W | 005G | 4.00MB | | | | | | 458 | | 11 | 156 | 41 | 305. |
| GS | 1974 | 07 | 16 | 07 | 30 | 32.6 | 45.711N | 111.684W | 010G | | | | | | | 456 | | 8 | 156 | 51 | 305. |
| GS | 1975 | 05 | 02 | 07 | 17 | 40.6 | 46.146N | 111.659W | 005G | | | | | | | 456 | | 15 | 156 | 61 | 305. |
| GS | 1979 | 05 | 08 | | 58 | 44.8* | 44.787N | 111.382W | 5G | | 4.70MBD | 4.60ML | | V | | 458 | F | 7 | 156 | 41 | 305. |
| PGS | 1969 | 04 | 27 | 10 | 50 | 14.1 | 44.655N | 111.337W | 033N | | | | | | | 458 | | 006 | 156 | 41 | 306. |
| GS | 1977 | 08 | 27 | 05 | 23 | 49.1 | 45.999N | 111.690W | 010G | 4.5 MB | | 3.70ML | 08 | | | 456 | | 15 | 156 | 51 | 306. |
| PGS | 1965 | 07 | 09 | 12 | 19 | 05.7 | 45.200N | 111.600W | 033 | | | | | III | | 456 | F | 009 | 156 | 51 | 306. |
| GS | 1976 | 04 | 05 | 02 | 00 | 07.4 | 46.127N | 111.675W | 005G | | 3.60ERD | 3.80ML | H80 | IV | | 456 | F | 18 | 156 | 61 | 306. |
| GS | 1979 | 01 | 06 | 1 | 25 | 48.7 | 44.837N | 111.449W | 5G | | | 4.10ML | 08 | | | 458 | | 15 | 156 | 41 | 307. |
| PGS | 1967 | 12 | 18 | 22 | 12 | 50.1 | 43.400N | 109.800W | 033 | | | | | | | 460 | | 005 | 155 | 39 | 308. |
| PGS | 1964 | 02 | 28 | 01 | 09 | 43.1 | 43.600N | 110.200W | 030 | 3.80MB | | | | | | 460 | | 008 | 156 | 30 | 308. |
| GS | 1980 | 03 | 11 | 00 | 03 | 34.1* | 45.577N | 111.703W | 005G | | | | 4.00ML | | | 456 | | 12 | 156 | 51 | 308. |
| PGS | 1967 | 01 | 10 | 11 | 52 | 52.1 | 44.901N | 111.499W | 025 | 3.80MB | | | | V | | 458 | F | 013 | 156 | 41 | 308. |
| GS | 1975 | 12 | 30 | 23 | 12 | 48.0* | 42.981N | 107.864W | 005G | | | | | | | 460 | | 14 | 155 | 27 | 308. |
| GS | 1975 | 05 | 02 | 11 | 27 | 55.8* | 46.128N | 111.701W | 005G | | | | | | | 456 | F | 8 | 156 | 61 | 308. |
| GS | 1977 | 11 | 09 | 12 | 43 | 27.5 | 46.088N | 111.718W | 005G | | | | 3.40ML ERD | | | 456 | | 15 | 156 | 61 | 309. |

| SOURCE | YEAR | MO | DA | HR | MN | SEC | LAT | LONG | DEPTH (KM) | MAGNITUDES BODY | SURF | OTHER | LOCAL | INT | PHENOM MAX DTSYND | RN | CE | Q/B | MAR | DG | DIST (KM) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *=N INDICATES A POSSIBLE DUPLICATE | | | | | | | | | | | | | | | | | | | | | |
| GS | 1977 | 03 | 11 | 12 | 17 | 51.9 | 44.848N | 111.500W | 005G | 5.2 HB | | | 4.10ML GS | | | 058 | | 23 | 156 | 41 | 310. |
| PGS | 1967 | 02 | 19 | 20 | 23 | 20.0 | 45.021N | 111.593W | 033N | | | | | | | 056 | | 005 | 156 | 51 | 311. |
| PGS | 1964 | 11 | 24 | 05 | 01 | 07.7 | 45.300N | 111.700W | 010 | 5.90MB | | | | IV | | 056 | F | 008 | 156 | 51 | 312. |
| PGS | 1963 | 12 | 24 | 01 | 50 | 58.1 | 44.800N | 111.500W | 020 | | | | | | | 058 | | 007 | 156 | 41 | 312. |
| PGS | 1966 | 10 | 11 | 09 | 57 | 35.1 | 44.800N | 111.500W | 033 | | | | | | | 058 | | 007 | 156 | 41 | 312. |
| PGS | 1961 | 02 | 23 | 01 | 46 | 36.9 | 45.000N | 111.600W | 025N | | | | | | | 056 | | | 156 | 51 | 312. |
| PGS | 1965 | 09 | 13 | 13 | 43 | 13.6 | 45.000N | 111.600W | 033 | | | | | | | 056 | | 006 | 156 | 51 | 312. |
| PGS | 1968 | 04 | 07 | 15 | 31 | 32.5 | 45.000N | 111.600W | 033 | 5.20MB | | | | IV | | 056 | F | | 156 | 51 | 312. |
| USE | 1970 | 01 | 07 | 12 | 27 | 53.0 | 45.000N | 111.600W | 033N | 4.90MB | | | | IV | | 056 | F | 012 | 156 | 51 | 312. |
| PGS | 1965 | 12 | 14 | 12 | 55 | 07.9 | 43.600N | 110.300W | 033 | 4.10MB | | | | | | 060 | | 011 | 156 | 30 | 313. |
| PGS | 1968 | 08 | 01 | 09 | 52 | 38.1 | 45.035N | 111.626W | 031 | 5.90MB | | | | | | 056 | | 007 | 156 | 51 | 313. |
| GS | 1977 | 02 | 13 | 21 | 27 | 57.7 | 44.685N | 111.456W | 005G | | | | 5.20ML ERD | | | 058 | | 10 | 156 | 41 | 313. |
| GS | 1974 | 10 | 20 | 02 | 19 | 29.5* | 44.241N | 111.137W | 005G | | | | | | | 058 | | 7 | 156 | 41 | 315. |
| GS | 1980 | 07 | 15 | 19 | 37 | 27.3* | 45.653N | 111.804W | 005G | | | | 3.00ML | | | 056 | F | 7 | 156 | 51 | 315. |
| USE | 1970 | 06 | 26 | 01 | 26 | 44.6 | 45.600N | 111.800W | 026 | 4.90MB | | | | V | | 056 | D | 009 | 156 | 51 | 315. |
| PGS | 1969 | 03 | 08 | 08 | 26 | 18.2 | 45.025N | 111.651W | 033N | 4.10MB | | | | | | 056 | | 010 | 156 | 51 | 315. |
| PDH | 1909 | 08 | 08 | 03 | 00 | 00.07 | 45.500N | 111.800W | | | | | | V | | 056 | F | | 156 | 51 | 316. |
| GS | 1981 | 04 | 15 | 18 | 46 | 37.0 | 44.398N | 111.293W | 005G | | | | 3.80ML GS | III | | 058 | F | 17 | 156 | 41 | 316. |
| FRL | 1972 | 01 | 14 | 08 | 34 | 22.7 | 44.950N | 111.635W | 005G | | | | | | | 058 | | 016 | 156 | 41 | 316. |
| GS | 1976 | 04 | 19 | 22 | 50 | 29.0* | 44.788N | 111.555W | 005G | | | | 2.90ML ERD | | | 058 | | 17 | 156 | 41 | 316. |
| PGS | 1965 | 09 | 13 | 21 | 18 | 34.4 | 45.80* | 111.800W | 025 | 3.60MB | | | | | | 056 | | 005 | 156 | 51 | 318. |
| PGS | 1964 | 05 | 02 | 03 | 24 | 24.1 | 43.600N | 110.800W | 033 | 4.00MB | | | | | | 460 | | 008 | 156 | 30 | 318. |
| PGS | 1959 | 08 | 19 | 08 | 08 | 03.0 | 44.900N | 111.633W | | | | 6.00BAK | | V | | 058 | F | | 156 | 41 | 318. |
| GS | 1980 | 07 | 20 | 12 | 57 | 29.8* | 45.653N | 111.845W | 005G | | | | 3.00ML | | | 456 | F | 8 | 156 | 51 | 318. |
| GS | 1980 | 07 | 20 | 13 | 03 | 39.7* | 45.612N | 111.851W | 005G | | | | 3.30ML | | | 456 | F | 6 | 156 | 51 | 319. |
| PGS | 1968 | 10 | 21 | 07 | 38 | 31.0 | 44.800N | 111.600W | 033 | 5.80MB | | | | V | | 058 | F | 058 | 156 | 41 | 319. |
| PGS | 1964 | 10 | 21 | 20 | 02 | 20.5 | 44.800N | 111.600W | 033 | 3.90MB | | | | IV | | 458 | F | 012 | 156 | 41 | 319. |
| PGS | 1961 | 02 | 23 | 03 | 12 | 58.5 | 45.000N | 111.700W | 025N | | | | | IV | | 456 | F | | 156 | 51 | 320. |

NUMBER OF HITS 528
NUMBER OF SUSPECTED DUPLICATES 2

PREPARED BY THE NATIONAL GEOPHYSICAL AND SOLAR-TERRESTRIAL DATA CENTER

ENVIRONMENTAL DATA SERVICE.....NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

# APPENDIX A-4

# SOILS AND VEGETATION

## CONTENTS

# SECTION A4-1

# SOIL SERIES AND MAPPING UNITS OF THE SYNFUEL PLANT SITES, CROW RESERVATION

Allentine Series

The Allentine series consists of deep, nearly level to sloping, well-drained soils on broad fans, ridetops and terraces in stream bottoms. Slopes range from 0 percent to 8 percent. These soils are formed in clayey alluvium. The surface layer is light gray silt loam 2 inches thick. The subsoil is grayish-brown and light browning-gray clay about 25 inches thick. The substratum is pale-olive and light-olive gray clay and silty clay that extends to a depth of 60 inches or more. Permeability is very slow and available water capacity is moderate or high. The effective rooting depth is 60 inches or more. These soils are used for range, wildlife, recreation, watershed and irrigated and dry-farmed crops.

- Asd - Allentine-Bone Complex, 1 percent to 4 percent slopes. This complex is made up of nearly level and gently sloping soils on fans and narrow terraces. It is about 60 percent Allentine silty clay loam, 30 percent Bone silty clay, and 10 percent Vananda silty clay. The Bone soil is in 2-inch to 6-inch microdepressions. The profiles are similar to those described under their respective series. A few pebbles are present on the surface. Runoff is medium and the hazard of erosion is slight.

Arvada Series

These soils are deep, nearly level and gently sloping, well-drained, sodic. They are on fans, terraces, and valley bottoms. They are formed in mixed clay and loam alluvium. The surface soil is grayish-brown and light brownish-gray silt loam about 3 inches thick. The subsoil is grayish-brown clay and silty clay about 15 inches thick. The substratum is grayish-brown and pale-brown silty clay 60 inches or more. Permeability is very slow and available water capacity is moderate or high. The effective rooting depth is 60 inches or more. These soils are used mostly for range, recreation and wildlife. When mixed with other soils it is dry-farmed.

- Aye - Arvada-Bone. This complex is made up of nearly level and gently sloping soils on small terraces and fans. The complex is comprised of Arvada clay (60 to 80 percent), Bone clay (15 to 30 percent), and Hydro silty clay loam (5 to 10 percent). Slopes are 1 percent or less on terraces and 3 to 4 percent on fans and terrace edges. Runoff is slow and the erosion hazard is slight. These soils are used for range, wildlife and recreation.

Doney Series

The Doney series consists of moderately deep, gently sloping and rolling to very steep, well-drained soils on dissected hills, ridges, and knolls in the sedimentary uplands. Slopes are from 5 to 95 percent. These soils are weathered in place from mixed loam shale, siltstone, and sandstone. The surface layer is grayish-brown loam 6 inches thick. It is underlain by light yellowish-brown and pale-yellow loam. Soft sandstone, siltstone, and loamstone are at a depth of about 21 inches. Permeability is moderate and available water capacity is low. They are used mostly for recreation, watershed, and wildlife. When mixed with deeper soils of valleys and on broad ridges they can be dry-farmed.

- DOe - Doney-Wayden complex, hilly. This complex is made up of rolling to hilly and steep soils in the sedimentary uplands. It is 60 to 75 percent Doney loam and Wayden silty clay loam; 5 to 15 percent rock and shale outcrops; and 15 to 25 percent Farnuf, Savage, and Shaak. Slopes are mostly 15 to 35 percent. The ridgetops are rounded and well grassed. The ridges are less than 150 feet wide and are discontinuous, and the valleys are several hundred feet wide and have nearly continuous foot slopes. The Doney and Wayden soils are intermixed on the ridges and hills. They have slopes of 20 to 35 percent. The Farnuf, Savage and Shaak soils are on short foot slopes and in the bottoms of wide valleys. They have slopes of 8 to 20 percent. Runoff is rapid and the erosion

hazard is severe. These soils are used for recreation, watershed, and wildlife.

Haverson Series

The Haverson series conists of deep, nearly level to steep, well-drained soils on flood plains and low terraces. Slopes range from 0 to 35 percent. These soils formed in stratified loam, silt loam, and fine sand loam alluvium. In a representative profile the surface layer is grayish-brown loam about 12 inches thick. The underlying material is light yellowish-brown and light brownish-gray stratified silt loam, loam, and sandy loam that extends to a depth of 60 inches or more. Permeability is moderate, and available water capacity is high. The effective rooting depth is 60 inches or more. These soils are used for irrigated and dry-farmed crops, wildlife, recreation, watershed, and range.

- Hfh - Haverson-Hysham Silty Clay Loams. This complex is made up of nearly level and gently sloping soils in stream valleys. It is 65 to 80 percent Haverson silty clay loam and 20 to 35 percent Hysham silty clay loam. Slopes are 0 to 4 percent. Areas of the Hysham soil are 5 to 15 feet wide and are marked by surface crusting and greasewood. They typically have slopes of 1 percent, but they range to 4 percent. The Haverson and Hysham soils in this complex have profiles similar to those described as representative of their respective series, but the Haverson soil has a surface layer of silty clay loam, and the Hysham soil has a surface layer of silty clay. Runoff is slow, and the hazard of erosion is moderate. In the large stream valleys, these soils are sometime briefly flooded if the snow melts rapidly or after early summer rains. They are suited to range, recreation, and wildlife and to hay and dry-farmed crops.

Kyle Series

The Kyle series consists of deep, nearly level to strongly sloping, well-drained soils on fans and foot slopes. Slopes range from 0 to 15 percent. These soils formed in clay alluvium. In a representative profile, the surface layer is grayish-brown silty clay about 2 inch thick. The subsoil is grayish-brown and olive-gray clay and silty clay about 8 inches thick. The underlying material is light olive-gray, olive, and pale-olive clay that extends to a depth of 62 inches or more. Permeability is very slow and available water capacity is moderate or high. The effective rooting depth is 60 inches or more. These soils are used for irrigated and dry-farmed crops, wildlife, recreation, watershed, and range.

- Ks - Kyle Silty Clay, 0 to 2 percent slopes. This nearly level soil is on terrace and fans. Areas range from 5 to 300 acres in size. The soil has a profile similar to the one described as representative of the series, but it is less sloping. Included in mapping are small areas of Kyle clay, saline, and Vananda clay. Runoff is slow, and the hazard of soil blowing is moderate on the bare soil. This soils is suited to irrigated and dry-farmed crops, wildlife, recreation, and range.

- Kt - Kyle Silty Clay, 4 to 8 percent slopes. This gently sloping soil is on terraces and fans. Slopes are smooth and range from 250 to 700 feet long. Included in this soils complex are Vananda clay and Allentine clay. In cultivated areas the gray surface layer is puddled and cloudy. Runoff is medium and the erosion hazard is moderate. This soils is suited to irrigated and dry-farmed crops, hay, wildlife, recreation, and range.

- Ku - Kyle Silty Clay, 4 to 8 percent slopes. This sloping soil is on fans and foot slopes. Areas range from 10 to 30 acres in size. Slopes range from 150 to 300 feet long. The soil has a profile similar to the one described as representative of the series, but it is steeper. Included in the mapping are small spots of Vananda clay. Runoff is rapid, and the

hazard of erosion is moderate. Most areas receive runoff from the hills and ridges above them. This soil is suited to dry-farmed crops, hay, wildlife, recreation, watershed, and range.

Lismas Series

The Lismas series consists of shallow, undulating to hilly or steep, well-drained soils on dissected sedimentary uplands. Slopes are mostly 4 to 35 percent, but they range to 50 percent. These soils formed in place from clay shale. In a representative profile the surface layer is light olive-gray clay about 1 inch thick. The underlying material is olive-gray and light olive-gray clay. Platy shale is at a depth of about 18 inches. Fine, weathered shale chips make up 10 to 30 percent of the soil material. Permeability is very slow, and available water capacity is very low. The effective rooting depth is 10 to 20 inches. Most of these soils are used for watershed, wildlife, recreation, and range. A few areas are included with deeper soils and are used for dry-farmed crops.

- LK - Lismas-Shale Outcrop Complex, Rolling. This complex is made up of rolling to hilly and moderately steep soils in the sedimentary uplands. It is about 75 percent Lismas clay and 10 percent Shale outcrop. Slopes are mostly 8 to 15 percent, but they range to 20 percent. The Lismas soil in this complex has a profile similar to the one described as representative of the Lismas series, but the underlying shale material has many crystals of gypsum. Included in mapping are areas of Pierre clay and Vananda clay that make up about 15 percent of the total area of this mapping unit. Runoff is medium, and the hazard of erosion is moderate. These soils are suited to range, wildlife, recreation and watershed.

- LM - Lismas-Vananda Clays, Undulating. This complex is made up of undulating soils in the sedimentary uplands. It is about 25 percent Lismas clay, 60 percent Pierre clay, and 15 percent Vananda clay.

Slopes are 4 to 8 percent. The Vananda soil has a crusted surface layer and is covered with greasewood. The Lismas soil is on the crests of surface undulations and the sides of deep drainageways. The Lismas soil in this complex has a profile similar to the one described as representative of the Lismas series, but it is shallower over shale, and it contains many crystals of gypsum. Also, in plowed areas it is light olive gray. Runoff is medium, and the hazard of erosion is moderate. These soils are suited to wildlife, recreation, watershed, range pasture, and dry-farmed crops.

- LN - Lismas-Vananda Clays, Undulating. This complex is made up of undulating soils in the sedimentary uplands. It is about 25 percent Lismas clay, 60 percent Pierre clay, and 15 percent Vananda clay. Slopes are 4 to 8 percent. The Vananda soil has a crusted surface layer and is covered with greasewood. The Lismas soil is on the crests of surface undulations and the sides of deep drainageways. The Lismas soil in this complex has a profile similar to the one described as representative of the Lismas series, but it is shallower over shale, and it contains many crystals of gypsum. Also, in plowed areas it is light olive-gray. These soils are suited to wildlife, recreation, watershed, range pasture, and dry-farmed crops.

Midway Series

The Midway series consists of shallow, gently sloping to steep and undulating to hilly, well-drained soils in the sedimentary uplands. Slopes range from 2 to 35 percent. These soils formed in place in material weathered from sitly clay loam and silty clay shale. The surface layer is light olive-gray silty clay loam about 2 inches thick. The underlying material is olive-gray silty clay loam. Shale is at a depth of about 11 inches. Permeability is slow and available water capacity is very low. The effective rooting depth is about 15 inches. Most of these soils are used for range, recreation, watershed, and wildlife. Small areas are dry-farmed.

- MVa - Midway Silty Clay Loam, Rolling. This soil is on ridges and hills dissected by short tributary drainageways. Slopes are 8 to 15 percent. Included in these soils are Heldt, Lohmiller, McRae, Thedalund, and Nelson soils. Runoff is rapid and the erosion hazard is severe. This soil is suited to range, wildlife, recreation and watershed.

- MVd - Midway-Lismas Complex, hilly. This complex is made up of hilly and steep soils in the sedimentary uplands. It has equal parts of Midway clay and Lismas clay with 10 to 30 percent shale outcrop present. Slopes are mostly 15 to 25 percent. The Lismas and Midway soils are intermixed, but shale outcrop is in deep drainageways and on narrow ridges. Fragments of porcelanite and red shale are scattered on ridges. Ironstone concretions are scattered on the shale outcrop. The Lismas soil generally is darker colored than the Midway soil. Other soils in this complex are Thedalund loam, Nelson sandy loam and Vananda clay. Runoff is rapid and the erosion hazard is severe. These soils are suited to range, wildlife, recreation and watershed.

Pierre Series

The Pierre series consists of moderately deep, gently undulating to hilly and steep, well-drained soils in the sedimentary uplands. Slopes are mostly 2 to 35 percent, but they range to 1 percent. These soils formed in material weathered in place from platy clay shale. In a representative profile the surface layer is grayish-brown silty clay and clay about 3 inches thick. The substratum is pale-olive clay. Platy clay shale is at a depth of about 29 inches. Permeability is very slow, and available water capacity is low. The effective rooting depth is 20 to 40 inches. These soils are used for range, wildlife, recreation, watershed, and dry-farmed crops.

- Pg - Pierre Clay, Undulating. This undulating soil is on shale hills and ridges in the sedimentary uplands. Areas range from 20 to 120 acres in

size. Slopes are 4 to 5 percent on ridgetops, in swales, and at the heads of drainageways and 6 to 8 percent on the sides of deep drainageways. The soil has a profile similar to the one decribed as representative of the series, but it is less sloping. Included in mapping are areas of Shale outcrop and Lismas clay on the points of ridges between deep drainageways. Runoff is medium, and the hazard of erosion is moderate. This soil is used for dry-farmed crops, pasture, wildlife, recreation, watershed and range.

- Pk - Pierre-Kyle Clays, Gently Undulating. This complex is made up of gently undulating soils int he sedimentary uplands. It is about 75 percent Pierre clay and 25 percent Kyle clay. Slopes are mostly 2 to 4 percent. The Pierre soil is on the convex slopes of knolls and ridges. The Kyle soil is in 3 to 5 acre patches on concave slopes at the heads of drainageways and between ridges. Shale bedrock is at a depth of 40 to 50 inches. Runoff is slow and erosion hazard is moderate. These soils are suited to dryfarming, pasture, wildlife, recreation, watershed, and range.

- Pm - Pierre-Lismas Clays, Rolling. This complex is made up of rolling soils in the sedimentary uplands. It is about 70 percent Pierre clay, 20 percent Lismas clay, and 10 percent Kyle clay. The Pierre soil is on wide ridges, hills, and side slopes of drainageways. It has slopes of 8 to 12 percent. The Lismas soil is on narrow ridges and side slopes of deep drainageways. It has slopes of 12 to 20 percent. Spots of gravelly terrace material exist. Runoff is rapid and the erosion hazard is severe. These soils are suited to range, recreation, watershed, and wildlife.

- Pn - Pierre-Lismas Clays, Hilly. This complex is made up of hilly and steep soils in the sedimentary uplands. It is 50 to 75 percent Lismas clay, 20 to 50 percent Pierre clay, and 5 to 15 percent shale outcrop. Slopes are mostly 15 to 25 percent. Most areas have a narrow central ridge and spur ridges that slope steeply to the valley bottoms. Narrow

drainageways separate the spur ridges. Local relief ranges from 75 to 200 feet. The Lismas is on steep, narrow ridges and sides of drainageways. It has slopes of 24 to 45 percent. The Pierre soil is on wide ridges and at the heads of drainageways. It has slopes of 15 to 20 percent. Spots of Harvey loam are evident. Runoff is rapid and the erosion hazard is severe. These soils are suited to range, wildlife, recreation and watershed.

Renohill Series

The Renohill series consists of moderately deep, undulating, well-drained soils on ridges and hills in the sedimentary uplands. Slopes range from 4 to 8 percent. These soils formed in place in material weathered from calcareous clay loam and silty clay loam shale. The surface layer is light brownish-gray silty clay loam about 2 inches thick. The subsoil is grayish-brown, brown, and light olive-brown silty clay loam and silty clay about 11 inches thick. The substratum is light brownish-gray and pale-olive silty clay loam, silty clay, and clay that contains a few shale chips in the lower part. Clay shale is at a depth of about 33 inches. Permeability is slow and available water capacity is low. The effective rooting depth is about 33 inches. These soils are used for range, dry-farming, recreation, watershed, and wildlife.

- Re - Renohill Silty Clay Loam, Undulating. This soil is on broad ridgetops and tablelands that are crossed by shallow drainageways. Slopes are 4 to 8 percent. Areas range from 20 to 50 acres in size. Other soils included are Midway silty clay loam on narrow ridges and Thurlow silty clay loam and Heldt silty clay loam in the concave heads of drainageways. Also included are soils that have a few fragments of pebble size on the surface in areas where terraces once covered the shale upland. Runoff is medium and the erosion hazard is moderate. The soil is suited to dry-farming, hay, range, recreation, watershed, and wildlife.

Thedalund Series

The Thedalund series consists of moderately deep, undulating to very steep, well-drained soils in the sedimentary uplands. Slopes range from 4 to 90 percent. These soils were formed from weathered shale. The surface soil layer is grayish-brown loam about 2 inches thick. The underlying material is light olive-brown, light yellowish-brown, and light-gray loam. Loam shale is at a depth of about 28 inches. These soils are used for range, recreation, watershed, and wildlife. Small areas included in deeper soils are used for dry-farmed crops.

- THn - Thedalund-Wibaux Stony Loams, Hilly. This complex is made uup of hill and steep soils in the sedimentary uplands. It is 45 to 60 percent Thedalund stonly loam, 25 to 35 percent Wibaux stony loam, and 10 to 20 percent shale outcrop. Minor soils in some valleys make up 5 to 10 percent of the complex. The two soils occur in random patterns, but the Wibaux soil is distinguished by its red color. The soils are stony on the surface. Runoff is rapid and the erosion hazard is severe. These soils are suited to game range, range, recreation and wildlife.

- THo - Thedalund-Wibaux Complex, Very Steep. This complex is made up of steep and very steep soils in the sedimentary uplands. It is 40 to 50 percent Thedalund stony loam, 30 to 35 percent Wibaux very stony loam, and 20 to 30 percent Rock outcrop. Slopes are 35 to 90 percent. The soils occur randomly, but the Wibaux soil is distinguished by its red color and its very stony surface. The Thedalund and Wibaux soils have steeper slopes that the Thedalund series. The Thedalund soil has fragments of channer and stone size covering 10 t0 20 percent of the surface and the Wibaux soil has a very stony surface layer. Runoff is very rapid and the erosion hazard is severe. These soils are suited to game range, range, recreation and watershed.

Vananda Series

The Vananda series consist of deep, nearly level to gently sloping and undulating, well-drained, sodium-affected soils on terraces, fans, and foot slopes. Slopes range from 0 to 8 percent. These soils formed in alkaline clay alluvium derived from fresh and salt-water shale. In a representative profile the surface layer is light brownish-gray silty clay about 1 inch thick. The underlying material is grayish-brown and olive-gray clay that extends to a depth of 60 inches or more. Permeability is very slow, and available water capacity is high. The effective rooting depth is 60 inches or more. These soils are used for range, wildlife, recreation, watershed, and irrigated crops.

- Vc - Vananda Clay, 1 to 8 percent slopes. This soil is in 20 to 100 acre areas on terraces, fans, and foot slopes in the shale highlands. The foot slopes and terraces have narrow hills and gullies spaced 100 to 200 feet apart. The soil has the profile described as representative of the series. Included in mapping are small areas of Allentine and Kyle soils. Runoff is medium, and the hazard of erosion is moderate. This soil is suited to range, wildlife, rereation and watershed.

Wayden Series

The Wayden series consist of shallow, strongly sloping to very steep and rolling to hilly, excessively drained soils on hills and ridges on dissected sedimentary uplands. Slopes range from 8 to 55 percent. These soils formed in material weathered in place from clay shale. The surface layer is grayish-brown silty clay loam about 2 inches thick. The subsoil is grayish-brown silty clay loam about 5 inches thick. The substratum light brownish-gray silty clay loam that is about 35 percent weathered shale chips. Shale is at a depth of about 19 inches. Permeability is slow and available water capacity is very low. The effective rooting depth is about 20 inches. These soils are used for range, recreation, watershed, and wildlife.

- WL - Wayden Outcrop Complex, Rolling. This complex is made up of rolling soils on deeply dissected sedimentary uplands. It is 55 percent Wayden silty clay loam and Savage silty clay loam, and 15 percent Rock outcrop. Slopes are 8 to 15 percent. The Wayden soil is on narrow ridges and hills. The Regent soil is on broad ridges. The Savage soil is on fans, boat slopes, and the bottoms of narrow drainageways. Rock outcrop is on peaks of narrow ridges and eroded drainageways. Runoff is medium and the erosion hazard is moderate. These soils are used for range, recreation, watershed, and wildlife.

## SECTION A4-2

## RANGE SITE DESCRIPTIONS, CROW RESERVATION

Clayey Site

This site is well-suited to mechanical treatments if adequate amounts of western wheatgrass and green needlegrass are present. Seeding adapted species results in satisfactory range improvement if it is followed by good management. Brush management is feasible in many areas that have a heavy growth of big sagebrush. This range site is made up of moderately deep to deep granular clay loam, silty clay loam, silty clay, sandy clay, and clay soils.

The approximate species composition, by air-dry weight, of the climax (potential) plant community is:

| Species | Percent |
|---|---|
| Western Wheatgrass | 40 |
| Green Needlegrass | 15 |
| Forbs | 15 |
| Bluebunch wheatgrass | 10 |
| Blue grama | 5 |
| Plains reedgrass | 5 |
| Greasewood | 5 |
| Big sagebrush | 5 |

Total annual yield on range in excellent condition is about 1,800 pounds air-dry herbage per acre. In less favorable years yield is as little as 600 pounds per acre.

Dense Clay

This range site is made up of relatively impervious deep clay that in places is overlain by a thin layer of other material. The soils are very hard to extremely hard when dry and very sticky when wet.

The approximate species composition, by air-dry weight, of the climax (potential) plant community is:

| Species | Percent |
|---|---|
| Western wheatgrass | 60 |
| Forbs | 15 |
| Sandberg bluegrass | 5 |
| Squirreltail | 5 |
| Sedges | 5 |
| Big sagebrush | 5 |
| Greasewood | 5 |
| Annuals | Trace |

Total yield on range in excellent condition is 1,200 pounds air-dry herbage per acre. In less favorable years yield is as low as 600 pounds per acre. This site is suitable for such mechanical treatments as shallow chiseling, pitting, or furrowing followed by periods of deferment. A good seedbed is difficult to prepare on this site, but there is rarely a need for range seeding unless the original vegetation has been destroyed by cultivation.

## Pan Spots

This range site is made up of silty, clayey, or sandy soils that are mapped in complex with soils in shallow depressions that have hard clay or other impervious material at or near the surface. The shallow depressions make up 20 to 50 percent of this site. If the site is in good to excellent condition, runoff is not excessive because the soils are gently sloping.

The approximate species composition, by air-dry weight, of the climax (potential) plant community is:

| Species | Percent |
|---|---|
| Western wheatgrass | 35 |
| Green needlegrass | 10 |
| Plains reedgrass | 10 |
| Blue grama | 10 |
| Forbs | 10 |
| Needleandthread | 5 |
| Sandberg bluegrass | 5 |
| Prairie junegrass | 5 |
| Big sagebrush | 5 |
| Sedges | 5 |
| Annuals | Trace |

Total annual yield on range in excellent condition is as much as 1,200 pounds air-dry herbage per acre. In less favorable years yield is as little as 600 pounds per acre. In areas where a sufficient amount of the climax grasses remain, this site is suitable for such mechanical treatments as shallow chiseling, range pitting, and furrowing followed by deferred grazing. Where the range is in poor condition, complete seedbed preparation followed by seeding a suitable mixture of climax plants helps restore acceptable range condition. The management of big sagebrush may hasten improvement of the range.

Shallow Clay

This range site is made up of soils that have a thin, granual surface layer and a dense weak block to massive subsurface layer that rest abruptly on platy, fracture shale at a depth of less than 20 inces. A few scattered barren shale areas may occur in this site.

The approximate species composition, by air-dry weight, of the climax (potential) plant community is:

| Species | Percent |
|---|---|
| Western wheatgrass | 45 |
| Green needlegrass | 20 |
| Perennial forbs | 10 |
| Little bluestem | 5 |
| Prairie sandreed | 5 |
| Bluebunch wheatgrass | 5 |
| Rocky Mountain juniper | 5 |
| Annual grasses and forbs | 5 |
| Plains muhly | Trace |
| Greasewood | Trace |
| Nuttal saltbush | Trace |
| Winterfat | Trace |

Total annual yield on range in excellent condition is 1,200 pounds air-dry herbage per acre. In less favorable years yield is as little as 600 pounds per acre. About 90 percent of the plants in this site furnish forage for cattle, sheep, horses, deer, and antelope. This site is not suited to mechanical treatments because the soils are shallow and soil blowing is a hazard. Uniform distribution of grazing is difficult on this site because of the varied terrain and lack of good permanent water development. Stock-water ponds on this site generally become filled with sediment in a few years.

Thin Breaks

This range site is made up of soils of various depths that have hard outcroppings of bedrock at different levels and are on steep, irregular slopes. Trees occur locally in places above the outcrops. Soil texture ranges from sandy loam to clay loam.

The approximate species composition, by air-dry weight, of the climax (potential) plant community is:

| Species | Percent |
|---|---|
| Bluebunch wheatgrass | 25 |
| Western wheatgrass | 25 |
| Needleandthread | 15 |
| Blue grama | 10 |
| Threadleaf sedge | 10 |
| Green needlegrass | 5 |
| Side-oats grama | 5 |
| Prairie junegrass | 5 |
| Annuals | Trace |

Total annual yield on range in excellent condition is 900 pounds air-dry herbage per acre. In less favorable years yield is as little as 300 pounds per acre. The irregular topography characteristic of the site discourages overuse by grazing animals and makes this site unsuitable for mechanical practices and seeding.

Thin Hilly Site

This site has calcareous loam to clay soils that are 20 inches deep or more. They are located on steep or hilly landscapes. Because of the steepness and the hazard of erosion this site cannot be improved by mechanical treatment. Brush removal and reseeding is not recommended because of the threat of increasing erosion.

The approximate species composition, by air-dry weight, of the climax (potential) plant community is:

| Species | Percent |
|---|---|
| Idaho fescue | 20 |
| Prairie sandreed | 15 |
| Western wheatgrass | 15 |
| Bluebunch wheatgrass | 10 |
| Little bluestem | 10 |
| Needleandthread | 10 |
| Forbs | 10 |
| Green needlegrass | 5 |
| Woody plants | 5 |
| Blue grama | Trace |

Total annual yield on range in excellent condition is 1,800 pounds air-dry herbage per acre. In less favorable years yield is as little as 800 pounds per acre. About 90 percent of the plants in this site furnish forage for cattle, horses, sheep, deer and antelope.

## SECTION A4-3

## ENGINEERING PROPERTIES OF SOILS, SITES 1 AND 23

## CROW RESERVATION

TABLE A

ENGINEERING PROPERTIES

CROW RESER

| Series & Mapping Units | Depth to bedrock and Gravel | Depth from Surface | Dominant USDA texture | Classification | | Percentage larger than 3 in. | Percentage p | |
|---|---|---|---|---|---|---|---|---|
| | | | | Unified | AASHTO | | No. 4 | No.10 |
| Allentine: Asd | 60 | 0-60 | Clay | CL-CH | A-7 | — | 100 | 100 |
| Arvada: Aye | 60 | 0-60 | Silty clay & clay | CL-CH | A-7 | — | 100 | 100 |
| Doney: DOe | 20-40 (shale or sand-stone) | 0-21<br>21 | Loam<br>Sand-stone or silt-stone. | ML-GM | A-4 or A-2 | — | 60-95 | 50-90 |
| Haverson: Hfh | 60 | 0-12 | Silty clay loam or silty clay. | CL | A-6 or A-7 | — | 100 | 100 |
| | | 12-60 | Loam & thin strata of silty clay loam silty clay | ML-CL, CL | A-4 | — | 100 | 100 |
| Kyle: Ks,Kt, Ku. | 60 | 0-62 | Clay | CH | A-7 | 0-25 | 70-100 | 65-100 |
| Lismas: LK, LM, LN | 10-20 (shale) | 0-18<br>18 | Clay Shale. | CL or CH | A-7 | — | 90-100 | 85-95 |
| Midway: MVa, MVd | 10-20 (shale) | 0-11<br>11 | Silty clay loam Shale. | CL | A-7 | — | 80-100 | 70-95 |

TABLE A4-1
OPERTIES OF SOILS, SITES 1 & 23,
OW RESERVATION

| rcentage passing sieve – 4 | No.10 | No.40 | No.200 | Permeability | Available water capacity | Reaction | Shrink swell Potential | Frost-action Potential | Corrosivity: Untreated steel | Corrosivity: Concrete |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100 | 95-100 | 85-95 | 0.06 | 0.12-0.18 | 7.9-8.4 | High | Moderate | High | Low |
| | 100 | 95-100 | 90-95 | 0.6 | 0.12-0.18 | 7.8-9.5 | High | Moderate | High | Low |
| 5 | 50-90 | 40-75 | 30-50 | 0.6-2.0 | 0.11-0.16 | 7.4-7.8 | Low | High or Moderate | High | Low |
| | 100 | 95-100 | 85-95 | 0.2-0.6 | 0.16-0.19 | 7.4-8.4 | Moderate | High | High | Low |
| | 100 | 85-95 | 65-80 | 0.6-2.0 | 0.15-0.18 | 7.4-8.4 | Low | High | High | Low |
| | 65-100 | 60-100 | 50-95 | 0.06 | 0.12-0.18 | 7.9-84 | High | Moderate | High | Mod. |
| | 85-95 | 80-90 | 75-95 | 0.06 | 0.12-0.18 | 7.9-8.4 | High | Moderate | High | Mod. |
| | 70-95 | 70-85 | 60-80 | 0.06-0.2 | 0.14-0.18 | 7.4-8.4 | Moderate | High | High | Low |

ENGINEERING PR
CR

| Series & Mapping Units | Depth to bedrock and Gravel | Depth from Surface | Dominant USDA texture | Classification | | Percentage larger than 3 in. | Percentag | |
|---|---|---|---|---|---|---|---|---|
| | | | | Unified | AASHTO | | No. 4 | No |
| Pierre: Pg, Pk, PM, PN | 20-40 (shale) | 0-29<br>29 | Clay Shale | CL | A-7 | — | 95-100 | 90 |
| Renohill: Re | 20-40 (shale) | 0-33<br>33 | Silty clay Shale | CL | A-7 | — | 100 | 10 |
| Thedalund: Hn, Tho | 20-40 (shale) | 0-28<br>28 | Loam Shale. | ML or SM | A-4 | 0-30 | 80-100 | 70 |
| Vananda: Vc | 60 | 0-60 | Clay | CL | A-7 or CH | — | 100 | 10 |
| Wayden: WL | 10-20 (hard shale) | 0-19<br>19 | Silty clay loam Shale. | CL | A-7 | — | 100 | 10 |

TABLE A4-1

RING PROPERTIES OF SOILS, SITES 1 & 23, CROW RESERVATION

(continued)

| Percentage passing sieve – No. 4 | No.10 | No.40 | No.200 | Permeability | Available water capacity | Reaction | Shrink swell Potential | Frost-action Potential | Corrosivity: Untreated steel | Corrosivity: Concrete |
|---|---|---|---|---|---|---|---|---|---|---|
| 5-100 | 90-100 | 85-100 | 75-95 | 0.06 | 0.13-0.18 | 7.9-8.4 | High | Moderate | High | Mod. |
| 100 | 100 | 95-100 | 85-95 | 0.06-0.2 | 0.12-0.15 | 7.9-8.4 | High | Moderate or High. | High | Low |
| -100 | 70-100 | 65-95 | 45-75 | 0.6-2.0 | 0.14-0.20 | 7.4-7.8 | Low | High | High | Low |
| 00 | 100 | 90-100 | 75-95 | 0.06 | 0.13-0.18 | 8.5-9.0 | High | Moderate | High | Mod. |
| 00 | 100 | 95-100 | 85-90 | 0.6-2.0 | 0.14-0.20 | 7.9-8.4 | Moderate | High | High | Low |

TABLE A4-2
RANGE SITE DESCRIPTIO
CROW RESERVATION

| Soil series/mapping units | Degree and kind of limitations for: Septic-tank absorption fields | Sewage lagoons | Shallow excavations | Dwellings with basements | Sanitary landfills (trench type) | Degree and Kind of limit for Continued |
|---|---|---|---|---|---|---|
| Allentine: Asd | Severe: very slow permeability. | Slight where slopes are 0 to 1 percent. Moderate where slopes are 2 to 4 percent. | Severe: clay texture. | Severe: high shrink-swell potential. | Severe: clay texture. | S |
| Arvada: Aye | Severe: very slow permeability. | Moderate: slopes are 2 to 4 percent. | Severe: clay and silty clay texture. | Severe: high shrink-swell potential. | Severe: clay and silty clay texture. | S |
| Doney: DOe | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 7 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 25 percent in places. | S |
| Haverson: Hfh | Moderate: moderate permeability; flooding hazard and high water table on the river terraces. | Moderate: moderate permeability; flooding hazard and high water table on the river terraces. | Slight or moderate: flooding hazard on the river terraces. | Severe: high potential frost action; flooding hazard and high water table on the river terraces. | Slight or moderate: flooding hazard on the river terraces. | S |
| Kyle: Ks, Kt, Ku | Severe: very slow permeability. | Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 7 percent. Severe where slopes are more than 7 percent. | Severe: clay texture. | Severe: high shrink-swell potential. | Severe: clay texture. | S |
| Lismas: LK, LM, LN | Severe: bedrock at a depth of less than 20 inches; very slow permeability; slopes are more than 15 percent. | Severe: bedrock at a depth of less than 20 inches. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 25 percent in places. | Se a l l p |

E A4-2
DESCRIPTIONS,
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ontinued

| ndfills type) | Roads and parking areas | Road Fill | Suitability as a source of: Sand or gravel | Topsoil | Soil features affecting: Pond reservoir areas | Dams, dikes, and levees | Drainage for crops and pasture |
|---|---|---|---|---|---|---|---|
| y. | Severe: high shrink-swell potential; low shear strength | Poor: high shrink-swell potential; low shear strength. | Not a source. | Poor: clay texture. | All features favorable. | Medium compressibility; high shrink-swell potential; low shear strength. | Very slow permeability. |
| y and tex- | Severe: high shrink-swell potential; low shear strength | Poor: high shrink-swell potential; low shear strength. | Not a source. | Poor: less than 8 inches thick. | All features favorable. | Poor compaction characteristics; high shrink-swell potential; low shear strength. | Very slow permeability. |
| rock of 20 s; more cent in | Severe: slopes are more than 15 percent in places. | Poor: bedrock at a depth of 20 to 40 inches. | Not a source. | Poor: more than 15 percent coarse fragments. | Bedrock at a depth of 20 to 40 inches; moderately steep and steep in places. | Low shear strength; high piping hazard; bedrock at a depth of 20 to 40 inches. | Not applicable. |
| erate: ard on races. | Severe: high potential frost action. | Poor: high potential frost action. | Not a source. | Good. | Water table at a depth of 3 to 5 feet on the river terraces. | Low shear strength; high piping hazard. | Unstable ditch banks. |
| exture. | Severe: high shrink-swell potential; low shear strength. | Poor: high potential frost action; low shear strength. | Not a source. | Poor: clay texture. | Moderate slopes in places. | High compressibility; high shrink-swell potential; low shear strength. | Very slow permeability. |
| | Severe: bedrock at a depth of less than 20 inches; high shrink-swell potential. | Poor: shale at a depth of 20 inches; high shrink-swell potential. | Not a source. | Poor: clay texture. | Shale at a depth of less than 20 inches. | Poor compaction characteristics; high shrink-swell potential; bedrock at a depth of less than 20 inches. | Not applicable. |

TABLE A4-2
RANGE SITE DESCRIPT
CROW RESERVATIO
(continued)

| Soil series/mapping units | Degree and kind of limitations for: Septic-tank absorption fields | Sewage lagoons | Shallow excavations | Dwellings with basements | Sanitary landfills (trench type) | Degree and Kind of limita for Continued: Ro... |
|---|---|---|---|---|---|---|
| Midway: MVa, MVd | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 7 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 25 percent in places. | Seve... roc... dep... tha... chie... are... 15 ... pla... |
| Pierre: Pg, Pk, PM, PN | Severe: very slow permeability; bedrock at a depth of 20 to 40 inches. | Severe: slopes are more than 7 percent in places; bedrock at a depth of 20 to 40 inches. | Severe: clay texture; bedrock at a depth of 20 to 40 inches. | Severe: high shrink-swell potential; bedrock at a depth of 20 to 40 inches. | Severe: bedrock at a depth of 20 to 40 inches. | Seve... shri... pot... slo... mo... per... pla... |
| Renohill: Re | Severe: bedrock at a depth of 20 to 40 inches. | Severe: bedrock at a depth of 20 to 40 inches. | Severe: bedrock at a depth of 20 to 40 inches. | Severe: high shrink-swell potential; bedrock at a depth of 20 to 40 inches. | Severe: bedrock at a depth of 20 to 40 inches. | Seve... shri... pot... slo... mo... per... pla... |
| Thedalund: THn, THo | Severe: bedrock at a depth of 20 to 40 inches. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 7 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 8 percent in places. | Severe: bedrock at a depth of 20 to 40 inches; slopes are more than 25 percent in places. places. | Seve... pot... fro... slo... mo... per... |
| Vananda: Vc | Severe: very slow permeability. | Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 7 percent. Severe where slopes are more than 7 percent. | Severe: clay texture. | Severe: high shrink-swell potential | Severe: clay texture. | Sever... shri... pot... low... stre... |
| Wayden: Wt. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 7 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Severe: shale at a depth of less than 20 inches; slopes are more than 8 percent in places. | Severe: bedrock at a depth of less than 20 inches; slopes are more than 25 percent in places. | Sever... at a... of l... 20 i... slop... mor... per... plac... |

LE A4-2
DESCRIPTIONS,
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ontinued

| ndfills (type) | Roads and parking areas | Road Fill | Suitability as a source of: Sand or gravel | Topsoil | Soil features affecting: Pond reservoir areas | Dams, dikes, and levees | Drainage for crops and pasture |
|---|---|---|---|---|---|---|---|
| ck of es an n | Severe: bedrock at a depth of less than 20 inches; slopes are more than 15 percent in places. | Poor: shale at a depth of less than 20 inches. | Not a source. | Poor: less than 8 inches thick. | Shale at a depth of less than 20 inches. | Fair compaction characteristics; medium compressibility; shale at a depth of less than 20 inches. | Not applicable. |
| ck f 20 | Severe: high shrink-swell potential; slopes are more than 15 percent in places. | Poor: high shrink-swell potential; bedrock at a depth of 20 to 40 inches. | Not a source. | Poor: clay texture. | Steep in places. | Poor compaction characteristics; high shrink-swell potential; low shear strength; bedrock at a depth of 20 to 40 inches. | Not applicable. |
| k 20 | Severe: high shrink-swell potential; slopes are more than 15 percent in places. | Poor: high shrink-swell potential; bedrock at a depth of 20 to 40 inches. | Not a source. | Poor: silty clay texture. | Bedrock at a depth of 20 to 40 inches. | Fair compaction characteristics; bedrock at a depth of 20 to 40 inches. | Not applicable. |
| e er- | Severe: high potential frost action; slopes are more than 15 percent in | Poor: high potential frost action; slopes are more than 25 percent in places; bedrock at a depth of 20 to 40 inches. | Not a source. | Fair: less than 16 inches thick. | Bedrock at a depth of 20 to 40 inches. | Medium susceptibility to piping; bedrock at a depth of 20 to 40 inches. | Not applicable. |
| | Severe: high shrink-swell potential; low shear strength. | Poor: high shrink-swell potential; low shear strength. | Not a source. | Poor: clay texture; high alkalinity. | All features favorable. | Poor compaction characteristics; high compressibility; low shear strength. | Not applicable. |
| at a han 25 ces. | Severe: shale at a depth of less than 20 inches; slopes are more than 15 percent in places. | Poor: shale at a depth of less than 20 inches. | Not a source. | Poor: less than 8 inches thick. | Steep; bedrock at a depth of less than 20 inches. | Moderate shrink-swell potential; bedrock at a depth of less than 20 inches. | Not applicable. |