

**ПЕРЕЧЕНЬ КООРДИНАТ ХАРАКТЕРНЫХ ТОЧЕК
границы памятника природы Челябинской области
низовья реки Малый Кизил**

| Номер точки | Номер узловой точки | Координаты | | От точки до точки | Длина, м | Дирекционный угол |
|----------------|---------------------------|------------|------------|----------------------------|-------------|----------------------|
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| 2 | | 438965,49 | 2159559,27 | 2–3 | 125,45 | 158° 51 ' 58 " |
| 3 | | 438848,48 | 2159604,50 | 3–4 | 120,22 | 169° 11 ' 55 " |
| 4 | | 438730,39 | 2159627,03 | 4–5 | 57,72 | 187° 29 ' 44 " |
| 5 | | 438673,16 | 2159619,50 | 5–6 | 88,89 | 116° 52 ' 56 " |
| 6 | | 438632,97 | 2159698,78 | 6–7 | 112,41 | 167° 17 ' 47 " |
| 7 | | 438523,31 | 2159723,50 | 7–8 | 89,04 | 199° 38 ' 8 " |
| 8 | | 438439,45 | 2159693,58 | 8–9 | 32,68 | 217° 37 ' 38 " |
| 9 | | 438413,57 | 2159673,63 | 9–10 | 84,03 | 126° 27 ' 14 " |
| 10 | | 438363,64 | 2159741,22 | 10–11 | 137,35 | 167° 17 ' 54 " |
| 11 | | 438229,65 | 2159771,42 | 11–12 | 135,42 | 232° 19 ' 56 " |
| 12 | | 438146,90 | 2159664,23 | 12–13 | 44,13 | 257° 12 ' 38 " |
| 13 | | 438137,13 | 2159621,19 | 13–14 | 99,21 | 190° 56 ' 6 " |
| 14 | | 438039,72 | 2159602,37 | 14–15 | 89,81 | 221° 54 ' 14 " |
| 15 | | 437972,88 | 2159542,39 | 15–16 | 63,69 | 238° 1 ' 27 " |
| 16 | | 437939,15 | 2159488,36 | 16–17 | 69,63 | 153° 38 ' 14 " |
| 17 | | 437876,76 | 2159519,28 | 17–18 | 94,47 | 186° 30 ' 35 " |
| 18 | | 437782,90 | 2159508,57 | 18–19 | 88,89 | 160° 59 ' 32 " |
| 19 | | 437698,86 | 2159537,52 | 19–20 | 59,12 | 152° 52 ' 2 " |
| 20 | | 437646,25 | 2159564,48 | 20–21 | 66,53 | 132° 47 ' 42 " |
| 21 | | 437601,05 | 2159613,30 | 21–22 | 67,64 | 143° 57 ' 19 " |
| 22 | | 437546,36 | 2159653,10 | 22–23 | 107,90 | 169° 12 ' 35 " |
| 23 | | 437440,37 | 2159673,30 | 23–24 | 83,03 | 226° 30 ' 11 " |
| 24 | | 437383,22 | 2159613,07 | 24–25 | 2,59 | 193° 23 ' 33 " |
| 25 | | 437380,70 | 2159612,47 | 25–26 | 17,55 | 181° 6 ' 35 " |
| 26 | | 437363,15 | 2159612,13 | 26–27 | 57,18 | 138° 14 ' 24 " |
| 27 | | 437320,50 | 2159650,21 | 27–28 | 110,93 | 151° 38 ' 7 " |
| 28 | | 437222,89 | 2159702,91 | 28–29 | 130,25 | 177° 31 ' 53 " |
| 29 | | 437092,76 | 2159708,52 | 29–30 | 108,60 | 236° 59 ' 4 " |
| 30 | | 437033,59 | 2159617,46 | 30–31 | 13,00 | 242° 30 ' 30 " |
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| 32 | | 436994,41 | 2159706,67 | 32–33 | 176,13 | 189° 35 ' 20 " |
| 33 | | 436820,74 | 2159677,33 | 33–34 | 129,22 | 237° 55 ' 47 " |
| 34 | | 436752,13 | 2159567,83 | 34–35 | 87,82 | 250° 24 ' 50 " |
| 35 | | 436722,69 | 2159485,09 | 35–36 | 79,27 | 278° 56 ' 52 " |
| 36 | | 436735,02 | 2159406,78 | 36–37 | 36,66 | 193° 8 ' 2 " |
| 37 | | 436699,32 | 2159398,45 | 37–38 | 94,39 | 216° 56 ' 3 " |
| 38 | | 436623,87 | 2159341,73 | 38–39 | 23,73 | 197° 59 ' 32 " |
| 39 | | 436601,30 | 2159334,40 | 39–40 | 55,34 | 188° 8 ' 4 " |
| 40 | | 436546,52 | 2159326,57 | 40–41 | 103,06 | 161° 26 ' 31 " |
| 41 | | 436448,82 | 2159359,37 | 41–42 | 100,97 | 183° 15 ' 11 " |
| 42 | | 436348,01 | 2159353,64 | 42–43 | 94,50 | 221° 6 ' 30 " |
| 43 | | 436276,81 | 2159291,51 | 43–44 | 111,70 | 224° 52 ' 23 " |
| 44 | | 436197,65 | 2159212,70 | 44–45 | 50,08 | 211° 25 ' 37 " |
| 45 | | 436154,92 | 2159186,59 | 45–46 | 55,34 | 191° 39 ' 55 " |
| 46 | | 436100,72 | 2159175,40 | 46–47 | 113,79 | 196° 58 ' 46 " |
| 47 | | 435991,89 | 2159142,17 | 47–48 | 79,54 | 189° 34 ' 55 " |
| 48 | | 435913,46 | 2159128,93 | 48–49 | 107,87 | 184° 32 ' 46 " |
| 49 | | 435805,93 | 2159120,38 | 49–50 | 72,72 | 187° 19 ' 52 " |
| 50 | | 435733,80 | 2159111,10 | 50–51 | 81,20 | 148° 57 ' 10 " |
| 51 | | 435664,23 | 2159152,98 | 51–52 | 91,03 | 201° 40 ' 31 " |
| 52 | | 435579,64 | 2159119,36 | 52–53 | 63,32 | 212° 58 ' 47 " |
| 53 | | 435526,52 | 2159084,89 | 53–54 | 31,49 | 205° 2 ' 36 " |
| 54 | | 435497,99 | 2159071,56 | 54–55 | 16,96 | 172° 57 ' 17 " |
| 55 | | 435481,16 | 2159073,64 | 55–56 | 83,13 | 161° 26 ' 27 " |
| 56 | | 435402,35 | 2159100,10 | 56–57 | 64,19 | 175° 44 ' 50 " |
| 57 | | 435338,34 | 2159104,86 | 57–58 | 5,36 | 128° 15 ' 34 " |
| 58 | | 435335,02 | 2159109,07 | 58–59 | 127,93 | 115° 2 ' 34 " |
| 59 | | 435280,87 | 2159224,97 | 59–60 | 102,89 | 150° 30 ' 36 " |
| 60 | | 435191,31 | 2159275,62 | 60–61 | 156,62 | 183° 14 ' 35 " |
| 61 | | 435034,94 | 2159266,76 | 61–62 | 118,55 | 233° 57 ' 34 " |
| 62 | | 434965,19 | 2159170,90 | 62–63 | 41,22 | 273° 13 ' 37 " |
| 63 | | 434967,51 | 2159129,75 | 63–64 | 131,42 | 175° 17 ' 42 " |
| 64 | | 434836,53 | 2159140,53 | 64–65 | 156,58 | 183° 14 ' 38 " |
| 65 | | 434680,20 | 2159131,67 | 65–66 | 137,31 | 188° 50 ' 22 " |
| 66 | | 434544,52 | 2159110,57 | 66–67 | 127,94 | 194° 1 ' 39 " |
| 67 | | 434420,40 | 2159079,56 | 67–68 | 86,83 | 212° 58 ' 55 " |
| 68 | | 434347,56 | 2159032,29 | 68–69 | 160,41 | 224° 9 ' 32 " |
| 69 | | 434232,48 | 2158920,54 | 69–70 | 92,53 | 226° 26 ' 58 " |
| 70 | | 434168,73 | 2158853,48 | 70–71 | 47,00 | 201° 7 ' 37 " |
| 71 | | 434124,89 | 2158836,54 | 71–72 | 100,62 | 187° 38 ' 49 " |
| 72 | | 434025,16 | 2158823,15 | 72–73 | 125,91 | 204° 29 ' 34 " |
| 73 | | 433910,58 | 2158770,95 | 73–74 | 136,87 | 268° 50 ' 10 " |
| 74 | | 433907,80 | 2158634,11 | 74–75 | 19,68 | 313° 34 ' 47 " |
| 75 | | 433921,37 | 2158619,85 | 75–76 | 52,18 | 225° 26 ' 33 " |
| 76 | | 433884,76 | 2158582,67 | 76–77 | 97,45 | 205° 18 ' 29 " |

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| 77 | | 433796,66 | 2158541,01 | 77–78 | 139,51 | 222° 53 ' 7 " |
| 78 | | 433694,44 | 2158446,07 | 78–79 | 84,96 | 235° 0 ' 29 " |
| 79 | | 433645,72 | 2158376,47 | 79–80 | 119,76 | 201° 3 ' 44 " |
| 80 | | 433533,96 | 2158333,43 | 80–81 | 94,82 | 205° 2 ' 46 " |
| 81 | | 433448,06 | 2158293,29 | 81–82 | 33,76 | 232° 16 ' 4 " |
| 82 | | 433427,40 | 2158266,59 | 82–83 | 94,14 | 138° 14 ' 48 " |
| 83 | | 433357,17 | 2158329,28 | 83–84 | 89,70 | 183° 12 ' 29 " |
| 84 | | 433267,61 | 2158324,26 | 84–85 | 19,38 | 59° 8 ' 52 " |
| 85 | | 433277,55 | 2158340,90 | 85–86 | 113,14 | 110° 36 ' 8 " |
| 86 | | 433237,74 | 2158446,80 | 86–87 | 47,52 | 136° 36 ' 42 " |
| 87 | | 433203,21 | 2158479,44 | 87–88 | 54,59 | 95° 37 ' 26 " |
| 88 | | 433197,86 | 2158533,77 | 88–89 | 132,82 | 131° 7 ' 35 " |
| 89 | | 433110,50 | 2158633,82 | 89–90 | 124,82 | 202° 53 ' 39 " |
| 90 | | 432995,51 | 2158585,26 | 90–91 | 90,24 | 220° 23 ' 36 " |
| 91 | | 432926,78 | 2158526,78 | 91–92 | 19,42 | 188° 35 ' 21 " |
| 92 | | 432907,58 | 2158523,88 | 92–93 | 0,42 | 152° 49 ' 8 " |
| 93 | | 432907,21 | 2158524,07 | 93–94 | 39,84 | 134° 3 ' 52 " |
| 94 | | 432879,50 | 2158552,70 | 94–95 | 89,63 | 115° 37 ' 18 " |
| 95 | | 432840,74 | 2158633,52 | 95–96 | 125,83 | 177° 31 ' 52 " |
| 96 | | 432715,03 | 2158638,94 | 96–97 | 80,12 | 195° 21 ' 4 " |
| 97 | | 432637,77 | 2158617,73 | 97–98 | 116,43 | 227° 23 ' 16 " |
| 98 | | 432558,94 | 2158532,04 | 98–99 | 18,43 | 164° 29 ' 9 " |
| 99 | | 432541,18 | 2158536,97 | 99–100 | 86,54 | 170° 59 ' 6 " |
| 100 | | 432455,71 | 2158550,53 | 100–101 | 113,27 | 195° 30 ' 40 " |
| 101 | | 432346,57 | 2158520,24 | 101–102 | 54,19 | 231° 49 ' 8 " |
| 102 | | 432313,07 | 2158477,64 | 102–103 | 101,69 | 193° 3 ' 38 " |
| 103 | | 432214,01 | 2158454,66 | 103–104 | 101,07 | 227° 14 ' 29 " |
| 104 | | 432145,39 | 2158380,45 | 104–105 | 138,40 | 246° 26 ' 41 " |
| 105 | 2 узл. | 432090,08 | 2158253,58 | 105–106 | 165,69 | 341° 7 ' 20 " |
| 106 | 3 узл. | 432246,86 | 2158199,97 | 106–107 | 66,10 | 70° 11 ' 59 " |
| 107 | | 432269,25 | 2158262,16 | 107–108 | 161,72 | 13° 3 ' 30 " |
| 108 | | 432426,79 | 2158298,70 | 108–109 | 58,98 | 51° 49 ' 0 " |
| 109 | | 432463,25 | 2158345,06 | 109–110 | 4,21 | 15° 33 ' 11 " |
| 110 | | 432467,31 | 2158346,19 | 110–111 | 30,95 | 350° 58 ' 0 " |
| 111 | | 432497,88 | 2158341,33 | 111–112 | 96,91 | 344° 3 ' 49 " |
| 112 | | 432591,07 | 2158314,72 | 112–113 | 96,71 | 29° 48 ' 16 " |
| 113 | | 432674,99 | 2158362,79 | 113–114 | 79,16 | 47° 18 ' 50 " |
| 114 | | 432728,66 | 2158420,98 | 114–115 | 83,03 | 314° 3 ' 12 " |
| 115 | | 432786,39 | 2158361,31 | 115–116 | 98,03 | 332° 46 ' 25 " |
| 116 | | 432873,56 | 2158316,46 | 116–117 | 141,02 | 8° 35 ' 48 " |
| 117 | | 433013,00 | 2158337,54 | 117–118 | 33,99 | 40° 26 ' 32 " |
| 118 | | 433038,87 | 2158359,59 | 118–119 | 14,82 | 316° 36 ' 47 " |
| 119 | | 433049,64 | 2158349,41 | 119–120 | 62,69 | 239° 6 ' 53 " |
| 120 | | 433017,46 | 2158295,61 | 120–121 | 114,73 | 273° 14 ' 16 " |
| 121 | | 433023,94 | 2158181,06 | 121–122 | 106,48 | 313° 28 ' 26 " |

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| 122 | | 433097,20 | 2158103,79 | 122–123 | 140,10 | 344° 4 ' 15 " |
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| 124 | | 433256,52 | 2158085,25 | 124–125 | 145,74 | 323° 46 ' 18 " |
| 125 | | 433374,08 | 2157999,12 | 125–126 | 144,59 | 19° 29 ' 52 " |
| 126 | | 433510,38 | 2158047,38 | 126–127 | 107,78 | 52° 11 ' 13 " |
| 127 | | 433576,46 | 2158132,53 | 127–128 | 39,58 | 25° 3 ' 1 " |
| 128 | | 433612,32 | 2158149,29 | 128–129 | 173,86 | 21° 3 ' 44 " |
| 129 | | 433774,56 | 2158211,77 | 129–130 | 124,75 | 55° 0 ' 29 " |
| 130 | | 433846,10 | 2158313,97 | 130–131 | 87,37 | 42° 53 ' 6 " |
| 131 | | 433910,12 | 2158373,43 | 131–132 | 101,84 | 25° 18 ' 43 " |
| 132 | | 434002,18 | 2158416,97 | 132–133 | 144,05 | 45° 19 ' 55 " |
| 133 | | 434103,45 | 2158519,42 | 133–134 | 125,49 | 70° 16 ' 37 " |
| 134 | | 434145,80 | 2158637,55 | 134–135 | 29,37 | 7° 39 ' 0 " |
| 135 | | 434174,91 | 2158641,46 | 135–136 | 115,58 | 21° 6 ' 59 " |
| 136 | | 434282,73 | 2158683,10 | 136–137 | 133,47 | 46° 27 ' 15 " |
| 137 | | 434374,68 | 2158779,84 | 137–138 | 136,85 | 44° 9 ' 22 " |
| 138 | | 434472,86 | 2158875,17 | 138–139 | 33,88 | 32° 59 ' 29 " |
| 139 | | 434501,28 | 2158893,62 | 139–140 | 85,47 | 14° 1 ' 23 " |
| 140 | | 434584,20 | 2158914,33 | 140–141 | 118,49 | 8° 50 ' 44 " |
| 141 | | 434701,28 | 2158932,55 | 141–142 | 132,92 | 3° 14 ' 35 " |
| 142 | | 434833,99 | 2158940,07 | 142–143 | 85,03 | 355° 17 ' 52 " |
| 143 | | 434918,73 | 2158933,10 | 143–144 | 77,37 | 336° 40 ' 44 " |
| 144 | | 434989,78 | 2158902,47 | 144–145 | 106,10 | 348° 10 ' 16 " |
| 145 | | 435093,63 | 2158880,72 | 145–146 | 105,56 | 20° 20 ' 38 " |
| 146 | | 435192,61 | 2158917,42 | 146–147 | 34,59 | 66° 33 ' 44 " |
| 147 | | 435206,37 | 2158949,16 | 147–148 | 47,40 | 308° 15 ' 28 " |
| 148 | | 435235,72 | 2158911,94 | 148–149 | 127,12 | 355° 45 ' 1 " |
| 149 | | 435362,49 | 2158902,52 | 149–150 | 78,16 | 341° 26 ' 15 " |
| 150 | | 435436,58 | 2158877,64 | 150–151 | 94,65 | 352° 56 ' 9 " |
| 151 | | 435530,51 | 2158866,00 | 151–152 | 102,93 | 25° 2 ' 38 " |
| 152 | | 435623,76 | 2158909,57 | 152–153 | 32,72 | 32° 57 ' 41 " |
| 153 | | 435651,21 | 2158927,37 | 153–154 | 45,60 | 328° 57 ' 47 " |
| 154 | | 435690,28 | 2158903,86 | 154–155 | 137,47 | 7° 19 ' 49 " |
| 155 | | 435826,63 | 2158921,40 | 155–156 | 111,80 | 4° 32 ' 25 " |
| 156 | | 435938,08 | 2158930,25 | 156–157 | 101,26 | 9° 35 ' 3 " |
| 157 | | 436037,93 | 2158947,11 | 157–158 | 117,45 | 16° 58 ' 31 " |
| 158 | | 436150,26 | 2158981,40 | 158–159 | 80,89 | 11° 40 ' 31 " |
| 159 | | 436229,48 | 2158997,77 | 159–160 | 108,48 | 31° 25 ' 13 " |
| 160 | | 436322,05 | 2159054,32 | 160–161 | 128,73 | 44° 52 ' 38 " |
| 161 | | 436413,27 | 2159145,15 | 161–162 | 16,70 | 40° 52 ' 22 " |
| 162 | | 436425,90 | 2159156,08 | 162–163 | 107,55 | 341° 27 ' 8 " |
| 163 | | 436527,86 | 2159121,87 | 163–164 | 120,01 | 8° 8 ' 20 " |
| 164 | | 436646,66 | 2159138,86 | 164–165 | 74,34 | 17° 58 ' 54 " |
| 165 | | 436717,37 | 2159161,81 | 165–166 | 85,58 | 36° 55 ' 49 " |
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| 167 | | 436841,02 | 2159226,10 | 167–168 | 91,34 | 35° 14 ' 19 " |
| 168 | | 436915,62 | 2159278,80 | 168–169 | 105,53 | 62° 59 ' 17 " |
| 169 | | 436963,55 | 2159372,82 | 169–170 | 33,45 | 112° 28 ' 44 " |
| 170 | | 436950,76 | 2159403,73 | 170–171 | 56,62 | 336° 41 ' 9 " |
| 171 | | 437002,76 | 2159381,32 | 171–172 | 93,39 | 7° 3 ' 18 " |
| 172 | | 437095,44 | 2159392,79 | 172–173 | 105,10 | 39° 5 ' 17 " |
| 173 | | 437177,02 | 2159459,06 | 173–174 | 36,36 | 62° 43 ' 49 " |
| 174 | | 437193,68 | 2159491,38 | 174–175 | 12,66 | 331° 39 ' 12 " |
| 175 | | 437204,82 | 2159485,37 | 175–176 | 112,24 | 318° 14 ' 49 " |
| 176 | | 437288,55 | 2159410,63 | 176–177 | 117,31 | 1° 7 ' 24 " |
| 177 | | 437405,84 | 2159412,93 | 177–178 | 83,58 | 13° 14 ' 17 " |
| 178 | | 437487,20 | 2159432,07 | 178–179 | 6,71 | 46° 56 ' 0 " |
| 179 | | 437491,78 | 2159436,97 | 179–180 | 46,77 | 312° 46 ' 56 " |
| 180 | | 437523,55 | 2159402,64 | 180–181 | 108,70 | 332° 51 ' 44 " |
| 181 | | 437620,28 | 2159353,06 | 181–182 | 148,39 | 340° 59 ' 32 " |
| 182 | | 437760,58 | 2159304,73 | 182–183 | 80,52 | 6° 30 ' 38 " |
| 183 | | 437840,58 | 2159313,86 | 183–184 | 126,71 | 336° 20 ' 10 " |
| 184 | | 437956,64 | 2159263,00 | 184–185 | 117,06 | 23° 48 ' 5 " |
| 185 | | 438063,74 | 2159310,24 | 185–186 | 120,49 | 58° 1 ' 38 " |
| 186 | | 438127,54 | 2159412,45 | 186–187 | 6,08 | 41° 55 ' 52 " |
| 187 | | 438132,06 | 2159416,51 | 187–188 | 61,70 | 10° 56 ' 25 " |
| 188 | | 438192,64 | 2159428,22 | 188–189 | 109,65 | 6° 36 ' 14 " |
| 189 | | 438301,56 | 2159440,83 | 189–190 | 56,24 | 77° 18 ' 20 " |
| 190 | | 438313,92 | 2159495,70 | 190–191 | 69,07 | 330° 20 ' 22 " |
| 191 | | 438373,94 | 2159461,52 | 191–192 | 107,96 | 6° 15 ' 50 " |
| 192 | | 438481,26 | 2159473,30 | 192–193 | 37,96 | 37° 51 ' 47 " |
| 193 | | 438511,23 | 2159496,60 | 193–194 | 24,78 | 296° 51 ' 53 " |
| 194 | | 438522,43 | 2159474,49 | 194–195 | 95,26 | 314° 51 ' 50 " |
| 195 | | 438589,63 | 2159406,97 | 195–196 | 135,94 | 7° 25 ' 49 " |
| 196 | | 438724,43 | 2159424,55 | 196–197 | 65,00 | 349° 12 ' 31 " |
| 197 | | 438788,28 | 2159412,38 | 197–198 | 51,58 | 338° 10 ' 48 " |
| 198 | 4 узл. | 438836,16 | 2159393,21 | 198–199 | 127,66 | 53° 47 ' 37 " |
| 199 | | 438911,57 | 2159496,22 | 199–200 | 96,92 | 351° 21 ' 14 " |
| 200 | | 439007,39 | 2159481,65 | 200–1 | 79,60 | 12° 15 ' 56 " |