Assessment of selenium-rich soils in the hilly areas, western Zhejiang Province with different sampling densities

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Abstract: To accurately determine the patches of selenium (Se)-rich paddy fields, this study carried out geochemical analysis on soils from the Qipanshan Se-rich area, Changshan County in western Zhejiang Province. Based on 1∶10 000 Geochemical Evaluation Criterion of Land Quality (an ave. sampling density of 25.6 pieces/km^2) and average assigned values of non-sample patches at an average sampling desity of 55.2 piece/km^2, Se contents of Se-rich soils and evaluation results of Se-rich patches in the hilly areas were obtained. The results show that the qualified rate of two differences between non-sample pattern assignment and measured value is 60.71%, with the consistency rate of selenium-rich pattern determination up to 63.64%. The accuracy of sampling evalution of the 1∶10 000 geochemical evalution for land quality in the study area is still difficult to meet the requirement of accurate determination of Se-rich patches. Therefore, sampling density should be increased appropriately, and deployment for sampling positions should be under control especially in no actual measured patches around non-sample patches.

Key words: selenium-rich soil; land quality geological survey; sampling density; hilly areas, western Zhejiang Province

赣南于都黄麟地区地热勘察取得突破性进展

为了更好地支撑服务赣州四县高质量脱贫攻坚,2019 年始,南京地质调查中心在赣州市于都县黄麟乡开展了水热型地热资源专项调查。近日,ZK4-1 探采结合孔顺利完工,孔深 568.66 m,孔口水温达 44.5 ℃。

(1)精准对接,聚焦需求。于都县是自然资源部定点帮扶的原国家级贫困县(2020 年 4 月 26 日脱贫摘帽),近年来中国地质调查局一直以“地质调查+”模式持续给予重点支持。该县黄麟乡公馆地区已发现较好的地热资源,但因地处高速铁路沿线保护区,区内有“热”禁止开发,区外找“热”求之不得。南京地质调查中心精准对接需求,依托“长江经济带综合地质调查工程”在外围开展专项水文地质调查,力图取得突破,满足政府对地热资源的迫切需求。

(2)精细探测,锁定井位。南京地质调查中心水文地质调查团队及江西省水文地质工程地质大队快速查明区域控热、导水构造特征,选择近 SN 向断裂与 NE 向控热断裂交汇处作为地热勘查靶区。物探组采用高密度电阻率、可控源音频大地电磁测深、视电阻率测深等手段,相互验证,确定黄麟地热勘查 ZK4-1 孔的孔位。

(3)精心施工,喜获温泉。项目组精选专业施工队伍开展取心钻进,遇关键层位邀请专家现场指导,并及时优化工序。2019 年 10 月 29 日,ZK4-1 孔顺利终孔,孔深 568.66 m。经抽水试验,在稳定降深条件下实测日出水量 900 t,井口水温 44.5℃,一举获得“经济实用型”地热宝藏。

(中国地质调查局南京地质调查中心　　刘林,姜月华,梅世嘉,崔玉贵,张哲豪,周权平,方捷)