

## **Proposed changes to the tentative Order for the ISOT Geothermal Heating System NPDES permit.**

The following text replaces section V.A.16 of the tentative Order.

**16. Temperature.** The natural temperature to be measurably increased.

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The following text replaces sections IV.D.3 and IV.D.4 of the Fact Sheet for the tentative ISOT Geothermal Heating System NPDES permit.

### **3. Satisfaction of Anti-Backsliding Requirements.**

Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order with the exceptions discussed below. The effluent limitations contained in this Order are consistent with the anti-backsliding requirements of the CWA and federal regulations.

#### Arsenic

The previous Order No. R5-2002-0079 contained an effluent limitation for arsenic of 150 ug/L, and a receiving water limitation of 10 ug/L. The calculation of the effluent limit and use of the receiving water limit was not done in accordance with the SIP, as it directly implemented the water quality objective as an effluent limitation (with dilution), and utilized a receiving water limitation in lieu of properly calculated effluent limitations. This technical mistake is corrected in this Order, and the effluent limitations for arsenic (AMEL=172 ug/L, MDEL=201 ug/L) are properly calculated in accordance with the SIP. The previous receiving water limitation has been removed, as it is properly implemented as effluent limitations. Correction of a technical mistake is allowed under federal anti-backsliding rules.

#### Mercury

The previous Order No. R5-2002-0079 contained an effluent limitation for mercury of 0.050 ug/L, and a receiving water limitation of 0.050 ug/L. The calculation of the effluent limit and use of the receiving water limit was not done in accordance with the SIP, as it directly implemented the water quality objective as an effluent limitation (with dilution), and utilized a receiving water limitation in lieu of properly calculated effluent limitations. This technical mistake is corrected in this Order, and the effluent limitations for mercury

(AMEL=0.050 ug/L, MDEL=0.142 ug/L) are properly calculated in accordance with the SIP. The previous receiving water limitation has been removed, as it is properly implemented as effluent limitations. Correction of a technical mistake is allowed under federal anti-backsliding rules.

#### Boron

The previous Order No. R5-2002-0079 contained a receiving water limitation for boron of 600 ug/L, but no effluent limitation. This approach to regulation of boron was not done in accordance with the SIP, as it directly implemented the water quality objective as a receiving water limitation and failed to implement an effluent limitation. This technical mistake is corrected in this Order, and effluent limitations for boron (AMEL=13,165 ug/L, MDEL=16,983 ug/L) are properly calculated in accordance with the SIP. The previous receiving water limitation has been removed, as it is properly implemented as effluent limitations. Correction of a technical mistake is allowed under federal anti-backsliding rules.

#### Temperature

The previous Order No. R5-2002-0079 contained an effluent prohibition for temperature of 80°F. The order did not provide any basis for the use of the prohibition, or the numerical value used. The value appears to be arbitrary, and is not necessarily protective of receiving water beneficial uses. The previous order also included a receiving water limitation of no more than a 5°F increase over background, based on implementation of a Basin Plan objective.

The Pit River is listed as an impaired water body with respect to temperature. Therefore, this Order properly implements a receiving water limitation that prohibits the discharge from causing any measurable increase in the temperature of the receiving water. The 5°F increase limit is therefore irrelevant and has been removed. The 80°F effluent limitation is irrelevant and without basis, and has been removed. Also, as a TMDL for temperature has not been developed, there is no way to determine what effluent temperature limitation would be protective of the beneficial uses. Correction of a technical mistake is allowed under federal anti-backsliding rules. However, anti-backsliding rules are not necessarily applicable to this change in regulation of temperature, as the previous order used a discharge prohibition, not an effluent limitation.

#### **4. Satisfaction of Antidegradation Policy.**

This Order complies with the antidegradation provisions of 40 CFR 131.12, State Water Board Resolution 68-16, and State Water Board APU 90-004. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 incorporates the Federal antidegradation policy (40 CFR 131.12) where the Federal policy applies under Federal law. Resolution 68-16 requires in part:

- 1) High quality waters be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies; and
- 2) Any activity, which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The discharge occurs in an area of active geothermal springs. A review of the *Technical Map of the Geothermal Resources of California* (California Division of Mines and Geology, 1983) indicates that ISOT's geothermal production well lies within the area delineated as the Kelly Hot Spring low temperature geothermal resource area. According to the *2002 Geothermal Map of California* published by the California Division of Oil and Gas, Kelly Hot Spring discharges at approximately 330 gallons per minute of approximately 198°F water into the Pit River. The ISOT geothermal discharge regulated by this Order averages 24 gpm and less than 90°F. The ISOT geothermal well and Kelly Hot Spring are believed to produce geothermal water from the same or connected formations. The flow rate of the ISOT discharge represents only 7.3 percent as compared to the natural Kelly Hot Spring flow rate. The ISOT geothermal discharge is insignificant in both flow and temperature compared to local natural geothermal discharges. It is also likely that pumping of the ISOT geothermal well causes a corresponding reduction in the discharge to the Pit River from Kelly Hot Spring. Through the Discharger's heat exchange use, the ISOT discharge temperature is reduced by over 50 percent. Furthermore, ISOT provides treatment for the removal of naturally-occurring mercury in the geothermal water. This treatment is provided by the Discharger even though the geothermal water naturally contains mercury, and the natural hot springs contribution of mercury is many times greater than the ISOT discharge (left untreated) would add.

It is arguable that ISOT's use of the geothermal waters results in a small benefit to the Pit River due to the reduction in temperature and mercury from the natural hot springs. Regardless, at most, the ISOT discharge results in minimal or no degradation of waters of the State and navigable waters of the United States. Receiving water monitoring has shown that any degradation in water quality outside of the mixing zone is so low as to not be measurable. Limited degradation that does not cause exceedance of water quality

objectives is warranted to allow for the economic benefit stemming from local growth. Additionally, use of geothermal energy is considered a desirable offset of conventional energy sources. Any minimal degradation occurring as a result of the discharge is consistent with the maximum benefit to the people of the State. This Fact Sheet contains detailed information about each constituent of concern in the waste discharge and what changes in the discharge may occur for each constituent. The effluent concentrations for all constituents are based on water quality criteria and objectives. This Order does not lower water quality limitations in effect in the previous order regulating this facility, except as explained in section IV.D.3, above. As explained, some effluent limits have been changed, but no additional degradation will occur because the Discharger's operation has not changed, and no pollutants are added by the Discharger's operation. Consistent with the Federal and State antidegradation policies, this Order requires the Discharger to meet requirements that will result in best practicable treatment or control.

These requirements to implement best practicable treatment or control will assure that pollution or nuisance will not occur and that the highest water quality consistent with maximum benefit to the people of the State will be maintained. Due to the high level of treatment required, the reduction in temperature achieved, and the significant dilution available, this Order will result in maintenance of existing in-stream uses. In performing the "reasonable potential" analysis, the Regional Water Board considered the discharge's effects on water quality on a pollutant-by-pollutant basis. This Order includes that analysis.

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The following text replaces section V.A.o of the Fact Sheet of the tentative Order.

- o. Temperature.** The Pit River from the confluence of the North and South Forks to Hat Creek has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that "[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature." However, the Pit River in the vicinity of the discharge is listed as an impaired water body with respect to temperature. Therefore, this Order does not allow the discharge to cause any measurable increase in receiving water temperature.