Run ID	Description	Significant Features	Calibration and Verification Summary and Conclusions	Application Summary and Conclusions
51	Homogeneous basalt with CSM saprolite	Evaluate regional flow behavior.	—	Water from beneath the Facility is captured by Red Hill Shaft when it is pumping.
51a	Limit horizontal anisotropy (3:1)	Assumed to be a conservative assumption and used in previous modeling efforts.	High head values were simulated low. There was less simulated water level difference in wells across Kalihi Valley, Moanalua Valley, Red Hill, North and South Hālawa Valleys, and Waimalu Valley. Pumping response to Red Hill Shaft was generally underpredicted (higher simulated connectivity), and pumping response to Hālawa Shaft was generally overpredicted (lower simulated connectivity).	Migration from the Facility was to the west and then NW when Red Hill Shaft is off, with some tracks migrating toward Hālawa Shaft and others toward Pearl Harbor.
51b	10:1 anisotropy	Evaluate impact of possible higher horizontal anisotropic conditions.	Model #51b captures the simulated water level differences from SE to NW across valleys better. The model provided NW directional regional head gradients. Pumping response to Red Hill Shaft was generally underpredicted (higher simulated connectivity), and pumping response to Hālawa Shaft was generally overpredicted (lower simulated connectivity).	Migration from beneath the Facility was still to the west and then turned NW when Red Hill Shaft is off. The elongated capture zone of Hālawa Shaft caused by the larger anisotropy intercepted water from the Facility.
51c	Zoned along ridges	Evaluate impact of flexibility along each hill.	Simulated water level difference statistics were better than Model #51a and similar to Model #51b. Model #51c better captures drawdown behavior than Model #51a for Red Hill Shaft, but Hālawa Shaft connectivity was still too large.	Migration from beneath the Facility was to the west and continued toward Pearl Harbor, being intercepted also by wells 2255-39 and 'Aiea Hālawa Shaft. Migration behavior is different from that of previous models.
51d	Calibrate on anisotropy	Evaluate what value of anisotropy best captures regional water level conditions (17.54 for this model).	PEST would gravitate toward values between 17 and 18 with vertical hydraulic conductivity of 40–70 ft/d during the different calibration runs. The model provided good calibration to regional water levels and differences. Model #51d provides a better match to Red Hill Shaft pumping than Model #51a or Model #51b, but still has too much connectivity between Hālawa Shaft and the Facility.	Migration behavior is similar to model with less (10:1) anisotropy. Larger anisotropy caused capture zones of wells and shafts to be wider.
51e	Zoned along ridges and within valleys	Evaluate impact of additional zonation since zoned conditions of Model #51c did not adequately distinguish itself from the average conditions of homogeneous Model #51a.	Additional zonation from Model #51c can capture regional water level conditions and connectivity between Red Hill Shaft, Hālawa Shaft, and the Facility. Also, the model provided relatively flat gradients at Red Hill due to a damming effect.	Migration from the Facility was to the west and continued toward Pearl Harbor, to discharge into Pearl Harbor Springs when Red Hill Shaft was not pumping.