

STATUS REPORT – to be presented to the Intelligence Team by 1200hrs daily.

Event: Christchurch Earthquake		Section/Function/agency:
Date: 09/03/2011	Time: 1200	Science Liaison Team
Operational Period:		Originator Record #: 012

Current situation (incidents, action taken, resource status, personnel numbers etc)

Earthquake Activity & Deformation: Appendix A illustrates the magnitude and frequency of aftershocks from 22 February to 9 March 2011.

Hot Springs: Partial survey results of earthquake effects on hot springs:

- Compared to January 2011 and baseline data, the volume of hot water discharging from Rapaki Bay, Cass Bay and Motukarara has increased by at least 10x after the 22 February earthquake, although discharge temperatures are relatively unchanged from baseline.
- Prior to the Feb earthquake, hot water discharge (with no gas) in Cass Bay was localised in two pipes and seeped from a hill near a boat shed. However, the most dramatic change after the Feb earthquake has occurred in Cass Bay where several points of hot water are now emanating from at least a 50 meter square area with temperatures of 23-28 deg C and from the two concrete pipes with maximum temperature of 32 deg C.
- Normally the Rapaki Bay springs do not discharge gas but immediately after the September and February earthquakes, the volume of gas in the hot waters increased markedly. Similarly, the Hanmer wells show a strong increase in the volume of gas discharge in response to strong earthquakes.
- No marked changes have been observed in the discharge temperature, flow rates and gas contents of fluid discharges in Sylvia Flats after the 22 Feb earthquake.

Monitoring:

- Continuous GPS on Kinsey Terrace, Glendavere with remote communications to transfer data out, while two sites on Balmoral Terrace remain on manual downloading every two days, with processing in Lower Hutt. Data has not been forwarded to CCC due to processing issues at Lower Hutt.
- Repeat scans of Sumner (RSA) were completed.

Landslides:

- Work continues across the hills by several geotechnical teams. Many calls are coming in from hill slope residents for geotechnical assessments now that the 941 8999 number is being more widely advertised.
- Continued assessment of regional rockfall patterns. Back analysis (numerical modelling) of known rockfall events is currently underway in order to calibrate the models so that they can be used as predictive tools. Continuing to provide advice to USAR teams on landslide related ground damage.
- Systematic aerial photo interpretation mapping of landslide, rockfall and other slope-related ground damage continues in Lower Hutt (GNS), with liaison to the ground party.

- There were several issues yesterday with a number of red stickers (for geotech reasons) being incorrectly removed from houses, including those in Morgans Valley, by structural engineers. These issues are being worked through. Grant Dellow, USAR geotech, continues his reassessments of evacuated areas across the hills. This will be completed by Sunday 13 March. A factsheet outlining this process was produced last night and is available on the www.canterburyearthquake.org.nz website under FAQ. USAR geotechnical people will stand down as of Monday 14 March.
- GNS is wrapping up the Landslide Geodatabase development work. The maintenance of the database will continue within the EOC.

Liquefaction:

- The UC team continued with CBD observations, inside the cordon area.
- The T&T team continued with house to house visits in eastern parts of city, with 8 teams of two deployed.
- A new group of Japanese geotechnical engineers have arrived and are continuing to work on detailed data collection along the Avon River to East of CBD. Last members of the GEER USA team will depart today.

Social Science:

- There is now a (rostered) social science liaison presence at the EOC Science Liaison desk.
- Enrolment data was obtained from the Ministry of Education to establish the numbers of Christchurch children enrolling in schools in other cities; redirection data from NZ Post was also obtained.

Outstanding Issues / Challenges / Problems:

Liquefaction: The UC team expressed concern that vital liquefaction and lateral spreading data may be lost with the demolition work now progressing rapidly in the CBD. This is especially important where buildings have been affected directly by foundation failures.

Social Science: Researchers proposing to arrive in Christchurch over the weekend (11-13 March) were forwarded an email from the National Controller's office, confirming the directive requesting that social science research not directly supporting the response be delayed until the state of emergency is lifted.

Anticipated Priorities / Activities: (For future operational periods)

Earthquake Activity & Deformation: GeoNet staff will be installing 5 seismometers in the Mount Pleasant area as an aid to investigate site effects.

Hot Springs: Hot springs will today be surveyed at Ferrymead, Heathcote and Godley Heads.

Monitoring: The continuous GPS is to be removed from Balmoral and reinstalled at Hillsborough.

Landslides: USAR geotechnical people will stand down as of Monday 14 March.

Liquefaction: CBD investigations will remain a high priority in coming days for the UC team.

Geospatial:

- LiDAR acquisition has commenced and it is hoped that initial results may be available by the end of the week.
- GNS will be doing a ground control GPS survey within the next couple of days, to support the LiDAR data collection.

Social Science:

- The Massey JCDR team is working with MoH and MSD on advice on structures and protocols for delivering psychosocial support in the short and long term.
- EOC recovery liaison is planning to carry out an urgent telephone survey of (1,000-2,000) Christchurch residents registering for support in other cities. UC will provide a team of appropriately qualified students to carry out the calls offsite, and enter the results into spreadsheets as they go. The aim is to complete it by March 13.
- The CCC planning team will work with the Massey JCDR team on migration and other demographic projections over the next ten years.

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APPENDIX A:

Magnitude and frequency of aftershocks from 22 February to 9 March 2011.

