Summary submission form

Instructions

Please read before completing your submission

It will help us process your submission if you clearly state the issue you want the Council to consider, what specific action you think the Council should take, and why that should be done.

If you wish, you can present your submission at a hearing. (If that is the case, please tick the box). The hearings will be held between Thursday 25 May and Wednesday 7 June 2006. Generally, 10 minutes are allocated for hearing each submission, including time for questions.

It will help us if your submission also refers to the page of either the full version or the summary version.

Please note: we are legally required to make all written or electronic submissions available to Councillors and to the public. This includes the name and address of the submitter. All submissions will be published on the Council's website from 10 May 2006.

No anonymous submissions will be accepted.

You may send us your submission...

By mail

Please mail your submission (no stamp is required) to:

Freepost 178
Our Community Plan
Christchurch City Council
PO Box 237
Christchurch 8003

RECEIVED
5 - MAY 2006
Civic Centre

By email

Please email your submission to:
ccc-plan@ccc.govt.nz
Please make sure that your full name and address is included with your submission.

On the internet

You may enter your submission using the form provided on the Council's web site at:
http://www.ccc.govt.nz
Please follow all the instructions on the web site.

Please remember to indicate if you wish to present your submission in person at one of the hearings.

Please ensure your submission arrives no later than Friday 5 May 2006.

Your submission

You may use this form for your submission on the draft Our Community Plan if you wish. Whether you use this form or not, please include your name, address and contact telephone number with your submission.

Tick one

- [x] I do NOT wish to present my submission at the hearing, and ask that this written submission be considered

OR

- [ ] I wish to talk to the main points in my written submission at the hearings to be held beween Thursday 25 May and Wednesday 7 June 2006

Are you completing this submission: [x] For yourself [ ] On behalf of a group or organisation

If you are representing a group or organisation, how many people do you represent?

My submission refers to: [ ] Full version [ ] Page No. [x] Summary version 10/18 Page No. 16

Do you also want to respond to: [ ] Development Contributions [ ] Aquatic Facilities [ ] Other

Contact Name: Ian Burn

Organisation name (if applicable):

Contact Address: 153 Fitzgerald Ave, Christchurch.

Phone No. (day): 374-3255 Phone No. (evening): 374-3255

Email (if applicable): ian-burn@actrix.co.nz

Signature: [signature] Date: 4/5/6

Summary submission form

Please be as specific as possible to help us understand your views

Questions

See list of major projects in the summary document

1. Do you have any comments on the major projects in our draft Our Community Plan? page number 16

In relation to water and ~~sewe~~ waste management issues has the Council considered the issues raised in the attached document? Please could I have a written response as to why these approaches are not being pursued.

2. Do you have any comments on groups of activities (the activities and services that Council provides)? page number 10.

Retain ~~and~~ or increase (not decrease) city housing stock after review of this in 06-07. Retain housing as a strategic asset on the Council's books.

3. Do you have any other comments or suggestions you want to make? page number 18.

~~Don't~~ Don't spend more money on major roading projects, i.e beyond basic maintenance.

Has the Council considered the impact of Peak oil on transport usage and the impact of this on road use? Will Council take into account the ~~impact~~ results of the Ecological Economics (Massey University) research group study on this matter coming out in 2007.

And more cycleways please!

You may add more pages if you wish. Thank you for your submission.

For office use only	
Submission #:	
Referred to:	
Date referred:	
Date required:	
Heard:	☐ Yes ☐ No

Brown.L.R.(2003) PLAN B: Rescuing a Planet Under Stress and a Civilisation in Trouble, WW Norton, London www.earth-policy.org.

their daily needs for water, the seepage from the small reservoir would gradually raise the water table, restoring wells that had been abandoned. He also told them this would take time. It worked exactly as he said it would.[32]

Singh's initial success led him to create a local nongovernmental organization with 45 full-time employees and 230 part-timers. Funded by the Ford Foundation and other groups, it has not only helped build 4,500 local water storage structures in Rajasthan, it has also raised villagers' incomes and improved their lives.[33]

When the local topography is favorable for building successful small water storage structures, this can be a boon for local communities. This approach works not only in monsoonal climates, but also in arid regions where low rainfall is retained for local use. With a modest amount of engineering guidance, hundreds of thousands of communities worldwide can build water storage works.

Another technique to retain rainfall is the construction of ridge terraces on hillsides to trap rainfall near where it falls, letting it soak into the soil rather than run off. Using a plow to establish the ridges, local farmers can build these terraces on their own, but they are more successful if they are guided by a surveyor who helps establish the ridgelines and determines how far apart the ridges or terraces should be on the hill. Once the terraces are established, the moisture that accumulates behind them can help support vegetation, including trees that can both stabilize the ridges and produce fruit and nuts or fuelwood. The terraces, which are particularly well adapted to the hilly agricultural regions of semiarid Africa, can markedly raise land productivity because they conserve both water and soil.

The water storage capacity of aquifers can also be exploited. In some ways, they are preferable to dams because water underground does not evaporate. As indi-

cated, percolation from locally constructed water storage facilities often helps recharge aquifers. Similarly, land that is covered with vegetation retains rainfall, reducing runoff and enabling water to percolate downward and recharge aquifers. Without vegetative cover, rainfall runs off immediately, simultaneously causing flooding and reducing aquifer recharge, thus contributing to water shortages. In effect, floods and water shortages are often opposite sides of the same coin. Reforestation, particularly in the upper reaches of a watershed, not only helps recharge aquifers but also conserves soil that if washed away might end up behind dams downstream, reducing the storage capacity of reservoirs.

In summary, water harvesting and local water storage behind dams and in aquifers expands the supply and strengthens the local economy. These same initiatives also help conserve soil, since any action that reduces runoff reduces soil erosion. The net effect is conservation of both water and soil: a classic win-win situation.

Raising Nonfarm Water Productivity

Nonfarm water use is dominated by the use of water simply to wash away waste from factories and households or to dissipate heat from thermal power plants. The use of water to disperse wastes is an outmoded practice that is getting the world into trouble. Toxic industrial wastes discharged into rivers and lakes or into wells also permeate aquifers, making water—both surface and underground—unsafe for drinking. And they are destroying marine ecosystems, including local fisheries. The time has come to manage waste without discharging it into the local environment, allowing water to be recycled indefinitely and dramatically reducing both urban and industrial demand.

The current engineering concept for dealing with human waste is to use vast quantities of water to wash it away in small amounts, preferably into a sewer system where it will be treated before being discharged into the local river. There are four problems inherent in this "flush and forget" system: it is water-intensive; it disrupts the nutrient cycle; most of humanity cannot afford it; and it is a major source of disease in developing countries.

As water scarcity spreads, the viability of water-based sewage systems will diminish. Water-borne sewage systems take nutrients from the land and dump them into rivers, lakes, or the sea. Not only are the nutrients lost from agriculture, but the nutrient overload has led to the death of many rivers, including nearly all of those in India and China. Water-based sewage also contributes to dead zones in coastal oceans. Sewer systems that dump untreated sewage into rivers and streams, as so many do, are a major source of disease and death.[34]

Sunita Narain of the Centre for Science and Environment in India argues convincingly that a water-based disposal system with sewage treatment facilities is neither environmentally nor economically viable for India. She notes that an Indian family of five, producing 250 liters of excrement in a year and using a water toilet, requires 150,000 liters of water to wash away the wastes.[35]

As currently designed, India's sewer system is actually a pathogen-dispersal system. It takes a small quantity of contaminated material and uses it to make vast quantities of water unfit for human use, often simply discharging it into nearby rivers or streams. Narain says both "our rivers and our children are dying." India's government, like that of many other developing countries, is hopelessly chasing the goal of universal water-based sewage systems and sewage treatment facilities—unable to close the huge gap between services needed and provided, but unwilling to admit that it is not an economically viable

option. Narain concludes that the "flush and forget" approach is not working.[36]

This dispersal of pathogens is a huge public health challenge. Worldwide, poor sanitation and personal hygiene claim 2.7 million lives per year, second only to the 5.9 million claimed by hunger and malnutrition.[37]

Fortunately there is an alternative to the use of water to wash away human waste: the composting toilet. This is a simple, waterless toilet linked to a small compost facility. Table waste can also be incorporated in the composter. The dry composting converts human fecal material into a soil-like humus, which is essentially odorless and is scarcely 10 percent of the original volume. These compost facilities need to be emptied every year or so, depending on their design and size. Vendors periodically collect the humus and market it for use as a soil supplement, returning the nutrients and organic matter to the soil and reducing the need for fertilizer.[38]

This technology reduces residential water use, thus cutting the water bill and lowering the energy needed to pump and purify water. As a bonus, it also reduces garbage flow if table waste is incorporated, eliminates the sewage water disposal problem, and restores the nutrient cycle. The U.S. Environmental Protection Agency now lists several brands of dry toilets for use. Pioneered in Sweden, these toilets are used in widely varying conditions, including Swedish apartment buildings, U.S. private residences, and Chinese villages.[39]

At the household level, water can be saved by using appliances that are more water-efficient, including showerheads, flush toilets, dishwashers, and clothes washers. Some countries are adopting water efficiency standards and labeling for appliances, much as has been done for energy efficiency. As water costs rise, as they inevitably will, investments in composting toilets and more water-

25. Water efficiency of wheat and rice from Postel, op. cit. note 15, p. 71; Beijing from "Rice Cropped for Water," *China Daily*, 9 January 2002; Egypt from USDA, "Egyptian Rice Acreage Continues to Exceed Government-Designated Limitations," *Foreign Countries' Policies and Programs*, at <www.fas.usda.gov/grain/circular/1999/99-02/dtricks.htm>, posted February 1999.

26. John Wade, Adam Branson, and Xiang Qing, *China Grain and Feed Annual Report 2002* (Beijing: USDA, March 2002).

27. For more information on water users' associations, see Saleth and Dinar, op. cit. note 6.

28. Saleth and Dinar, op. cit. note 6, p. 6.

29. World Bank and SDC, op. cit. note 17, p. 19.

30. Gardner-Outlaw and Engelman, op. cit. note 7, pp. 14–18.

31. Fen Montaigne, "Water Pressure," *National Geographic*, September 2002, pp. 2–34.

32. Ibid.

33. Ibid.

34. Sunita Narain, "The Flush Toilet is Ecologically Mindless," *Down to Earth*, 28 February 2002, pp. 28–32.

35. Ibid.

36. Ibid.

37. Ibid.

38. U.S. Environmental Protection Agency, "Water Efficiency Technology Factsheet—Composting Toilets," information sheet (Washington, DC: September 1999).

39. Ibid.

40. Noel Gollehon, William Quinby, and Marcel Aillery, "Water Use and Pricing in Agriculture," in USDA, *Agricultural Resources and Environmental Indicators 2003* (Washington, DC: February 2003), Chapter 2.1, p. 2.

41. Postel, op. cit. note 15, pp. 136–45.

42. Asit Biswas, "Water Crisis: Current Perceptions and Future Realities," in *Groundwater: Legal and Policy Perspectives, Proceedings of a World Bank Seminar* (Washington, DC: Salman, 1999), p. 1–11.

43. Calculation based on Peter Wolff and Thomas M. Stein, "Efficient and Economic Use of Water in Agriculture—Possibilities and Limits," *National Resources and Development*, vol. 49/50 (1999), pp. 151–59.

44. Erik Eckholm, "Chinese Will Move Water to Quench Thirst of Cities," *New York Times*, 27 August 2002; "Per Head Water Resources on Decline Along Yangtze," *Xinhua News Agency*, 31 December 2002.

CHAPTER 8. RAISING LAND PRODUCTIVITY

1. U.S. Department of Agriculture (USDA), *Production, Supply, and Distribution*, electronic database, updated 13 May 2003.

2. Animal protein from U.N. Food and Agriculture Organization (FAO), *FAOSTAT Statistics Database*, at <apps.fao.org>, livestock data updated 9 January 2003; population from United Nations, *World Population Prospects: The 2002 Revision* (New York: February 2003); world fish catch from FAO, *Yearbook of Fishery Statistics: Capture Production and Aquaculture Production* (Rome: various years).

3. United Nations, op. cit. note 2.

4. Land productivity from USDA, op. cit. note 1.

5. Thomas R. Sinclair, "Limits to Crop Yield," paper presented at the 1999 National Academy Colloquium, *Plants and Populations: Is There Time?* Irvine, CA, 5–6 December 1998.

6. FAO, *FAOSTAT*, op. cit. note 2, irrigation data updated 7 August 2002.

7. Ibid., fertilizer use data updated 1 April 2003.

8. USDA, op. cit. note 1; United Nations, op cit. note 2.

9. Yields from USDA, op. cit. note 1; percent photosynthate to seed from J. T. Evans, *Crop Evolution Adaptation and Yield* (Cambridge: Cambridge University Press, 1993), pp. 242–44.

10. Table 8–1 from USDA, op. cit. note 1.

11. Pedro Sanchez, "The Climate Change–Soil Fertility–Food Security Nexus," summary note (Bonn: International Food Policy Research Institute, 4 September 2001).

12. USDA, op. cit. note 1.

efficient household appliances will become increasingly attractive to individual homeowners.

For cities, the most effective single step to raise water productivity is to adopt a comprehensive water treatment/recycling system, reusing the same water continuously. With this system, a small percentage of water is lost to evaporation each time it cycles through. Given the technologies that are available today, it is quite possible to comprehensively recycle urban water supplies, largely removing cities as a claimant on water resources.

At the industrial level, one of the largest users of water is the energy sector, which uses water to cool thermal power plants. As fossil fuels are phased out and the world turns to wind, solar, and geothermal energy, the need for cooling water in thermal power plants will diminish. In the United States, for example, thermal cooling of power plants accounts for 39 percent of all water withdrawals. With each coal-fired power plant that is closed as a new wind farm comes online, water use for thermal cooling drops, freeing up water for food production.[40]

Many of the industrial processes now used belong to a time when water was an abundant resource. Within the steel industry, for example, water use efficiency may vary among countries by a factor of three. Much of the water used in industry just washes away waste. If this is stopped, and more and more companies move into zero-emissions industrial parks, water use in industry could drop dramatically.[41]

The new reality is that the existing water-based waste disposal economy is not viable. There are too many factories, feedlots, and households to simply try and wash waste away. It is ecologically mindless and outdated—an approach that belongs to an age when there were many fewer people and far less economic activity.

A Global Full-Court Press

As fast-unfolding water shortages translate into food shortages, they will signal that we can no longer rely on incremental business-as-usual change. Three factors—the simultaneous drop in water tables, the exponential nature of that fall, and the globalization of water scarcity—ensure that such a response will not be sufficient. As water shocks become food shocks and as falling water tables translate into higher food prices, we will realize that the world has changed fundamentally. As Asit K. Biswas, Director of the Third World Centre for Water Management, notes, "The world is heading for a water crisis that is unprecedented in human history. Water development and management will change more in the next 20 years than in the last 2,000 years."[42]

Supply-side technological fixes, such as the massive desalting of seawater, do not hold much hope for food production in the foreseeable future. Although the cost of desalting seawater is falling, it is still expensive and thus not yet a viable prospect for irrigation. At present, it costs between $1 and $2 per cubic meter to desalt seawater. Even at the lower cost, producing wheat with desalted seawater would raise its price from $120 to $1,120 per ton.[43]

Some countries are still focusing on supply expansion when it might be less costly to focus on demand management. To get water to the cities in its industrial northern half, including Beijing and Tianjin, China has devised a plan to move water along three routes from the Yangtze River basin to the Yellow River basin, since the latter has only one tenth the flow of the former. These three routes, designated the East, Central, and West, will cost an estimated $59 billion. Construction on the East route began in December 2002. For China, it might be more economical to invest this $59 billion in urban water recycling and