



April 22, 2010

U.S. Army Corps of Engineers  
Attn: CECW-CE, Douglas J. Wade  
441 G Street NW  
Washington, DC 20314-1000

PRESIDENT  
Eric F. Douglas

Re: Docket Number COE-2010-0007 – Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls

SECRETARY  
Rick LaMantain

Dear Mr. Wade,

TREASURER  
Matt McCauley

As the U.S. Army Corps of Engineers (Corps) moves forward with the new Process for Requesting a Variance from Vegetation Standards set forth in the Corps' Engineering Technical Letter (ETL) 1110-2-571, the Sacramento Tree Foundation would like the Corps to consider all the important benefits provided by trees, which impact our citizens and our environment. Levee stability is of critical concern, yet our increasingly complex environmental situation requires consideration of multi-purpose solutions based on the best possible, current scientific research. The goals of levee stability, environmental preservation, and public health may all be simultaneously achievable with the right information.

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John Webre

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We strongly urge the Corps to expedite the research needed to determine the impact of trees on levee stability – in particular the impact of tree roots on potential seepage. Such research will clarify whether previous concerns about roots and earthen dams are applicable to well-designed levees. Preliminary research indicates that waterside trees are safe, so why would they be less safe on the landward side, given the right design? The Tree Foundation is very willing to provide assistance on this research. If the research proves that tree roots are not a threat to seepage – indeed may even strengthen levees<sup>1</sup> – then we will be able to preserve and extend a valuable resource of riparian woodland on the waterside and the landside of levees.

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In the ETL 1110-2-571, the benefits of landscape planting mentioned include dust and erosion prevention, water quality and wildlife habitat, and creating a pleasant environment for human use and recreation. But the benefits of trees go far beyond this list as shown below:

EXECUTIVE DIRECTOR  
Raymond L.  
Trettheway III

- Trees are a significant factor in reducing air pollution by means of nitrous oxide deposition, sulfur dioxide absorption, ozone interception, and particulate matter interception. 100 trees can remove 1,000 pounds of pollutants per year, including 400 pounds of ozone and 300 pounds of particulates.<sup>2</sup> Recent research shows the increasing public health threats of ultrafine particulate matter from car exhaust.
- On an annual basis, 100 trees can remove 5 tons of carbon dioxide from the atmosphere.<sup>2</sup> Large trees are the most effective for long-term carbon storage.
- In semi-arid California, trees catch and hold rainfall, which delays stormwater runoff and reduces flooding. A large deciduous tree can intercept between 500 and 760 gallons of water per year. A mature evergreen can intercept more than 4,000 gallons per year, depending on species and rainfall characteristics.<sup>3</sup> Preventing stormwater

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runoff improves water quality and water availability at the local level. Tree canopies reduce soil erosion by diminishing the impact of rain on barren surfaces.

- Plants clean the soil and water by removing contaminants such as metals, pesticides, crude oil, polycyclic aromatic hydrocarbons and more through the process known as phytoremediation. Tree species commonly used for phytoremediation include willow, poplar (cottonwood hybrids), and mulberry, because they have deep root systems and are able to control the movement of pollutants by consuming large amounts of water. Willow and poplar are the typical species for riparian woodland in Sacramento. While pollutant removal rates vary greatly, one study estimated that one sugar maple growing along a roadway removed 60 mg of cadmium, 140 mg of chromium, 820 mg of nickel, and 5,200 mg of lead from the environment during a single growing season.<sup>4</sup>
- In urban areas, such as the Natomas Levee in Sacramento, an increase in tree canopy can reduce the urban heat island effect by reducing ambient temperatures by 3 – 5 degrees Fahrenheit.<sup>5</sup>
- Trees provide habitat for raptors which help control burrowing animals and other rodent populations.

Again we urge the Corps to expedite the research on trees and levees before we clear cut levees and lose this valuable resource. The Tree Foundation believes that together we can reach a solution that addresses the multiple issues of levee stability, human health, and environmental protection. Thank you very much for your consideration.

Sincerely,

Ray Tretheway  
Executive Director  
Sacramento Tree Foundation

1. Levee Armoring: Woody Biotechnical Considerations for Strengthening Midwest Levee Systems. D. Wallace et al, USDA Soil Conservation Service. Columbia, MO. Presented at the Restoration of Aquatic Ecosystems symposium, The Association of State Wetland Managers, St. Paul, MN, June 20-23, 1994.

This paper states: "Woody corridor development and woody levee cover appear to be critical elements in increasing levee integrity... An informal aerial review of a segment of the Missouri main-stem levee showed a dramatic increase in levee failure as woody corridor width decreased. Observations from Missouri Department of Conservation personnel (Young, 1994) contend that tree screens are credited with saving levees as well as floodplain fields from flood scour."

2. Tree Guidelines for San Joaquin Valley Community. E.G. McPherson et al, USDA Forest Service, Pacific Southwest Research Station, Center for Urban Forest Research. Davis, CA. 1999.



4. Identified Benefits of Community Trees and Forests. K. Coder, University of Georgia. Athens, GA. 1996.
5. Energy Saving Calculations for Heat Island Reduction Strategies in Baton Rouge, Sacramento, and Salt Lake City. Konopacki, S. and H. Akbari. 2000.

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