CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105- 2219
VOICE AND TDD (415) 904- 5200
FAX (415) 904- 5400

M E M O R A N D U M

FROM: John Dixon, Ph.D.
Ecologist

TO: Meg Vaughn

SUBJECT: Natural Resources at the Parkside Property

DATE: July 2, 2007

Documents reviewed:

Bilhorn, T.W. (Earth Science Consultant). September 1986. Seasonal variations in the extent of ponded surface water in the Bolsa Chica lowland, Orange County, California. A report to Signal Bolsa Corporation.

Bilhorn, T.W. June 1987. Agricultural area delineation, Bolsa Chica, Orange County, California. A report to Signal Bolsa Corporation.

Bilhorn, T.W. June 28, 2007. Memorandum to J. Dixon (CCC) regarding: "Bolsa Chica 'Agricultural' Area Jurisdictional Wetlands Delineation."

Bixby, M.D. June 27, 2007. Letter to M. Vaughn (CCC) and California Coastal Commissioners regarding raptor foraging and raptor maps.

Bloom, P.H. (Santa Cruz Predatory Bird Research Group). April 15, 1982. Raptor inventory and habitat assessment for the Bolsa Chica area, Orange County, California. A report to the U.S. Fish and Wildlife Service, Laguna Niguel, California.

Bloom, P.H. (Raptor Biologist). June 5, 2002. Letter to J. Dixon (CCC) regarding white-tailed kites and golf courses.

Boule, M., M. Dybdahl, and K. Austrian (Shapiro and Associates). April 27, 1981. Final Bolsa Chica Vegetation Study. A report prepared for the U. S. Army Corps of Engineers, Los Angeles District.

CDFG. 1981. Determination of the status of the Bolsa Chica Wetlands. A report submitted to the California Coastal Commission on December 11, 1981.

Dillingham Corporation. 1971. An environmental evaluation of the Bolsa Chica Area. Volume 1.

Dixon, J. (CCC). 2006a. Memorandum to M. Vaughn (CCC) regarding: "Wetlands at Shea Homes Parkside," dated July 27, 2006.

Dixon, J. (CCC). 2006b. Memorandum to M. Vaughn (CCC) regarding: "Raptor Habitat at Parkside," dated July 28, 2006.

EPA, Region IX. February 1989. A determination of the geographical extent of waters of the United States at Bolsa Chica, Orange County, California.

Findlay, C. S. and J. Houlahan. 1997. Anthropogenic correlates of species richness in southeastern Ontario wetlands. Conservation Biology 11:1000-1009.

Frank Havore & Associates. December 10, 1997. Biological resources assessment, Shea Homes property, project #6N153.01, Huntington Beach, California.

Froke, J. B. October 10, 2002. Conservation of white-tailed kites at Dos Pueblos golf links in Santa Barbara County, California. A report submitted to Culbertson, Adams & Associates.

Gill, J. (ACOE). May 20, 1992. Letter to Beveridge & Diamond, P.C. declaring the MWD property to be "prior converted cropland" and not jurisdicational under Section 404 of the Clean Water Act.

Holmes, T. 1993. Behavioral responses of grassland raptors to human disturbance. M.S. thesis. Colorado State University, Fort Collins, Colorado. Cited in G.R Craig (Colorado Division of Wildlife). October 20, 1998. Recommended buffer zones and seasonal restrictions for Colorado raptors. Obtained from the Colorado Division of Wildlife Research Center Library.

Holmgren, M.A. (UCSB). June 7, 2002. Memorandum to J. Dixon (CCC) regarding sensitivity of white-tailed kites to disturbance.

Homrighausen, A. and R. Erickson (LSA). November 23, 1999. Letter report to S. Rynas (CCC) re: "Buffer design for Bolsa Chica Eucalyptus ESHA."

Homrighausen, A. (LSA), T. Bomkamp, (Glenn Lukos Associates) and M. Josselyn (WRA). June 12, 2007. Memorandum to S. Sarb (CCC) regarding: "Historic 'EPA area' on Parkside Estates, Huntington Beach, Huntington Beach LCPA 1-06."

Homrighausen, A. (LSA), T. Bomkamp, (Glenn Lukos Associates) and M. Josselyn (WRA). June 22, 2007. Memorandum to S. Sarb and M. Vaughn (CCC) regarding: "Off-site drainage into Parkside Estates 'EPA area'"

Huffman, R.T. 1987. A report on the presence of wetland and other aquatic habitats within the Bolsa Chica lowlands. A report to the USEPA, Region IX, San Francisco, California.

Jurek, R. M. (CDFG). October 16, 2000. Letter to S. Hansch (CCC) regarding the probable effects of development on raptors at Bolsa Chica Mesa.

Kegarice, L.M. (Tom Dodson & Associates). December 17, 1997. Letter report to J. Morgan (EDAW Inc.) regarding: "Verification/update of wetland determinations for TT#15377"

LSA Associates. c. January 14, 2000. An examination of raptor flushing distances at the Bolsa Chica Eucalyptus Grove ESHA in early January, 2000. A report to Hearthside Homes.

Metzler, R. (Shea Homes). June 20, 2007. Letter to Chairman Kruer (CCC) and Executive Director Douglas (CCC) concerning allegations made by members of the public during the May 10, 2007 CCC Hearing concerning the Huntington Beach LCPA (1-06).

Mulroy, T. 1973. Flora and Fauna. Pages 22 – 34 in Environmental Impact Reports, Inc. Draft Environmental Impact Report, Tentative tract 7495, Hunting Beach California.

Rempel, R.D. (CDFG). 1998a. Letter to J.R. Barnes (City of Huntington Beach) concurring with the Tom Dodson report (Kegarice 1997) that found no wetlands on the Shea site dated March 16, 1998.

Rempel, R.D. (CDFG). 1998b. Letter to J.R. Barnes (City of Huntington Beach) regarding: Parkside Estates Draft Environmental Impact Report, SCH #97091051, Orange County dated June 15, 1998.

Richardson, C.T. and C.K. Miller. 1997. Recommendations for protecting raptors from human disturbance: A review. Wildlife Society Bulletin 25(3):634-638.

Sanders, D.R. June 24, 1987. Determination of waters of the United States, including wetlands, at Bolsa Chica, California. A report to Beveridge & Diamond, P.C.

Sanders, D.R. October 10, 1991. Letter to R. Sater (Beveridge & Diamond, P.C.) regarding: "Investigation of MWD portion of Bolsa Chica with respect to prior-converted cropland versus farmed wetland status."

Tippets, W.E. (CDFG). June 19, 2000. Letter to D. Barlett regarding "Comments on the Hellman Ranch biological assessment (1/6/00), burrowing owl survey (2/23/00) and subsequent confirmation of the biological assessment (5/31/00).

U.S. Army Corps of Engineers. September 26, 1990. Regulatory Guidance Letter 90-07, Subject: Clarification of the phrase "normal circumstances" as it pertains to cropped welands.

U. S. Fish and Wildlife Service. May 1979. U.S. Fish and Wildlife Service special report: Bolsa Chica Area. Prepared by Ecological Services, Laguna Niguel, California

Van Coops, J. (CCC). July 2, 2007. Memorandum to J. Dixon and M. Johnsson (CCC) regarding: Aerial Photo Interpretation for Shea Property (Orange Co. APNs 110-016-19, 110-016-20, and 110-016-23).

Walton, B. (U.C. Santa Cruz Predatory Bird Research Group). October 23, 2000. Letter to S. Hansch (CCC) concerning probable effects of development on raptors at Bolsa Chica Mesa.

White, C.M. and T.L. Thurow. 1985. Reproduction of ferruginous hawks exposed to controlled disturbance. Condor 87:14-22

Young, S. and T. Bomkamp. January 6, 2004. Letter report to R. Metzler (Shea Homes) regarding: "Wetland determination for the Parkside Estates site in the City of Huntington Beach, Orange County, California"

At the May 10, 2007 Coastal Commission Hearing concerning a project-specific (Shea Homes) LCP Amendment by the City of Huntington Beach, several issues were raised by Commissioners or members of the public that staff had either not addressed or had dealt with in insufficient detail. Although many photographs of standing water were presented at the hearing, there was no new evidence of inundation that I had not previously considered (Dixon 2006). The principal unresolved issue concerns the possible loss of wetlands as a result of significant landform alterations including direct fill of wetlands. The Commission's mapping supervisor, Jon Van Coops (2007), has documented in a separate memorandum the actual landform changes that have taken place since the implementation of the Coastal Act using aerial imagery and topographic surveys. I will relate those changes to the existence and distribution of wetlands on the property. I will also address the recent assertions by wetland consultants for Shea Homes that the area delineated as a wetland by consultants for the Signal Bolsa Corporation and by the U.S. Environmental Protection Agency was not actually a wetland when delineated, but rather was an artifact of technical errors. In addition, I will address two issues relating to raptors: 1. The value of the agricultural field as foraging habitat, and 2. The basis for recommending a particular width for a protective buffer around perching, roosting, and nesting habitat.

Wetlands, Landform Alterations, and 1998 Farming Operations

EPA Wetland

During the 1980s, the Signal Bolsa Corporation commissioned a great deal of field work to delineate wetlands within the undeveloped portions of the Bolsa Chica lowlands that historically had been tidal marsh. Much of that effort was devoted to hydrological studies, which included the analysis of aerial imagery, both vertical aerial photographs and nearly monthly oblique aerial photographs that documented surface saturation or

surface ponding of water. The study area included the property that was owned by the Metropolitan Water District of Southern California (now Shea Homes Parkside), although the MWD property received less intense scientific scrutiny than the Signal properties. Then, as now, most of the Parkside property was under agriculture, precluding the presence of wetland vegetation. Dr. Dana Sanders was the wetland scientist responsible for the wetland delineation. However, for the Parkside property, his recommendations followed closely the recommendations of Thomas Bilhorn, a hydrologist and earth scientist, who conducted the actual field work and analysis. Bilhorn based his wetland identification on: (1) a field examination (including test pits and borings) on April 15, 1987, (2) nearby rainfall records, (3) a 1980 topographic map, (4) approximately monthly low altitude, oblique aerial photographs covering the period 1981 - 1987, (5) historical aerial photos dating to 1927, and (6) the documented history of land alterations affecting the area. After Dr. Sanders concluded that a portion of the site met federal wetland criteria[1], Mr. Bilhorn estimated the location, size and shape of the wetland based on the presence of a topographic depression and on the location of a wetted area on vertical aerial photographs from 1982.

In 1980, the U. S. Environmental Protection Agency designated the Bolsa Chica area as a "Special Case," which under a Memorandum of Understanding with the U. S. Army Corps of Engineers, transferred the responsibility for wetlands identification and delineation from the Corps to EPA. Although considerable field work had been done by Signal, the EPA independently identified and delineated the wetlands in the agricultural area based on their own analysis of aerial photographs and topography (T. Yocom[2] in personal telephone and electronic mail communications to J. Dixon on June 19, 2007). Mr. Yocom pointed out that, "In addition, under 40 CFR 230.3(s)(1), farmed areas which were historically subject to the ebb and flow of the tide and which remain below the plane of MHW are 'waters of the United States.' (see EPA JD[3], page 6). The Metropolitan property, according to EPA's JD, is underlain with Bolsa Silty Clay Loam, and is described as a soil on alluvial fans that are somewhat poorly drained and with mottles (redox concentrations.) They are listed as having good potential for supporting wetland vegetation (1978 Soil Survey for Orange County)."

In a recent submission (Homrighausen, Bomkamp and Josselyn 2007), Shea Homes' wetland consultants refer to the wetland area mapped in the late 1980s by Signal Bolsa Corporation and by the EPA as the "so-called 'EPA Wetland'" and put forth various arguments that purport to show that a wetland did not exist at that location at that time. They make the following claims: 1. Field studies conducted both before and after the EPA wetland delineation found that no wetlands were present. 2. The Signal Bolsa consultant, Thomas Bilhorn, based his 1987 wetland determination only on 1980 topography and 1982 vertical aerial photographs and that dark soils in such a photograph are not evidence of wetness. 3. EPA "picked up" Bilhorn's errors and, by implication, did not do independent research. 4. Bilhorn and EPA did not account for losses of hydrology that resulted from the construction of the Cabo del Mar

[1] Sanders made all the final delineation decisions following the standards developed by the Army Corps of Engineers (Bilhorn, personal communication to J. Dixon on June 29, 2007).
[2] Tom Yocom was a "National Wetlands Expert" for the USEPA at the time of his retirement in 2005. In the late 1980s, Mr. Yocom was responsible for the EPA wetland delineation of the Bolsa Chica lowlands.
[3] Jurisdictional Determination

condominium complex around 1983-1984, several years before their delineations. 5. No direct evidence of surface hydrology was ever reported, and 6. Signal Bolsa Corporation's primary wetland consultant, Dana Sanders, determined in 1991 that "Bilhorn is flawed." I will address these claims in order.

1. Homrighausen et al. (2007) assert that, "Four mappings or wetland determinations made before the Bilhorn/EPA delineation and six made subsequent to it all found no wetland in the 'EPA wetland' area." This might be taken to mean that each of these reports determined that there were no wetlands in the area mapped by EPA. That is not the case. The four early studies (Dillingham 1971, Mulroy 1973, Boule, et al. 1981, and CDFG 1981) were not technical wetland delineations. Dillingham (1971) and Boule, et al. (1981) were vegetation studies that described the Parkside property as "plowed field" and "U/A" (Urban/Agricultural), respectively. Mulroy characterized the area as a "ploughed field" or "wheat field" containing trees and weeds. In 1981, the California Department of Fish and Game designated the whole Parkside property as "severely degraded wetlands (restorable – below +5' MSL)." These reports simply acknowledge the fact that this historical salt marsh was an agricultural field at the time of observations. Of the six "studies" that took place after the EPA determination, three (Sanders 1991, Gill 1992, and Rempel 1992) were not, in fact, studies at all. Sanders (1991) was a determination based on inaccurate reporting of the record (see Dixon 2006) that the EPA wetland was "prior converted cropland"[4] and Gill (1992) was a concurrence letter from the Army Corps of Engineers. Apparently, no field work was conducted for this concurrence and had the record been accurately reported, the area might not have met the definition of "prior converted cropland" (Dixon 2006). Rempel (1992) was a concurrence by CDFG with the report by Kegarice (1997). The flawed nature of that study and my technical assessment of the other two studies (Frank Havore and Associates 1997, Young and Bomkamp 2004) are detailed in my earlier memo (Dixon 2006). In addition, it should be noted that these wetland studies did not attempt to assess conditions as they existed in 1987, but rather dealt with current conditions, which included markedly changed topography.

2. Homrighausen et al. (2007) confound issues associated with wetland identification with separate issues regarding wetland boundary determination. Bilhorn relied on a variety of evidence for his wetland determination (see above). His boundary determination, on the other hand, was based on the wetted area shown on two 1982 aerial photographs[5] and on the location of a topographical depression documented by 1980 elevations. Although the data were not shown,[6] Bilhorn (1987) stated that "seasonal patterns of damp and flooded soils" were determined from the monthly 1981 -

[4] In the 1988 National Food Security Act Manual, the Soil Conservation Service defined "prior converted croplands" as wetlands that, prior to December 23, 1985, were both cropped and manipulated to the extent that they no longer exhibit important wetland values. Specifically, such areas are inundated for less than 15 consecutive days during the growing season during most years. The Corp and EPA do not exert jurisdiction over prior converted cropland.

[5] This was actually a good time to analyze patterns of wetness and inundation. In the week prior to the March 18, 1982 photograph there were about 2.2 inches of rain with 1.8 inches falling on March 17-18. In the intervening days before the March 31, 1982 photograph, an additional .8 inches of rain fell.

[6] In his report on the Bolsa Chica lowland owned by Signal Bolsa Corporation, Bilhorn (1986) mapped the ponded areas shown in the low level, oblique aerial photographs. Unfortunately, the study area for the 1986 report did not include the agricultural field, so no data were shown for the latter. Although the photographs included the agricultural field and Bilhorn (1987) used them for his wetland identification, he did not present the data.

1987 low altitude photographs, as opposed to the two 1982 vertical aerial photographs that he used to estimate the wetland boundary. Homrighausen et al. (2007) also assert that "Bilhorn made a flawed determination of 'wetted soils'" and "presumed that dark soils were equivalent to wet soils." In a recent memorandum (Bilhorn 2007), Mr. Bilhorn states his educational credentials and extensive experience in the interpretation of aerial photographs, emphasizes that in all his work (including that at Bolsa Chica) he combines photo-interpretation with ground-truthing, addresses the "dark soils vs wet soils" issue[7] and stands by his 1987 delineation. A March 19, 1982 oblique aerial photograph shows the EPA wetland completely covered by standing water from the horse arena in the south to the northern property line (Figure 1). This confirms the accuracy of Mr. Bilhorn's determination of wetted soils from his analysis of the March 18, 1982 vertical aerial photograph. Finally, Homrihausen et al. (2007) claim that I found that ponding occurred for less than 7 days during March 1982, implying that this in some way relates to the EPA wetland. In my report (Dixon 2006), I used rainfall to estimate the likelihood of areas AP and WP ponding for at least 7 days given current topography and soil conditions. This obviously says nothing about the actual conditions in 1982 when the topography was very different. At that time, neither AP nor WP was present, whereas the EPA wetland included the lowest point in the agricultural field.

3. Homrighausen et al. (2007) assert that the EPA study was really just a restatement of the Bilhorn study.[8] According to Mr. Yocom, this is not true. EPA took into account data that had been collected by Signal Bolsa Corporation's consultants, but also conducted an independent analysis based on their own interpretation of aerial photographs and site topography.

4. Prior to the 1980s, some portion of the runoff from the mesa and mesa slope where the Cabo del Mar condominiums are now located drained onto the Parkside property. To my knowledge, there has never been a topographic analysis to determine where the runoff was directed or how much drained onto Parkside as opposed to other parts of the mesa or to the residential areas north of Parkside that are at a lower elevation. However, this land historically contributed some amount of water to the agricultural area of Parkside. At least by 1986[9], all the runoff from the Cabo del Mar Condominium complex and some adjacent neighborhoods was directed to a 5-foot storm drain that was constructed on the Parkside property along its northern boundary. Also, for an interim period of unknown duration between about 1978 and the completion of the condominium complex, runoff from an undetermined area was directed to drain pipes that terminated in an open "bubble up structure"[10] just north of the Parkside property line at the base of the slope near the northern Eucalyptus grove. Homrighausen et al. (2007) claim that the delineation of the "EPA wetland" was flawed because neither Bilhorn nor the EPA took into account these changes in hydrology and seem to suggest

[7] Mr. Bilhorn commented that, "… I have a great deal of experience in using aerial photos, and at Bolsa visited and mapped that site almost monthly over something like eight years. I am comfortable in standing by my description of saturated ground as distinguished from dark-mineral colored soil as that was a necessary distinction I had to make each month throughout the Bolsa area."

[8] Similarly, Metzler (2007) states that EPA "perpetuated" an error by Bilhorn.

[9] The construction drawings submitted to the City were signed off "as built" in 1986, but the date of sign-off does not necessary correspond to the date of completion.

[10] Essentially a short length of vertical culvert that terminated above the ground surface and had a protective grated cover.

that if there was a wetland, it was critically dependent on whatever water was diverted by the new storm drain. The latter is an *ad hoc* hypothesis for which there is little evidence one way or the other. One can only say that some amount of water was added or perhaps only directed to a point location (the bubble up structure) for a few years around the early 1980s and that sometime between about 1984 and 1986 water from north of the site was diverted to a storm drain. Both Bilhorn (1987) and EPA (1989) are silent regarding the Cabo del Mar development. However, the grading and construction of the condominiums and the excavation and installation of the storm drain across the agricultural field were not subtle or hidden activities and Bilhorn (1987) stated that he considered "[v]arious records and reports providing dates of construction and land alteration which affect the …hydrology of the area of study." Although Mr. Bilhorn does not recall the detail of the construction activities that were taking place when he did his assessment, he stated that he would routinely have taken into account obvious changes that affected hydrology and that took place prior to his 1987 report (personal communication to J. Dixon, June 28, 2007).

5. Homrighausen et al. (2007) assert that "…no direct evidence of surface hydrology was ever reported…." Bilhorn (1987) stated that the delineated area was "…indicated by aerial photographs to receive surface water repeatedly from adjacent areas during the winter rainy season." That is direct evidence (also see Figure 1, below). Unfortunately, the photographs are not readily available for verification because Mr. Bilhorn turned over all the photographs to the State Lands Commission when they took possession of the Bolsa Chica lowlands (Bilhorn 2007 and personal communication to J. Dixon on June 28, 2007).

6. Homrighausen et al. (2007) assert that: "…Sanders originally concluded that none of the area in the agricultural field was wetland. Nevertheless, in 1987 Sanders deferred to Bilhorn's hydrology analysis, even though, in retrospect, it appears flawed." In 1987 Sanders concluded that: "Based on the application of the multiparameter approach, the entire subunit (43.8 acres) is presently uplands. This is due to the absence of wetlands hydrology in most of the subunit and hydrophytic vegetation throughout. However, it was determined that a portion of the subunit would probably be sufficiently wet to support hydrophytic vegetation if the farming activities ceased." In his 1991 letter, Sanders backpedaled and claimed that he "preliminarily concluded that none of the area qualified as wetlands" but changed his mind because Bilhorn (1987) showed that during periods of normal rainfall the shallow soil was saturated by a high water table. This characterization of Bilhorn's results is demonstrably false (Dixon 2006). The salient result of Bilhorn's studies was that the water table in the agricultural field was too deep to contribute to wetland hydrology and that the wetland was dependent on rainfall and localized runoff (Bilhorn 1987 and personal communication to J. Dixon on June 28, 2007).

Homrighausen et al. continue: "Sanders makes it clear in his 1991 letter that Bilhorn is flawed, noting the altered hydrology." After rereading Sanders (1991) several times, I remain baffled by this statement. No where does Sanders question Bilhorn's results, he merely misrepresents them. I have previously (Dixon 2006) discussed the grossly

inaccurate representations made by Sanders (1991)[11]. I am attaching copies of Sanders (1987 and 1991) and Bilhorn (1987) so those who are interested can make their own assessment of the reliability and verisimilitude of Sanders (1991).

Landform Alterations

In his memorandum, Jon Van Coops (2007) carefully documents both the fill that has been added to the southwestern portion of the Parkside site (probably originating offsite) and the leveling of the agricultural field by removing soil from some areas and adding it to others. In 1980, the area where a wetland was later mapped by EPA was a depression that included the lowest point in the agricultural field. In general, the ground sloped from the south and east to the north and west. The bottom of the depression was one to one and half feet lower than the surrounding ground and probably corresponded to a low feature in the historical salt marsh. Essentially all the runoff from rainfall that fell onto the agricultural field and the adjacent hillside would have been directed to that depression. Today there is no indication of a depression in that area.[12] It has been completely filled. On the other hand, the base of the hillside to the west has been cut and that is now the lowest place in the agricultural field and the location of the AP wetland. Until 2005, there was a second, shallower depression next to the flood control channel that was designated WP. The delineated boundary was at an elevation of about 1.2 feet and the lowest point was about 0.7 feet. This area was effectively leveled by moving dirt from the hill to the west into the depression with a box plow[13] in December 2005. Therefore, regardless of means or intent, the EPA wetland was filled and the AP and WP wetlands were created between 1977 and 2005. In December 2005, WP was also filled.

In addition to the land leveling that has taken place, fill has been imported and placed in the southwestern portion of the site. The fill upon which the extension of Slater Avenue was constructed was in place prior to the local implementation of the Coastal Act. The fill upon which a stable and associated infrastructure was built was added after 1977. In addition, a ditch was dug around the northern and eastern edges of this raised area, apparently to convey runoff to a pond from which it was pumped, probably into the flood control channel. This unpermitted ditch periodically held water and may have developed wetland characteristics. Using a bulldozer, Shea Homes filled the ditch in 1998 "in preparation for farming." The earlier fill south of Slater Avenue associated with the stable development covered an area that supported pickleweed, a wetland indicator

[11] Sanders (1991) manages to make the following contradictory statements on the same page: "…the water table does not rise to the soil surface during years of normal rainfall…." and "…the area would not have been considered as wetlands except for the high water table expected during years of normal rainfall…."

[12] Homrighausen et al. (2007), however, assert that "Changes in topography have been minimal – a matter of inches, less than the depth of a furrow."

[13] Shea Homes (Metzler 2007) equates a "box plow" with a "wide-blade plow." The use of the latter is considered "plowing" and a normal farming activity by the Corps of Engineers. However, a "wide-blade plow" is a different implement. According to "free.tractor.manuals.com," a wide-blade plow is synonymous with "sweep plow," "Noble blade plow," "blade plow," and "V-blade plow" and refers to a "wide flat blade tractor implement that kills weeds without disturbing surface residue." A similar definition is provided by the Savannah Company, which manufactures blade plows (www.savannahglobal.com). In any event, "redistribution of surface materials by blading, rading, or other means to fill in wetland areas is not plowing" by federal standards (33CFR320-331).

plant, in 1971. The area no doubt was still a wetland when it was filled. The fill north and west of the horse arena occurred in areas that were periodically inundated, judging from aerial photographs. However, there are insufficient data upon which to determine whether most of those areas would have met the definition of wetlands under the Coastal Act and the Commission's Regulations at the time they were filled. A small portion of that fill appears to have been placed on the EPA wetland (Van Coops 2007, Exhibit 26).

1998 Farming Operations

Metzler (2007) characterizes an April 22, 1998 photograph of a bulldozer grading and moving earth within the agricultural field as being a "weed abatement operation," and implies that it was a necessary response to a weed abatement order from the City of Huntington Beach. On April 20, 1998, apparently in response to concerns from citizens and the Department of Fish and Game,[14] the City of Huntington Beach acted as follows:

> The motion made by Green, second Sullivan to authorize the Street Superintendent to proceed with abatement of said nuisance, except Shea Company property located at southerly terminus of Graham Street, north of Orange County Flood Control channel (except for 100 foot buffer zone by residences for fire protection purposes) and report this matter at the Council meeting of May 4, 1998. The motion carried by unanimous vote with Councilmember Julien recorded absent.

Apparently, weed abatement was only required in a 100-foot strip long the northern boundary of the property that is adjacent to existing residences.[15] Generally, weed abatement is accomplished by mowing to a height of no more that 6 inches or by disking and does not require the movement of earth from one place to another. The bulldozer operation that took place in April 1998 did accomplish the abatement of weeds, but it also resulted in significant landform alteration as is suggested by the piles of earth that were documented in a video taken by a local resident (Figure 2).

Raptor Habitat and Its Protection

Foraging Habitat

At the May 10, 2007 Hearing, members of the public pointed out that the agricultural fields on the Shea Homes Parkside property offer foraging opportunities to raptors that would be lost as a result of the planned development. In a comment letter on the draft Environmental Impact Report for Parkside Estates, the California Department of Fish

[14] "Scott Harris, biologist, California Department of Fish and Game, stated that new information has been given to the state Department of Fish and Game. He presented reasons why he would urge that weed abatement be postponed for at least one growing season to give any wetlands vegetation a chance to come back so that a more complete wetland evaluation can be on that property. Mr. Harris responded to Mayor Pro Tem Green regarding the possibility of reversing the letter of the California Department of Fish and Game." From the Minutes, City Council/Redevelopment Agency, City of Huntington Beach, April 20, 1998.

[15] However, it was also made clear at the meeting that there was no reason not to disk the field for farming.

and Game (Rempel 1998b) found that, "Agricultural areas, grasslands and wetlands are of seasonal importance to several species of raptors in Orange County by providing important, if not vital, staging and wintering habitat. These habitats also provide forging areas for resident breeding raptors." Although the potential impact to raptor foraging habitat was noted, Rempel (1998b) did not recommend any specific mitigation.

In recent years, the California Department of Fish and Game has recommended that losses of documented raptor foraging habitat would be adequately offset by the dedication of 0.5 acres of foraging habitat for every 1.0 acre that is lost (e.g., Tippets 2000 and W. Tippets (CDFG), personal communication to T. Henry (CCC) in 2004). In past actions,[16] the Commission has followed this recommendation.

Since raptor foraging habitat is typically comprised of annual grassland and ruderal areas, I queried a number of raptor experts regarding the significance of agricultural areas that are frequently planted in row crops. Although plowed fields tend to have lower foraging value than undisturbed areas, they are still important. If the agricultural land is allowed to go fallow for part of the year and if it is periodically flooded it will also bring in more raptor prey species (Scott Harris, CDFG, email to J. Dixon on May 25, 2007). At an agricultural site in the Halfmoon Bay area there is significant raptor foraging in disked areas (G. Deghi, email communication to J. Dixon on June 8, 2007). Peter Bloom observed that gophers are often abundant in agricultural fields and that even repeated plowing does not exclude all rodent species (email communication to J. Dixon on June 4, 2007). Gary George, the Executive Director of the Los Angeles Audubon Society noted that agricultural fields are used for foraging by white-tailed kites, northern harriers, ferruginous hawks, and Swainson's hawks (email communication to J. Dixon on May 27, 2007). Although, there has been no attempt to quantify the raptor use of the agricultural field at the Shea Homes Parkside property, Mark Bixby (2007), a local resident who regularly visits the site, "semi-regularly" observes foraging by white-tailed kites, northern harriers, kestrels, and Cooper's hawks, especially in the western portion of the agricultural field nearest the Bolsa Chica Mesa and the stands of Eucalyptus trees.

Therefore, it appears that the agricultural field at the Shea Homes Parkside property is a significant foraging resource for several raptor species, including the white-tailed kite, which is a California "fully protected species." Bloom (2000) estimated the average distance from their hunting perch that raptors take prey: red-tailed hawk (100-300 yd / 91-274m); red-shouldered hawk (100ft / 30m); merlin (75-400yd / 69-366m); peregrine falcon (150yd / 137m); Cooper's hawk (50-250yd / 46-229m); sharp-shinned hawk (50-150yd / 46-137m); great horned owl (100-300yd / 91-274m); barn owls (25-100yd / 23-91m). This also suggests that the portion of the field that is closest to the western hillside and the Eucalyptus groves is of greatest significance to raptors.

[16] For example, Revised Findings for 5-97-367-A1 (Hellman Properties LLC) adopted June 14, 2000 and Revised Findings for 5-05-020 (Hearthside Homes/Signal Landmark) adopted October 13, 2005 (original CCC action was on April 14, 2005).

Eucalyptus Tree ESHA and Protective Buffers

Most of the area supporting the trees that line the edge of the Bolsa Chica Mesa has been recognized as an Environmentally Sensitive Habitat Area (ESHA) by the Coastal Commission in past actions because of the important ecosystem function of providing nesting, perching, and roosting habitat for many species of birds of prey. I have recommended that the northern grove of trees on the Parkside property also be designated as an ESHA because it has been documented to provide the same ecosystem functions as the rest of the trees and recommended a 100-meter protective buffer (Dixon 2006b). The following discussion presents the rationale for recommending a 100-meter development setback.

The protective function of development setbacks or buffers increases in some non-linear fashion with an increase in the width of the buffer. The amount of protection provided by the buffer can probably be described by an S-shaped curve, increasing slowly for ten or twenty meters, then rapidly for some unknown distance that varies by species (but probably from several tens of meters to a few hundred meters) and finally slowing and approaching an asymptote at greater distances. Therefore, within that middle range of distances whether or not a buffer is protective is not a “yes” or “no” question, but is instead a matter of degree. The shape of the curve and the feasible level of protection also varies with the landscape setting.

In an urban setting, feasible development setbacks are probably always too small to prevent impacts to all wildlife species. For example, Findlay and Houlahan (1997) found a negative correlation between species richness in wetlands and the density of roads on land up to 2000 meters from the wetland and concluded that narrow buffer zones were unlikely to protect biodiversity. It is very unlikely that such relationships would be evident in urban areas because the potential buffer zone is already developed and the most sensitive species are already lost. The scale of disturbance and its ecological effects is irreversibly altered by urbanization. Whereas in a natural setting a 2-kilometer buffer might be measurably more protective than a buffer of a few hundred meters, in an urban setting the maximum possible buffer is generally no more than one to several hundred meters and often less.

Another complication in an urban setting is that many birds that are present are either genetically predisposed to tolerate disturbance or have become habituated to human activities. These are the birds that will be most apparent to human observers. In the context of the nearby Hearthside Homes Brightwater development, LSA (2000) conducted a flushing study. They found that, when their perches were approached by a pedestrian, raptors flushed at distances that varied among species, individuals, and height of the perch. The lower the perch the sooner the birds flushed. Kestrels were most tolerant of human presence, often not flushing at all (flushing range 0 – 13 m). At the other extreme the single turkey vulture approached flushed at a distance of 70 m. White-tailed kites, which are sensitive to human intrusion in natural settings, generally flushed when approached to 30 m. Given the relatively high level of disturbance within the habitat where the study was done, it is reasonable to assume that most of the birds

that persisted there were relatively tolerant of human presence and these flushing distances should be considered minimums.

The problem with such studies is that they probably are examining only the tolerant subset of the raptor populations. Less tolerant birds would flush much sooner and may avoid many urban areas. Jurek (2000) pointed out that, "Individuals within a species may have differing levels of response to human activities, owing to variation in the population for tolerating unusual situations, or to differences in habituating to human activities out of past experience or upbringing. The same level of activity that would not adversely affect one of the habituated raptors might be perceived by a newly arrived individual of the same species in the ESHA to be threatening, causing the bird to not return there." Similarly, Walton (2000) wrote that developers "...often rely on buffers that I find largely ineffective for reducing raptor fright/flight response." and "They describe unusual tolerance, habituated individuals or exceptions to normal raptor behavior rather than the more common behavior of wild birds."

Studies conducted in natural settings find greater sensitivity to disturbance and result in recommendations for much larger buffers. Richardson and Miller (1997) cite several studies of flushing, the results of which vary among raptor species. Across species, the average minimum and average maximum flushing distances were, respectively, 35 m and 293 m for vehicle disturbance and 40 m and 466 m for pedestrian disturbance. The pedestrian figures suggest greater sensitivity to disturbance than was observed by LSA, but a different suite of species were observed in the two reports, which confounds direct comparison. However, two species were common to both reports. Merlin allowed approach all the way to the perch tree at Bolsa Chica but flushed at 17 m – 180 m elsewhere. Similarly, kestrels often never flushed at Bolsa Chica (range: 0 m –13 m), whereas they flushed at approach distances of 10m – 100 m elsewhere. These data suggest that raptors that currently use the highly disturbed portion of the ESHA at Bolsa Chica[17] are more tolerant of human presence than the average individual at less disturbed locations. The corollary is that many birds that could potentially use the ESHA may be excluded by human disturbance (cf. Jurek, 2000 and Walton 2000).

In their literature review, Richardson and Miller (1997) found that raptor biologists recommended buffers for various species of nesting raptors from 200 m to 1500 m in width, with the exception of 50-m buffers from visual disturbance for kestrels and prairie falcon. The following buffers were recommended for raptors that are known to have occurred at Bolsa Chica: Osprey (400–1500m), Cooper's Hawk (400–600m), sharp-shinned hawk (400-500m), red-tailed hawk (800m), peregrine falcon (800-1600m), American kestrel (50-400m). In order to prevent flushing by 90 percent of wintering individuals in rangeland and agricultural habitats, Holmes (1993) recommended buffers of 75 m for American kestrels and 125 m for merlin. Ferruginous hawks, which have the potential to occur at Bolsa Chica (Bloom, 1982), were subjected to experimental disturbance by White and Thurow (1985), which resulted in nest abandonment and lowered fledging success. Based on their experiment, they concluded that a buffer of 250 m would prevent nest desertion for 90% of the population. Bloom (2000) estimates flushing distances for raptors that occur at Bolsa Chica as follows: Osprey, red-tailed

[17] With the application of a Habitat Management Plan, the level of disturbance should decrease significantly.

hawk, rough-legged hawk, white-tailed kite, and peregrine falcon (100yd / 91m); Cooper's hawk (≥ 100yd / 91m); merlin (50 yd / 46m), great horned owl (75 yd / 69m); barn owl (day: 10 yd/ 9m).

White-tailed kites are a fully protected species in California, have frequently nested at Bolsa Chica, and are generally considered relatively sensitive to human disturbance. Therefore, I think that buffers that are adequate to protect nesting white-tailed kites should be adequate for most of the other species that are likely to nest in the Bolsa Chica ESHA. The following minimum spatial buffers have been recently recommended for nesting white-tailed kites: 100m (Bloom 2002); 100m (Holmgren 2002); 50m (J. Dunk (raptor researcher) in personal communication to M. Holmgren, 2002); 46-61m with "low-frequency and non-disruptive activities" (Froke 2002). These estimates suggest that a 100-m buffer in an urbanized setting is probably adequate, but not overly conservative.

The California Department of Fish and Game (1982) and the U.S. Fish and WIldlife Service (1979) also recommended a 100-m buffer for Eucalyptus ESHA at Bolsa Chica. The Service (1919) stated that, if planning adhered to USFWS guidelines, not only would 100-m buffers be established around the Eucalyptus groves but, "No development or access of any type would be allowed in the buffer area. Park corridors could border the zone but not intrude into it."

LSA, the consultant group for both Hearthside Homes and Shea Homes, has argued for very narrow buffers at Bolsa Chica. However, for the ESHA to the west of the Shea property, Homrighausen and Erickson (1999) concluded that a "100 foot buffer will provide adequate distance to permit nesting by the most common and least sensitive raptor species in all suitable portions of the ESHA" and that "The southern side of the ESHA will have a great deal of utility for virtually all the nesting birds, because it is bordered by hundreds of acres of open space, it will be screened from the development area by the northern edge of the ESHA, and a substantial portion of the grove is a least 100 meters from future development." I think taken together these statements indicate that development closer than 100 meters will reduce the utility for nesting raptors of those portions of the ESHA that are closest to the development footprint and therefore that a reduced buffer would violate Section 30240(b) of the Coastal Act because the portions of the ESHA nearest the development would be significantly degraded and no longer suitable for nesting by some of the raptor species at Bolsa Chica.

Finally, there seems to be a tendency to argue for narrower buffers where there are sources of disturbance already present. For example, the northern grove of Eucalyptus at the Shea Homes property is perpendicular to an adjacent condominium complex. If anything, this circumstance should be recognized as a reason to increase the amount of protection for the portions of the ESHA that are still adjacent to open space. If disturbance is allowed close to the trees on the remaining sides of the grove, the utility of the habitat to raptors would be severely compromised.

For all these reasons, I recommend that the Eucalyptus tree ESHA on and adjacent to the Shea Homes property be provided with 100-meter development setbacks. Such a

buffer will not only keep disturbance at a distance, but it will provide foraging opportunities close to perching and nesting areas.

Attachments:

Bilhorn (1987, 2007), Sanders (1987, pages 49-50), and Sanders (1991).

Figure 1. Oblique aerial photograph dated March 19, 1982 showing the EPA wetland and surrounding land under standing water. The photograph was originally obtained from Aerial Eye, Inc., 18103-F Sky Park Circle, Irvine, CA 92614 and a digital image was provided by M. Bixby. I cropped the photograph to emphasize the Shea Parkside property.

Figure 2. Piles of earth along Graham Street resulting from grading activities on the Shea Parkside property in April 1998. I extracted this image from a video clip taken by a local resident (identified as “Albright-980424.2”).

APPENDIX F

Agricultural Area Delineation
Bolsa Chica, Orange County California

Prepared by

Thomas W. Bilhorn
Earch Science Consultants
San Diego, CA 92128

Prepared for

The Signal Bolsa Corporation
17890 Skypark Circle
Irvine, CA 92714

June 1987

The Agricultural subunit Section 404 delineation has been made relying on less information than that available for the remainder of the project area. No water table piezometers were installed in this area; thus detailed hydrological information is lacking.

The location and type of lands believed to potentially qualify under Section 404 are shown on the attached map (Agricultural Area Delineation, Bolsa Chica Study, June 1987). The delineation is based upon the following examinations and records:

1. Field examination of current conditions (April 15, 1987) including two test pits and borings to total depths of approximately 60 inches.
2. Rainfall records of adjacent stations (Huntington Beach Fire Station and Orange County Westminster Station) for comparison of the current season with long-term record-derived norms.
3. Topographic map at the scale of 1 inch equals 200 feet with computed 0.5 foot contours, flown September, 1980.
4. Low altitude, oblique aerial photographs flown approximately monthly from 1981 to the present.
5. Historical aerial photographs dating back to 1927.

6. Various records and reports providing dates of construction and land alteration which affect the elevation, vegetative cover and hydrology of the area of study.

CONCLUSION

This area has been under agricultural cultivation since the mid-1930's. Some drainage works existed prior to that time, and major projects, principally the Wintersburg-East Garden Grove Flood Control Channel and the Slater Drain, were completed by 1961 and 1968, respectively. Land drainage and the current agricultural usage began long before enactment of Section 404.

At the time of field examination, the area had been plowed in preparation for planting. It was unvegetated except for an area of a few hundred square feet containing remnants of an agricultural crop. Current topographic relief appears generally consistent with the topographic map of 1980. A small depression near Graham Street has been filled as no water is seen to collect in this area. Otherwise, seasonal patterns of damp and flooded soils, as interpreted from the recent low altitude photography, are consistent with the 1980 topography.

Using March 18 and March 31, 1982, photographs, which are representative of normal year seasonal and transient ponding, a portion of the area lying within the -0.5-foot mean sea level

("MSL") contour shows wet soil conditions. Darkest in value (wettest) is the section running north-south at the western edge of the parcel, from the riding stable to the dead-end street. The soils lying within the "arm" of the -0.5-foot contour extending eastward to the Graham Street boundary are much lighter in value and therefore much drier.

Lithologic examinations show the surface to a 14- to 20-inch depth to be a silty clay. Beneath this layer the sediment changes to a fine-grained, well-sorted quartz sand with a 0.1- to 0.2-mm grain size. The free water surface was encountered at 51 inches below the ground surface. In a sand with the grain size and sorting described above, no capillary rise occurs. At the time of the field examination, the water table was 32 to 37 inches below the silty clay.

Based on comparison of water table elevation differences throughout the Bolsa Chica Lowland piezometer network between the current 1986-1987 season and the normal rainfall year of 1981-1982, the current elevation could be expected to rise about 2 feet to reach the normal year maximum. At this elevation the water table would lie 8 to 13 inches below the silty clay surface material and thus could not saturate this material by capillary processes.

Analysis of the monthly aerial photographs confirms that the surface layer remains dry from groundwater during the water table seasonal high. The appearance and disappearance of moist

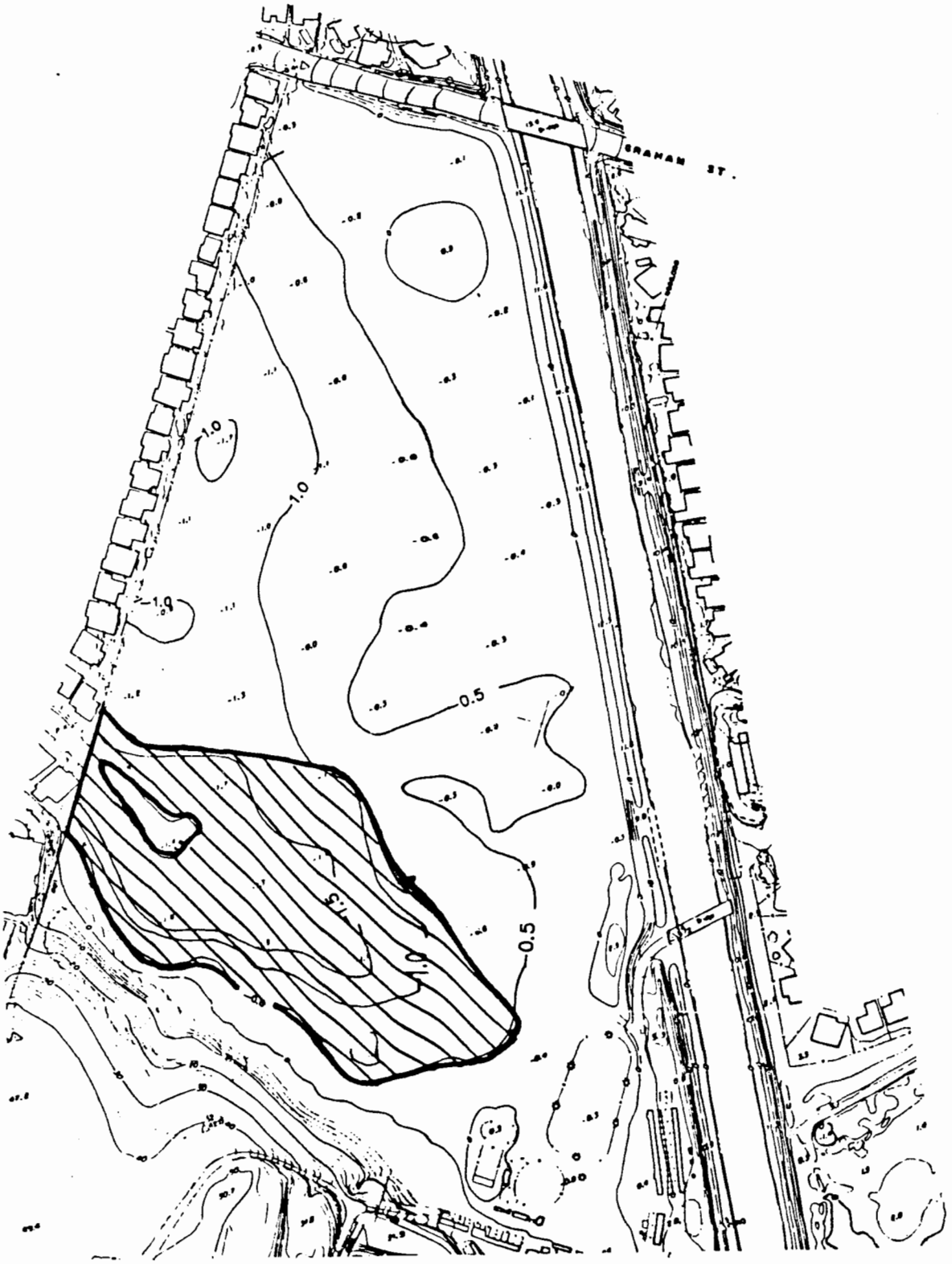
soils in this area are brief (days) and correlate to rainfall events and not water table fluctuations which are of shorter duration. Elevation of the water table by above-normal conditions of the 1-in-3 year return frequency is probably no more than a few inches and therefore would not affect the area expected to be saturated by groundwater.

The area delineation on the attached map is a depressional area within a portion of the -0.5 to -1.0-foot MSL contours indicated by aerial photographs to receive surface water repeatedly from adjacent areas during the winter rainy season. The area is considered to be a candidate for Section 404 jurisdiction if agricultural usage ceases and the land is allowed to lie fallow for an indefinite period.

The 1 inch equals 200 foot-scale map was used for acreage determination. Computer-electronic digitizer techniques were used for measurement. Resolution is 0.2 feet; acreage measurement is reproducible to 0.01 acre.

<u>The area so delineated totals 7.6 acres.</u>

0623A



AGRICULTURAL AREA DELINEATION
BOLSA CHICA STUDY

T.W. Bilhorn, Earth Sciences Consultant

THOMAS W. BILHORN

EARTH SCIENCES CONSULTANTS
NATURAL RESOURCE HYDROLOGY

MEMORANDUM

TO: John Dixon, California Coastal Commission

FROM: Tom Bilhorn

DATE: June 28, 2007

SUBJECT: Bolsa Chica "Agricultural" Area Jurisdictional Wetlands Delineation

Thee following comments are given based upon our two phone conversations today and your Email that included a copy of my 1987 report "Agricultural Area Delineation Bolsa Chica, Orange County California. As I told you, my reports, maps, photos were all given to the State Lands Commission in the late 1990's (as I recall) when they purchased the lowlands.

My delineation work at Bolsa was done with Dana Saunders (who, when with the COE wrote the 3 parameter approach delineation manual). I was responsible for the hydrology and mapping part of that effort and overseeing some peripheral soil oxygen studies. I was also responsible for arranging the flight patterns and interpreting the aerial photographs taken over the many years.

My scholastic background includes bachelors and masters degrees (Washington University and California Institute of Technology respectively) and included surveying and photogrammetry. My first work experience consisted of five years of aerial geologic mapping and for the past 15 years I have been retained by the State Attorneys General Office and the Department of Fish and Game on the surface and groundwater conditions of the Mojave River system – much of which has relied on photo interpretation. I co-authored a report with the USGS (report 96-4241) that mapped vegetation of the Mojave River. I also relied heavily on aerial photographs in preparing this report. In doing such work there is a basic rule that I follow, and preach: "see it on the ground first, see the photo, see it on the ground again".

In shorter words, I have a great deal of experience in using aerial photos, and at Bolsa visited and mapped that site almost monthly over something like eight years. I am comfortable in standing by my description of saturated ground as distinguished from dark-mineral colored soil as that was a necessary distinction I had to make each month throughout the Bolsa area. I wrote a number of reports over the 1980's including some on the unusual water table aquifer (which slopes downward away from the coast) and others on the photos and rainfall and other subjects. If those are available to you there could be a lengthy description of the photo and mapping steps I took.

18174 VICEROY DRIVE, SAN DIEGO, CALIFORNIA 92128

TELEPHONE (858) 485 - 6457
FAX (858) 485 - 9024
EMAIL TBILHORN@SAN.RR.COM

DETERMINATION OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS, AT BOLSA CHICA, CALIFORNIA

Prepared by

Dana R. Sanders, Sr.
D. R. Sanders and Associates, Inc.
302 Pecan Boulevard
Vicksburg, Mississippi 39180

Prepared for

Beveridge & Diamond, P.C.
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

June 24, 1987

to allow development of characteristics of hydric soils. This subunit has 3.9 acres of wetlands, 0.0 acres of perennial water bodies, 1.6 acres of unvegetated seasonal ponds, and 36.0 acres of uplands (see Figure 3 and Table 1). The total area comprising all categories of "waters of the United States" was 5.5 acres.

43. Agricultural Area. This subunit (43.8 acres) (Table 1) is located north of the Wintersburg Flood Control Channel in the extreme northeastern portion of the project area (Figure 2). It consists of an area of stables and associated facilities and a larger agricultural field. Surface elevations of much of the subunit are below sea level. Based on application of the multiparameter approach, the entire subunit (43.8 acres) is presently uplands. This is due to the absence of wetlands hydrology in most of the subunit and hydrophytic vegetation throughout. However, it was determined that a portion of the subunit would probably be sufficiently wet to support hydrophytic vegetation if the farming activities were to cease. Soils in a major portion of the root zone during years of near-normal rainfall would not be saturated by rise of water from the water table due to capillary action. The only source of sufficient water to saturate the soils in a major portion of the root zone in this subunit is from surface water runoff following significant rainfall events. Only depressional areas would be saturated sufficiently to support the growth of hydrophytic vegetation. The stables area has

apparently received some fill material, and thus would not support the growth of hydrophytic vegetation due to the fact that soils would not be saturated in a major portion of the root zone. The subunit presently has 0.0 acres of wetlands, 0.0 acres of perennial water bodies, 0.0 acres of unvegetated seasonal ponds, and 43.8 acres of uplands (see Figure 3 and Table 1); if farming were to cease, it is likely that the subunit would eventually have 7.6 acres of wetlands and 36.2 acres of uplands (see Bilhorn, 1987a, Appendix F herein, "Agricultural Area Delineation, Bolsa Chica, Orange County, California," for a more complete discussion of the agricultural area delineation). The total area of "waters of the United States" is presently 0.0 acres; if farming were to cease, the total area of "waters of the United States" would be 7.6 acres.

44. State Lands. This area (Figure 2) consists of the area known as the Ecological Reserve. For discussion purposes, the area has been divided into two subunits: (a) Tidal, and (b) Non-tidal. These will be discussed separately.

a. Tidal. This subunit (234.3 acres) contains the portion of the Ecological Reserve that is subject to tidal action. It extends from the South Bolsa Dunes to Warner Avenue. Most of the subunit consists of perennial water bodies, with a fringe of wetlands occurring in some areas. Uplands occur as levees, an area of high ground on the west side near Warner Avenue, and small islands maintained as nesting areas for Least Terns. The tidal subunit includes 59.3

D. R. SANDERS AND ASSOCIATES, INC.

Route 2, Box 142 • Utica, MS 39175 • Bus. (601) 885-6135 • Fax (601) 885-6130

10 October 1991

Ms. Rachel Sater
Beveridge and Diamond, P.C.
Suite 3900
1 Sansome Street
San Francisco, CA 94104

RE: INVESTIGATION OF MWD PORTION OF BOLSA CHICA WITH RESPECT TO PRIOR-CONVERTED CROPLAND VERSUS FARMED WETLAND STATUS

Dear Ms. Sater:

As you requested, I have conducted an investigation to determine whether the portion of the MWD property at Bolsa Chica technically qualifying as wetlands is subject to the prior-converted cropland provision in the 1990 Corps of Engineers Regulatory Guidance Letter (RGL-90-7 dated 26 September 1990). If so, the area would be considered as nonjurisdictional for purposes of Section 404 of the Clean Water Act of 1977 (as amended).

Background

I conducted a wetland delineation for Signal Landmark, Inc. in 1987 on a tract of approximately 1650 acres known as Bolsa Chica in Orange County, California (Sanders, 1987). An 8.1-acre* portion of a 45.6-acre agricultural field owned by the Metropolitan Water District (MWD) was among the portions of Bolsa Chica concluded to be wetlands. The area was concluded to have wetland hydrology on the basis of a groundwater hydrology study conducted by Mr. Thomas Bilhorn that indicated the water table

* The Koll Company had a consultant digitize the map provided in EPA's final wetland determination report, and found that the portion of the MWD farm field concluded to be wetlands by EPA is 8.1 acres. The same area was delineated as wetland in my report, and the area measured 7.6 acres according to Bilhorn (1987). Regardless of the differences in acreages, the area referred to in this letter is the entirety of wetlands that occur in the MWD farm field, whether 7.6 acres or 8.1 acres. The differences in acreage appear to be due to differences in mensuration methods.

D. R. SANDERS AND ASSOCIATES, INC.

Route 2, Box 142 • Utica, MS 39175 • Bus (601) 885-6135 • Res (601) 885-6130

under normal rainfall conditions rises sufficiently near the soil surface to result in long duration of soil saturation within the upper one foot of the surface (Bilhorn, 1987). However, there was no evidence that the area is inundated periodically (except during the 1983 rainfall year, for which the return frequency exceeded 100 years). The 1983 rainfall year had the second greatest rainfall of the entire period of record. During the period in which the delineation was conducted, the above-referenced tract was being farmed to lima beans.

Standard For Prior-Converted Cropland

According to RGL-90-7 and subsequent guidance provided by the Corps of Engineers, the standard for determining whether an area that technically qualifies as wetlands qualifies as prior-converted cropland has two basic components:

(1) The area in question must have been farmed prior to 23 December 1985, and must continue to have been farmed (but not necessarily on an annual basis) since 23 December 1985.

(2) The area in question must not be inundated for 15 days or longer annually under conditions of normal rainfall.

The area in question will continue to be treated as farmed wetlands if either of the above provisions is not met, and the appropriate Section 404 permit would be required for the discharge of dredged or fill material into the area.

1987-1988 Observations

I observed site conditions of the area in question on several occasions during 1987-1988. During that period, I saw no evidence of either current or past inundation or soil saturation in the area. I preliminarily concluded that none of the area qualified as wetlands, but modified the original delineation on the basis of Mr. Bilhorn's hydrologic study indicating that 7.6 acres of the farm field would be expected to have saturated soil in the upper portion of the soil profile due to a water table rising to nearer than 18 inches of the soil surface under conditions of normal rainfall. This modification was considered appropriate on the basis that the delineation of the farm field was made using the Atypical Situation procedures described in the 1987 Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987). Under this procedure, it was appropriate to delineate areas where one or more of the

D. R. SANDERS AND ASSOCIATES, INC.

Route 2 Box 142 • Utica, MS 39175 • Bus (601) 885 6135 • Res (601) 885-6135

parameters could not be characterized due to disturbance on the basis of the other two parameters. The field had been planted to lima beans, which was considered to be a disturbance that prevented characterization of the vegetation of the area. Based on the results of Bilhorn's (1987) groundwater hydrology study and the presence of indicators of hydric soils, I concluded that the 8.1-acre area (see page 1 footnote) would technically qualify as wetlands under conditions of normal rainfall and in the absence of farming activities.

1991 Observations

At the request of Beveridge and Diamond, P.C., I revisited the MWD property on 18 August, 1991. I made the following observations specifically in consideration of whether the 8.1-acre area would qualify as prior-converted cropland as defined by the MOA:

1. The entire field had supported a dense stand of barley during 1991. Although the stand apparently was volunteer, the high density of the barley indicates that the field probably had been planted to barley during 1990. The area recently had been disked and much of the barley was covered by soil. These observations provide onsite evidence that the field (including the portion qualifying as wetlands) has been subject to farming activities during the period following December 23, 1985.

2. Most of the area qualifying as wetlands in 1987 exhibited no evidence of gross wetland characteristics nor recent wetness. Barley had been growing throughout the depressional area. The only plant species observed in addition to barley were upland weeds [e. g., Salsola iberica (Russian thistle) and Brassica nigra (mustard)].

3. One small area (36 feet by 15 feet) of Typha latifolia (cattails) was observed on the south margin of the field. Water obviously had stood in the small depression earlier in the year. However, there were no obvious surficial features to account for the presence of cattails. I learned from officials of the Koll Company that a water pipe had burst in the area during the spring, which provided sufficient wetness to allow colonization by the cattails. Although the small depression might continue to support species having an indicator status of FACULTATIVE WETLAND and/or FACULTATIVE in the absence of farming activities, I would not expect the area to continue to exhibit sufficient wetness to support cattails.

D. R. SANDERS AND ASSOCIATES, INC.

Route 2 Box 142 • Utica, MS 39175 • Bus (601) 885 6125 • Fax (601) 885-6130

4. There are no significant upland drains entering the property. The Wintersburg Channel borders the field on the east and south sides. The area to the north has been developed as an apartment complex, from which surface runoff is directed into storm sewers. A steep hill bordering the property on the west is the only area available that could provide some surface runoff to the property. However, the absence of surface drains indicates that most water entering the property from the hill occurs as sheet flow. Therefore, the area does not receive significant surface runoff that could pond for long duration in the depressions.

Other Information

In his report of hydrologic conditions of Bolsa Chica, Bilhorn (1986) discussed factors influencing ponding of water on the general area. He concluded that transient ponds remain for less than one week under normal rainfall conditions due to the limited rainfall (approximately 10 inches per year) and the high evapotranspiration rate (approximately 60 inches per year). These transient ponds also were characterized as being very shallow (a maximum of only a few inches in depth). Transient ponds were observed to remain for less than seven days following rainfall events of 2 inches or less. A 2-inch rainfall event exceeds the normal two-year storm event for the area.

check EPA comment

Wetland Functions and Values

Although no formal analysis of wetland functions and values has been performed, it is obvious that the wetland portions of the MWD farm field are not providing functions and values normally attributed to wetlands (Adamus et.al, 1987), for the following reasons:

1. Continued farming of the area essentially precludes the presence of vegetation associated with wetlands. The absence of hydrophytic vegetation essentially eliminates the opportunity and effectiveness for the area to provide most of the functions attributed to wetlands, including all wildlife-related functions.

2. The area essentially lacks a watershed, which severely limits the opportunity for the area to provide the floodflow alteration, sediment stabilization, sediment/toxicant retention, and nutrient removal/transformation functions.

D. R. SANDERS AND ASSOCIATES, INC.

Route 2 Box 142 • Utica MS 39175 • Bus (601) 885-6135 • Res (601) 885-6130

3. The lack of permanent to periodically ponded water for long duration on the property drastically limits the ability of the area to provide most of the above-referenced functions, in addition to the aquatic diversity/abundance and recreation functions.

4. The area provides no fishery-related functions.

5. The absence of a hydrologic outlet precludes the possibility for the area to provide the detritus export function.

6. The fact that the water table does not rise to the soil surface during years of normal rainfall eliminates the possibility for the area to act as a ground water discharge area, while the small size of the area, limited volume of standing water for short duration, and relatively impermeable surface soil layers severely limits the possibility that the area provides significant ground water recharge.

Discussion

The area in question has had a long history of farming. Other evidence to be provided by the Koll Company will establish that the area was farmed regularly for many years prior to December 23, 1985. Examination of historical aerial photography also indicates a long farming history. My onsite observations during the period of 1987 through 1991 indicates that farming of the property has continued on a more or less regular basis since December 23, 1985. Therefore, based on information to be provided by the Koll Company and my personal observations, it is a fact that the area was farmed regularly prior to 1985 and has continued since 1985.

According to my 1987 wetland delineation of the MWD property, the source of wetlands hydrology for the 8.1 acres qualifying as wetlands is a water table that rises to nearer than 18 inches of the soil surface during years of normal rainfall (Sanders, 1987). The area was not delineated as wetlands on the basis of indicators that the area is periodically inundated. In fact, the area would not have been considered as wetlands except for the high water table expected during years of normal rainfall (Bilhorn, 1987). All available data indicate that the area is not inundated for long periods following rainfall events. The primary reasons for the lack of inundation for long duration include the low average annual precipitation rate, high evapotranspiration rate, very limited watershed, and

D. R. SANDERS AND ASSOCIATES, INC.

Route 2, Box 142 • Utica, MS 39175 • Bus (601) 885 6135 • Fax (601) 885-6130

absence of upland drains that convey water into the area. Therefore, the areas of MWD that technically qualify as wetlands are not inundated for 15 days or longer during years of normal rainfall.

Due to the extreme modification and use of the area and adjacent areas, wetlands occurring in the MWD farm field are not providing the functions normally attributed to wetlands. Factors affecting the ability of the wetlands to provide the functions normally attributed to wetlands include continued farming activities, a very limited watershed, low rainfall and high evapotranspiration rates, lack of permanently to periodically inundated areas, absence of a hydrologic outlet, a water table that does not rise to the soil surface, and relatively impermeable surface soil layers.

Conclusions

Conclusions of this study are:

1. The 8.1 acres of wetlands in the MWD farm field have been farmed for many years, and have been farmed regularly since December 23, 1985. Therefore, the area meets the first of two essential criteria for an area to qualify as prior-converted cropland.

2. Wetlands of the MWD farm field are not inundated for 15 days or longer during years of normal rainfall. The primary reasons for a failure to meet this criterion are a very limited watershed, low average annual rainfall (10 inches) and high evapotranspiration rates, and permanent alteration of upslope areas. Therefore, the area meets the second essential criterion of the prior-converted cropland provision of the MOA.

3. A general assessment of wetland functions and values indicates that, due to factors identified above, the area is not providing the functions normally attributed to wetlands. The fact that the area is not performing the functions and values normally attributed to wetlands provides evidence that it is prior-converted cropland.

4. Both essential criteria are met for a wetland area to qualify as prior-converted cropland. Moreover, the area does not provide the functions and values normally attributed to wetlands. Therefore, the 8.1-acre portion of the MWD farm field qualifies as prior-converted cropland, and the area should be considered as nonjurisdictional for purposes of Section 404 of the Clean Water Act or 1977 (as amended).

D. R. SANDERS AND ASSOCIATES, INC.

Route 2 Box 142 • Utica, MS 39175 • Bus (601) 885-6135 • Fax (601) 885-6130

References

Adamus, P. R., E. J. Clairain, Jr., R. D. Smith, and R. E. Young. 1987. "Wetland Evaluation Technique (WET), Volume II: Methodology," Operational Draft Technical Report, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Bilhorn, T. W. 1986. "Seasonal Variations in the Extent of Ponded Surface Water in the Bolsa Chica Lowland, Orange County, California," Prepared for The Signal Bolsa Corporation, Irvine, California.

Bilhorn, T. W. 1987. "Agricultural Area Delineation, Bolsa Chica, Orange County, California," Prepared for Signal Bolsa Corporation, Orange County, California.

Environmental Laboratory, 1987. "Corps of Engineers Wetlands Delineation Manual," U. S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Sanders, D. R., Sr. 1987. "Determination of Waters of the United States, Including Wetlands, at Bolsa Chica, California," Prepared for Beveridge and Diamond, P. C., Washington, D.C.

If you have questions or comments regarding this letter report, please contact me at (601) 885-6135.

Sincerely,

Dana R. Sanders, Sr.

Dana R. Sanders, Sr., PhD.
D. R. SANDERS AND ASSOCIATES, INC.