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COMMISSION ON WATER RESOURCE MANAGEMENT
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July 13, 2006

Dear Parties:

Attached is the Commission's Findings of Fact, Conclusions of Law, and Decision and Order in the second remand proceedings "In the Matter of Water Use Permit Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiahole Ditch Combined Contested Case Hearing (CCH-OA95-1)."

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LAWRENCE H. MIIKE, Commissioner and
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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

In the Matter of)
Water Use Permit Applications,)
Petitions for Interim Instream) FINDINGS OF FACT, CONCLUSIONS
Flow Standard Amendments, and) OF LAW, AND DECISION AND ORDER
Petitions for Water Reservations)
For the Waiāhole Ditch Combined)
Contested Case Hearing:)
)
ON SECOND REMAND)
_____)

**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND
DECISION AND ORDER**

**I hereby certify that the foregoing
is a true and correct photocopy of the
original document on file in the office of the
Commission on Water Resource Management.**

Dated JUL 13 2006 By



DEAN A. NAKANO
Acting Deputy Director

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1 **I. Introduction**

2
3 This Decision and Order responds to the Supreme Court of the State of Hawai`i's
4 (hereinafter, "Court") second remand of the Commission on Water Resource
5 Management's (hereinafter, "Commission") "In the Matter of Water Use Permit
6 Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions
7 for Water Reservations for the Waiāhole Ditch Combined Contested Case Hearing."
8

9 The Commission issued its original Findings of Fact, Conclusions of Law, and
10 Decision and Order, Case No. CCH-OA95-1 (hereinafter, "D&O I") on December 24,
11 1997.
12

13 On appeal, the Court in *In re Water Use Permit Applications* (hereinafter,
14 "*Waiāhole I*"), 94 Haw. 97, 9 P.3d 409 (2000), remanded seven issues to the Commission
15 with further hearings if necessary. All other aspects of the Commission's decision not
16 otherwise addressed in the opinion were affirmed.
17

18 The Commission issued its response (hereinafter, "D&O II") on December 28,
19 2001.
20

21 Several parties again appealed, and the Court on June 21, 2004, remanded five
22 issues to the Commission in *In re Water Use Permit Applications* (hereinafter, "*Waiāhole*
23 *II*") 105 Haw. 1, 93 P.3d 643 (2004).
24
25

26 **II. Background**

27
28 Initial construction on the Waiāhole Ditch and Tunnel System (hereinafter,
29 "Waiāhole Ditch" or "Ditch") took place between February 1913 and December 1915 to
30 transport water from windward streams and springs to irrigate sugar cane fields on the
31 drier leeward side. During construction, large amounts of dike-impounded ground water
32 were encountered at the high altitudes (between approximately 700 to 800 feet elevation)
33 at which the transmission tunnels were being bored, and subsequent extensions of the
34 tunnel system during 1925 to 1933 and again in 1964, have resulted in a system that
35 currently collects mostly dike-impounded ground water. These dike-impounded waters
36 also previously fed Waiāhole (and its tributary Waianu), Waikāne and Kahana streams
37 through springs and seeps, resulting in diminished flows in these streams.
38

39 On April 19, 1989, the Commission adopted the Interim Instream Flow Standard
40 (IIFS) for all windward O`ahu streams as "that amount of water flowing in each stream
41 on the effective date of this standard, and as that flow may naturally vary throughout the
42 year and from year to year without further amounts of water being diverted offstream
43 through new or expanded diversions, and under the stream conditions existing on the
44 effective date of the standard." (Effective May 4, 1992.) In essence, the IIFS provides
45 that no additional diversions from the "status quo" shall be made without amending the

1 IIFS. A restoration of stream flows above the “status quo” also requires amending the
2 stream’s IIFS.

3
4 On May 5, 1992, the Commission designated the five aquifer systems of
5 windward O`ahu as ground-water management areas. Notice of the action was published
6 on July 15, 1992, the effective date of designation. Under the State Water Code, chapter
7 174C, Haw. Rev. Stat. (hereinafter “Water Code”), users of ground water must apply for
8 a water use permit within one year of the effective date of designation.

9
10 In June 1993, Waiāhole Irrigation Company (hereinafter, “WIC”) filed a
11 combined water use permit application for all of the then-existing water users of the
12 Waiāhole Ditch water transported to Central O`ahu.

13
14 In August 1993, O`ahu Sugar Company, Ltd. (hereinafter, “OSCO”) announced
15 that it would cease its sugar operations by 1995.

16
17 In November 1993, the Department of Agriculture (hereinafter, “DOA”)
18 petitioned the Commission “to preserve the present use flow of the Waiāhole Ditch
19 system for agricultural uses...to take effect upon the demise of the Oahu Sugar
20 Company’s operations.” Other petitions to reserve water under Haw. Rev. Stat. Sec.
21 174C-49(d) were later filed by the Office of Hawaiian Affairs (hereinafter, “OHA”)
22 (8/94); the Kahalu`u Neighborhood Board No. 29, the Hakipu`u `Ohana, and the
23 Waiāhole-Waikāne Community Association (hereinafter, collectively referred to as the
24 “Windward Parties”) (9/94); Kamehameha Schools Bernice Pauahi Bishop Estate
25 (hereinafter, “KSBE”) (12/94); and the Department of Hawaiian Home Lands
26 (hereinafter, “DHHL”) (1/95).

27
28 In December 1993, the Windward Parties petitioned to amend the IIFS for
29 windward O`ahu streams affected by the Waiāhole Ditch. (OHA also petitioned to amend
30 the IIFS for windward streams in February 1995.)

31
32 In response to complaints received in May 1994, the Commission investigated
33 releases of Waiāhole Ditch water into central O`ahu gulches. After site visits, public
34 informational meetings and a staff report on these releases, the Commission considered
35 an “Order To Show Cause to Waiāhole Irrigation Company Why It Should Not Be
36 Ordered To Cease Wasting Water” at its September and October 1994 meetings. The
37 Commission deferred action on the matter and asked interested groups to enter into
38 expedited mediation of the release issue in lieu of holding a contested case hearing.

39
40 Mediation on the Waiāhole interim release issue was held in November 1994,
41 with 17 parties participating.

42
43 In December 1994, the Commission adopted a “Mediation Agreement, Waiāhole
44 Ditch Interim Water Releases,” signed by most of the Waiāhole Ditch water users,
45 applicants and petitioners to allow 8 million gallons per day (mgd) to flow past the North
46 Portal (below the crest of the Ko`olau mountains between the windward and leeward

1 sides) in the Waiāhole Tunnel and release the remainder back into Waiāhole Stream.
2 (This order was amended in June 1995 to release 2 mgd of the remainder into Waianu
3 Stream, a tributary of Waiāhole Stream, below the release point into Waiāhole Stream.)
4

5 In January 1995, the Commission ordered that a combined contested case hearing
6 be held on: 1) all related applications for water use permits, 2) all related petitions to
7 reserve water, 3) the petitions to amend the IIFS, and 4) any other matters related to the
8 Waiāhole Ditch.
9

10 In April 1995, a public hearing was held to give all interested persons and
11 organizations the opportunity to testify or present information on Waiāhole Ditch matters
12 and to request to be an intervening party, orally or in writing, by the end of the public
13 hearing.
14

15 In May and July 1995, the Commission granted standing to 25 parties and denied
16 standing to nine parties.
17

18 From May to November 1995, there were 17 meetings, which included six pre-
19 hearing conferences, a field investigation, four hearings on existing uses and six hearings
20 on motions.
21

22 The contested case hearing was held from November 1995 to September 1996,
23 during which time there were 52 days of hearings, including four evening sessions,
24 written testimony from 161 witnesses—of which 140 testified orally—and 567 exhibits
25 introduced into evidence.
26

27 The Commission issued its Proposed Findings of Fact, Conclusions of Law, and
28 Decision and Order in July 1997 and heard oral arguments on written exceptions in
29 August 1997.
30

31 On December 24, 1997, the Commission issued D&O I.
32

33 In D&O I, the Commission:
34

- 35 1) determined that the Waiāhole Ditch developed a total of 27 million gallons per
36 day (mgd), consisting of 23.3 mgd measured at the North Portal, which is
37 directly underneath the crest of the Koʻolau Mountains, and an additional 3.7
38 mgd measured at Adit 8, where the Waiāhole Ditch surfaces in Waiawa on the
39 leeward side;
40
- 41 2) amended the IIFS for certain windward streams by adding 4 mgd from the
42 Waiāhole Ditch to Waiāhole Stream and 2 mgd to Waianu Stream (a tributary
43 of Waiāhole Stream), whose base flows had been diminished by the
44 construction of the Waiāhole Ditch;
45

- 1 3) determined that a reasonable duty of water for diversified agriculture was
2 2,500 gallons per acre per day (gad);
3
- 4 4) recognized “agricultural uses” totaling 12.22 mgd, based on past agricultural
5 uses of Waiāhole Ditch water: 1) 10 mgd representing 2,500 gad multiplied by
6 approximately 4,000 acres of former OSCO sugarcane lands irrigated by the
7 Waiāhole Ditch when OSCO was in full production; plus 2) 2.22 mgd
8 representing approximately 1,552 acres of Dole/Castle & Cooke’s agricultural
9 lands multiplied by their requested usage amounts or 2,500 gad, whichever
10 was less;
11
- 12 5) approved agricultural water use permits for 10.64 mgd of the 12.22 mgd and
13 proposed that the remaining 1.58 mgd be designated an agricultural reserve
14 through formal rulemaking after the contested case proceedings;
15
- 16 6) deferred formal rulemaking action on the other water reservation petitions to a
17 later date;
18
- 19 7) approved leeward non-agricultural water use permits for a total of 1.29 mgd;
20
- 21 8) denied certain leeward applications in whole or in part for agricultural or non-
22 agricultural water use permits;
23
- 24 9) made allowances for 2.1 mgd in operational losses for Waiāhole Irrigation
25 Company (WIC); and
26
- 27 10) ordered that any water under the agricultural and non-agricultural water use
28 permits that were not being used, as well as the 1.58 mgd for the proposed
29 agricultural reserve and the remaining 5.39 mgd of Waiāhole Ditch flows not
30 subject to water use permits, be released into windward streams until they
31 were used under current and/or future water use permits, in addition to the 4
32 mgd added to Waiāhole Stream and the 2 mgd added to Waianu Stream under
33 the amended IIFS for these two streams.
34

35 WIC had requested a water use permit for 2.0 mgd of Waiāhole Ditch water as
36 operational losses. The Commission had denied the request but recognized that
37 operational water losses do occur and hence provided the 2.1 mgd of Kahana Stream
38 surface waters being diverted into the Ditch as an allowance for such losses. The
39 Commission took this action because it had concluded that it had no water use permit
40 authority over Kahana Stream surface waters, because the Kahana watershed was not in a
41 surface water management area. The Commission had further stated its intention to
42 initiate the process of designation for the Kahana watershed as a surface water
43 management area and to consider the Kahana surface water diversions for future
44 restoration of Kahana Stream. Because the 2.1 mgd would continue to be diverted from
45 Kahana Stream into the Waiāhole Ditch and to the leeward side until such actions could

1 be taken, the Commission concluded that it should be used as an allowance for WIC's
2 operational losses.

3
4 In light of the integrated nature of the relevant water sources and infrastructure,
5 the Commission had also ordered that the 27 mgd developed by the Waiāhole Ditch (23.3
6 mgd windward of the North Portal and 3.7 mgd leeward of the North Portal) be regulated
7 as a unified water system within the windward Ko'olaupoko and Kahana Water
8 Management Areas and the leeward Waipahu-Waiawa Water Management Area.

9
10 The Commission also ordered the agricultural parties, with the cooperation and
11 participation of WIC and DOA, to draft an Implementation Plan incorporating the
12 principles of the "Farm Delivery Agreement" to form a cooperative to coordinate and
13 facilitate the delivery of water.

14
15 Finally, the Commission proposed to establish technical advisory committees
16 representing a cross-section of interests to address specific areas of concern, most
17 notably, the effects of stream flow restoration, conservation measures and financing of
18 the technical studies.

19
20 Notices of Appeal to the Court were filed by the Windward Parties; Hawai'i's
21 Thousand Friends; City & County of Honolulu, Planning Department and Board of Water
22 Supply; and KSBE. Notices of Cross-Appeal were filed by: The Robinson Estate; Pu'u
23 Makakilo, Inc. (hereinafter, "PMI"); State of Hawai'i, DOA and Department of Land and
24 Natural Resources (hereinafter, "DLNR"); Estate of James Campbell (hereinafter,
25 "Campbell Estate"); Dole Food Company, Inc./Castle & Cooke; United States
26 Department of the Navy; and Land Use Research Foundation (hereinafter, "LURF").

27
28 In December 1999, the Court heard oral arguments on certain issues of the
29 Waiāhole Ditch Combined Contested Case Hearing and issued its *Waiāhole I* decision on
30 August 22, 2000.

31
32 On August 31, 2000, KSBE filed a motion for reconsideration, which was denied
33 on September 27, 2000.

34
35 On October 2, 2000, the Supreme Court filed the Final Judgment, officially
36 remanding the case to the Commission.

37
38 The Court in *Waiāhole I* remanded the following issues for additional findings
39 and conclusions, with further hearings if necessary. All other aspects of the
40 Commission's decision not otherwise addressed in the opinion were affirmed.

- 41
42 1) further consideration of the designation of an IIFS for windward streams
43 based on the best available information, as well as the specific
44 apportionment of any flows allocated or otherwise released to the
45 windward streams;

- 1 2) the merits of the petition to amend the interim standard for Waikāne
2 Stream;
- 3
- 4 3) the actual need for 2,500 gad over all acres in diversified agriculture;
- 5
- 6 4) the actual needs for certain leeward parcels of agricultural lands;
- 7
- 8 5) the practicability of Campbell Estate and PMI to use alternative leeward
9 ground-water sources;
- 10
- 11 6) practical measures to mitigate the impact of variable off-stream demand
12 on the streams; and
- 13
- 14 7) the merits of the permit application for Waiāhole Ditch system losses.
- 15

16 On October 3, 2000, the Commission issued an interim order for no changes in
17 water allocations, no issuance of additional water use permits and no further diversions
18 from windward streams affected by the Waiāhole Ditch, pending determination of an
19 IIFS for these streams.

20

21 In November 2000, DLNR withdrew from further participation as a party in the
22 remanded case.

23

24 In November 2000, the Commission delegated the remanded Waiāhole Ditch
25 Combined Contested Case Hearing to a Hearings Officer and appointed Dr. Lawrence
26 Miike.

27

28 At the February 2001 pre-hearing conference, the parties were notified that the
29 hearings officer had concluded that the record of the first hearing provided adequate
30 information without the need for additional hearings to designate an IIFS for the
31 windward streams, as well as the specific apportionment of any flows allocated or
32 otherwise released to these streams. Thus, the hearing would be limited to five of the
33 seven issues remanded by the Supreme Court: 1) the actual need for 2,500 gallons per
34 acre per day over all acres in diversified agriculture; 2) the actual needs of Field Nos. 146
35 and 166 (ICI Seeds), and Field Nos. 115, 116, 145, and 161 (Gentry and Cozzens); 3)
36 practicable measures to mitigate the impact of variable off stream demand on the streams;
37 4) the practicability of Campbell Estate and PMI using alternative ground-water sources;
38 and 5) The merits of the permit application for ditch “system losses.”

39

40 The hearing was held on April 4, 2001, with closing arguments held on April 24,
41 2001. The hearings officer submitted his proposed Decision and Order to the
42 Commission on August 1, 2001, and on December 28, 2001, the Commission issued
43 D&O II.

44

45 In D&O II, the Commission amended the IIFS of the windward streams by adding
46 9.9 mgd to their base flows, with the remaining 17.1 mgd available for offstream use as

1 follows: 1) 10.01 mgd issued in agricultural use permits; 2) 3.29 mgd issued in non-
2 agricultural use permits (including 2.0 mgd for operational losses); 3) 1.58 mgd for the
3 proposed agricultural reserve; and 4) 2.22 mgd in non-permitted water (this water and the
4 proposed agricultural reserve would be available for future water use permit
5 applications).

6
7 1) Amended IIFS:

- 8 a) Waiāhole Stream: 4.8 mgd¹ added to current base flow of 3.9 mgd,
9 for an amended IIFS of 8.7 mgd base flow, measured at its
10 confluence with its tributary, Waianu Stream;
11 b) Waianu Stream: 3.0 mgd² added to current base flow of 0.5 mgd,
12 for an amended IIFS of 3.5 mgd base flow, measured at its
13 confluence with Waiāhole Stream;
14 c) Waikāne Stream: 2.1 mgd³ added to current base flow of 1.4 mgd,
15 for an amended IIFS of 3.5 mgd base flow, measured at an altitude
16 of 75 feet; and
17 d) Kahana Stream: no change in its IIFS from the current base flow of
18 11.2 mgd, measured at an altitude of 15 feet.⁴
19 e) In addition, the non-permitted water and any water not consumed
20 for day-to-day operations for any of the permitted uses were to be
21 released into the windward streams in the following manner: 1) 0.9
22 mgd into Waikāne Stream, and 2) the remainder to be released into
23 Waiāhole Stream.

24
25 2) Practicable measures to mitigate the impact of variable off-stream demand on
26 the streams because of the use of 12-month moving averages (MAV)⁵ to
27 measure water uses:

- 28 a) Waiāhole Stream: the 8.7 mgd may be reduced to 6.6 mgd no more
29 than five (5) non-consecutive days a month;
30 b) Waianu Stream: the 3.5 mgd may be reduced to 3.0 mgd no more
31 than five (5) non-consecutive days a month;
32 c) Waikāne Stream: no variation from 3.5 mgd; and
33 d) Kahana Stream: no variation from 11.2 mgd.
34 e) To account for variable off-stream demand, an additional 2.6 mgd
35 would be available, but only up to five non-consecutive days a
36 month from Waiāhole and Waianu Streams. Regardless of the 12-

¹ 4.0 mgd had been added in D&O I.

² 2.0 mgd had been added in D&O I.

³ No Waiāhole Ditch water had been added in D&O I.

⁴ In *Waiāhole I*, the Court had ordered the Commission to consider amending the IIFS for Waikāne Stream but not for Kahana Stream, in addition to Waiāhole and Waianu Streams. However, the Commission included Kahana Stream in its analysis before deciding to keep its IIFS at the status quo.

⁵ With the use of 12-MAV to measure use, it was theoretically possible to use all of the Waiāhole Ditch flows at some times and still average the permitted amounts over a twelve-month period, thereby leaving no water to be added to the windward streams during these times.

1 MAV, the streams' amended IIFSs had to be met before leeward
2 offstream uses would be accommodated.⁶
3

- 4 3) Actual Needs for 2,500 gad over all acres in diversified agriculture:
5 a) 2,500 gad for acres under cultivation or planned to be under
6 cultivation was reaffirmed as a reasonable water duty for leeward
7 diversified agriculture, and the diversified agriculture water use
8 permits were conditioned on a showing of actual use, not to exceed
9 2,500 gad, within four years of the date of D&O II.
10
- 11 4) The Actual Needs of Certain Fields:
12 a) The award to Campbell Estate for Fields 115, 116, 145 and 161
13 was revised as follows: 1) 2,500 gad for 267 acres in Fields 115,
14 116 and 145, for a total of 0.66 mgd; and 2) 2,000 gad for 208
15 acres in Field 161, for a total of 0.42 mgd. Furthermore, the award
16 for the 803 acres in Fields 140, 156 and 172 was revised from
17 2,500 gad to 2,000 gad, for a total of 1.60 mgd, when Campbell
18 Estate requested a revision for these fields, reflecting Del Monte's
19 decision to only grow pineapple.
20
- 21 5) Practicability of Campbell Estate and PMI using alternative ground-water
22 sources:
23 a) The Commission found that the scenarios developed for Campbell
24 Estate by its consultant, Belt Collins Hawaii, did not provide
25 practical alternative ground-water sources for either Campbell
26 Estate or PMI, because the assumptions in those scenarios were not
27 applicable.
28 b) The Commission found that the wells that Campbell Estate had
29 retained⁷ had chloride contents exceeding Board of Water Supply
30 standards for irrigation water applied over drinking water aquifers
31 and that, if Campbell Estate were to drill a new well, it would have
32 to be in the Waipahu-Waiawa aquifer, because allocations in `Ewa-
33 Kunia had reached or were close to the sustainable yield, and that
34 most of Campbell Estate's Kunia lands overlay the `Ewa-Kunia
35 aquifer.
36 c) The Commission found that the three ground-water alternatives
37 examined by PMI were not practicable.
38 d) The Commission also found that the physical impact on the
39 Waiāhole Ditch and the economic impact on its operational

⁶ This policy negated any possibility that the use of the 12-MAV could impact the amended IIFS for the windward streams.

⁷ The Windward Parties had also objected to the transfer of Campbell Estate's water use permit for `Ewa Shaft (EP-15/16) to the Honolulu Board of Water Supply and its subsequent change in use from agricultural to domestic use. The Commission found that the Windward Parties had full and fair opportunity to present these issues and did present these issues in the context of the remanded contested case hearing and concluded that the transfer was legal because the provisions of the Water Code had been met.

1 viability if Campbell Estate were required to use ground-water
2 sources would make such an alternative to use of Waiāhole Ditch
3 water not practical.

4 e) Finally, the Commission concluded that, if water from the
5 Waipahu-Waiawa aquifer were to replace Waiāhole Ditch water
6 for Campbell Estate and PMI, water from windward public trust
7 resources that are available for non-trust purposes after measures
8 had been taken to enhance those windward public trust resources
9 would be given priority over a leeward public trust resource.

10
11 6) Merits of the permit application for Waiāhole Ditch system losses:

12 a) The Commission issued a water use permit to the State of Hawai`i,
13 Agribusiness Development Corporation⁸ (hereinafter, “ADC”), the
14 successor to WIC, for 2.00 mgd, conditioned on ADC conducting
15 studies on the probable contribution to system losses from leakages
16 in the unlined portions of the Ditch and in the reservoirs and any
17 other probable, major contributor. Depending on the outcome of
18 those studies, ADC was to conduct followup studies on the
19 feasibility of addressing those leaks and the costs of such projects
20 and to take appropriate actions to reduce such leakages.

21
22 Appeals were filed by the Windward Parties, Hawai`i’s Thousand Friends and
23 KSBE. However, among the Windward Parties, Waiāhole-Waikāne Community
24 Association did not join the Kahalu`u Neighborhood Board and Hakipu`u `Ohana in
25 filing a joint opening brief, and KSBE stipulated to a dismissal of its appeal, leaving
26 Kahalu`u Neighborhood Board, Hakipu`u `Ohana, Ka Lāhui Hawai`i and Hawai`i’s
27 Thousand Friends as appellants.

28
29 Appellees were the Commission, Robinson Estate, Campbell Estate, PMI, ADC,
30 and City and County of Honolulu, Planning Department and Board of Water Supply.

31
32 In *Waiāhole II*, issued on June 21, 2004, the Court, in reviewing D&O II on
33 appeal, remanded for further findings and conclusions:

34
35 1) The designation of an IIFS for windward streams:

36 a) while concluding that the Commission’s approach in setting the
37 amended IIFS was erroneous, the Court also concluded: “If, on
38 remand, the Water Commission is able to support its conclusion
39 with findings quantifying the windward streams’ flows during the
40 1960s, then the 1960s testimonials would be sufficient to set the
41 IIFS at the levels established in the D&O II, inasmuch as: (1) more
42 water would be added to the streams than that which adequately
43 supported the streams’ ecosystem in the 1960s *see* D&O II at 104;
44 (2) the increase in stream flow over the 1960s stream flow would

⁸ ADC, as the successor in interest to WIC effective July 1999, is the present applicant for a water use permit for system losses occurring in connection with the operation of the Waiāhole Ditch.

1 be beneficial in light of the Water Commission’s finding that
2 increasing a stream’s flow results in stream habitat improvement,
3 *see* D&O II at 104; and (3) appurtenant rights, riparian uses, and
4 existing uses would be accounted for by further increases in stream
5 flow, *see* D&O II at 112. The foregoing would then adequately
6 establish that instream values would be protected to the extent
7 practicable for interim purposes (*footnote omitted*).” (105 Haw. at
8 12)
9

10 2) The 2.22 mgd of unpermitted water:⁹

- 11 a) The Court first quoted from its opinion in *Waiāhole I*: “(T)he
12 Commission should incorporate any allowances for scientific
13 uncertainty into its initial determination of the minimum standard.
14 Any flows in excess of this standard shall remain in the stream
15 until permitted and actually needed for offstream use, in keeping
16 with the policy against waste and in recognition that the standard
17 merely states an absolute minimum required under any
18 circumstances. These unallocated flows, however, will not
19 constitute a distinct category or quantity, but will fluctuate
20 according to variations in supply and demand.” (94 Haw. at 156)
21 b) However, the Court then went on to state: “On remand, it appears
22 that the 2.2 mgd were not allocated. The Windward Parties argue
23 that by failing to include the unpermitted 2.2 mgd in the IIFS, the
24 Water Commission fails to protect instream values to the extent
25 practicable. Although nothing in the record indicates that the Water
26 Commission created a separate and distinct category by not
27 including 2.2 mgd of unpermitted water in the IIFS, the Water
28 Commission, nevertheless, failed to make any findings regarding
29 the 2.2 mgd, leaving this court without a means to decide the
30 issue.” (105 Haw. at 13)
31

32 3) The practicability of Campbell Estate and PMI using alternative ground
33 water sources:

- 34 a) The Court concluded that Campbell Estate failed to meet its
35 threshold burden of establishing the absence of practicable
36 alternatives but that PMI had met its threshold burden.
37 b) However, the Court concluded that the Commission erred by also
38 basing its decision that Campbell Estate and PMI had no practical
39 alternative water sources on the effect reduced flows would have

⁹ In D&O II, there was 3.80 mgd in unpermitted water: 1.58 mgd for a proposed agricultural reserve and a remainder of 2.22 mgd for other offstream uses. In D&O I, 12.22 mgd had been designated for agricultural uses, 10.64 mgd of which had been issued in agricultural use permits, leaving a remainder of 1.58 mgd for a proposed agricultural reserve. This left 2.22 mgd for other offstream uses under future water use permit applications. In D&O II, the agricultural use permits were reduced to 10.01 mgd, which should have increased the proposed agricultural reserve from 1.58 mgd to 2.21 mgd and reduced the remaining unpermitted water from 2.22 mgd to 1.59 mgd. These corrections will be addressed in this Decision and Order.

1 on the Waiāhole Ditch’s economic viability and on the theory that
2 public trust resources may not be prioritized. Even if the
3 Commission did not rely on all of these factors in reaching its
4 decision, the Court concluded that the Commission failed to
5 articulate as such in its analysis with reasonable clarity.
6

- 7 4) the actual needs of Field Nos. 115, 116 and 145 (Jefts):
8 a) The Court concluded that there was insufficient evidence to
9 establish that 267 acres of lands in these fields were to be
10 cultivated.
11
12 5) the actual needs of 229 acres in Field Nos. 146 and 166 (Garst Seeds):
13 a) The Court concluded that there was insufficient evidence that
14 2,500 gad was needed for 229 acres of these fields.
15
16 6) ADC’s permit for system losses:
17 a) The Court concluded that ADC did not establish that its system
18 losses met the water use permit requirements.
19

20 On August 25, 2004, the Commission delegated the remanded hearing to
21 Commissioner Lawrence Miike as the hearings officer.
22

23 On September 22, 2004, the Commission held a hearing on its draft “Third
24 Amended Interim Order for No Changes in Water Allocations, No Issuance of Additional
25 Water Use Permits and No Further Diversions from Windward Streams Affected by the
26 Waiāhole Ditch Pending Determination of Interim Instream Flow Standards (IIFS) for
27 Affected Windward Streams,” in which the Commission proposed that Campbell Estate
28 and PMI may continue their uses until the appropriate IIFS for the affected windward
29 streams have been set and a Commission decision rendered on their applications for
30 water use permits in accordance with *Waiāhole II*. A similar situation had arisen after
31 *Waiāhole I*, where the Court had held that the Commission was authorized to allow such
32 uses pending a final decision on their water use permit applications, and the Commission
33 had allowed such uses to continue. On September 30, 2004, the Commission issued its
34 Amended Interim Order allowing Campbell Estate and PMI to continue their uses.
35

36 On October 1, 2004, the Hearings Officer issued Minute Order Number 88,
37 setting the prehearing conference for November 9, 2004.
38

39 At the November 9th prehearing conference, the date of the start of the hearing
40 was set at April 5, 2005. A schedule was determined for the filing of opening statements,
41 opening briefs, witness lists, witness statements and exhibits. The parties were limited to
42 four of the six issues remanded by the Court: 1) the practicability of Campbell Estate
43 using alternative ground-water sources; 2) the actual needs of Fields Nos. 115, 116 and
44 145 (Jefts); 3) the actual needs of 229 acres in Fields Nos. 146 and 166 (Garst Seeds);
45 and 4) ADC’s permit for system losses.
46

1 On November 12, 2004, the Hearings Officer issued Minute Order Number 89,
2 stating that no further hearings would be necessary for item #1, the designation of an IIFS
3 for windward streams; item #2, the 2.22 mgd¹⁰ of unpermitted water; and part of item #3,
4 the practicability of PMI using alternative ground-water sources. The Hearings Officer
5 concluded that there was sufficient evidence in the existing record to address these issues.
6

7 On March 28, 2005, the Hearings Officer issued Minute Order Number 90,
8 confirming the start of the contested case hearing as 9:00 a.m. on April 5, 2005.
9

10 On March 28, 2005, the Kahalu`u Neighborhood Board, Hakipu`u `Ohana and Ka
11 Lāhui Hawai`i filed a motion to deny PMI's water use permit application for 0.75 mgd,
12 stating that: "(1) PMI's clubhouse has been torn down; (2) it has, at best, cut in half the
13 acreage irrigated with Windward stream water, and, at worst, its golf course is no longer
14 in operation; (3) its own executive has conceded that '[t]he area isn't suitable for a golf
15 course[;]' and (4) it is no longer using water from the Waiāhole Ditch System."
16

17 On April 5, 2005, the contested case hearing was begun and concluded.
18

19 On April 7, 2005, Minute Order Number 91 was issued, establishing the dates for
20 written and oral closing arguments and Proposed Findings of Fact, Conclusions of Law,
21 and Decision and Order.
22

23 On April 26, 2005, Minute Order Number 92 was issued, granting DOA/ADC's
24 motion to supplement the record of the April 5, 2005 hearing; and Minute Order Number
25 93 was also issued, granting the Windward Parties motion for Leave to Conduct
26 Necessary Discovery filed on April 22, 2005.
27

28 On May 12, 2005, Minute Order 94 was issued, granting the Windward Parties
29 motion for an Extension of Time to Complete Necessary Discovery.
30

31 Written Closing Arguments were submitted by the parties on June 7, 2005,
32 Closing Oral Arguments were held on June 22, 2005, and Proposed Findings of Fact,
33 Conclusions of Law, and Decision and Order were submitted on June 29, 2005.
34
35

36 **III. Findings of Fact**

37

38 The findings of fact (FOF) for designation of an IIFS for windward streams, the
39 2.2 mgd of unpermitted water, and the practicability of PMI using alternative ground-
40 water sources are based on the existing record prior to the April 5, 2005 hearings. FOF
41 from D&O I and II are in brackets, with FOF from D&O I identified by number, and FOF
42 from D&O II identified by page and line numbers. FOF not included in D&O I and II are
43 referenced by their original sources in parentheses.
44

¹⁰ To be corrected to 1.59 mgd. See footnote 9, *supra*.

1 The parties submitted a total of 229 proposed individual FOF after the April 5,
2 2005 hearings on the practicability of Campbell Estate using alternative ground-water
3 sources, the actual needs of Field Nos. 115, 116 and 145 (Jefts), the actual needs of 229
4 acres in Field Nos. 146 and 166 (Garst Seeds), and ADC's permit for systems losses.
5 Appendix C lists the Commission's rulings on the proposed FOF submitted by the parties
6 and whether they were accepted or rejected. References to the record are in parentheses,
7 and the FOF numbers of the various parties are in brackets. Where modifications to FOF
8 were made for clarification and accuracy, they are indicated as modified.

9
10
11 **A. Designation of an IIFS for Certain Windward Streams**

12
13 The Court on remand concluded that the Commission failed to support its
14 conclusion that the IIFS flows established in D&O II are more than the flows in the 1960s
15 and went on to state that if the Commission is able to support its conclusion with findings
16 quantifying the windward streams' flows during the 1960s, then the 1960s testimonials
17 would be sufficient to set the IIFS at the levels established in D&O II.

18
19 Stream flows are expressed in base (ground-water contribution) and average (the
20 addition of rain and runoff to base flow) flows. The changes to the affected windward
21 streams from construction of the Waiāhole Ditch are determined by examining the base
22 flows of the streams, because construction of the Waiāhole Ditch affected the flows of
23 certain windward streams by decreasing the ground-water contribution to these streams'
24 flows.

25
26 The United States Geological Survey (USGS) uses multiple-year data to estimate
27 post-Waiāhole Ditch base and average stream flows.

28
29 The USGS estimates represent the flows of the windward streams in the post-
30 Waiāhole Ditch period up to the initial onset of this Contested Case, including: 1) the
31 1960s, 2) the time when the initial IIFS were established in May 1992 as the status quo
32 flows, and 3) the times when D&O I and II amended the IIFS by adding the amounts
33 specified in those Decisions and Orders to the base flows. Several events have taken
34 place that may have affected the USGS estimates since they were published in 1969. The
35 impact of these changes on the relationship between the base flows in the 1960s and the
36 amended flows established in D&O II is discussed in the Conclusions of Law.

37
38
39 **1. Waiāhole Ditch and Tunnel System**

40
41 1. "Dikes, mostly vertical and parallel or subparallel to the fissure zone, control
42 movement and discharge of ground water because they are less permeable than the rocks
43 they intrude. Dikes impound or partly impound ground water by preventing or retarding
44 its movement toward discharge points. The top of this water, called high-level water in
45 Hawai'i, is at an altitude of about 1,000 feet in the north end of windward Oahu and 400
46 feet near the south end of Waimānalo Valley." [D&O II, at 13, lines 27-36]

- 1
2 2. The bed rock, on which these dike-impounded waters rest, extends to about 400
3 feet elevation in the Waiāhole-Waikāne drainage basin, and acts as a dam for the high-
4 level water in the dike compartments. [D&O II, at 13, lines 38-40]
5
- 6 3. The total length of the Waiāhole Ditch system is approximately twenty-five (25)
7 miles, stretching from Kahana Valley in windward O`ahu to Honouliuli in the Leeward
8 plains. [D&O I, FOF 3, modified]
9
- 10 4. The system is comprised of two (2) major parts. The collection part of the system
11 consists almost entirely of tunnels starting from Kahana and running through Waiawa.
12 This is where the water is collected. The delivery part starts from Adit 8, where the tunnel
13 surfaces in Waiawa, and runs downstream to the Leeward plains. [D&O I, FOF 10,
14 modified]
15
- 16 5. The system collects primarily ground water and some surface water through a
17 series of development tunnels in the Ko`olau Mountains and transports the non-potable
18 water to Central and Leeward O`ahu, primarily for agricultural purposes. [D&O I, FOF 1]
19
- 20 6. The initial system was constructed between 1913-1916, as a way to transport
21 water to irrigate Oahu Sugar Company, Ltd.'s ("OSCO") sugar cane fields in central
22 Oahu. [D&O I, FOF 5, modified]
23
- 24 7. At that time, when the system was initially constructed, the system was designed
25 to collect surface waters from surface water intakes on the Windward side of the island
26 and the water would be transported through a trans-Ko`olau tunnel which also developed
27 additional ground waters. [D&O I, FOF 6, modified]
28
- 29 8. The transmission tunnel from Kahana to the North Portal, an opening in the *pali*
30 face at ditch level on the windward side, is 24,621 feet in length, and 790 feet elevation at
31 the Kahana end. [D&O II, at 14, lines 22-26, modified]
32
- 33 9. The portion of the tunnel from the North Portal leeward is known as the Trans-
34 Ko`olau Tunnel or the Waiāhole Main Bore. It is 14,500 feet in length, and the elevation
35 is approximately 724 feet at the south portal Adit 8, and 754 feet at the North Portal.
36 [D&O II, at 14, lines 19-22, modified]
37
- 38 10. The transmission tunnel runs parallel to the dikes and thus develops and collects
39 little or no ground water, while the trans-Ko`olau tunnel or Main Bore runs perpendicular
40 to and penetrates the dike compartments and develops and collects significant amounts of
41 ground water. (Exhibit N-118, at 15, figure 8)
42
- 43 11. Work on the Main Bore, which began in February 1913, was completed in
44 December 1915. Discharge from the dike compartments penetrated by the Main Bore
45 reached equilibrium with recharge in May 1916, when excess flow from storage ceased.
46 ("Geology and Ground-Water Resources of the Island of Oahu, Hawaii," by Stearns and

1 Vaksvik, Division of Hydrography, Department of Public Lands, Territory of Hawai'i,
2 May 1935, at 402-404; cited in Exhibit N-118, at 12, and by Lum, Transcript, 4/24/96, at
3 27, lines 17-22)
4

5 12. Between 1925 and 1935, the Kahana, Waikāne #1, Waikāne #2 and the Uwau
6 Main Tunnels, which were drilled perpendicular to the collection tunnel and penetrated
7 the dike compartments, were developed to collect dike-impounded water. As the system
8 collected more dike water, it collected less surface water. Thus, except between 1925 and
9 1935 when the development tunnels were under construction, the amount of water
10 flowing through the Ditch system has been relatively constant from 1916. [D&O II, at 14,
11 lines 33-39, modified]
12

13 13. In 1964 the Uwau tunnel was extended by about 270 feet, and about 177 of those
14 feet were past the crest of the Ko'olaus into Waipi'o lands owned by Castle & Cooke.
15 [D&O II, at 14, lines 41-42, modified, and at 15, lines 1-2]
16

17 14. Until 1982 about 1 to 1.5 mgd of water was pumped from Waiāhole Stream at 450
18 feet elevation into the Waiāhole Ditch. This practice was stopped due to pumping costs.
19 [D&O II, at 15, lines 4-6]
20

21 15. In 1992 a bulkhead was installed at the Kahana Development Tunnel by the State
22 of Hawai'i. [D&O II, at 15, lines 8-9]
23

24 16. Average flows in the Waiāhole Tunnels follow. Except for the period when the
25 development tunnels were being built, variability in ditch flow runs roughly between 20
26 to 30 mgd. The average flows for the period 1989 to 1993 were selected because the
27 flows were neither extraordinarily high nor were they extraordinarily low, and it was also
28 after pumping from Waiāhole Stream into the ditch system had ceased. [D&O II, at 15,
29 lines 11-16]
30

31 17. The period of stability in Ditch flows started about 1938, with variability in Ditch
32 flows ranging roughly between 20 to 30 mgd. Prior to that, there were much higher flows
33 during the time when the stored waters in the dikes pierced by the tunnel system were
34 being depleted. [D&O II, at 35, lines 6-9, modified]
35

36 18. According to the U.S. Geological Survey: "Because the tunnel system and the
37 dike-impounded reservoirs are under steady-state conditions, there is no further depletion
38 of ground-water storage in the aquifers." [D&O II, at 35, lines 11-13]
39

40 19. The average amount of water developed from the Kahana Development Tunnel
41 was 2.6 mgd. In addition, there was about an additional 2.1 mgd of Kahana Stream
42 surface water that is also collected, giving the total waters collected from Kahana of
43 about 4.7 mgd. [D&O II, at 15, lines 18-21]
44

1 20. Waikāne #1 develops approximately 4.2 mgd, and Waikāne #2 develops
2 approximately 1.1 mgd. At this point in the system, the total waters developed, including
3 the Kahana waters, were approximately 10 mgd. [D&O II, at 15, lines 23-26]
4

5 21. The system then enters the lands of Uwau and Waianu. The Uwau Development
6 tunnel has two components: the original Uwau Tunnel, and its 1964 extension.
7 Approximately 8.7 mgd is developed in the main part of the Uwau Development Tunnel
8 on the windward side of the Ko`olau crest, and another 4.8 mgd is developed in the Uwau
9 Tunnel extension, on the leeward side of the Ko`olau crest, for a total of 13.5 mgd. At
10 this point, the total water developed is 23.5 mgd. [D&O II, at 15, lines 28-34]
11

12 22. The 1964 Uwau extension developed only a net of 2.77 mgd. Before the extension
13 was built, some of the water upstream of the gauge was finding its way into the already
14 existing main Uwau development tunnel. Therefore, about half of the Uwau Tunnel
15 extension water represents a decrease from the main tunnel prior to construction of the
16 extension. [D&O II, at 15, lines 36-41]
17

18 23. The total water developed between the lands of Uwau and Waianu and the North
19 Portal gauge, which is directly underneath the crest of the Ko`olau, was approximately
20 1.3 mgd. Therefore, the system to this point for the period of record developed
21 approximately 24.8 mgd. [(D&O II, at 15, lines 43-46)
22

23 24. During this period of record, 1989 to 1993, the Kahana bulkhead was installed in
24 early 1992. Ditch flows from Kahana tunnel have been reduced by approximately 1.5
25 mgd to 1.1 mgd from the original flow of 2.6 mgd. Therefore, the system from Kahana to
26 North Portal gate developed approximately 23.3 mgd. [D&O II, at 16, lines 1-5]
27

28 25. Beyond the North Portal, the opening in the *pali* face on the windward side, the
29 tunnel then enters the lands of Waiawa, which begin at the crest of the Ko`olau where
30 the North Portal gauge is located and are owned by Kamehameha Schools/Bernice Pauahi
31 Bishop Estate (“KSBE”). (This section between the North Portal and Adit 8 is called the
32 “main bore.”) [D&O II, at 16, lines 7-10, modified]
33

34 26. For the period of record from 1989 to 1993, the total average water developed
35 between the North Portal crest gauge station and the gauging station at the leeward end of
36 the main bore at Adit 8 was 3.7 mgd. Thus, the total water developed from Kahana to
37 Adit 8 is approximately 27.0 mgd for the period of record. [D&O II, at 16, lines 12-16]
38
39

40 2. Impact on Windward Stream Flows 41

42 27. “Valleys on the windward side penetrate deeply into the mountains and cut into
43 the dike-impounded reservoir, whereas most of the leeward valleys do not. This causes
44 proportionately more dike-impounded water to leak to the windward side from the area
45 underlying the crest. Consequently, the ground-water divide lies (somewhere) to the
46 leeward along most of the crest.” [D&O II, at 17, lines 20-24]

1
2 28. “The flow of Waiāhole (and its tributary, Waianu), Waikāne, and Kahana Streams
3 have [*sic*] been affected by the Waiāhole Ditch tunnel system, which diverts water at an
4 altitude of 800 feet.”¹¹ (Exhibit N-118, at 74) Thus, the U.S. Geological Survey does not
5 consider Hakipu`u Stream to be affected by the Waiāhole tunnels. [D&O II, at 17, lines
6 26-29]

7
8 29. Hakipu`u Stream does not go all the way back up to the Ko`olau crest, and a good
9 portion of that stream is below 400-foot elevation (that is, below the top of the bed rock
10 underlying the dike-impounded ground water through which the tunnel system has been
11 dug – Exhibit M-36D, at 2). [D&O II, at 17, lines 31-34]

12
13 30. “Waiāhole, Waianu, and Waikāne Streams lie down-gradient from Uwau tunnel
14 and Waikāne tunnels 1 and 2 and lie entirely in the dike complex. The total base flow of
15 the streams below tunnel level is 5.8 mgd or only about a third of the flow of the up-
16 gradient tunnels. In contrast, Kahana Stream, down-gradient from Kahana tunnel, lies
17 only partly in the dike complex and mostly in the marginal dike zone. Its base flow below
18 tunnel level is 11.2 mgd, or about three times the flow of the tunnel (before the Kahana
19 bulkhead was installed).” [D&O II, at 17, lines 36-42]

20
21 31. “Leakage and overflow from the dike-impounded water bodies, not exploited by
22 tunnels, continues [*sic*] to provide flow in all streams at the lower levels. Exceptions are
23 the lower parts of Hakipu`u and Ka`a`awa Streams, which are somewhat isolated from
24 the main Ko`olau mass.” (Exhibit M-36D, at 35) In other words, the lower reaches of the
25 streams are being fed by dikes that are not cut by the tunnel. Windward streams are
26 gaining streams, although Hakipu`u Stream is a losing stream in much of its reach.
27 Between altitudes of 400 and 250 feet, Waiāhole Stream cuts deeper into saturated rock
28 in this reach than streams in the other valleys, resulting in more leakage into the stream.
29 [D&O II, at 17, lines 44-45; at 18, lines 1-7]

30
31 32. However, while experts agree that the stream flows have been affected
32 significantly by the tunnels, they disagree on whether there is a one-to-one relationship
33 between ditch flows and loss of flows from the streams. The following statements
34 illustrate these disagreements:

35
36 “Under natural conditions, all of the water (collected by the Waiāhole Tunnel
37 complex) probably drained to Kaneohe Bay, including the 10 mgd or so from the
38 leeward side of the crest.” (Excerpts from “Report on the Hydrologic
39 Investigation of Groundwater and Surface Water Conditions in the Windward
40 O`ahu Water Management Area, O`ahu,” by George A.L. Yuen and Associates,
41 Inc., for the Commission on Water Resource Management, September 1989, and
42 revised February 1990, Exhibit N-119 at 63)

43
44 “Before excavation of the main bore, part of this water probably moved to the
45 windward area, and the rest moved leeward from the ground-water divide. Owing

¹¹ Note, *supra*, FOF 8-9, that the actual elevations are 790 feet at Kahana and 754 feet at North Portal.

1 to a lack of detailed information, half the average discharge...and half of the Q90
2 (of the main bore)...are assigned to the windward side.” (Exhibit N-118, at 74)
3

4 “[S]hould the Ditch flow be discontinued, the dike-confined water will discharge
5 naturally at the surface in the form of springs feeding windward streamflow, and
6 beneath the surface recharging adjacent windward dike-confined and basal
7 aquifers. In the undeveloped state, the dike compartments now supplying the
8 Waiāhole Ditch system undoubtedly also leaked water in the leeward direction,
9 ultimately recharging the aquifers of the Pearl Harbor region.” (Meyer, written
10 direct testimony, exhibit H, at 7) [D&O II, at 18, lines 9-12; at 19, lines 10-17, 21-
11 34]
12

13 3. Measurement of Stream Flows 14

15 33. Stream flows are measured in: 1) base flows and 2) average flows, at specified
16 places along the streams’ reaches, usually with corresponding altitudes noted. [D&O II,
17 at 20, lines 24-26]
18

19 34. Most of Hawai`i’s streams are classified as straight channels. Straightness is
20 determined by the ratio of the valley length to the river length, and in Hawai`i they are
21 about the same. Their steepness has some bearing on this. In steep channels, when you
22 put more flow in, they tend not to spread out and not to deepen very much compared to
23 how they speed up. The water just goes faster, it doesn’t get a lot deeper, and it doesn’t
24 spread out a whole lot more with increasing flows. Streams in Hawai`i are typically very
25 flashy in nature. They can rise up to many times the base flow when a storm occurs, then
26 come right back down. Windward streams are usually short and have steep gradients, are
27 flashy, and can rise and fall several feet in a few hours. The annual maximum discharge
28 usually occurs in the cooler months, October through April. [D&O II, at 20, lines 28-39]
29

30 35. The base flow is an estimate of the ground-water contribution to the stream. The
31 Q90 flow is used as an index of the reliability of flow from a water source for water
32 development studies and represents that volume of water that is equaled or exceeded 90
33 percent of the time over the period of record. The Q90 flow is an estimate of the dry
34 weather flow (base flow) of streams, and, in most cases, the Q90 flow is an estimate of
35 the ground-water contribution to the stream. [D&O II, at 20, lines 41-45; at 21, lines 1-2]
36

37 36. The average flow is an average of all flows, including the base flow and rainfall,
38 runoff and percolating ground waters from the surface. Therefore, the base flow is less
39 than the actual amount of water that flowed in the streams during the time periods
40 chosen. [D&O II, at 21, lines 4-7]
41

42 37. The United States Geological Survey (USGS) uses multiple-year data to compute
43 stream flows, and its “inventory of streamflow for all perennial streams in windward
44 Oahu” uses the base period July 1, 1926, to June 30, 1960. Estimates of the long-term
45 average and Q90 flows of Waiāhole, Waianu, Waikāne, and Kahana Streams are as
46 follows:

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Waiāhole Stream: the point of maximum base flow is at its confluence with Waianu Stream,¹² where the long-term average flow is 6.9 mgd¹³ and the Q90 flow is 3.9 mgd.

Waianu Stream: the point of maximum base flow is at its confluence with Waiāhole Stream, where the long-term average flow is 1.2 mgd and the Q90 flow is 0.5 mgd.

Waikāne Stream: the point of maximum base flow is at 75 feet altitude, where the long-term average flow is 4.2 mgd and the Q90 flow is 1.4 mgd.

Kahana Stream: the point of maximum base flow is at 15 feet altitude, where the long-term average flow is 29.5 mgd and the Q90 flow is 11.2 mgd. [D&O II, at 21, lines 9-26]

4. Amended IIFS Under D&O II

38. D&O II amended the IIFS for Waiāhole, Waianu, Waikāne and Kahana Streams by adding additional amounts of water from the Ditch as follows:

- Waiāhole Stream: 3.9 mgd + 4.8 mgd = 8.7 mgd, which may be reduced to 6.6 mgd no more than five (5) non-consecutive days a month;
- Waianu Stream: 0.5 mgd + 3.0 mgd = 3.5 mgd, which may be reduced to 3.0 mgd no more than five (5) non-consecutive days a month;
- Waikāne Stream: 1.4 mgd + 2.1 mgd = 3.5 mgd; and
- Kahana Stream: 11.2 mgd + 0.0 mgd = 11.2 mgd. [D&O II, at 112, lines 17-27]

5. Ditch-Related Events That Could Have Affected the USGS Estimates¹⁴

39. The period of stability in Ditch flows started about 1938, with variability in Ditch flows ranging roughly between 20 to 30 mgd. Prior to that, there were much higher flows during the time when the stored waters in the dikes pierced by the tunnel system were being depleted. [D&O II, at 35, lines 6-9, modified]

¹² The elevation at this point is 80 feet. (Lum, Transcript, 4/24/96, at 74, line 25 to 75, line 1)
¹³ This is the average flow at the point in the stream where the base flow has reached its maximum. Average flows further downstream would be higher, the amount depending on runoff and rain in the part of the watershed which drains into these lower reaches of the stream. In contrast to average flows, contribution of base flow at points lower downstream would not increase and would be the same as its contribution at the elevation where base flow had reached its maximum.
¹⁴ Some of the following FOF repeat previous FOF to highlight changes in the Ditch system that could have affected the stream flows during and since the 1960s.

1 40. In 1964 the Uwau tunnel was extended by about 270 feet, and about 177 of those
2 feet were past the crest of the Ko`olau into Waipio lands owned by Castle & Cooke.
3 [D&O II, at 14, lines 41-42 and at 15, lines 1-2, modified]
4

5 41. The 1964 Uwau extension developed only a net of 2.77 mgd. Before the extension
6 was built, some of the water upstream of the gauge was finding its way into the already
7 existing main Uwau development tunnel. Therefore, about half of the Uwau Tunnel
8 extension water represents a decrease from the main tunnel prior to construction of the
9 extension. [D&O II, at 15, lines 36-41]
10

11 42. Until 1982 about 1 to 1.5 mgd of water was pumped from Waiāhole Stream at 450
12 feet elevation into the Waiāhole Ditch. This practice was stopped due to pumping costs.
13 [D&O II, at 15, lines 4-6]
14

15 43. In 1992 a bulkhead was installed at the Kahana Development Tunnel by the State
16 of Hawai`i. [D&O II, at 15, lines 8-9]
17

18 44. As of 1993 ditch flows from Kahana tunnel have been reduced by approximately
19 1.5 mgd to 1.1 mgd from the original flow of 2.6 mgd. [D&O II, at 16, lines 1-5,
20 modified]
21
22

23 **B. The 2.2 mgd of Unpermitted Water**

24

25 45. In D&O II, the Waiāhole Ditch system flow was estimated at 27.0 mgd. [D&O II,
26 at 142, table 1]
27

28 46. Under the amended IIFS, a total of 9.9 mgd was added to Waiāhole (4.8 mgd),
29 Waianu (3.0 mgd) and Waikāne Streams (2.1 mgd). [D&O II, at 134, lines 6-19]
30

31 47. Therefore, 17.1 mgd was available for offstream uses. [D&O II, at 152, figure 2]
32

33 48. 10.01 mgd was issued for Leeward O`ahu agricultural water use permits. [D&O
34 II, at 143, table 2]
35

36 49. 3.29 mgd was issued for Leeward O`ahu water use permits, other uses. [D&O II,
37 at 144, table 3]
38

39 50. Therefore, 3.80 mgd remained unpermitted and available for future water use
40 permits. [D&O II, at 152, figure 2]
41

42 51. In D&O I, the Commission recognized “agricultural uses” totaling 12.22 mgd,
43 based on past agricultural usage of Waiāhole Ditch system water. [D&O I, at Decision
44 and Order, page 6]
45

1 52. Agricultural water use permits for 10.64 mgd were issued in D&O I, leaving 1.58
2 mgd of the 12.22 mgd for a proposed “agricultural reserve” that was to be established
3 under future formal rulemaking procedures under HAR section 13-171-60. [D&O I, at
4 Decision and Order, page 7]

5
6 53. In D&O I, the unpermitted water equaled 6.97 mgd: 1.58 mgd for the proposed
7 agricultural reserve and a remainder of 5.39 mgd. [D&O I, at Decision and Order, page
8 26, figure A]

9
10 54. In D&O II, the unpermitted water equaled 3.80 mgd: 1.58 mgd for the proposed
11 agricultural reserve and a remainder of 2.22 mgd. [D&O II, at 152, figure 2]

12
13 55. In D&O II, the amounts of the proposed agricultural reserve and the remaining
14 unpermitted water were incorrectly stated. D&O II issued 10.01 mgd for Leeward O`ahu
15 agricultural water use permits instead of the 10.64 mgd issued in D&O I. [D&O II, at
16 143, Table 2] Thus, the proposed agricultural reserve should have been 2.21 mgd (12.22
17 mgd minus 10.01 mgd) and not 1.58 mgd.

18
19 56. Thus, the corrected amounts that comprised the 3.80 mgd in unpermitted water in
20 D&O II are: 1) 2.21 (and not 1.58) mgd for a proposed agricultural reserve; and 2) a
21 remainder of 1.59 (and not 2.22) mgd for other future offstream uses.

22
23 57. In D&O I, the unpermitted water, as well as any water for which a water use
24 permit had been issued but was not being used, were to be released into the windward
25 streams at locations determined by the Commission. [D&O I, at Decision and Order,
26 pages 10 and 11]

27
28 58. In D&O II, 0.9 mgd of the release was to be into Waikāne Stream, with the
29 remainder into Waiāhole Stream. [D&O I, at 139-140]

30
31
32 **C. Practicability of PMI and Campbell Estate Using Alternative**
33 **Ground Water Sources**
34

35 59. In D&O II, the Commission issued water use permits for Waiāhole Ditch water to
36 PMI and Campbell Estate on three criteria: 1) both PMI and Campbell Estate had no
37 practicable alternative sources available; 2) “the physical impact on the Ditch and the
38 economic impact on the continued operational viability of the Ditch if Campbell Estate is
39 required to use ground-water sources makes such an alternative to use of Waiāhole Ditch
40 water not practical;” and 3) “if water from the Waipahu-Waiawa Management Area of
41 the Pearl Harbor aquifer were to replace Ditch water for Campbell Estate and PMI, water
42 from windward public trust resources that are available for non-trust purposes after
43 measures have been taken to enhance those windward public trust resources, would be
44 given priority over a leeward public trust resource.” [D&O II, at 127, lines 7-10; 128,
45 lines 39-43; 138, lines 24-26] On the third criterion, the Commission had interpreted the
46 Court’s order in *Waiāhole I* as requiring the use of Pearl Harbor ground water for

1 irrigation if it were practicably available and pointed out that the Court had also
2 concluded in the same decision that it is neither feasible nor prudent to designate absolute
3 priorities between broad categories of uses under the water resources trust, there was no
4 categorical imperative for resource protection, and public and private uses must be
5 weighed on a case-by-case basis. (94 Haw. at 142) The Commission therefore reasoned
6 that, if there were no absolute priorities between broad categories of uses, there should
7 not be absolute priorities between public trust water resources.
8

9 60. The Court in *Waiāhole II* responded to the three criteria as follows:

- 10 1) “PMI met its burden of establishing the absence of practicable alternative
11 water sources,” but “the Water Commission entered no FOFs or COLs as
12 to whether Campbell Estate satisfied its burden of establishing that no
13 practicable alternatives existed,” (105 Haw. at 17) For Campbell Estate,
14 the Commission in its FOF had analyzed alternative scenarios developed
15 by Campbell Estate in the original hearings, updated by information in the
16 remand (D&O II, at 88, line 38 to 94, line 14), but the Court concluded
17 that, even if the Commission had properly considered these scenarios, they
18 did not render an alternative impracticable. (105 Haw. at 17)
- 19 2) “The Water Commission did not make any finding as to the water flow
20 required to maintain the ditch’s economic and operational viability.” (105
21 Haw. at 20)
- 22 3) “[T]he Water Commission’s reasoning, that public trust resources may not
23 be prioritized because public trust uses may not be prioritized, is illogical.
24 Considering whether alternative water resources are practicable innately
25 requires prioritizing among public trust resources. As such, by failing to
26 prioritize among public trust resources, the Water Commission failed to
27 fulfill its duty, under the Water Code and the public trust doctrine, of
28 considering whether practicable alternatives exist.” (emphasis in original)
29 (105 Haw. at 20)
30

31 61. Even though the Court in *Waiāhole II* found that PMI had met its burden of
32 establishing the absence of practicable alternative water sources, it concluded that the
33 Commission failed to articulate with reasonable clarity whether it also had relied on the
34 other two criteria in reaching its decision. (105 Haw. at 20)
35
36

37 1. PMI

38
39 The following Findings of Fact (FOF) reiterate the Commission’s FOF that led
40 the Court to conclude in *Waiāhole II* that PMI had met its burden of establishing the
41 absence of practicable alternative water sources.
42

43 62. PMI considered three ground water alternatives to Waiāhole Ditch water. A
44 source contemplated in the original golf course plans was the `Ewa Caprock aquifer. The
45 application was rejected because the chlorides were in the 900 to 1,100 ppm range and
46 would be used over a potable aquifer. Estimates of desalinating the water to below 200

1 ppm were \$6,000,000, exclusive of land and easement acquisition, with estimated
2 operating costs of \$3.00 per 1,000 gallons, which was not considered economically
3 feasible. In addition, the original arrangements for the plant site lease and easements to
4 the golf course were not available to PMI at the time it purchased the property in
5 foreclosure. [D&O II, at 94, lines 16-24]
6

7 63. The second alternative was an on-site basal well in the `Ewa-Kunia aquifer, with
8 1998 construction costs estimated at \$900,000 and operating costs of \$0.18 per 1,000
9 gallons. This was considered economically feasible, but the property has deed restrictions
10 prohibiting an on-site well, and the likelihood of obtaining an allocation for a basal well
11 in the `Ewa-Kunia aquifer is remote. The current sustainable yield is 16 mgd, the existing
12 allocations total 14.5 mgd, applications are pending for an additional 3.1 mgd, and the
13 milestone yield for the aquifer is 14 mgd. [D&O II, at 94, lines 26-33] The sustainable
14 yield for the `Ewa-Kunia aquifer was revised downward by the Water Commission from
15 20 mgd to 16 mgd on March 15, 2000. Permitted use as of 12/8/2000 was 14.492 mgd,
16 leaving a balance of 1.508 mgd. The Board of Water Supply's share of the 14.492 mgd is
17 9.220 mgd, and it has averaged 7.984 mgd over the five-year period 1996-2000, leaving a
18 balance of 1.236 mgd in permitted use. However, the 1.236 mgd balance is not available
19 as a potable supply, because it consists of 0.954 mgd from the Makakilo Well, which
20 cannot be pumped due to high chlorides of between 250 to 260 ppm, and 0.291 mgd from
21 the Barbers Point non-potable wells. [D&O II, at 95, lines 4-12]
22

23 64. The third alternative was a basal well in the Waipahu-Waiawa aquifer, using EP-
24 5/6 (owned by Campbell Estate and with a marginally acceptable chloride content of 180
25 ppm). Estimated construction costs were \$3,000,000 and estimated operating costs were
26 \$0.39 per 1,000 gallons to a delivery point at Farrington Highway, exclusive of the
27 pumping and delivery charge by the well operator to move the water from the well to
28 Farrington Highway. PMI considered this alternative marginally feasible. Other factors
29 affecting practicability were the chloride level of the water, available pumping capacity, a
30 long-term pumping agreement, the ease of obtaining an allocation in the Waipahu-
31 Waiawa aquifer, and the ease and cost of obtaining an easement from the Farrington
32 Highway delivery point, under the H-1 Freeway to the golf course property. With the
33 marginally feasible economics and difficulty in obtaining supply agreements and
34 easements, PMI did not consider this a practicable alternative. [D&O II, at 95, lines 35-
35 45; at 96, lines 1-2]
36

37 65. The Board of Water Supply (hereinafter, "BWS") standard for irrigation water
38 applied over drinking water aquifers is 160 ppm. EP-10 has a chloride content of 460
39 ppm and some of the water from the battery of wells feeding into the EP-18 pumping
40 station also exceed the standard. EP-3,4 is at 260 ppm, EP-5,6 is at 180 ppm, and EP-7,8
41 is at 240 ppm. [D&O II, at 94, lines 5-9]
42

43 66. Based on the foregoing FOF, the Court in *Waiāhole II* concluded that PMI met its
44 burden of establishing the absence of practicable alternative water sources. (105 Haw. at
45 19)
46

1 67. In Minute Order No. 89, dated November 12, 2004, the Hearings Officer
2 established the date for the remanded hearings as April 5, 2005, framed the issues to be
3 resolved on remand, and determined that no further hearings were necessary regarding
4 the practicability of PMI using alternative ground-water sources, as there was sufficient
5 evidence in the existing record to address that item. The Windward Parties did not object
6 to Minute Order No. 89 nor requested that additional issues be considered. The deadline
7 for filing all pre-hearing motions was established as March 28, 2005. On March 28, 2005,
8 the Windward Parties filed a motion to deny PMI's water use permit application on the
9 grounds that PMI had to again demonstrate its actual water needs in light of PMI's
10 current usage and the fact that the golf course was not yet operating. At the April 5, 2005
11 remanded hearing, the Hearings Officer concluded that the issues would be limited to
12 those identified by the Court in *Waiāhole II*—i.e., practicable alternatives for PMI—and
13 that the subject of the motion would be referred to the Commission and its staff for
14 follow-up and decision. (Transcript, 4/5/2005, p. 6, line 7 to p. 7, line 2)

15 16 17 **2. Campbell Estate**

18 19 **a. Alternative sources**

20
21 68. Campbell Estate established criteria for analyzing alternatives that were based
22 upon the needs of the farmers and the protection of ground-water sources. (Exhibit B-
23 RD-46, Tom Nance Memo, pp. 1-3) [Campbell Estate, FOF 11]

24
25 69. The criteria used by Campbell Estate consisted of the following:

- 26 a. Within the particular aquifer system in which the wells are located, there
27 must be a remaining allocated supply of at least 3.98 mgd.
- 28 b. There must be available well sites that can pump 4700 gallons per minute
29 (gpm) (1.7 times the water use permit amounts) without adversely
30 impacting other existing wells or having a gradual deterioration in the
31 quality of the water pumped.
- 32 c. The salinity of the ground-water supply should be no greater than the
33 salinity of ground water beneath the fields on which the water is applied.
34 (Exhibit B-RD-46, Tom Nance Memo, p. 3) [Campbell Estate, FOF 12]
35 (modified)

36
37 70. Ground-water sources from the `Ewa-Kunia Aquifer system were eliminated as an
38 alternative because there is just 0.543 mgd available from the sustainable yield of that
39 aquifer. (Exhibit B-RD-46, Tom Nance Memo, p. 4) [Campbell Estate, FOF 13]
40 (modified)

41
42 71. Ground-water sources from the `Ewa Caprock Aquifer were eliminated as an
43 alternative because the water is brackish with chlorides varying from 500 milligrams per
44 liter (mg/l) to 1,500 mg/l. (Exhibit B-RD-46, Tom Nance Memo, p. 4) [Campbell Estate,
45 FOF 14](modified)

1 72. The Waipahu-Waiawa Aquifer System has 21 mgd available from its sustainable
2 yield of 104 mgd and is the source of the ground water for Campbell Estate's analysis.
3 (Exhibit B-RD-46, Tom Nance Memo, p. 4) [Campbell Estate, FOF 15](modified)
4

5 73. The ground water from the Waipahu-Waiawa Aquifer is of potable water quality.
6 (Transcript of Hearing, April 4, 2001, p. 277, lines 18-20) [Campbell Estate, FOF 46]
7

8 74. Campbell Estate proffered evidence regarding five alternative ground-water
9 sources from the Waipahu-Waiawa Aquifer for the Waiāhole Ditch: (1) construction of
10 new wells near where the Waiāhole Ditch enters Campbell Estate lands; (2) a mixed
11 alternative of 2.42 mgd from the new wells and 1.56 mgd from the Waiāhole Ditch; (3)
12 the EP-5/6 well battery; (4) the WP-2 battery of 12 wells and WP-30, an abandoned
13 O'ahu Sugar Company booster station that is not a source of supply; and (5) the `Ewa
14 Shaft (also known as EP 15/16 or Well No. 2202-01). (See Campbell's Op. Br. at 4-6; Ex.
15 B-RD-46) [Windward Parties, FOF 15](modified)
16
17

18 **i. New wells and mixed alternative**
19

20 75. For a new well and in order to minimize infrastructure cost, it would make most
21 sense to drill a well at the 645-foot level as the Waiāhole Ditch enters Campbell Estate
22 land. (Exhibit B-RD-46, Tom Nance Memo, p. 6) [Campbell Estate, FOF 45](modified)
23

24 76. The infrastructure cost for drilling a new well would be \$0.74 per 1,000 gallons, if
25 the source were to provide an average of 3.98 mgd.¹⁵ (Exhibit B-RD-46, Joe Vierra
26 Letter, p. 3) [Campbell Estate, FOF 47](modified)
27

28 77. For use of 2.42 mgd,¹⁶ new wells would run \$0.88 per 1,000 gallons. (Exhibit B-
29 RD-46, Joe Vierra Letter, p. 2)
30

31 78. The combined source of 2.42 mgd from a new well and using 1.56 mgd of
32 existing Waiāhole Ditch Water is also \$0.74 per 1,000 gallons to supply an average of
33 3.98 mgd. This is based on: 1) water from the new well is estimated at \$0.88 per 1,000
34 gallons; 2) Waiāhole Ditch water is estimated at \$0.37 per 1,000 gallons; and 3) \$0.06 per
35 1,000 gallons is added for an estimated 10% amortization of construction costs necessary
36 to merge the two systems and make them usable for Campbell Estate's lessees. (Exhibit
37 B-RD-46, Joe Vierra Letter, p. 3) [Campbell Estate, FOF 48](modified)
38

39 79. These figures incorporate an eight percent (8%) rate for borrowing money to
40 construct the improvements. (Vierra, Transcript, 4/5/05, p. 46, line 25 to p. 47, line 12)
41 [Campbell Estate, FOF 49](modified)
42

¹⁵ 3.98 mgd is the amended total request by Campbell Estate.

¹⁶ 2.42 mgd is the current average use.

1 80. Eight percent is a rate based on the fact that it represents an average interest rate
2 over a 20-year period. (Vierra, Transcript, 4/5/05, p. 46, lines 14-20, and p. 48, lines 13-
3 15) [Campbell Estate, FOF 50](modified)

4
5 81. Interest rates on business loans are renegotiated every three years. (Vierra,
6 Transcript, 4/5/05, p. 42, lines 3-12 and p. 47, line 24 to p. 48, line 5) [Campbell Estate,
7 FOF 51]

8
9 82. Based on an amortization rate of five percent, which is closer to today's prime
10 rate, the cost to Campbell Estate of drilling and pumping a new well near where the
11 Waiāhole Ditch enters Campbell's lands, when considered alone or as a mixed
12 alternative, would be approximately 63.5 cents per 1,000 gallons for 3.98 mgd. (See
13 Vierra, Transcript, 4/5/05, p. 43, line 21 to p. 44, line 6; p. 52, line 24 to p. 53, l. 3;
14 Federal Reserve Board, Monthly Bank Prime Loan [Rates] (June 6, 2005) (available at:
15 <http://www.federalreserve.gov/releases/h15/data/m/prime.txt> - [note: website link may
16 have changed])) [Windward Parties, FOF 27](modified)

17
18 83. The prime rate is the short-term lending rate for a bank's best customers.
19 Campbell Estate does not qualify for the prime rate. (Vierra, Transcript, 4/5/05, p. 52,
20 lines 12-16)

21
22
23 **ii. EP-5/6**
24

25 84. The unit cost for improvements to make EP-5/6 operational would be \$0.95 per
26 1,000 gallons, if this source were to provide 3.98 mgd. (Exhibit B-RD-46, Joe Vierra
27 Letter, p. 2) [Campbell Estate, FOF 37](modified)

28
29 85. For usage of 2.42 mgd, the cost to use EP-5/6 would be \$1.16 per 1,000 gallons.
30 (Exhibit B-RD-46, Joe Vierra Letter, p. 2)

31
32 86. The chloride levels of the water drawn from EP-5/6 have varied over the past
33 three years between 140 and 180 mg/l. (Exhibit B-RD-46, Tom Nance Letter, p. 5,
34 modified)

35
36 87. The Court has confirmed the Commission's use of a 160 mg/l limit for irrigating
37 fields over drinking water aquifers.¹⁷ (105 Haw. at 19, modified)

38
39 88. The available recent chloride data for EP-5/6 do not definitively establish that its
40 water meets the 160 mg/l maximum chloride as being acceptable for irrigation use over
41 drinking water aquifers. (Exhibit B-RD-46, Tom Nance Letter, p. 9, modified)

42
43 89. Although recent data indicates that the chloride levels from EP-5/6 have
44 decreased, its use as an irrigation water source would still adversely impact the `Ewa
45 Shaft (EP-15/16) for the following reasons: based on past history, chlorides of EP-5/6

¹⁷ mg/l is equivalent to ppm. See FOF 65, *supra*.

1 will increase over their present levels with the additional pumping to the Waiāhole-
2 irrigated fields, chlorides of the irrigation return water will be increased due to
3 evaporation loss and plant evapotranspiration, and the link between the quality of water
4 applied on Waiāhole-irrigated fields and the salinity of water pumped from the `Ewa
5 Shaft was clearly established during the OSCO period. For a long time, OSCO imported
6 the slightly brackish water from the WP-5 well battery via the WP-10 booster to
7 Reservoir 155 to supplement Waiāhole water to irrigate the fields in question. During that
8 period, water of the `Ewa Shaft was typically around 200 mg/l. When WP-5 was shut
9 down about a decade before OSCO closed, chlorides of the `Ewa Shaft steadily declined
10 to their present level. (Exhibit B-RD-46, Tom Nance Letter, p. 9) [Campbell Estate, FOF
11 34](modified)

12
13
14 **iii. The WP-2 battery of wells**

15
16 90. The cost to establish the WP-2 battery of 12 wells as a source is \$0.96 per 1,000
17 gallons, if providing 3.98 mgd. (Exhibit B-RD-46, Joe Vierra Letter, pp. 2-3) [Campbell
18 Estate, FOF 41](modified)

19
20 91. The cost for providing 2.42 mgd from WP-2 is \$1.18 per 1,000 gallons. (Exhibit
21 B-RD-46, Joe Vierra Letter, pp.2-3)

22
23 92. Campbell Estate would need to obtain easements over land that it does not own in
24 order to deliver the WP-2 water to its lessees' lands. The cost estimates include the cost
25 of the pipeline across these lands but no costs for easement acquisitions from landowners.
26 (Exhibit B-RD-46, Joe Vierra Letter, p. 3)

27
28 93. WP-2 is located very near EP-5/6. (Vierra, Transcript, 4/5/05, p. 38, lines 4-21)
29 [Campbell Estate, FOF 39]

30
31 94. Based on the criteria used by Campbell Estate in analyzing alternative ground-
32 water sources, Campbell Estate believes WP-2 should not be used as a ground-water
33 source because it is also makai of the fields irrigated with Waiāhole Ditch Water and
34 could damage the ground water beneath the fields. (Exhibit B-RD-46, Tom Nance Memo,
35 p. 4) [Campbell Estate, FOF 40](modified)

36
37
38 **iv. EP-15/16 (`Ewa Shaft)**

39
40 95. EP-15/16 is a BWS resource that is not yet in service and permitted for municipal
41 purposes, not specifically for large agricultural usage. (Exhibit B-RD-46, Joe Vierra
42 Letter, pp. 2-3)

43
44 96. Based on BWS' prevailing rate for irrigation water from a potable source at \$0.99
45 per 1,000 gallons and an estimated added cost of delivering water of \$0.40 per 1,000

1 gallons, Campbell Estate's consultant estimated the cost of delivering water from EP-
2 15/16 as \$1.39 per 1,000 gallons. (Exhibit B-RD-46, Joe Vierra Letter, pp. 1-2)

3
4 97. After July 1, 2005, the BWS rate will increase from \$0.99 to \$1.12 per 1,000
5 gallons. (Amended Exhibit N-222, p. 4)

6
7 98. Based on a BWS rate of \$1.12 per 1,000 gallons, the cost of delivering water from
8 EP-15/16 would be \$1.52 per 1,000 gallons (\$1.12 + \$0.40).

9
10 99. Until July 1, 2005, BWS' Schedule of Rates and Charges states that BWS will
11 charge 75 cents per 1,000 gallons for agricultural water in blocks over 13,000. After July
12 1, 2005, that rate will increase to 77 cents per 1,000 gallons. (Amended Exhibit N-222, p.
13 4) [Windward Parties, FOF 38](modified)

14
15 100. Based on a BWS rate of 77 cents per 1,000 gallons, the cost of delivering water
16 from EP-15/16 would be \$1.17 per 1,000 gallons (\$0.77 + \$0.40).

17
18 101. A witness from BWS stated that if water were available from BWS, the cost of
19 obtaining water from BWS would be \$1.98 per 1,000 gallons, the rate for non-residential
20 usage in effect until July 1, 2005, when it increases to \$2.24 per 1,000 gallons.
21 (Declaration of Dean Shimizu, Civil Engineer VI, with BWS, ¶4, Amended Exhibit N-
22 222-4, and Transcript of the Deposition of Dean S. Shimizu p. 34, lines 16-24) [Campbell
23 Estate, FOF 26](modified)

24
25 102. Based on a BWS rate of \$1.98 per 1,000 gallons, the cost of delivering water from
26 EP-15/16 would be \$2.38 per 1,000 gallons (\$1.98 + \$0.40).

27
28 103. Based on a BWS rate of \$2.24 per 1,000 gallons, the cost of delivering water from
29 EP-15/16 would be \$2.64 per 1,000 gallons (\$2.24 + \$0.40).

30
31 104. In addition to per gallon water charges, the use of EP-15/16 as a source of water
32 could subject the applicant to one-time meter fees (referred to as "Water System
33 Facilities Charges"). (Amended Exhibit N-222-4 and -5 and the Declaration of Dean
34 Shimizu, amended Exhibit N-222-6 to -8) [Campbell Estate, FOF 27](modified)

35
36 105. Part of this fee could be waived. (Declaration of Dean Shimizu, p. 27, line 22 to p.
37 28, line 6) [Campbell Estate, FOF 31]

38
39 106. BWS' regulations provide that it "may negotiate water system facilities charges
40 (WSFC) other than those in the schedule when it is determined that the schedule is
41 inappropriate. The Department may also negotiate agreements with developers for
42 payment of the actual costs of installation of the necessary water system facilities or
43 require the installation of the facilities by the developer in lieu of payment of water
44 system facilities charges." (Exhibit N-223, p. 2) [Windward Parties, FOF 62](modified)

45

1 107. WSFC “will not be levied on developments where the developer installs at his
2 cost, a complete water system including source and transmission and daily storage
3 facilities.” Exhibit N-223, p. 2) [Windward Parties, FOF 63](modified)
4

5 108. The EP-15/16 was already drilled and pumps were already installed before that
6 well was transferred to BWS. (Exhibit N-224, p. 33, lines 9-17)
7

8 109. There already is a storage tank near the `Ewa Shaft, and Campbell Estate expects
9 to install the necessary infrastructure from the storage tank near EP 15 & 16 to the point
10 of delivery to Campbell Estate’s farmers, which is estimated at \$0.40 per 1,000 gallons
11 and already included in the consultant’s estimated cost of \$1.39 per 1,000 gallons.
12 (Exhibit B-RD-46, Vierra letter, p. 1; Exhibit N-224, Shimizu deposition, pp. 33, line 22
13 to p. 34, line 15)
14

15
16 **b. Lessees’ water costs**
17

18 110. Water from the Waiāhole Ditch is currently being provided to the farmers at the
19 rate of \$0.40 per 1,000 gallons. (Littleton, Transcript, 4/5/05, p. 15, lines 14-17)
20 [Campbell Estate, FOF 52]
21

22 111. The four farmers with long-term leases have escape clauses tied to the Consumer
23 Price Index (CPI) which permit the respective lessees to leave. (Hatton, Transcript,
24 4/5/05, p. 57, lines 1-12; Written Testimony of Bert Hatton, p. 1, line 9 to p. 2, line 6)
25 [Campbell Estate, FOF 53](modified)
26

27 112. If water reaches the rate of 63.5 cents per 1,000 gallons, Del Monte is entitled to
28 terminate its lease. (Id.) [Campbell Estate, FOF 54]
29

30 113. If water reaches the rate of 62.7 cents per 1,000 gallons, Garst Seeds is entitled to
31 terminate its lease. (Id.) [Campbell Estate, FOF 55]
32

33 114. If water reaches the rate of 60.6 cents per 1,000 gallons, Sugarland Farms is
34 entitled to terminate its lease. (Id.) [Campbell Estate, FOF 56]
35

36 115. If water reaches the rate of \$52.3 cents per 1,000 gallons, Larry Jefts Farms is
37 entitled to terminate its lease. (Id.) [Campbell Estate, FOF 57]
38

39 116. Based on the April 2005 CPI of 194.6, the most recent CPI available at the
40 deadline for the parties’ written closing arguments, the escape clauses for Campbell
41 Estate’s lessees increased from 52.3 to 53.3 cents per 1,000 gallons for Jefts, from 60.6 to
42 61.7 cents per 1,000 gallons for Sugarland, from 62.7 to 63.8 cents per 1,000 gallons for
43 Garst, and from 63.5 to 64.7 cents per 1,000 gallons for Del Monte. (*See*
44 <http://www.bls.gov/news.release/cpi.t01.htm>. [note: website link may have changed] *See*
45 generally Campbell’s Op. Br., at 3-4; Windward Parties’ Written Closing Argument at 4)
46 [Windward Parties, FOF 34](modified)

1
2 117. Larry Jefts, who holds the Campbell Estate leases for both Sugarland and Larry
3 Jefts Farms, stated that he would be willing to pay an additional cost for Campbell Estate
4 to transport water to their fields from an alternative source. He also acknowledged that he
5 could abandon both leases if the costs exceed the lease terms, but that he would
6 “have to look at the terms and conditions associated with obtaining the delivery of water
7 to my farms and assess any risks involved. It would be a business decision.” (Jefts,
8 Written Statement, January 14, 2005, p. 2, lines 6-19)
9

10 118. Paul Stuart of Garst Seed Company also acknowledged that Garst could abandon
11 its lease if the costs exceed the lease terms, and also stated that “[a]ny higher cost of
12 water would cause my company to evaluate its options, including early termination of the
13 lease and relocating to other areas with more reasonable water delivery options.” (Stuart,
14 Written Statement, January 14, 2005, p. 3, lines 8-20)
15

16 119. Edward Littleton of Del Monte also acknowledged that Del Monte could abandon
17 its lease if the costs exceed the lease terms, and also stated that Del Monte would not pay
18 additional costs for Campbell Estate to transport water to their fields from an alternative
19 source, because competition and the large worldwide supply of fresh pineapple have been
20 driving the prices of their fruit down and any increased production costs puts it at a
21 disadvantage with its competitors. (Littleton, Written Statement, January 14, 2005, p. 1,
22 line 17, to p. 2, line 5; Littleton, Transcript, 4/5/05, p. 13, line 21, to p. 14, line 21)
23

24 120. The fifth lessee, Hawai'i Agricultural Research Center (HARC), is on a month-to-
25 month agreement with Campbell Estate and not in negotiation for a long-term lease.
26 HARC is a non-profit organization and just needs to meet its costs. If its water costs
27 increase to \$0.66 per 1,000 gallons, HARC will probably not be able to meet its current
28 contract for potatoes. If costs increase to \$0.79 per 1,000 gallons, HARC probably could
29 not meet its current contracts for its other crops. (Santo, Transcript, 4/5/05, p. 11, line 2 to
30 p. 13, line 5)
31

32 121. Campbell Estate's leases provide that its lessees must pay all taxes for the lands at
33 issue in the 2005 remanded hearing, including property taxes. (*See, e.g.*, State of Hawai'i
34 Commission on Water Resource Management, Transcript of the April 4, 2001 Remanded
35 Hearings at 87, lines 9-17, Exhibit B-RD-37, at 11-2) [Windward Parties, FOF 50]
36

37 122. Portions of Campbell Estate's lands are dedicated to agricultural use for periods
38 of one, five, or ten years, so property taxes are assessed at five, three, and one percent of
39 the total market value for the property, respectively. (City and County of Honolulu, Rev.
40 Ord. (“ROH”) § 8-7.3(b)(2)) [Windward Parties, FOF 51](modified)
41

42 123. If a Campbell Estate lessee exercised its escape clause and terminated its lease,
43 and the land was “not in substantial and continuous agricultural use,” the agricultural
44 dedication could be lost and Campbell Estate would be responsible for future property
45 taxes, which would be assessed at 100% of the fair market value of that property. (ROH §
46 8-7.3(o), attached as Exhibit B to the Windward Parties' Written Closing Argument; *see*

1 also ROH § 8-7.3(m), attached as Exhibit B to the Windward Parties’ Written Closing
2 Argument) [Windward Parties, FOF 52](modified)
3

4 124. Campbell Estate has reserved the right to subsidize water costs to prevent tenants
5 from terminating their leases. (*See e.g.*, Exhibit N-179, Lease Between Campbell Estate
6 and Del Monte Fresh Produce (Hawai`i), Inc., at 20) [Windward Parties, FOF 48]
7

8
9 **c. Prioritizing among public trust resources**

10
11 125. The Court in *Waiāhole II* concluded that “[c]onsidering whether alternative water
12 resources are practicable innately requires prioritizing among public trust resources.”
13 (105 Haw. at 20)
14

15 126. The Court in *Waiāhole I* concluded that “the public trust doctrine applies to all
16 water resources, unlimited by any surface-ground distinction.” (94 Haw. at 135)
17

18 127. The Water Code states: “The common law of the State to the contrary
19 notwithstanding, the commission shall allow the holder of a use permit to transport and
20 use surface or ground water beyond overlying land or outside the watershed from which
21 it is taken if the commission determines that such transport and use are consistent with
22 the public interest and the general plans and land use policies of the State and counties.”
23 (HRS § 174C-49(c))
24

25 128. In *Waiāhole I* the Court identified domestic water uses of the general public,
26 particularly drinking water, as a public trust purpose. (94 Haw. at 137)
27

28 129. Agriculture, while a constitutionally specified public purpose, is not one of the
29 four public trust purposes currently specified by the Court, but can be “accommodated”
30 when it “promotes the best economic and social interests of the people of this state.” (94
31 Haw. 141) [D&O II, p.128, lines 23-26]
32

33 130. In D&O I, the Commission had imposed a higher standard of review for
34 agricultural versus non-agricultural uses, and the Court in *Waiāhole I* concluded that
35 “such measures lay squarely within the Commission’s appointed function of weighing
36 and negotiating competing interests in regulating the water resources of this
37 state....[N]othing in the record suggests that the Commission’s decision to subject golf
38 course irrigation to different standards or conditions than other uses was arbitrary or
39 capricious.” (D&O I, Conclusions of Law, pp. 26-27; 94 Haw. at 169)
40

41 131. In D&O I, the Commission concluded that “Oahu’s remaining ground-water
42 resources must be directed to its highest and best use. There must be an increased
43 emphasis on water conservation, water reclamation and reuse, and system efficiency
44 improvements. One way to stretch Oahu’s remaining resources is to utilize lower quality
45 water for irrigation purposes, replacing the use of higher quality ground water. Thus,

1 reclaimed water and brackish caprock water should be used for irrigation purposes
2 whenever it is both possible and allowable. (D&O I, Decision and Order, p.1)

3
4 132. The ground water from the Waipahu-Waiawa Aquifer is of potable water quality.
5 (Transcript of Hearing, April 4, 2001, p. 277, lines 18-20) [Campbell Estate, FOF 46]

6
7 133. According to the City and County of Honolulu, Campbell Estate and PMI should
8 not be given water use permits from leeward ground-water sources merely because there
9 is unallocated permitted ground water available, and they must justify their use of ground
10 water as against the rights the public has in the ground water for domestic use. [D&O II,
11 p. 95, lines 32-36]

12
13
14 **D. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)**

15
16 134. “Arable land is land that is able to be cultivated but not necessarily in cultivation.
17 Cultivated land goes through the cycle of being plowed, planted, harvested, plowed under
18 and left to rest (with or without cover crop), then plowed and planted, etc. Planted means
19 when the plants are actually present. So you may be planted three or four months a year,
20 but you’re in cultivation continuously throughout the year.” [D&O II at 74]

21
22 135. In *Waiāhole II* the Court concluded that “(t)he Water Commission’s allocation of
23 2,500 gallons of water per cultivated acre per day appears to be based on the best
24 information currently available.” (105 Haw. at 22)

25
26 136. In *Waiāhole II* the Court concluded that “Jefts presented sufficient evidence of,
27 and the Water Commission made reasonably clear findings that, Jefts’s actual water need
28 is 2,500 gallons per cultivated acre per day and that Jefts had cultivated or planned to
29 cultivate 188 acres of land in Field Nos. 115, 116, and 145. However...the Water
30 Commission failed to enter any finding that Jefts adduced sufficient evidence to establish
31 that he planned to cultivate all 267 acres of land in Field Nos. 115, 116, and 145.” (105
32 Haw. at 24)

33
34 137. D&O II stated that at the time of the remanded hearings, Jefts had completed
35 clearing the land and putting in the irrigation infrastructure for 188 of the 267 acres, and
36 confirmed the original award of 2,500 gad for 267 acres for Field Nos. 115, 116 and 145,
37 or a total of 0.66 mgd. [D&O II at 137]

38
39 138. In *Waiāhole II* the Court concluded that, although Jefts implied that he intended to
40 convert all arable lands leased from Campbell Estate into cultivated lands, the Water
41 Commission failed to make any finding that all 267 acres of land were to be cultivated.
42 (105 Haw. at 24)

43
44 139. Mr. Jefts has clarified that he is only cultivating 188 acres and will not use the
45 entire 267 acres. (Jefts, Transcript, 4/5/05, at 7, line 24 to 8, line 5) [Campbell Estate,
46 FOF 3](modified)

1
2 140. The total needs of Field Nos. 115, 116, and 145 are therefore 0.47 mgd (188 acres
3 x 2,500 gad) and not 0.66 mgd (267 acres x 2,500 gad). (Amended Exhibit B-RD-47)
4 [Campbell Estate, FOF 4](modified)
5
6

7 **E. Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)**
8

9 141. The Supreme Court has previously affirmed that Garst’s actual water need is
10 1,800 gallons per planted acre and that 115 acres (approximately one-third of the total
11 acres) are planted. (105 Haw. at 25, 93 P.3d at 667) [Campbell Estate, FOF5](modified)
12

13 142. In addition to granting 1,800 gad for 115 acres, or 0.21 mgd, the Commission had
14 also granted 2,500 gad for 229 acres, or 0.57 mgd. (D&O II at 137)
15

16 143. Garst Seed Company originally intended to farm 115 of the 344 acres in Field
17 Nos. 146 and 166 for seed crops and use the other 229 acres for diversified agriculture.
18 Because its plan to develop diversified agriculture never materialized, it is only planting
19 115 of the total 344 acres for seed crops at a particular time. The other 229 acres that is
20 not being used for seed crops will remain part of its crop rotation plan. (Stuart,
21 Transcript, 4/5/05, p. 8, line 24 to p. 9, line 8; Stuart, written direct testimony, at 2, lines
22 1-5) [Campbell Estate, FOF 7](modified)
23

24 144. The total needs of Field Nos. 146 and 166 are therefore 0.21 mgd (115 acres x
25 1,800 gad) and not 0.78 mgd. (Amended Exhibit B-RD-47) [Campbell Estate, FOF 8]
26 (modified)
27
28

29 **F. ADC’s Permit for System Losses**
30

31 **1. Water use permit for system losses**
32

33 145. Under the State Water Code: “No person shall make any withdrawal, diversion,
34 impoundment, or consumptive use of water in any designated water management area
35 without first obtaining a permit from the commission (emphasis added).” (HRS section
36 174C-48(a))
37

38 146. To obtain a water use permit, it must be established that the proposed use: 1) can
39 be accommodated with the available water source; 2) is a reasonable-beneficial use as
40 defined in section 174C-3; 3) will not interfere with any existing legal use of water; 4) is
41 consistent with the public interest; 5) is consistent with state and county general plans and
42 land use designations; 6) is consistent with county land use plans and policies; and 7) will
43 not interfere with the rights of the department of Hawaiian home lands as provided in
44 section 221 of the Hawaiian Homes Commission Act. (HRS section 174C-49(a))
45

1 147. The Waiāhole Ditch system is comprised of two (2) major parts. The collection or
2 withdrawal part of the system consists almost entirely of tunnels starting from Kahana
3 and running through Waiawa. The delivery or diversion part starts from Adit 8, where the
4 open ditch begins, and runs downstream to the Leeward plains, ending at Reservoir 155
5 in Honouliuli. [D&O I, FOF 10, modified]
6

7 148. System losses due to leaks are present in any water distribution system. The
8 Waiāhole system was designed to carry flows in excess of 40 mgd. In a large-capacity
9 system with reduced flows, losses will become a more significant factor in the overall
10 flow budget. [D&O II, at 97, lines 16-19]
11

12 149. System losses occur downstream of Adit 8 in the form of evaporation from the
13 open ditch, including from the system's two reservoirs; of leakage from the lined ditches,
14 siphons, pipelines which distribute water to the edges of users' fields, and reservoirs; and
15 of overflow from the two reservoirs. [D&O II, at 97, lines 21-25]
16

17 150. A calculation of "system losses" can be made by taking the amount of water
18 measured at Adit 8, where the tunnel system emerges and the open ditch begins in
19 Waiawa, and subtracting the reported amount of metered usage. Essentially, this
20 calculation of system losses includes any and all flows not actually recorded in the users'
21 meters. [D&O II, at 97, lines 27-30]
22

23 151. Before the three wooden siphons were replaced, a further breakdown of system
24 losses was made by measuring losses from the three wooden siphons, estimating system
25 evaporation from the surface area of the open ditch and reservoirs, and overflow at
26 Reservoir 155 at the end of the system. The remaining losses were collectively
27 categorized as "unmetered flows." The loss from one of the three siphons was included in
28 the category of unmetered flows, because its losses did not collect in a single location and
29 commingled in a culvert with water from other sources. [D&O II, at 97, lines 32-39]
30

31 152. At the D&O II hearings, ADC/DOA projected that the 2.02 mgd of system losses
32 it had requested would consist of: 1) no losses from the replaced siphons; 2) 0.45 mgd
33 overflow at Reservoir 155 at the end of the system; 3) 0.07 mgd in evaporation; and 4)
34 1.50 mgd in the residual category, "unmetered losses." [D&O II, at 98, lines 35-41]
35

36 153. In *Waiāhole II*, issued June 24, 2004, as to the estimated 1.50 mgd in unmetered
37 losses probably due to leakage and seepage, the Court noted that the Commission found
38 that ADC had "not yet addressed the feasibility and cost of lining the remaining unlined
39 portion of the ditch and/or the two reservoirs." (105 Haw. at 27) The Court stated that
40 ADC should not have been granted a permit for system losses until the Commission had
41 addressed the feasibility of mitigating the probable 1.50 mgd leakage and seepage, as the
42 Court considered that this was required to show that ADC's allocation for system losses
43 was a reasonable-beneficial use under §174C-49(a), HRS. (105 Haw. at 26-27)
44 [ADC/DOA, FOF 21]
45

1 154. The Commission’s Decision granting ADC a permit for system losses in the
2 amount of 2.0 mgd ordered ADC to address the 1.50 mgd in unmetered losses, thought to
3 be leakage and seepage, through studies as to the probable contribution from unlined
4 portions of the ditch and reservoirs, through feasibility and cost studies, and if
5 appropriate, through subsequent mitigation action. (D&O II at 131-132) [ADC/DOA,
6 FOF 22](modified)
7

8 155. At the 2001 hearing in this case, ADC estimated unmetered losses to be at about
9 1.50 mgd, thought to be mostly seepage and leakage. ADC now believes that this
10 estimate was too low, probably because ADC’s projections were overly optimistic as to
11 the amount of loss reduction that would result from replacing the deteriorated wooden
12 siphons on the system. Losses from one of the three siphons had been included in the
13 category of unmetered flows, because its losses did not collect in a single location and
14 commingled in a culvert with waters from other sources. Unmetered losses stabilized
15 between 1.69 – 1.75 mgd from FY 2002 to FY 2004, as shown in Exhibit L-1109. This
16 1.69 – 1.75 mgd range is probably the baseline unmetered loss for leakage and seepage in
17 the system if no major additional mitigative steps are taken. (Lee, Written Direct
18 Testimony, p. 8) [ADC/DOA, FOF 26](modified)
19
20

21 2. HRS Section 174C-49(a)(2): reasonable-beneficial use 22

23 156. The Waiāhole Ditch and tunnel system consists of dikewater development
24 tunnels, surface water intakes, open ditches, gates, flumes, and siphons. The total length
25 of the system is approximately twenty-five (25) miles stretching from Kahana Valley to
26 the Leeward plains. [D&O I, FOF 1,3]
27

28 157. The “North Portal,” at an elevation of approximately 754 feet, is an opening in the
29 *pali* face at ditch level on the windward side and is the last point (near Gate 31) at which
30 ditch waters can be diverted into windward streams (Waiāhole Stream). (D&O II, at 14,
31 lines 19-22; Lee, Written Direct Testimony, 4/5/05, p. 4)
32

33 158. The tunnel system emerges at the south portal Adit 8, at an elevation of
34 approximately 724 feet, where the leeward open ditch system begins. (D&O II, at 14,
35 lines 19-22)
36

37 159. The portion of the tunnel from North Portal to Adit 8 is known as the Main Bore
38 and is approximately 14,500 feet in length. (D&O II, at 14, lines 19-20)
39

40 160. Water collected between North Portal and Adit 8 continues into the leeward ditch
41 system even if the adjustment gate at North Portal is shut down so that no water from the
42 windward tunnels is flowing leeward. The amount of this water is calculated by
43 subtracting the measured North Portal flow from the Adit 8 reading. This amount of
44 water is greatly affected by leeward Waiawa rainfall, although the increased flow seems
45 to show up several months after the rainy periods. For example, in November of 2003,
46 the amount of water developed in the Main Bore was about 3.8 mgd, but because of

1 heavy rainfall in the Waiawa area from December to March 2004, the amount of water
2 developed in June 2004 reached a record of 7.55 mgd. (Lee, Written Direct Testimony,
3 4/5/05, pp. 13-14)

4
5 161. ADC has no control of the weather, which determines both the amount of water
6 flowing from Adit 8 and the amount of leeward water usage. (Lee, Written Direct
7 Testimony, 4/5/05, p. 15)

8
9 162. Given the structural design of the Ditch, ADC cannot stop the flow of Main Bore-
10 developed water from Adit 8 that results in overflow at Reservoir 155 at the end of the
11 system during rainy, low-usage periods. (Lee, Written Direct Testimony, 4/5/05, p. 15)
12 [ADC/DOA, FOF 56](modified)

13
14 163. Normally, rainfall in the Kunia area affects overflow at Reservoir 155 more than
15 other factors, as demonstrated in Exhibit L-1114 for the months of October 2002,
16 December 2003, and January 2004. When the soil is sufficiently moistened by rain,
17 farmers tend not to irrigate and Reservoir 155 overflows. (Lee, Written Direct Testimony,
18 4/5/05, p. 14; Exhibit L-1114) [ADC/DOA, FOF 53]

19
20 164. For many months during FY 2004, because of the unusually wet weather in
21 Kunia, the wooden adjustment gate near Gate 31 remained closed and no windward water
22 was diverted to the leeward side. In fact, in calendar year 2004, windward water was sent
23 over for only two days, in July 2004, and the adjustment gate near Gate 31 remained
24 closed for the rest of 2004. From December 2003 to June 2004, water from Adit 8 simply
25 flowed, untouched, into Reservoir 155 and spilled into the ravines at Kunia. (Lee, Written
26 Direct Testimony, 4/5/05, pp. 14-15; Exhibit L-1114) [ADC/DOA, FOF 54]

27
28 165. Compounding the rainy weather in Kunia in FY04 was the unusually high water
29 development between North Portal and Adit 8. ADC saw more frequent and higher-
30 volume overflows at Reservoir 155 in FY 2004 than in the previous several years. As
31 shown in Exhibit L-1109, the average overflow reading at Reservoir 155 for FY 2004,
32 recorded at 1.75 mgd, is more than 7 times the amount recorded in FY 2003. With these
33 kinds of weather conditions, ADC believes it is not possible to comply with the 2.0 mgd
34 cap for system losses that was allowed by ADC's permit. (Lee, Written Direct
35 Testimony, 4/5/05, p. 15; Exhs. L-1109, L-1114) [ADC/DOA, FOF 55](modified)

36
37 166. However, while system losses are calculated by measuring the amount of water at
38 Adit 8 and subtracting the reported amount of metered usage, ADC has been reporting
39 system losses as including all overflow from Reservoir 155, which may include runoff
40 from rain that is not part of the water measured at Adit 8. (Exhs. L-1108, L-1109)

41
42 167. ADC has done studies and taken remedial measures in three general areas: 1)
43 quantifiable flows, which are flows where the losses can be seen and at least
44 approximately measured; 2) field observation, which concerns losses that are known to
45 be happening but can't be seen or quantified; and 3) seepage, or the slow loss of water
46 through unlined surfaces into the soil. (Lee, Written Direct Testimony, 4/5/05, p. 2)

1
2 168. As to quantifiable flows, it was determined that replacement of the deteriorated
3 and leaking wooden siphons would eliminate the largest contributing factor to total
4 system losses. In November 2001, the \$1.2 million siphon replacement project that was
5 still ongoing during the 2001 hearing was completed. Average total system losses went
6 down from a peak of 5.5 mgd in FY 2000 to as low as 2.01 mgd in FY 2003. Although it
7 is difficult to quantify exactly how much of the total losses were attributed to the leaks
8 from the three old wooden siphons, it is estimated to be between 2 to 3 mgd. (Lee,
9 Written Direct Testimony, 4/5/05, p. 3)

10
11 169. Another quantifiable flow is the overflow measurement at Reservoir 155 at the
12 end of the system, which is computed by having the overflow go through a 24-inch pipe
13 connected to a flow meter. During heavy rains, the volume of overflow exceeds the
14 capacity of the pipe, so ADC is replacing the pipe with Parshall flumes and data loggers
15 to more accurately measure overflows during heavy rains. (Lee, Written Direct
16 Testimony, 4/5/05, pp. 3-4, modified)

17
18 170. As a mitigation measure to prevent overflow at Reservoir 155, after the 2001
19 hearing, ADC installed an automatic gate opening and closing device at the wooden
20 adjustment gate near Gate 31 at the North Portal to allow for quicker adjustments of
21 flows of windward water to the leeward side. When it starts to rain on the leeward side
22 and windward flows are not needed, ADC shuts off the windward flows to the leeward
23 side simply by sending a signal to the adjustment gate near Gate 31. (Lee, Written Direct
24 Testimony, 4/5/05, pp. 4, 14) [ADC/DOA, FOF 12](modified)

25
26 171. ADC daily reviews whether to adjust the adjustment gate near Gate 31, reviewing
27 the projected needs of the day and taking into consideration irrigation schedules and the
28 weather. (2001 Lee, Written Direct Testimony, pp. 12, 16-17) [ADC/DOA, FOF 13]

29
30 172. To reduce the occurrence of overflow, ADC installed a pump at Reservoir 155 to
31 pump water back into the ditch, making the pumped water available for users at the end
32 of the ditch, and began to use Reservoir 225, further up the ditch, to provide capacity for
33 flows that ADC otherwise anticipated would go to Reservoir 155. (Lee, Written Direct
34 Testimony, 4/5/05, pp. 4-5) [ADC/DOA, FOF 14]

35
36 173. Reservoirs 155 and 225 are 3.13 acres and 2.54 acres, respectively, and have
37 usable storage capacities of about 10 million gallons each. (Matsuo, Written Direct
38 Testimony, 4/5/05, p. 6; Hatton, Written Direct Testimony, Exhibit A-1, at 6, lines 1-3).

39
40 174. ADC's efforts to reduce overflow at Reservoir 155 succeeded in reducing
41 overflow from 0.46 mgd in FY 2001 to 0.24 mgd in FY 2003. (Exhs. L-1108, L-1109)
42 [ADC/DOA, FOF 15](modified)

43
44 175. The second category of remediation, losses that can't actually be seen or
45 measured with reliability (field observation), includes losses due to cracks in the
46 concrete-lined sections of the ditch (leakage), overflow due to silt and mud build-up, and

1 malfunctioning user meters (losses are calculated as the flow at Adit 8 minus metered
2 usage). (Lee, Written Direct Testimony, 4/5/05, pp. 5, 16)

3
4 176. Leakage is different from seepage in an irrigation system like the Ditch. Seepage
5 occurs largely from the percolation of water through the wetted perimeter of the water
6 containment facility, such as an unlined ditch, tunnel, or reservoir, and seepage is
7 governed by the porous makeup of that containment facility and the underlying earthen
8 material, i.e., soil (dirt, sand, lava), grass lining, grouted stone, etc. Leakage, on the other
9 hand, occurs usually from some fault caused either by a failure, normal wear and tear, or
10 physical disturbance such as hairline cracks, shrinkage/washout at joints, tree root
11 intrusions, or aquatic plant growth, that allows water to flow out of its container, whether
12 that container is a ditch, tunnel, siphon, sump, or reservoir, etc. Seepage is more difficult
13 to detect and to eliminate than leakage. (Matsuo, Written Direct Testimony, 4/5/05, pp.
14 2-3) [ADC/DOA, FOF 23](modified)

15
16 177. At the same time as the old wooden siphons were being replaced, ADC started to
17 work on measuring flows at various sections of the ditch to try to pinpoint losses, using
18 standard stream-gauging techniques. ADC concluded that the standard stream gauging
19 method does not work well in the Waiāhole Ditch system due to interruptions by water-
20 user draws and accuracy limitations of the current meter, especially given the small
21 seepage losses it was trying to detect. As a result, ADC relies mainly on visual
22 inspections of the ditch's concrete liners, which have deteriorated over the years. (Lee,
23 Written Direct Testimony, 4/5/05, p. 5)

24
25 178. ADC addresses leakage through ongoing visual inspections and makes repairs in
26 concrete ditch liners as defects are discovered. It noticed that certain deteriorated
27 concrete-lined sections, especially below the water lines, had cracks and were sources of
28 leakage losses. To reduce this category of losses, ADC focused its maintenance efforts on
29 patching and repairing deteriorated concrete linings, spending about 300 to 500 man
30 hours annually on this type of repair work from 2000 to 2003. (Lee, Written Direct
31 Testimony, 4/5/05, pp. 5-7) [ADC/DOA, FOF 24](modified)

32
33 179. A second item in the category of field observation is silt and mud deposits in
34 certain areas of the ditch bottom, which make the water level higher than usual and can
35 cause water to spill out of the ditch when it is carrying more water than usual, as during
36 rainy weather. At those areas, ADC has removed the silt and mud deposits, resulting in
37 lowering the water level, and has not seen overflow spillage in those particular areas
38 since the work was finished in late 2003. ADC is confident that most of the excess water
39 on rainy days now overflows at the end of the system out of Reservoir 155 and is being
40 accounted for. (Lee, Written Direct Testimony, 4/5/05, p. 6)

41
42 180. The third item in the category of field observation is user meters, which can
43 occasionally malfunction for various reasons, causing them to register lower readings
44 than actual usage. Water used but not accounted for by the meters is counted as part of
45 ADC's system losses. To address this problem, ADC started an annual meter calibration
46 program to randomly check user meters' accuracy. Ten user meters, about 25 percent, are

1 checked annually. ADC informs meter owners when it finds irregularities, and the meters
2 are repaired so that water actually used is not recorded as system losses. (Lee, Written
3 Direct Testimony, 4/5/05, p. 6)
4

5 181. The third category of remediation is losses due to seepage. Since the
6 Commission's Decision in D&O II, ADC has conducted seepage studies involving
7 unlined portions of the Ditch, including the reservoirs. (Lee, Written Direct Testimony,
8 4/5/05, pp. 5-7) [ADC/DOA, FOF 25](modified)
9

10 182. Repairs to the Waiāhole Ditch, such as lining or enclosing in pipes the still
11 unlined portions of the ditch including the supply ditches to Garst Seeds, would
12 significantly reduce system loss due to seepage. (Matsuo, Written Direct Testimony,
13 4/5/05, pp. 3-4) [Windward Parties, FOF 93](modified)
14

15 183. Seepage can be assumed to occur at the same rate in all the unlined portions of the
16 Ditch. (Matsuo, Written Direct Testimony, 4/5/05, p. 4) [ADC/DOA, FOF 27](modified)
17

18 184. ADC identified eleven unlined portions of the ditch that were causing seepage
19 losses. (Exhibit L-1112)
20

21 185. Nine of the portions comprised 28% of the total unlined area, ranging from 1.0%
22 to 5.2%, while reservoirs 155 (38.8%) and 225 (33.4%) accounted for about 72% of the
23 unlined surface area in the leeward part of the Ditch where seepage occurs, so the
24 reservoirs were targeted to be lined first. (Lee, Written Direct Testimony, p. 8; Exhs. L-
25 1111, L-1112) [ADC/DOA, FOF 28](modified)
26

27 186. The most effective method of reducing system loss in the unlined portions of the
28 ditch system would be lining the reservoirs with high-density polyethylene and replacing
29 unlined portions of the waterways with closed conduits; i.e. pipes. Lining the reservoirs
30 would be the most effective, because it would seal off the entire wetted area with an
31 impermeable barrier that would eliminate seepage. Enclosing the 1000 or so feet of
32 unlined open ditch in pipes would eliminate both seepage and evaporation from that
33 portion of the ditch. (Matsuo, Written Direct Testimony, 4/5/05, p. 3)
34

35 187. The Army Corps of Engineers 2002 report to ADC recommended that ADC line
36 Reservoirs 155 and 225 and replace the unlined portions of the ditch system with pipes.
37 The unlined ditch portion is about 1000 feet in length and is a supply ditch to Garst
38 Seed's reservoir. (Matsuo, Written Direct Testimony, 4/5/05, pp. 3-4) [Windward Parties,
39 FOF 101](modified)
40

41 188. In contrast with lining Reservoirs 155 and 225, lining or enclosing in pipe the
42 1000 or so feet of unlined ditch near the end of the ditch will make only a small dent in
43 seepage reduction, as it is a very small portion of the ditch and only 4.0% of the total
44 unlined area. (Matsuo, Written Direct Testimony, 4/5/05, pp. 3-4; Lee, Transcript, 4/5/05,
45 at 71, lines 4-9; Exhs. L-1111, L-1112) [ADC/DOA, FOF 29](modified)
46

1 189. To address seepage in Reservoirs 155 and 225, the Hawai`i Department of
2 Agriculture (HDOA), as local sponsor, initiated a project that the Army Corps of
3 Engineers (Corps) is undertaking that will line both reservoirs with high-density
4 polyethylene, a durable, impermeable material that prevents seepage. (Lee, Written
5 Direct Testimony, 4/5/05, p. 9; Matsuo, Written Direct Testimony, 4/5/05, pp. 3, 5)
6 [ADC/DOA, FOF 30]

7
8 190. Through HDOA, state matching funds have been reserved for the Corps'
9 reservoir-lining project. (Lee, Written Direct Testimony, 4/5/05, pp. 9-11; Lee,
10 Transcript, 4/5/05, at 65, lines 15-18) [ADC/DOA, FOF 31](modified)

11
12 191. The total project cost for lining Reservoirs 155 and 225 if ADC were to fund this
13 project by itself is estimated at between \$3.2 to \$4.9 million. (Matsuo, Written Direct
14 Testimony, 4/5/05, pp. 5-6) [ADC/DOA, FOF 32](modified)

15
16 192. The Corps completed a preliminary study for the reservoir-lining project in 2002,
17 has awarded a design contract for this work, and the project should be going out to bid
18 when the design is completed and approved. A Corps project that reaches the design
19 stage like the reservoir-lining project will go forward as long as the State provides its
20 matching cost share. Those state matching funds have been reserved for this project.
21 (Lee, Written Direct Testimony, 4/5/05, p. 9; Matsuo, Written Direct Testimony, 4/5/05,
22 pp. 7-8) [ADC/DOA, FOF 33](modified)

23
24 193. Assuming that the design contract awarded by the Corps is completed by the
25 middle of 2005, as projected, and assuming the usual timelines on a joint federal/state
26 construction project of this type, it is estimated that the reservoir-lining project could be
27 completed sometime between December 2007 and June 2008 (Matsuo, Transcript,
28 4/5/05, at 83, lines 1-18; and 85, lines 1-10) [ADC/DOA, FOF 34]

29
30 194. When both Reservoirs 155 and 225 are lined, it is expected that unmetered losses
31 will decrease by 0.398 mgd to 0.759 mgd. (Lee, Written Direct Testimony, 4/5/05, p. 9)
32 [ADC/DOA, FOF 35]

33
34 195. ADC is continuing to seek funding to address system losses due to seepage from
35 other unlined portions of the ditch and has approached a federal agency for project
36 funding that requires 50% state matching funds. (Lee, Written Direct Testimony, p. 10)
37 [ADC/DOA, FOF 37]

38
39 196. In August 2004, ADC submitted a pre-proposal to the U.S. Department of
40 Commerce, Economic Development Agency, for a \$300,000 project for the lining,
41 piping, or repairing of other unlined portions of the ditch, which requires 50% state
42 matching funds. ADC is still awaiting word on its application. (Lee, Written Direct
43 Testimony, 4/5/05, p. 10)

44
45 197. As a state entity, ADC does not have sole control over its finances such that ADC
46 can decide how much of its resources should be invested in mitigating water loss. To

1 fund any substantial mitigation measures, ADC or HDOA must go to the state legislature
2 for funding and compete with many other state purposes that the legislature views as
3 important. The legislature can and has “taken” ADC’s revolving funds for general fund
4 purposes when it was deemed necessary. (Lee, Written Direct Testimony, p. 11)
5 [ADC/DOA, FOF 38](modified)
6

7 198. ADC does not have the option to raise water rates for leeward users in order to
8 fund mitigation measures. These water rates were established by a 20-year contract with
9 the leeward users’ coop that was signed in 1999 when ADC purchased the Ditch. The
10 contract provides that rate increases are based on the producer price index. (Lee,
11 Transcript, 4/5/05, at 67, line 24, to 68, line 14) [ADC/DOA, FOF 40](modified)
12

13 199. As previously described, at the 2001 hearing in this case, ADC estimated
14 unmetered losses to be at about 1.50 mgd, thought to be mostly seepage and leakage.
15 ADC now believes that this estimate was too low, probably because ADC’s projections
16 were overly optimistic as to the amount of loss reduction that would result from replacing
17 the deteriorated wooden siphons on the system. Unmetered losses stabilized between 1.69
18 – 1.75 mgd from FY 2002 to FY 2004, as shown in Exhibit L-1109. This 1.69 – 1.75 mgd
19 is probably the baseline unmetered loss for the system before major additional mitigative
20 steps, including lining Reservoirs 155 and 225, are taken. (Lee, Written Direct
21 Testimony, at 8, lines 5-13) [ADC/DOA, FOF 26](modified)
22
23

24 **3. Remaining criteria for a permit under HRS Section 174C-49(a)** 25

26 200. In D&O I, the Commission previously found that it is in the public interest to
27 direct water to the area where it is needed. (Exh. L-500, filed 4/3/96, Nakatani, Written
28 Direct Testimony, at 4, lines 6-7) [ADC/DOA, FOF 63](modified)
29

30 201. In D&O I, the Commission previously found that the primary concern of the State
31 is the maintenance and the health, safety, and welfare of the people. The priority of State
32 policy with respect to use of water has always been domestic consumption, followed by
33 the creation of jobs and economic development through agriculture and the preservation
34 of the agricultural land base. (D&O I, FOF 805; Pai, Transcript, 11/28/95, at 19, lines 3-
35 8) [ADC/DOA, FOF 60](modified)
36

37 202. In D&O I, the Commission previously found that the use of Waiāhole Ditch water
38 for diversified agriculture on lands designated as priority agricultural lands is reasonable
39 and consistent with state land use plans and policies. (D&O I, FOF 810; Exhibit L-500,
40 filed 4/3/96, Nakatani, Written Direct Testimony, Exhibit L-500, p. 708; Schwind,
41 Transcript, 12/7/95, p. 129; Schwind, Written Direct Testimony, 9/18/95, at 13, lines 4-9)
42 [ADC/DOA, FOF 64](modified)
43

44 203. In its 1997 Decision, D&O I, the Commission found all the water use permit
45 applications to be consistent with the Hawai‘i State Plan and land use classifications, as

1 well as with the County General Plan. (D&O I, FOF, p. 123, paragraph I; FOF 827)
2 [ADC/DOA, FOF 65](modified)

3
4 204. Support of agriculture in Central Oahu is part of the City and County of
5 Honolulu’s General and Development Plans. (D&O I, FOF 836) [ADC/DOA, FOF 66]
6 (modified)

7
8 205. In its 1997 Decision, the Commission found that the leeward applicants’ existing
9 and proposed agricultural operations are consistent with land use designations for these
10 parcels of land in the City’s `Ewa and Central Oahu Development Plans. (D&O I, FOF
11 838; Soon, Transcript, 11/14/95, at 72, lines 10-25; 73, lines 1-23) [ADC/DOA, FOF 67]
12

13 206. The Department of Hawaiian Homelands applied for a water reservation for 0.410
14 mgd, but the Commission did not take up any reservation requests in this proceeding and
15 stated its intent to do so after the conclusion of this contested case. (D&O 1, FOF 602;
16 D&O, p. 13) [ADC/DOA, FOF 68]
17

18 207. Moreover, the Hawaiian Homes Commission has a “first call” on water under
19 HHCA Section 221, and all water use permits are subject to the requirements of the
20 Hawaiian Homes Commission Act (D&O I, Conclusions of Law, p. 27; “Standard Water
21 Use Permit Conditions,” #6)

22 23 24 **IV. Conclusions of Law**

25 26 **A. Designation of an IIFS for Certain Windward Streams**

27
28 The Court in *Waiāhole II* concluded: “If, on remand, the Water Commission is
29 able to support its conclusion with findings quantifying the windward streams’ flows
30 during the 1960s, then the 1960s testimonials would be sufficient to set the IIFS at the
31 levels established in the D&O II, inasmuch as: (1) more water would be added to the
32 streams than that which adequately supported the streams’ ecosystem in the 1960s *see*
33 D&O II at 104; (2) the increase in stream flow over the 1960s stream flow would be
34 beneficial in light of the Water Commission’s finding that increasing a stream’s flow
35 results in stream habitat improvement, *see* D&O II at 104; and (3) appurtenant rights,
36 riparian uses, and existing uses would be accounted for by further increases in stream
37 flow, *see* D&O II at 112. The foregoing would then adequately establish that instream
38 values would be protected to the extent practicable for interim purposes (*footnote*
39 *omitted*).” (105 Haw. at 12)

40
41 1. Stream flows are expressed in base (ground-water contribution) and average (the
42 addition of rain and runoff to base flow) flows. The changes to the affected windward
43 streams from construction of the Waiāhole Ditch are determined by examining the base
44 flows of the streams, because construction of the Waiāhole Ditch affected the flows of

1 certain windward streams by decreasing the ground-water contribution to stream flows.
2 [FOF 27-28, 30, 31, 33, 35]

3
4 2. The post-Ditch base flows of the affected windward streams are as follows: 1)
5 Waiāhole Stream: 3.9 mgd at its confluence with Waianu Stream; 2) Waianu Stream: 0.5
6 mgd at its confluence with Waiāhole Stream; 3) Waikāne Stream: 1.4 mgd at altitude of
7 75 feet; and 4) Kahana Stream: 11.2 mgd at altitude of 15 feet. [FOF 37]

8
9 3. These were the base flows in the 1960s as well as when the IIFS for windward
10 O`ahu streams were established in May 1992 as “that amount of water flowing in each
11 stream on the effective date of this standard.” (HAR section 13-169-49.1) Stability in
12 ditch flows started in 1938. Prior to that, there were much higher flows during the time
13 when the stored waters in the dikes pierced by the tunnel system were being depleted.
14 [FOF 17] Because the tunnel system and the dike-impounded reservoirs have been in
15 steady-state conditions since then (except for possible exceptions discussed later), there is
16 no further depletion of ground-water storage in the aquifers. [FOF 18]

17
18 4. In D&O I, the IIFS for Waiāhole Stream was increased by 4 mgd to 7.9 mgd and
19 by 2 mgd to 2.5 mgd for Waianu Stream in December 1997. (D&O I, at page 3 of the
20 Decision and Order) In December 2001, D&O II: 1) amended the increase in the IIFS for
21 Waiāhole Stream from 4.0 mgd to 4.8 mgd for a new IIFS of 8.7 mgd; 2) amended the
22 increase in the IIFS for Waianu Stream from 2 mgd to 3 mgd, for a new IIFS of 3.5 mgd;
23 3) increased the IIFS for Waikāne Stream by 2.1 mgd to 3.5 mgd; and 4) kept the IIFS for
24 Kahana Stream at 11.2 mgd. (D&O II, at 112) In addition, for Waiāhole Stream, the 8.7
25 mgd could be reduced to 6.6 mgd no more than five (5) non-consecutive days a month;
26 and for Waianu Stream, the 3.5 mgd could be reduced to 3.0 mgd no more than five (5)
27 non-consecutive days a month;

28
29 Thus, the base flows of the streams in the 1960s compared to the increases in
30 flows under the amended IIFS in D&O II are as follows:

31

	<u>1960s</u>	<u>D&O II</u>	<u>Percent Increase</u>
32 Waiāhole Stream:	3.9 mgd	8.7 mgd	124%
33 Waianu Stream:	0.5 mgd	3.5 mgd	600%
34 Waikāne Stream:	1.4 mgd	3.5 mgd	150%
35 Kahana Stream:	11.2 mgd	11.2 mgd	no change

36
37

38 For the variable flows, the 6.6 mgd for Waiāhole Stream is still 2.7 mgd (69%)
39 greater than its flow in the 1960s, and the 3.0 mgd for Waianu Stream is still 2.5 mgd
40 (500%) greater than its flow in the 1960s.

41
42 5. Three events have taken place since the mid-1960s that might have impacted base
43 flows, the first of which could have decreased stream flow and the latter two, increased
44 stream flows: 1) extension of the Uwau Tunnel in 1964 by about 270 feet, about 177 feet
45 of which were past the Ko`olau crest into the leeward side [FOF 13]; 2) cessation of
46 pumping in 1982 of 1 to 1.5 mgd of water from Waiāhole Stream at 450 feet elevation

1 into the Ditch [FOF 14]; and 3) installation of a bulkhead in 1992 at the Kahana Tunnel
2 [FOF 15]. However, none of these events would have significantly affected the
3 difference between the 1960s flows and the amended IIFS under D&O II, as explained
4 below.

5
6 6. Approximately 4.8 mgd is developed in the 1964 Uwau Tunnel extension [FOF
7 21], which is 270 feet long, 177 feet of which are into the leeward side of the mountain's
8 crest. [FOF 13] However, extension of the Uwau Tunnel only developed a net of 2.77
9 mgd. Before the extension, the main part of the Uwau Tunnel on the windward side of the
10 Ko`olau crest developed 10.73 mgd. After the extension, the main part developed 8.7
11 mgd and the extension developed 4.8 mgd. Thus, some of the water leeward of the
12 original Uwau Tunnel was already finding its way into the main Uwau development
13 tunnel before the extension was constructed. [FOF 21-22] Therefore, nearly half of the
14 stored water that flowed windward from the dikes that were pierced by the Uwau Tunnel
15 extension were already flowing windward before the extension was built, and at least
16 some, if not all, of the water further developed by the extension would have flowed
17 leeward before the 1964 extension disrupted the dike systems and diverted this water to
18 the windward side. These findings are compatible with expert opinion that the ground-
19 water divide lies somewhere to leeward along most of the crest; i.e., somewhere within
20 the 177 feet of the Uwau Tunnel extension that is leeward of the crest. [FOF 13, 27]
21 Thus, under natural conditions, little, if any, of the 2.77 mgd further extracted from the
22 Uwau Tunnel extension into the leeward side would have contributed to the base flows of
23 Waianu and Waiāhole Streams (Uwau Stream is a tributary of Waianu Stream, which is
24 in turn a tributary of Waiāhole Stream).

25
26 7. In D&O II, the Commission referred to the net 2.77 mgd developed by the
27 leeward extension of the Uwau Tunnel: "A minimalist approach to restoring stream flows
28 could look to the period of the 1960s and see what stream-flow-related changes occurred
29 during that time that could have contributed to the decline in stream vitality. One such
30 event did occur — extension of the Uwau Tunnel in 1964, which could have reduced
31 flow in Waianu and Waiāhole Streams by 2.8 mgd (emphases added)." (D&O II, at 103,
32 lines 6-10) That analysis was not a conclusion by the Commission that the ground-water
33 contribution to Waiāhole and Waianu Streams had been depleted by 2.8 mgd. In that
34 analysis, the Commission only concluded that there was one event that might have been
35 related to the testimony of the loss of stream vitality that was present until the 1960s and
36 identified the Uwau Tunnel extension as that event. But the Commission's analysis then
37 went further: "But in 1982, pumping from Waiāhole Stream up into the tunnel system of
38 1 to 1.5 mgd (per day) was discontinued. Therefore, under the minimalist approach,
39 either 2.8 mgd would be added to Waiāhole and Waianu Streams, or 1.3 to 1.8 mgd to
40 Waianu Stream (because 1 to 1.5 mgd had been 'returned' to Waiāhole Stream by the
41 cessation of pumping)." (D&O II, at 103, lines 10-14) Thus, the analysis in D&O II is not
42 incompatible with the Commission's conclusion here that it was more likely that the net
43 development of 2.77 mgd in the leeward extension of the Uwau Tunnel was flowing
44 leeward before the dikes were breached and that water was later diverted into the main
45 Uwau Tunnel.

1 8. An issue raised by the Court related to COL 6-7, *supra*, is a footnote in *Waiāhole*
2 *II*: “Although the Water Commission refers to a 10 mgd flow measurement taken from
3 Waiāhole stream during 1965 while discussing the contradiction in testimony regarding
4 the extension of the Uwau tunnel, it is unclear whether the measurement itself was a
5 finding of fact by the Water Commission. D&O II at 34. If so, this measurement does not
6 support the Water Commission’s conclusion that the 8.7 mgd allocated to Waiāhole
7 stream is more than in the 1960s. In any event, the Water Commission ‘must make its
8 findings reasonably clear’ because this court ‘should not be left to guess, with respect to
9 any material question of fact...’ *Waiāhole I*, 94 Hawai‘i at 157-58, 9 P3d. at 469-70.”
10 (105 Haw. at 10, n.7)

11
12 The Court was referring to the following discussion in D&O II between two
13 witnesses on whether or not any impact of the Uwau Tunnel extension on Waiāhole
14 Stream’s flow would have been visible: “Hatton, to the contrary, was of the opinion that
15 it would have been hard to see the impact, if any, of the extension of the Uwau tunnel,
16 because of the variability of rainfall. In 1965, after the tunnel was extended, the rainfall at
17 the Waiāhole rain gauging station at elevation 750 feet was 200 inches, almost double the
18 rainfall of 1961, and the stream gage in Waiāhole Stream at elevation 250 feet registered
19 an average of 10 mgd in that year (1965).” [D&O II, at 34, lines 38-43]

20
21 Hatton was referring to the *average* flow (base flow plus rain and runoff) for only
22 the year 1965, which was a particularly rainy year, and his point was that any impact
23 would have been hard to see, including the stopped pumpage from Waiāhole Stream in
24 1982, given the natural variability in flow due to rainfall. (D&O II, at 34, lines 43-46)
25 The long-term average flow for Waiāhole Stream is 6.9 mgd. [FOF 37]) Average flows
26 will vary with rain and runoff, while base flows are the ground-water contribution to
27 stream flows and the basis for establishing the IIFS. The base flow was 3.9 mgd during
28 1965 and was increased by 4.8 mgd under D&O II to 8.7 mgd.

29
30 9. Suppose we do assume that the combined base flows of Waiāhole and Waianu
31 Streams decreased by a maximum of 2.77 mgd because of the Uwau Tunnel extension.¹⁸
32 In relation to the base flows in the 1960s and at the time of the amended IIFS in D&O II,
33 the combined base flows of Waiāhole and Waianu Streams could have decreased by a
34 maximum of 2.77 mgd. In the 1960s, the combined base flows of Waiāhole and Waianu
35 Streams were 4.4 mgd. [COL 4, *supra*] Assuming that their combined base flows
36 decreased by all of the 2.77 mgd from the 1964 Uwau Tunnel extension, their combined
37 base flows at the time of D&O II would have been 1.63 mgd. The amended IIFS of these
38 two streams added a total of 7.8 mgd to their base flows. [COL 4, *supra*] Thus, under the
39 amended IIFS of D&O II, their combined base flows would be 9.43 mgd (1.63 mgd + 7.8
40 mgd), still more than twice their combined base flows of 4.4 mgd in the 1960s.

41
42 10. In 1982, the 1 to 1.5 mgd pumped from Waiāhole Stream at 450 feet altitude
43 (above its confluence with Waianu Stream) was discontinued. [FOF 14] However, the

¹⁸ Both Waiāhole Stream and its tributary, Waianu Stream, lie down-gradient from Uwau Tunnel, so any impact of Uwau Tunnel could be on both streams, and there is no way to quantify the separate impacts. *See*, D&O II at 18, lines 40-43; 34, line 30 to 35, line 4; 103, lines 8-10.

1 record does not show when pumping was initiated or whether pumping was taking place
2 in the 1960s. Therefore, relative to the time when D&O II added to the base flow of
3 Waiāhole Stream, its base flow in the latter half of the 1960s might have been 1 to 1.5
4 mgd lower, or it might have been the same. D&O II amended the IIFS of Waiāhole
5 Stream by adding 4.8 mgd to the existing base flow. Relative to the flow of Waiāhole
6 Stream in the 1960s, the base flow under the amended IIFS of D&O II is 4.8 mgd greater.
7 [COL 4, *supra*] If 1 to 1.5 mgd were being extracted from the stream prior to and during
8 the 1960s and ceased in 1982, then the amended IIFS under D&O II would be 5.8 to 6.3
9 mgd greater than the base flow in the 1960s.

10
11 11. Installation of the bulkhead in Kahana Tunnel in 1992 reduced Ditch flows from
12 the tunnel by approximately 1.5 mgd by 1993. [FOF 24] Kahana Stream, down-gradient
13 from Kahana Tunnel, lies only partly in the dike complex and mostly in the marginal dike
14 zone, and its flow is about three times the flow of the Kahana Tunnel, in contrast to
15 Waiāhole, Waianu and Waikāne Streams, which are down-gradient from Uwau, Waikāne
16 #1 and Waikāne #2 Tunnels and which lie entirely in the dike complex. [FOF 30] Thus,
17 Kahana Stream was affected relatively less than the other three streams by diversion of
18 ground water by the Ditch, and this is reflected by the amount of water developed in the
19 tunnels: 2.6 mgd by Kahana Tunnel before it was bulk-headed, 5.3 mgd by the two
20 Waikāne Tunnels, and 13.5 mgd by the Uwau Tunnel and its extension. [FOF 19-21]
21 Therefore, while some of the 1.5 mgd reduction in Ditch flows from bulk-heading
22 Kahana Tunnel may discharge into Kahana Stream, it is likely less than 1.5 mgd.¹⁹ Any
23 impact on Kahana Stream from the bulkheading of Kahana Tunnel would result in an
24 increase in its base flow, and relative to its base flow in the 1960s, its base flow at the
25 time of D&O II would be up to 1.5 mgd greater.²⁰

26
27 12. The Commission concludes that none of the three events analyzed in COL 5-11,
28 *supra*, had a significant impact on the 1960s' base flows of the four windward streams.

29
30 13. Therefore, under D&O II: a) the amended IIFS added more water than that which
31 adequately supported the streams' ecosystem in the 1960s; b) the increase in stream flow
32 over the 1960s' stream flows would be beneficial in light of the Commission's finding
33 that increasing a stream's flow results in stream habitat improvement; and c) appurtenant
34 rights, riparian uses and existing uses would be accounted for by further increases in
35 stream flow, thereby adequately establishing that instream values would be protected to
36 the extent practicable for interim purposes. (105 Haw. at 12)

37

¹⁹ The 1.5 mgd decrease from the 1992 bulkheading of Kahana Tunnel dates to 1993. The purpose of the bulkheading was to store water in the tunnel, so in 1993, it was likely that storage was not complete and equilibrium had not been reached between recharge and discharge.

²⁰ D&O II considered but made no changes in the IIFS for Kahana Stream, as its base flow is only moderately affected by the Ditch and was estimated at 78% of historical levels. Moreover, no evidence was submitted in support of amending its IIFS. On the first remand, the Court had only ordered that an IIFS be addressed for Waikāne Stream as well as for Waiāhole and Waianu Streams. All of the testimony on stream conditions in the 1960s involved Waiāhole, Waianu and Waikāne Streams, as well as on similar conditions in Hakipu'u and Punalu'u Streams, which are not affected by the Waiāhole Ditch system. [D&O II, at 29-34]

1
2 **B. The 2.2 mgd of Unpermitted Water**
3

4 In *Waiāhole II*, the Court first restated its conclusion in *Waiāhole I*: “(T)he
5 Commission should incorporate any allowances for scientific uncertainty into its initial
6 determination of the minimum standard. Any flows in excess of this standard shall
7 remain in the stream until permitted and actually needed for offstream use, in keeping
8 with the policy against waste and in recognition that the standard merely states an
9 absolute minimum required under any circumstances. These unallocated flows, however,
10 will not constitute a distinct category or quantity, but will fluctuate according to
11 variations in supply and demand.” (105 Haw. at 13)
12

13 However, the court then went on to state: “On remand, it appears that the 2.2 mgd
14 were not allocated. The Windward Parties argue that by failing to include the unpermitted
15 2.2 mgd in the IIFS, the Water Commission fails to protect instream values to the extent
16 practicable. Although nothing in the record indicates that the Water Commission created
17 a separate and distinct category by not including 2.2 mgd of unpermitted water in the
18 IIFS, the Water Commission, nevertheless, failed to make any findings regarding the 2.2
19 mgd, leaving this court without a means to decide the issue.” (105 Haw. at 13)
20

21 14. Under the amended IIFS of D&O II, 9.9 mgd was added to Waiāhole, Waianu and
22 Waikāne Streams [FOF 46], leaving 17.1 mgd²¹ for offstream uses. [FOF 47] 10.01 mgd
23 were issued for Leeward O`ahu agricultural water use permits [FOF 48], and 3.29 mgd
24 were issued for Leeward O`ahu water use permits, other uses. [FOF 49] Therefore, 3.80
25 mgd remained unpermitted and available for future water use permits. [FOF 50]
26

27 15. The “unpermitted 2.22 mgd” was part of the 3.80 mgd and was not created as a
28 separate and distinct category by the Commission. [FOF 54] In Figure 2 of D&O II, the
29 allocation of the 27 mgd in Ditch flows was summarized as consisting of the increase in
30 base flows to Waiāhole, Waianu and Waikāne Streams, permitted agricultural uses,
31 permitted other uses, proposed agricultural reserve, and unpermitted ground water. [D&O
32 II, at 152] However, Figure 2 did not explicitly state that the latter two categories were
33 subcategories of the 3.80 mgd that remained unpermitted and available for future water
34 use permits after the IIFS were amended and water use permits were issued for both
35 agricultural and other offstream uses.
36

37 16. In D&O I, the Commission had recognized “agricultural uses” totaling 12.22
38 mgd, based on past agricultural usage of Waiāhole Ditch system water. [FOF 51]
39 Agricultural water use permits for 10.64 mgd were issued, leaving 1.58 mgd of the 12.22
40 mgd for a proposed “agricultural reserve” that was to be established under future formal
41 rule making procedures. [FOF 52] In D&O I, the unpermitted water equaled 6.97 mgd:
42 1.58 mgd for the proposed agricultural reserve and a remainder of 5.39 mgd. [FOF 53] In
43 D&O II, the amounts of the proposed agricultural reserve and the remaining unpermitted
44 water were incorrectly stated. D&O II issued 10.01 mgd for Leeward O`ahu agricultural

²¹ 3.7 mgd of the 17.1 mgd comes from the leeward portion, between the North Portal crest gauge station and the gauging station at the leeward end of the main bore at Adit 8. [FOF 26]

1 water use permits, so the proposed agricultural reserve should have been 2.21 mgd (12.22
2 mgd minus 10.01 mgd) and not 1.58 mgd. [FOF 55] Thus, the corrected amounts that
3 comprised the 3.80 mgd in unpermitted water in D&O II are: 1) 2.21 (and not 1.58) mgd
4 for a proposed agricultural reserve; and 2) a remainder of 1.59 (and not 2.22) mgd for
5 other future offshore uses. [FOF 56]

6
7 17. In both D&O I and II, the Commission stated its intent to reserve part of the
8 unpermitted water for agricultural use water permits, as authorized in the Water Code
9 under HRS section 174C-49(d) and HAR section 13-171-60. The Commission did not
10 formally set aside an agricultural reserve in either D&O I or D&O II and only stated the
11 reason and amount for such future actions.²² If and when the Commission designates such
12 an agricultural reserve from the remaining water available for offshore uses, the
13 agricultural reserve may be used only for agricultural purposes, while the remainder may
14 be used for both agricultural and non-agricultural purposes. These delineations are
15 authorized under the Water Code.

16
17 18. The Commission is not compelled to include the remaining unpermitted water in
18 the IIFS. In D&O II, the Commission had treated the unpermitted water in exactly the
19 way that the Court has stated: “Any flows in excess of this standard (the IIFS) shall
20 remain in the stream(s) until permitted and actually needed for offshore use, in keeping
21 with the policy against waste and in recognition that the standard merely states an
22 absolute minimum required under any circumstances. These unallocated flows, however,
23 will not constitute a distinct category or quantity, but will fluctuate according to
24 variations in supply and demand.” (105 Haw. at 13) The identification in Figure 2 of
25 D&O II of the remaining 3.80 mgd of unpermitted water as consisting of a proposed
26 agricultural reserve and water available for other uses only reflected the Commission’s
27 intention to establish an agricultural reserve by formal rulemaking for part of the
28 remaining unpermitted water.

29
30 19. In conclusion, the “unpermitted 2.2 mgd” was not a separate category but the
31 amount the Commission had indicated in D&O I that would be remaining after an
32 agricultural reserve was created in the future. This intent was carried over into D&O II
33 through Figure 2, although: 1) the Decision and Order should have provided a reiteration
34 of the intent in D&O I to create an agricultural reserve; and 2) the correct amount should
35 have been amended to 1.59 mgd, because of reductions in the agricultural water use
36 permits, leaving more for the proposed agricultural reserve and thus less for other future
37 uses.

²² “The 1.58 mgd for the proposed ‘agricultural reserve’ is based on the non-permitted balance of the 12.22 mgd ‘agricultural uses.’ Formal rule making procedures to establish an ‘agricultural reserve’ will be conducted after the contested case proceedings. When established by rule making, the agricultural reserve will be available for any agricultural uses through the water use permitting process. If a contested case hearing is requested during the water use permit process for a reserved amount, standing will be determined mainly among competing agricultural users, thereby limiting the scope, duration, and expense of the proceeding.” (D&O I, Decision and Order, at 7) In D&O II, Figure 2 divided the 3.80 mgd of unpermitted water into 2.22 mgd non-permitted ground water and 1.58 mgd proposed agricultural reserve without identifying the combined amounts as the 3.80 mgd in remaining unpermitted water available for offshore uses. (D&O II, Figure 2, at 152)

1
2 **C. Practicability of PMI and Campbell Estate Using Alternative**
3 **Ground Water Sources**
4

5 20. In D&O II, the Commission identified three reasons for its conclusion that PMI
6 and Campbell Estate had no practical alternative to the use of Waiāhole Ditch water for
7 their irrigation needs: 1) both PMI and Campbell Estate had no practicable alternative
8 sources available; 2) the physical impact on the Ditch and the economic impact on the
9 continued operational viability of the Ditch if Campbell Estate is required to use ground-
10 water sources makes such an alternative to use of Waiāhole Ditch water not practical; and
11 3) if water from the Waipahu-Waiawa Management Area of the Pearl Harbor aquifer
12 were to replace Ditch water for Campbell Estate and PMI, water from windward public
13 trust resources that are available for non-trust purposes after measures have been taken to
14 enhance those windward public trust resources, would be given priority over a leeward
15 public trust resource. [FOF 59]
16

17 21. The Court in *Waiāhole II* responded as follows: 1) PMI met its burden of
18 establishing the absence of practicable alternative water resource but the Commission
19 entered no FOF or COL as to whether Campbell Estate satisfied its burden of establishing
20 that no practicable alternatives existed;²³ 2) the Commission did not make any finding as
21 to the water flow required to maintain the Ditch’s economic and operational viability; and
22 3) considering whether alternative water resources are practicable innately requires
23 prioritizing among public trust resources. [FOF 60]
24

25 22. Even though the Court found that PMI had met its burden of establishing the
26 absence of practicable alternative water resources, the Court concluded that the
27 Commission failed to articulate with reasonable clarity whether it also had relied on the
28 other two criteria in reaching its decision. [FOF 61]
29

30 23. In D&O II, the three criteria were intended by the Commission to be separate and
31 independent of each other, and that if any were to be invalidated by the Court, the status
32 and rationale of the other criteria would not be affected. As the Court in *Waiāhole II*
33 found that this was not articulated with reasonable clarity, the Commission confirms that
34 the three criteria were exclusive of each other, and the absence of practicable alternative
35 water resources, as analyzed in the three ground-water alternatives considered by PMI
36 [FOF 62-65], was the basis for the Commission’s decision to confirm the water use
37 permit for PMI. In the granting of a permit to PMI for 0.75 mgd of ditch water to irrigate
38 its golf course project, there was substantial evidence in the Record that PMI had no
39 practicable alternative ground-water sources. In its incorporation by reference of all prior

²³ The Commission did in fact enter FOF and COL for Campbell Estate at D&O II, p. 90, line 38 to p. 94, line 14, and at p. 125, line 4 to p. 126, line 13. These FOF and COL were not numbered. However, the FOF and COL for PMI were also not numbered, yet the Court identified them as such. In referring to the Commission’s findings in D&O II at pp. 94-95, the Court stated: 1) “(i)n its FOFs, the Water Commission found that PMI considered three ground-water alternatives,” 105 Haw. at 17-18; and 2) “(b)ased on the foregoing, PMI adduced sufficient evidence, in the form of written and oral testimony, to meet its burden of establishing the absence of practicable alternatives. Moreover, the Water Commission analyzed each alternative and explained why they were impracticable.” 105 Haw. at 18.

1 FOF in this case, for D&O II, the Commission deletes page 90, lines 27-31; and page 95,
2 lines 44 to page 96, line 8.

3
4 24. Given the Court’s analysis and conclusions in *Waiāhole II*, the Commission
5 concludes that it must first analyze whether alternative water resources are reasonably
6 available. If the Commission then concludes that an alternative water resource is
7 reasonably available and if that alternative is also a public trust resource, then the
8 Commission, in determining practicable availability, must prioritize among the public
9 trust resources.²⁴

10
11 25. For PMI, the Commission’s analysis ends at the first step as described in COL 24,
12 *supra*, because there are no reasonable alternatives to Ditch water.

13
14 26. Prior to the April 5, 2005 hearings on second remand, the Windward Parties filed
15 a motion to deny PMI’s water use permit application on the grounds that PMI had to
16 again demonstrate its actual water needs in light of PMI’s current usage and the fact that
17 the golf course was not operating. The Hearings Officer ruled that the issues would be
18 limited to those on remand by the Court—i.e., whether or not there were practicable
19 alternatives for PMI—and that the subject of the motion would be referred to the
20 Commission and its staff for follow-up and decision. [FOF 67] In *Waiāhole II*, the Court
21 vacated PMI’s permit, pending remand for clarification of the Commission’s ruling that
22 PMI had no practical alternatives, and PMI’s continued use of Ditch water was
23 authorized by the Commission on September 30, 2004, through a Third Amended Interim
24 Order.

25
26 27. For Campbell Estate, the Commission has to first determine whether there are
27 reasonable ground-water alternatives to Ditch water [COL 24, *supra*].

28
29 28. The Waipahu-Waiawa Aquifer System, which is of potable water quality, is the
30 potential source of alternative ground water for Campbell Estate. [FOF 68-73] Five
31 potential sources were evaluated by Campbell Estate’s consultants. [FOF 74]

32
33 29. A new well would cost \$0.74 per 1,000 gallons to provide an average of 3.98 mgd
34 and \$0.88 per 1,000 gallons to provide an average of 2.42 mgd. [FOF 75-77]

35

²⁴ The Commission would not have characterized prioritizing among public trust resources as part of a practicability analysis but as a policy issue within the purview of the Commission, as long as its reasons for prioritizing were reasonable and transparent. In retrospect, the Commission in D&O II should have expanded on its interpretation that the Court’s directive that the Commission had to consider leeward ground water as an alternative was a directive to give absolute priority to windward dike-enclosed water that interacted with windward streams over leeward ground water. Under such an interpretation, the Commission should have: 1) extended its analysis to state that it considered water use permits that could be satisfied by more than one public trust resource to be within the policy purview of the Commission to determine which resource would be permitted; and 2) explained how it would prioritize and apply that process to the case at hand. Then perhaps the Court would have agreed that it was a policy issue instead of finding that prioritizing among public trust resources was “innately” within the practicability analysis.

1 30. The combined source of 2.42 mgd from a new well and 1.56 mgd of Ditch water
2 would also cost \$0.74 per 1,000 gallons for 3.98 mgd. [FOF 78] These estimates for both
3 a new well and a combined source incorporate an eight percent (8%) cost for borrowing
4 money to construct the improvements. [FOF 79] A five percent cost for borrowing
5 money, which is closer to today's prime rate, would reduce the cost from \$0.74 to \$0.63.5
6 per 1,000 gallons for the 3.98 mgd scenarios. [FOF 82]

7
8 31. The eight percent (8%) cost for borrowing money to construct the improvements
9 is a reasonable estimate. Five percent (5%) is near the current prime rate, not the business
10 rate; eight percent represents the average interest rate over a 20-year period; and interest
11 rates on business loans are renegotiated every three years. Campbell Estate does not
12 qualify for the prime rate. [FOF 80, 81, 83]

13
14 32. The cost for improvements to make EP-5/6 operational would be \$0.95 per 1,000
15 gallons for 3.98 mgd and \$1.16 per 1,000 gallons for 2.42 mgd. [FOF 84-85]

16
17 33. Chloride levels for EP-5/6 are at or very near the 160 mg/l limit for irrigating
18 fields over drinking water aquifers, and if EP-5/6 were used as the irrigating water
19 source, it would most likely increase the chloride levels of EP-15/16 above 160 mg/l.
20 [FOF 86-88]

21
22 34. The cost to establish the WP-2 battery of wells is estimated at \$0.96 per 1,000
23 gallons for 3.98 mgd and \$1.18 per 1,000 gallons for 2.42 mgd. The cost includes
24 estimates of the pipeline across land Campbell Estate does not own but not the cost of
25 obtaining easements over that land. [FOF 90-92]

26
27 35. WP-2 is located very near EP-5/6, and the Campbell Estate consultant believes it
28 should not be used as a ground-water source because it is also makai of the fields
29 irrigated with Ditch water and could damage the ground water beneath the fields. [FOF
30 93-94]

31
32 36. EP-15/16 is a Board of Water Supply (BWS) resource that is not yet in service
33 and permitted for municipal services, not specifically for large agricultural usage. [FOF
34 95] Campbell Estate had transferred its permit to BWS, which was found to be lawful by
35 the Court in *Waiāhole II*. (105 Haw. at 14) However, the Court also stated that the
36 absence of a permit alone would not render EP-15/16 impracticable as an alternative
37 water source. (105 Haw. at 15)

38
39 37. "The transfer of Campbell Estate's permit to BWS complied with the plain
40 language of the law." (105 Haw. at 14) "(T)he absence of a permit alone will not render
41 an alternative water source impracticable. Thus, Campbell Estate would still be required
42 to establish that EP-15/16 is impracticable as an alternative water source." (105 Haw. at
43 15)

44
45 38. Campbell Estate's consultant estimated the cost for water from EP-15/16 at \$1.39
46 per 1,000 gallons, using \$0.99 per 1,000 gallons for water from a potable source from the

1 BWS Rate Schedule and \$0.40 per 1,000 gallons in added costs for delivering the water
2 to Campbell Estate's fields. [FOF 96] The BWS rate increases from \$0.99 to \$1.12 per
3 1,000 gallons after July 1, 2005, which would increase the cost to \$1.52 per 1,000
4 gallons. [FOF 97-98) Using BWS' rate for agricultural water, the cost of delivering water
5 from EP-15/16 would be \$1.17 per 1,000 gallons. [FOF 99-100] A witness from BWS
6 also stated that BWS would charge the rate for non-residential usage, which was \$1.98
7 per 1,000 gallons until July 1, 2005, increasing to \$2.24 per 1,000 gallons after July 1,
8 2005. [FOF 101] This would be reflected in costs of \$2.38 and \$2.64 per 1,000 gallons.
9 [FOF 102-103]

10
11 39. Water System Facilities Charges could also be added by BWS, but the charge is
12 not levied on developers that install a complete water system, including source and
13 transmission and daily storage facilities, and Campbell Estate's consultant's estimate
14 included the costs of transmission. [FOF 104-109]

15
16 40. Ditch water is currently being provided to Campbell Estate's lessees at a rate of
17 \$0.40 per 1,000 gallons, and four of its five lessees have escape clauses that entitle them
18 to terminate their leases if their water rates exceed specified CPI-based levels. All of
19 these levels are below the projected costs of all of the possible alternative ground-water
20 sources. The lowest projected costs among the possible alternatives are for the new well
21 and the combination of a new well and Ditch water, at \$0.74 per 1,000 gallons, compared
22 to escape clauses ranging currently from \$0.53+ to \$0.64+ per 1,000 gallons. [FOF 110-
23 116]

24
25 41. Only Larry Jefts, who holds two of the four long-term leases, would be willing to
26 pay additional costs but would have to make a business decision when faced with the
27 actual terms. [FOF 117] One other lessee would consider terminating its lease, while the
28 other stated that his company would not pay for the additional costs of a ground-water
29 alternative. [FOF 118-119] The fifth lessee is on a month-to-month agreement and would
30 probably not be able to continue with the increased costs. [FOF 120]

31
32 42. In the leases, Campbell Estate reserves the right to subsidize water costs to
33 prevent tenants from terminating their leases. [FOF 124] Because lessees currently pay
34 all property taxes and the current agricultural designation could be lost if the lands were
35 not in substantial and continuous agricultural use, Campbell Estate has an incentive to
36 exercise these rights. [FOF 121-123]

37
38 43. Of the five potential alternative ground-water sources, the Commission concludes
39 as follows:

40
41 a) New well and combination with Ditch water

42
43 The estimated costs of a new well and a combination of water from a new
44 well and Ditch water are both at \$0.74 per 1,000 gallons for 3.98 mgd, so the
45 Commission will only consider the new well as providing the alternative source.
46

1 Price alone is not a determining factor. The Commission “is not obliged to
2 ensure that any particular user enjoy a subsidy or guaranteed access to less
3 expensive water sources when alternatives are available and public values are at
4 stake.” [94 Haw. at 165]

5
6 Compared to the estimated \$0.74 per 1,000 gallons, the current price of
7 ditch water is \$0.40 per 1,000 gallons, but four of Campbell Estate’s five lessees,
8 who lease the great majority of the Estate’s lands, cannot break their leases unless
9 water rates exceed specified CPI-based levels, currently at approximately \$0.53+
10 to \$0.64+ per 1,000 gallons. Campbell Estate also reserves the right to subsidize
11 water costs to prevent tenants from terminating their leases, which, if terminated,
12 may expose Campbell Estate’s lands to loss of their agricultural designation and
13 higher property taxes.

14
15 The approximately \$0.10 to \$0.20 per 1,000 gallons difference between
16 the current lease-breaking points (\$0.53+ to \$0.64+ per 1,000 gallons) and the
17 estimated costs of a new well (\$0.74 per 1,000 gallons) translate to \$242 to \$484
18 per day for 2.42 mgd and \$398 to \$796 per day for 3.98 mgd, if Campbell Estate
19 were to partially subsidize its lessees’ water costs to prevent the lessees from
20 breaking the leases. This would translate into approximately \$88,330 to \$176,660
21 and \$145,000 to \$290,000 per year. The estimated amounts would be less than the
22 higher figures, because only one of Jefts’ leases has the lower lease-breaking
23 point of \$0.53+ per 1,000 gallons.

24
25 It is difficult for the Commission to speculate whether such increased
26 costs would result in Campbell Estate’s lessees deciding to terminate their leases,
27 and if so, whether Campbell Estate would counter with subsidizing all or part of
28 the increased costs. The Court in *Waiāhole II* rejected the Windward Parties’
29 argument that PMI did not meet its burden of proof when it did not offer evidence
30 regarding its financial condition; but there, PMI had conceded that two of the
31 three alternatives were economically feasible. The Court then went on to state,
32 however, that regardless of PMI’s financial condition, it had already concluded in
33 *Waiāhole I* that the Commission “is not obliged to ensure that any particular water
34 user enjoy a subsidy or guaranteed access to less expensive water sources when
35 alternatives are available and public values are at stake.” [94 Haw. at 165] While
36 the Commission is “not obliged,” neither is it required to ignore costs, and at
37 some point the costs of a water source do factor in the Commission’s standard that
38 an alternative source “is available and capable of being utilized after taking
39 consideration cost, existing technology, and logistics in light of the overall water
40 planning process.” [D&O II, at 124-125]

41
42 The analysis of Campbell Estate’s consultant concluded that ground water
43 from a new well could be available, given existing technology and logistics.
44 Therefore, the Commission concludes that the costs do not void availability, and a
45 new well is an alternative ground-water source to Ditch waters for Campbell
46 Estate’s leased lands. But both Ditch water and ground water from the Waipahu-

1 Waiawa Aquifer are public trust resources. Thus, whether the new well is a
2 practicable alternative after prioritizing among public trust resources will be
3 addressed after considering the remaining three alternative leeward ground-water
4 sources.

5
6 b) The EP-5/6 well battery
7

8 The cost of ground water from EP-5/6 is estimated at \$0.95 per 1,000
9 gallons for 3.98 mgd and \$1.16 per 1,000 gallons for 2.42 mgd. The impact of
10 these costs on availability need not be analyzed further, because of the following
11 issues.

12
13 Chloride levels for EP-5/6 are already at or near the limit of 160 mg/l for
14 irrigating over drinking water aquifers, and use of EP-5/6 would also likely
15 increase the chloride levels of EP-15/16 above 160 mg/l.

16
17 EP-5/6 is the same potential source of ground water that was considered
18 by PMI, not considered a practicable alternative by PMI, found not acceptable by
19 the Commission because of the chloride content, and confirmed by the Court in
20 *Waiāhole II* as not being a practicable alternative. Thus, EP-5/6 is not an
21 alternative ground-water source for the use of Ditch waters by Campbell Estate's
22 lessees.

23
24 c) The WP-2 battery of wells
25

26 The cost of ground water from WP-2 is estimated at \$0.96 per 1,000
27 gallons for 3.98 mgd and \$1.18 per 1,000 gallons for 2.42 mgd. The impact of
28 these costs on availability need not be analyzed further, because of the following
29 issues.

30
31 WP-2 is very near EP-5/6 and would result in the same problems of
32 chloride content and irrigation over drinking water aquifers and the effect on the
33 chloride levels of EP-15/16 from pumping EP-5/6. Thus, WP-2 is not an
34 alternative ground-water source for the use of Ditch waters by Campbell Estate's
35 lessees.

36
37 d) EP-15/16
38

39 Campbell Estate's consultant estimated the cost of ground water from EP-
40 15/16 at \$1.39, using BWS' prevailing rate for irrigation water from a potable
41 source at \$0.99 per 1,000 gallons and an estimated added cost of delivering water
42 of \$0.40. Under various other BWS water rates, including increases over time, the
43 estimated cost varies from \$1.17 per 1,000 gallons to \$2.64 per 1,000 gallons. The
44 highest rates, at \$2.38 and \$2.64 per 1,000 gallons, were based on the BWS'
45 witness' statement that BWS would charge the non-residential usage rate. A
46 Water Systems Facilities Charge (WSFC) may also be levied by BWS, but it

1 likely would be waived, as the scenario developed by Campbell Estate’s
2 consultant included the services for which the WSFC would be charged.
3

4 The water use permit for EP-15/16 was transferred by Campbell Estate to
5 BWS, who subsequently changed the water use from agricultural to urban and
6 stated that it planned to supply Campbell Estate with 11.87 mgd, actions that were
7 found to be legal by the Court in *Waiāhole II*. However, the Court also stated that
8 the absence of a permit did not render EP-15/16 impractical as an alternative
9 water source. (105 Haw. at 17)
10

11 If Campbell Estate were to request that it be granted 3.98 mgd from EP-
12 15/16 to replace Ditch waters for agricultural irrigation, it would make this
13 request to the BWS and not to the Commission. Under HRS § 174C-57,
14 modifications to the terms of a permit are treated as initial permit applications, but
15 county agencies are exempt from these requirements except where the
16 modification involves a change in the quantity of water to be used or where the
17 new use would adversely affect the quality of the water or quantity of use of
18 another permittee. The Campbell Estate request would be to change the use of
19 3.98 mgd from urban to agricultural, so BWS would not have to request a new
20 permit from the Commission.
21

22 However, the City and County of Honolulu and the BWS are opposed to
23 granting water use permits to either PMI or Campbell Estate merely because there
24 is unallocated permitted ground water available, citing the rights the public has in
25 the ground water for domestic use. (D&O II, at 95, lines 32-42) BWS’ opposition
26 to the use of leeward potable ground water as an alternative to ditch waters is
27 reinforced by the testimony of BWS that it would charge the highest rate
28 possible—non-residential usage—if BWS had to supply Campbell Estate with
29 EP-15/16 potable water that it has designated for urban use.
30

31 Would the price the BWS representative stated Campbell Estate would be
32 charged — \$2.64 per 1,000 gallons after July 1, 2005, based on non-residential
33 rates — be such a significant increase in costs that it would make water from
34 BWS’ EP-15/16 not practicable? This rate would be more than 6 times the current
35 ditch water rate of \$0.40. If Campbell Estate were to subsidize its farmer lessees
36 for the costs above the lease-breaking point of \$0.64+ per 1,000 gallons, the costs
37 to Campbell Estate would be approximately \$2.00 per 1,000 gallons, or \$4,840
38 per day, an annual cost of over \$1.7 million for 2.42 mgd, or \$7,960 per day, an
39 annual cost of up to approximately \$2.9 million for 3.98 mgd. This is
40 considerably more than the estimated costs to Campbell Estate to subsidize the
41 increased costs of a new well at \$0.74 per 1,000 gallons. However, the
42 Commission is unwilling to conclude that the estimated cost of \$1.7 million to
43 \$2.9 million per year alone makes the alternative of water from BWS’ EP-15/16
44 not a viable alternative ground water source.
45

1 Would the refusal of BWS to supply Campbell Estate with water from EP-
2 15/16 for agricultural purposes render this alternative ground water source
3 impractical?
4

5 The alternative must be practical and not merely feasible. In *Waiāhole II*
6 in confirming the Commission’s conclusion that PMI had no practical
7 alternatives, the Court specifically cited “deed restrictions prohibiting an on-site
8 well,” “(lack of) a long-term pumping agreement,” and “the ease and cost of
9 obtaining an easement” as factors making the use of Waipahu-Waiawa water not
10 practicable for use by PMI. (105 Haw. at 18) The Court, in concluding that the
11 deed restrictions prohibiting an on-site well made the alternative not practical for
12 PMI, recognized that a third party’s actions may render an alternative not
13 practical.
14

15 As stated earlier, the City and County of Honolulu and the BWS are
16 opposed to granting water use permits to either PMI or Campbell Estate merely
17 because there is unallocated permitted ground water available, citing the rights the
18 public has in the ground water for domestic use. BWS further testified that it
19 would charge the highest rate possible—non-residential usage—if BWS had to
20 supply Campbell Estate with potable water. While the Commission is reluctant to
21 rely on the estimated costs of the non-residential rate to conclude that such costs
22 would be unaffordable, the Commission can rely on such testimony as further
23 evidence that BWS opposes any use of potable ground water to supply Campbell
24 Estate’s irrigation needs, including water it has designated for urban use.
25

26 The Commission therefore concludes that BWS has the right to refuse to
27 grant Campbell Estate such an allocation from its unallocated permitted water for
28 urban use. Thus, EP-15/16 is not an alternative ground-water source for the use of
29 Ditch waters by Campbell Estate’s lessees.
30

- 31 44. Of the five scenarios, a new well is a reasonable alternative to Ditch waters on
32 the basis of cost, existing technology, and logistics.²⁵ However, these
33 considerations must take place “in light of the overall water planning
34 process.” Furthermore, both sources are public trust resources [FOF 126], so
35 the analysis of whether the ground water is a practicable alternative is
36 incomplete without prioritizing among public trust resources. In *Waiāhole I*
37 the Court remanded to the Commission “the practicability of Campbell Estate
38 and PMI using alternative ground water sources.” (94 Haw. at 189) In D&O
39 II, the Commission had concluded that “if water from the Waipahu-Waiawa
40 Management Area of the Pearl Harbor Aquifer were to replace Ditch water for
41 Campbell Estate and PMI, water from windward public trust resources that are
42 available for non-trust purposes after measures have been taken to enhance
43 those windward public trust resources, would be given priority over a leeward

²⁵ The combination of a new well and ditch water was also an alternative, but the estimated costs were the same as for a new well alone, so the Commission has focused on the alternative that would completely replace ditch water.

1 public trust resource.” (D&O II, p. 128, lines 39-43) In *Waiāhole II* the Court
2 responded that “the Water Commission’s reasoning, that public trust resources
3 may not be prioritized because public trust uses may not be prioritized, is
4 illogical. Considering whether alternative water resources are practicable
5 innately requires prioritizing among public trust resources.” (emphases in
6 original) (104 Haw. at 20)

7
8 a) Alternative water source for leeward ground water
9

10 Waiāhole Ditch water has been and is currently being used to irrigate
11 Campbell Estate’s lands. It costs less than all of the possible leeward ground
12 water alternatives and would need no additional technology or logistics for
13 delivery. Thus it is a proven alternative water source to the use of leeward ground
14 water to irrigate these lands.

15
16 b) Availability of water
17

18 Under the State Water Code, the amended IIFS is the method to protect
19 streams and the sustainable yield is the method to protect ground water. Water-
20 use permits issued to irrigate Campbell Estate’s lands must be accommodated
21 either: 1) with the remaining water after Ditch waters have been added to the
22 affected windward streams to meet the amended IIFS, or 2) with water within the
23 sustainable yield of the Waipahu-Waiawa Aquifer system. With aquifers,
24 unallocated (unpermitted) water remains in the aquifer, as does any permitted
25 water not actually being used. With the ditch waters, the Commission has ordered
26 that a similar approach be taken: unpermitted waters and any permitted waters not
27 in actual use must be diverted into the windward streams. However, the last
28 diversion point is at the adjustment gate near Gate 31 at the opening at the *pali*
29 face on the windward side above Waiāhole Stream, so the water developed in the
30 Main Bore, which is leeward of and at a lower elevation than Gate 31, cannot be
31 diverted into the streams and flows leeward, whether or not all of it is used by
32 permittees. The Main Bore develops an average of about 5.0 mgd, of which 3.7
33 mgd is developed in the Waiawa area leeward of the crest of the Ko`olau
34 Mountains. In FYs 2003 and 2004, between 3.8 to 7.55 mgd were actually
35 developed in the Main Bore. [FOF 23, 26, 160-162, 164-165]
36

37 The relative amount of water available from each resource after measures
38 have been taken to protect the resource is not relevant to prioritizing among these
39 resources. Protective measures for each resource are undertaken by taking into
40 consideration the unique circumstances of each resource. For aquifers, protective
41 measures are focused on the quality and quantity of their waters. The sustainable
42 yield for ground water is “the maximum rate at which water may be withdrawn
43 from a water source without impairing the utility or quality of the water source as
44 determined by the commission.” (HRS § 174C-3) For instream flow standards,
45 the protective measures are relative to offstream uses. For interim instream flow
46 standards, “the commission shall weigh the importance of the present or potential

1 instream values with the importance of the present or potential uses of water for
2 noninstream purposes, including the economic impact of restricting such uses.”
3 (HRS § 174C-71(2)(D)) For instream flow standards, “the commission shall
4 weigh the importance of the present or potential uses of water from the stream for
5 noninstream purposes, including the economic impact of restriction of such uses.
6 In order to avoid or minimize the impact on existing uses of preserving,
7 enhancing, or restoring instream values, the commission shall consider physical
8 solutions, including water exchanges, modifications of project operations,
9 changes in points of diversion, changes in time and rate of diversion, uses of
10 water from alternative sources, or any other solution.” (HRS § 174C-71(1)(E))
11

12 Thus, the 3.98 mgd to irrigate Campbell Estate’s lands could be
13 accommodated with currently available water from either the Waiāhole Ditch or
14 the Waipahu-Waiawa Aquifer.
15

16 c) Purposes of the water resources trust
17

18 The Court in *Waiāhole I* and *Waiāhole II* has identified domestic uses of
19 the general public, particularly drinking water, as a purpose of the public water
20 resources trust [FOF 128].
21

22 Agriculture, while a constitutionally specified public purpose, is not a
23 public trust purposes currently specified by the Court, but can be
24 “accommodated” when it “promotes the best economic and social interests of the
25 people of this state.” [FOF 129]
26

27 d) The Commission’s priorities and its authority to establish such priorities
28

29 In D&O I, the Commission concluded that “Oahu’s remaining ground-
30 water resources must be directed to its highest and best use. There must be an
31 increased emphasis on water conservation, water reclamation and reuse, and
32 system efficiency improvements. One way to stretch Oahu’s remaining resources
33 is to utilize lower quality water for irrigation purposes, replacing the use of higher
34 quality ground water.” [FOF 131]
35

36 In D&O I, the Commission had imposed a higher standard of review for
37 agricultural versus non-agricultural (*e.g.*, golf courses) uses, and the Court in
38 *Waiāhole I* concluded that “such measures lay squarely within the Commission’s
39 appointed function of weighing and negotiating competing interests in regulating
40 the water resources of this state.” [FOF 130]
41

42 In *Waiāhole I*, the Court also confirmed that imposing different permit
43 conditions and restrictions on some uses but not others were “squarely within the
44 Commission’s appointed function of weighing and negotiating competing
45 interests in regulating the water resources of this state” as long as those actions
46 were not arbitrary and capricious. (94 Haw. at 168-169)

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The Commission’s priorities are reflected in its “weighing and negotiating [of] competing interests.” In issuing water use permits for ditch waters, the Commission imposed stricter conditions for golf-course irrigation, because the highest and best use of non-potable ditch water was for agriculture. On the other hand, the highest and best use of potable Waipahu-Waiawa Aquifer water is domestic use of the general public, particularly drinking water. Municipal use does have the substantial purpose of domestic use of the general public, particularly drinking water, but it may also include commercial and industrial purposes, and the Court has yet to delineate the boundaries of “domestic use of the general public.” On a related issue, the Court has applied the doctrine of public use to public entities such as the BWS and in a decision involving the BWS, has commented that “we understand public use to mean the actual consumption of water by the general public.” (*Reppun v Board of Water Supply*, 65 Haw. 531, at 560, n. 21 and 22 (1982).)

It is the Commission’s priority that water resources be matched with their highest and best use. When applied by the Commission to water for agriculture uses from a potable versus non-potable water source, the decision must be the use of Ditch water and not water from the Waipahu-Waiawa Aquifer to irrigate Campbell Estate’s agricultural lands. Non-potable Waiāhole Ditch water is available for its highest and best use, agricultural irrigation. Agricultural use is not the highest and best use of the Waipahu-Waiawa Aquifer. To use potable Waipahu-Waiawa Aquifer water when a non-potable source is equally and even more available, taking into consideration cost, existing technology and logistics in light of the overall water planning process, would be counter to the priorities of the Commission.

45. The Court has concluded that “[c]onsidering whether alternative water resources are practicable innately requires prioritizing among public trust resources.” (105 Haw. at 20) The Commission’s prioritizing results in the conclusion that the highest use for Ditch water is for agricultural uses, while the highest use for Waipahu-Waiawa Aquifer water is for potable purposes. Campbell Estate’s water use permit application was for agriculture use on its lands, which is best met with Ditch waters. Thus, after prioritizing among these two public trust resources, the Commission concludes that Waipahu-Waiawa Aquifer water is not a practicable alternative water resource, and a new well using such water, or any well utilizing the same source, is not a practicable alternative to the use of Ditch water to irrigate Campbell Estate’s lands.²⁶

²⁶ In this decision, the Commission has confirmed its decision in D&O II that PMI had no practicable alternatives, based on its analysis of PMI’s three ground-water scenarios, and clarified that this basis for its decision was separate and distinct from the two other reasons originally stated in D&O II that the Court rejected. Had one or more of the alternative scenarios been found reasonable, the Commission would have proceeded to prioritize among the two public trust resources and reached the same conclusions that it has for Campbell Estate.

1 **D. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)**

2
3 46. Jefts cultivates 188 acres of the 267 acres in Field Nos. 115, 116 and 145 for
4 diversified agriculture and does not farm the entire 267 acres. [FOF 139]

5
6 47. There is sufficient evidence that Jefts’ actual water need is 2,500 gad per
7 cultivated acre. [FOF 135-137]

8
9 48. Jefts’ actual water uses for diversified agriculture on Field Nos. 115, 116 and 145
10 should be adjusted from 0.66 mgd to 0.467 mgd. [FOF 140]

11
12
13 **E. Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)**

14
15 49. Garst Seed Company plants only 115 of the total 344 acres for seed crops at a
16 particular time. The other 229 acres that are not being used for seed crops will remain
17 part of its crop rotation plan. [FOF 143]

18
19 50. Garst’s actual water need is 1,800 gad per planted acre. [FOF 141]

20
21 51. Garst’s actual water uses for its seed crops on Field Nos. 146 and 166 should be
22 adjusted from 0.78 mgd to 0.21 mgd. [FOF 144]

23
24
25 **F. ADC’s Permit for Systems Losses**

26
27 52. The State Water Code contains the following provision:
28 **Permits required.** (a) No person shall make any withdrawal, diversion,
29 impoundment, or consumptive use of water in any designated water
30 management area without first obtaining a permit from the commission.
31 However, no permit shall be required for domestic consumption of water
32 by individual users, and no permit shall be required for the use of a
33 catchment system to gather water. An existing use in newly designated
34 areas may be continued until such time as the commission has acted upon
35 the application subject to compliance with section 164C-51.

36
37 53. Except for two stated exceptions, one for consumption and one for impoundment,
38 any withdrawal, diversion, impoundment or consumption is a use of water that requires a
39 permit. (COL 52, *supra*)

40
41 54. Therefore, water withdrawn from the windward, high-level dike-enclosed waters
42 and diverted to the leeward plains through the Waiāhole ditch system, including any
43 water lost in delivery, requires a water use permit and must meet the conditions of HRS §
44 174C-49(a) of the State Water Code:

- 45 (1) Can be accommodated with the available water source;
46 (2) Is a reasonable-beneficial use as defined in section 174C-3;

- 1 (3) Will not interfere with any existing legal use of water;
- 2 (4) Is consistent with the public interest;
- 3 (5) Is consistent with state and county general plans and land use designations;
- 4 (6) Is consistent with county land use plans and policies; and
- 5 (7) Will not interfere with the rights of the department of Hawaiian home lands as
- 6 provided in section 221 of the Hawaiian Homes Commission Act.
- 7

8 55. In *Waiāhole I*, the Court emphasized that “reasonable-beneficial use” as defined
9 in HRS § 174C-3 allowed use only “in such quantity as is necessary for economic and
10 efficient utilization” and concluded that permit applicants must demonstrate the absence
11 of practicable mitigating measures, including the use of alternative water sources. (94
12 Haw. at 161)

13
14 56. In *Waiāhole II*, the Court, in referring to a permit for system losses, concluded
15 that “the Commission must scrutinize such an allocation as it would any other proposed
16 ‘use,’ pursuant to the permitting process. On remand, the Commission shall consider the
17 permit application for 2.0 mgd to cover system losses and determine whether this request
18 is appropriate given the still uncertain public interest in instream flows, and based on
19 actual need and any practicable mitigating measures, including repairs to the ditch
20 system.” (94 Haw. at 173)

21
22 57. In *Waiāhole II*, after quoting the Commission as finding that ADC “has not yet
23 addressed the feasibility and costs of lining the remaining unlined portion of the ditch
24 and/or the two reservoirs,” the Court, in referring to the 1.5 mgd in projected seepage
25 losses (0.5 mgd of the 2.0 mgd in total losses were from evaporation and overflow at
26 Reservoir 155), concluded that “[w]ithout addressing the feasibility of repairing the leaks
27 that cause the 1.5 mgd loss, it is unclear how the Water Commission could determine that
28 a 1.5 mgd loss complied with HRS § 174C-49(a).” (105 Haw. at 26-27)

29
30 58. The Court in *Waiāhole I* explicitly noted that it meant “feasible” as a “balancing
31 of benefits and costs” and not “capable of achievement.” (94 Haw. at 141, n. 39)

32
33 59. Moreover, the Commission in D&O II stated that “an alternative source is
34 practicable if it is available and capable of being utilized after taking into consideration
35 cost, existing technology, and logistics in light of the overall water planning process”
36 (D&O II, at 124-125), and the Court stated in *Waiāhole II* that the Commission “must
37 determine whether the alternative is available and capable of being utilized after
38 considering cost, technology, and logistics.” (105 Haw. at 19)

39
40 60. Because the water use permit provisions of the Code determine how much to
41 award ADC for system losses: 1) some of the seven conditions under HRS § 174C-49(a)
42 must primarily be determined by the uses for which water is being delivered through the
43 Ditch system and which result in system losses; and 2) the evaluation of practical
44 alternatives cannot look toward another source of water but must be “based on actual
45 need and any practicable mitigating measures, including repairs to the ditch system.” (94
46 Haw. at 173) The seven conditions for a water use permit are addressed as follows.

1
2 61. Can be accommodated with the available water source: The total average flow in
3 the Waiāhole Ditch system is 27.0 mgd. [FOF 26] Under D&O II, 9.9 mgd were added to
4 the windward streams. ([FOF 38] Under this Decision and Order (discussed later), this
5 amount is increased by 2.1 mgd added to Kahana Stream, for a new total of 12.0 mgd.
6 Under D&O II, 11.30 mgd were issued in water use permits, exclusive of the 2.0 mgd for
7 system losses. Under this Decision and Order (discussed later), the 11.30 mgd is reduced
8 by 0.76 mgd, for a new total of 10.54 mgd issued in water use permits. Therefore, of the
9 27.0 mgd, there are 4.46 mgd remaining for off-stream use, and the request from
10 ADC/DOA for system losses is 2.00 mgd.

11
12 62. Will not interfere with any existing legal use of water: The amount of Ditch water
13 can accommodate the amended IIFS, the water use permits, and the amount requested for
14 system losses. (COL 61, *supra*)

15
16 63. Is consistent with the public interest: System losses occur with the conveyance of
17 water issued under the water use permits, it is in the public interest to direct water to the
18 areas in which it is needed, and permitted waters have met the provisions of the Code.
19 (D&O I and II) [FOF 148, 200-205]

20
21 64. Is consistent with state and county general plans and land use designations: In
22 D&O I, the Commission previously found that the use of Waiāhole Ditch water for
23 diversified agriculture on lands designated as priority agricultural lands is reasonable and
24 consistent with state land use plans and policies. [FOF 202] In D&O I, the Commission
25 found all the water use permit applications to be consistent with the Hawai'i State Plan
26 and land use classifications, as well as with the County General Plan. [FOF 203]

27
28 65. Is consistent with county land use plans and policies: Support of agriculture in
29 Central Oahu is part of the City and County of Honolulu's General and Development
30 Plans. [FOF 204] In D&O I, the Commission found that the leeward applicants' existing
31 and proposed agricultural operations are consistent with land use designations for these
32 parcels of land in the City's `Ewa and Central Oahu Development Plans. [FOF 205]

33
34 66. Will not interfere with the rights of the department of Hawaiian home lands as
35 provided in section 221 of the Hawaiian Homes Commission Act: The Department of
36 Hawaiian Homelands applied for a water reservation for 0.410 mgd, but the Commission
37 did not take up any reservation requests in this proceeding and stated its intent to do so
38 after the conclusion of this contested case. [FOF 206] Moreover, the Hawaiian Homes
39 Commission has a "first call" on water under HHCA Section 221, and all water use
40 permits are subject to the requirements of the Hawaiian Homes Commission Act. [FOF
41 207]

42
43 67. Is a reasonable-beneficial use as defined in section 174C-3: ADC is requesting
44 2.00 mgd for system losses, the same amount awarded by the Commission in D&O II, but
45 which was remanded after the Court concluded that "[w]ithout addressing the feasibility
46 of repairing the leaks that cause the 1.5 mgd loss, it is unclear how the Water

1 Commission could determine that a 1.5 mgd loss complied with HRS § 174C-49(a).”
2 (105 Haw. at 27)

3
4 a) The Commission concludes that ADC has taken reasonable and
5 practicable mitigating measures to repair the ditch system.

6
7 b) ADC took a reasonable approach to the issue of practicable mitigating
8 measures, including repairs to the ditch system. After replacement of the three wooden
9 siphons, ADC projected that its estimate of 2.02 mgd in system losses would consist of:
10 1) 0.45 mgd overflow at Reservoir 155 at the end of the system; 2) 0.07 mgd in
11 evaporation; and 1.50 mgd in the residual category, “unmetered losses.” (FOF 152) ADC
12 then focused its efforts on the two largest categories of losses: overflow at Reservoir 155
13 and unmetered losses.

14
15 c) After identifying the sources of losses and prioritizing which would be
16 addressed first, ADC was not required to expend funds to estimate the costs of
17 eliminating every source of system losses. ADC operates under a limited budget and must
18 obtain legislative approval for funding. (FOF 197-198) By identifying all sources of
19 system losses and then prioritizing among them to take action and secure funding, ADC
20 took the practicable mitigating measures required by the State Water Code.

21
22 d) ADC was able to reduce overflow at Reservoir 155 from 0.46 mgd in FY
23 2001 to as low as 0.24 mgd in FY 2003. [FOF 174] This was achieved by installing an
24 automatic gate opening and closing device at the wooden adjustment gate near Gate 31 at
25 the North Portal on the windward side to allow for quicker adjustments of flows of
26 windward water to the leeward side. When it starts to rain on the leeward side and the
27 windward flows are not needed, the gate is closed. [FOF 170] ADC also installed a pump
28 at Reservoir 155 to pump water back into the ditch, making the pumped water available
29 for users at the end of the ditch, and began to use Reservoir 225, further up the ditch, to
30 provide capacity for flows that ADC otherwise anticipated would go to Reservoir 155.
31 [FOF 172]

32
33 e) The 0.24 mgd in overflow losses in FY 2003 is not achievable all of the
34 time, because rainfall on the leeward side affects overflow at Reservoir 155 more than
35 other factors, and ADC has no control of the weather, which determines both the amount
36 of water flowing from Adit 8 and the amount of leeward water usage. Given the structural
37 design of the ditch system, the flow from the Main Bore leeward of Gate 31 results in
38 overflow at Reservoir 155 at the end of the system during rainy, low-usage periods.
39 When the soil is sufficiently moistened by rain, farmers tend not to irrigate, rainwater
40 runs into the ditch, and water developed by the Waiawa portion of the tunnel, leeward of
41 Gate 31, continues to flow even when the windward adjustment gate diverts all windward
42 water into the windward streams. Water from the Waiawa portion of the tunnel has varied
43 from 3.8 mgd to 7.55 mgd, with the increased flow showing up several months after the
44 rainy periods. [FOF 160-165]

45

1 f) Enlarging Reservoir 155 does not present a long-term solution. Its
2 capacity is 10 million gallons. [FOF 173] If it were doubled in size, the excess capacity
3 would be filled in about forty (40) days in dry weather conditions, at the rate of 0.24 mgd
4 that was achieved in FY 2003; in wet weather conditions, the excess capacity would be
5 filled in less than six (6) days, at the rate of 1.75 mgd in FY 2004. [FOF 165, 174] When
6 no water is being used and the windward adjustment gate is diverting all of the windward
7 ditch waters into the streams, there will still be an average flow of 5 mgd from the Main
8 Bore leeward of the adjustment gate. [FOF 23, 26] About 1.0 mgd would be lost through
9 evaporation and seepage/leakage after Reservoirs 155 and 225 are lined, [FOF 199]
10 leaving 4.0 mgd that would reach Reservoir 155 at the end of the system. Excess capacity
11 would be exceeded in less than three (3) days. For a quadrupling of Reservoir 155 to 40
12 million gallons, the comparable rates in which excess capacity would be exceeded would
13 be 160, 24, and 10 days, respectively. The actual rates would be somewhere between the
14 extremes, or between three and forty days for doubling the capacity of Reservoir 155, and
15 between 10 and 69 days for quadrupling the capacity.

16
17 g) Enclosing the entire open ditch system, which runs from Waiawa to
18 Honouliuli, to eliminate evaporation and leakage might be feasible, but it is not
19 practicable. The Army Corps of Engineers recommended, in addition to lining Reservoirs
20 155 and 225, enclosing only the 1,000 feet of remaining unlined portion of the ditch at
21 the end of the system with a pipe, and ADC is pursuing funding for that option. [FOF
22 187, 195-196]

23
24 h) The current calculation for system losses is the Adit 8 reading minus
25 metered usage, and consists of evaporation, overflow at Reservoir 155, and the residual
26 category of “unmetered losses.” Essentially, this method includes any and all flows not
27 actually recorded in the users’ meters. (FOF 150, 166) Thus, the portion of “system
28 losses” measured by overflow at Reservoir 155 will, in wet weather, include flows from
29 the Waiawa portion of the development tunnels that cannot be diverted into the windward
30 streams and runoff from rain into the ditch. The amount due to runoff from rain into the
31 ditch is not part of the dike-enclosed waters developed by the tunnels, and ADC has
32 practical limitations on reducing the overflow at Reservoir 155 when use is less than the
33 amount flowing from the Main Bore leeward of the windward adjustment gate.

34
35 i) ADC has taken reasonable and practical steps to reduce “unmetered
36 losses.” It has developed a program to detect and repair leaks in the concrete lining of the
37 ditch, eliminated overflow due to silt and mud build-up in the ditch, and developed a
38 program to improve the accuracy of user meters so that water actually used is not
39 recorded as system losses. [FOF 175-180] Projects to address the major sources of
40 seepage losses, Reservoirs 155 and 225, which are estimated as accounting for 72% of
41 such losses, are fully funded and in progress. [FOF 185-187, 189-193] When this project
42 is completed, losses are expected to decrease by 0.398 mgd to 0.759 mgd. (FOF 194)
43 ADC is also in the process of seeking funding for the lining, piping, or repairing of other
44 unlined portions of the ditch, the other project recommended by the Army Corps of
45 Engineers. [FOF 187, 195-196]

46

1 j) At the D&O II hearings, ADC estimated system losses after replacing the
2 three wooden siphons as 2.02 mgd and consisting of 1.50 mgd in unmetered losses, 0.45
3 mgd in overflow at Reservoir 155, and 0.07 mgd in evaporation. [FOF 152] ADC now
4 believes this estimate was too low, probably because projections of loss reduction from
5 replacing the wooden siphons were overly optimistic. Unmetered losses stabilized
6 between 1.69 mgd to 1.75 mgd (average of 1.72 mgd) from FY 2002 to FY 2004, and
7 ADC now believes this is probably the baseline unmetered loss before the two reservoirs
8 were to be lined. [FOF 155] This would increase the original estimate of total system
9 losses from 2.02 mgd to 2.24 mgd after the three wooden siphons were replaced.

10
11 k) Under dry weather conditions, overflow can be reduced to 0.24 mgd (FY
12 2003). [FOF 174] The revised unmetered losses of 1.69 mgd to 1.75 mgd
13 (average of 1.72 mgd) are estimated to be reduced by 0.398 mgd to 0.759 mgd (average
14 of 0.578 mgd) from lining the two reservoirs, with estimated completion dates between
15 December 2007 and June 2008. [FOF 193-194] Thus, the revised estimates of system
16 losses after lining the reservoirs are as follows: 1) evaporation losses unchanged at 0.07
17 mgd; 2) overflow at Reservoir 155 reduced from 0.45 mgd to 0.24 mgd; and 3)
18 unmetered losses reduced from 1.72 mgd to 1.14 mgd.

19
20 l) Therefore, total system losses prior to lining the two reservoirs would be
21 2.03 mgd, and after the lining, total system losses are estimated to be 1.45 mgd. After the
22 remaining 1000 feet of unlined ditch are enclosed in pipes, additional reductions in losses
23 are projected at 0.03 mgd [FOF 185, 188, 194], for total system losses reduced further to
24 1.42 mgd.

25
26 m) The current method of measuring total system losses includes the overflow
27 at Reservoir 155, which averaged as high as 1.75 mgd during FY 2004, a wet year,
28 compared to a low of 0.24 mgd in FY 2003, a dry year. [FOF 165, 174] During wet
29 weather, or when usage otherwise is also significantly lower than the amount of water
30 developed leeward of Gate 31, amounts in excess of use will often exceed the capacity of
31 ADC to manage the overflow at Reservoir 155. [FOF 164-165, 169] Overflow in excess
32 of ADC's capacity to manage it may occur even when Gate 31 is closed and all of the
33 water developed in the windward tunnels are diverted into the windward streams. [FOF
34 164]

35 36 37 **G. Conclusion**

38
39 For the reasons discussed above, the Commission concludes that the amended
40 interim instream flow standards, the water use permits, and the management of the
41 unpermitted Ditch waters and permitted waters not in actual day-to-day use approved and
42 established as modified in this Decision and Order meet the requirements of law as
43 determined by the Court in *Waiāhole I* and *Waiāhole II*.

1 Caveat: Finally, if any statement denominated a conclusion of law is more properly
2 considered a finding of fact, then it should be treated as a finding of fact; and conversely,
3 if any statement denominated as a statement of fact is more properly considered a
4 conclusion of law, then it should be treated as a conclusion of law.
5
6

7 **V. Decision and Order**

8 9 **A. Introduction**

10
11 This Decision and Order is the third that the Commission has issued in response
12 to the Court’s review on appeal, following D&O I (December 24, 1997) and D&O II
13 (December 28, 2001). The current remand by the Court is limited to the following six
14 issues: 1) the designation of an IIFS for windward streams; 2) the 2.2 mgd of unpermitted
15 water; 3) the practicability of Campbell Estate and PMI using alternative ground-water
16 sources; 4) the actual needs of Field Nos. 115, 116, and 145 (Jefts); 5) the actual needs of
17 229 acres in Field Nos. 146 and 166 (Garst Seeds); and 6) ADC’s permit for systems
18 losses.
19

20 The Findings of Fact for designation of an IIFS for windward streams, the 2.2
21 mgd of unpermitted water, and the practicability of PMI using alternative ground-water
22 sources are based on the existing record prior to the April 5, 2005 hearings, at which time
23 further testimony was taken and evidence submitted on the practicability of Campbell
24 Estate using alternative ground-water sources, the actual needs of Field Nos. 115, 116
25 and 145 (Jefts), the actual needs of 229 acres in Field Nos. 146 and 166 (Garst Seeds),
26 and ADC’s permit for systems losses.
27
28

29 **B. Designation of an IIFS for Certain Windward Streams**

30
31 The amended IIFS under D&O II resulted in stream flows for Waiāhole, Waianu
32 and Waikāne Streams that were 124%, 600% and 150% greater than their flows in the
33 1960s. [COL 2-4] The IIFS for Kahana Stream remained unchanged from its flow in the
34 1960s. However: 1) Kahana Stream is only moderately affected by the Ditch, with its
35 current flow estimated at 78% of pre-Ditch levels; 2) the Court on its first remand only
36 ordered that an IIFS be addressed for Waikāne Stream in addition to Waiāhole and
37 Waianu Streams; and 3) all of the testimony on stream conditions in the 1960s involved
38 Waiāhole, Waianu and Waikāne Streams, as well as on similar conditions in Hakipu`u
39 and Punalu`u Streams, which are not affected by the Waiāhole Ditch system. [COL 11]
40

41 Three events since the 1960s might have affected the stream flows before Ditch
42 waters were added under D&O I and II. Only one of these events would have reduced the
43 difference between stream flow during the 1960s compared to flow under the amended
44 IIFS of D&O II, and the other two events would have increased the difference. Under all
45 three possibilities, the amended IIFS under D&O II still resulted in greater flows for the
46 affected streams than their flows in the 1960s.

1
2 Extension of Uwau Tunnel in 1964 leeward of the mountain’s crest developed an
3 additional 2.77 mgd, but most if not all of this net extraction was probably flowing
4 leeward before the dikes were disrupted and the water diverted into the Ditch system.
5 [COL 8] Even if it is assumed that all of the 2.77 mgd flowed windward before the
6 extension and that the combined flows for Waiāhole Stream and its tributary, Waianu
7 Stream, were reduced by a similar amount, the Ditch waters added to these two streams
8 under D&O II still result in flows that are more than twice their flows in the 1960s. [COL
9 9]

10
11 In 1982, the 1 to 1.5 mgd pumped from Waiāhole Stream above its confluence
12 with Waianu Stream was discontinued. However, the record does not show when
13 pumping was initiated or whether pumping was taking place in the 1960s. If pumping
14 were taking place during the 1960s, the difference between Waiāhole Stream’s flow in
15 the 1960s and under the amended IIFS in D&O II would not be 4.8 mgd but 5.8 to 6.3
16 mgd. [COL 10]

17
18 Installation of the bulkhead in Kahana Tunnel in 1992 reduced Ditch flows from
19 the tunnel by approximately 1.5 mgd by 1993. A small portion of this reduced flow might
20 find its way into Kahana Stream, thereby increasing its flow compared to the 1960s, even
21 though no Ditch water was added to the stream under D&O II. [COL 11]

22
23 The Commission therefore concludes that under the amended IIFS of D&O II: 1)
24 more water was added than that which adequately supported the streams’ ecosystem in
25 the 1960s; 2) the increase in stream flow over the 1960s’ stream flows are beneficial in
26 light of the Commission’s finding that increasing a stream’s flow results in stream habitat
27 improvement; and 3) appurtenant rights, riparian uses and existing uses would be
28 accounted for by further increases in stream flow, thereby adequately establishing that
29 instream values would be protected to the extent practicable for interim purposes. [COL
30 12-13]

31
32 Under D&O II and in response to the Court’s charge to develop practicable
33 measures to mitigate the impact of variable offstream demand on the streams, the
34 Commission had developed variable IIFS for Waiāhole and Waianu Streams. [COL 4]
35 The concern had been raised by the use of 12-month moving averages (12-MAV), which
36 could have left insufficient water to meet the IIFS of the windward streams in very dry
37 periods, and the Commission’s remedy in D&O II was to: 1) continue to use the 12-
38 MAV; 2) designate the IIFS to allow for variability on a limited, monthly basis; and 3)
39 add water to the streams to meet the amended IIFS before any water could be used by
40 leeward permittees. [D&O II, at 116] The Commission reinforced the last condition by
41 ordering that “regardless of the 12-MAV, the IIFS must be met before leeward offstream
42 uses are accommodated.” [D&O II, at 117] The Commission now concludes that this
43 latter requirement makes the variable IIFS—which would have allowed lower flows for
44 part of each month [COL 4]—unnecessary, so the variable IIFS established for Waiāhole
45 and Waianu Streams are hereby rescinded.
46

1 2.1 mgd of Kahana surface water are diverted into the Ditch system and comprise
 2 part of the average 27.0 mgd. [FOF 19] While the Commission concludes that the
 3 instream values for Kahana Stream are adequately protected without adding more water
 4 than was present in the 1960s, in D&O I, the Commission had stated that “[t]he Kahana
 5 surface water diversions may also be considered for future restoration to Kahana
 6 Stream.” [D&O I, Decision and Order, at 6] Nearly nine years have passed since D&O I.
 7 The Commission therefore now orders that the diversion of 2.1 mgd from Kahana Stream
 8 into the Ditch be discontinued and that the IIFS for Kahana Stream be increased by 2.1
 9 mgd from 11.2 mgd to 13.3 mgd.

10
 11 Thus, the IIFS for Waikāne Stream established under D&O II is confirmed, and
 12 the IIFS for Waiāhole, Waianu and Kahana Streams established under D&O II are
 13 amended as described above:

14	Waiāhole Stream:	8.7 mgd	(no variable IIFS of 6.6 mgd)
15	Waianu Stream:	3.5 mgd	(no variable IIFS of 3.0 mgd)
16	Waikāne Stream:	3.5 mgd	
17	Kahana Stream:	13.3 mgd	(increase from 11.2 mgd)

18
 19
 20 In comparison to the 1960s, the amended IIFS are as follows:

	<u>1960s</u>	<u>amended IIFS</u>	<u>% increase</u>	
21	Waiāhole Stream:	3.9 mgd	8.7 mgd	124%
22	Waianu Stream:	0.5 mgd	3.5 mgd	600%
23	Waikāne Stream:	1.4 mgd	3.5 mgd	150%
24	Kahana Stream:	11.2 mgd	13.3 mgd	19%

25
 26
 27
 28 **C. The 2.2 mgd of Unpermitted Water**

29
 30 “(T)he Commission should incorporate any allowances for scientific uncertainty
 31 into its initial determination of the minimum standard. Any flows in excess of this
 32 standard shall remain in the stream until permitted and actually needed for offstream use,
 33 in keeping with the policy against waste and in recognition that the standard merely states
 34 an absolute minimum required under any circumstances. These unallocated flows,
 35 however, will not constitute a distinct category or quantity, but will fluctuate according to
 36 variations in supply and demand.” (105 Haw. at 13)

37
 38 In D&O II, after amending the IIFS for windward streams and issuing water use
 39 permits for leeward agricultural and other uses, 3.80 mgd remained unpermitted and
 40 available for future water use permits. [COL 14] The “unpermitted 2.2 mgd,” together
 41 with a proposed agricultural reserve, was part of the 3.80 mgd. [COL 15] It was not a
 42 separate category but the amount the Commission had indicated in D&O I that would be
 43 remaining after an agricultural reserve was created in the future from the unpermitted
 44 water. This intent was carried over into D&O II through Figure 2, although: 1) the
 45 Decision and Order should have provided a reiteration of the intent in D&O I to create an
 46 agricultural reserve; and 2) the correct amount should have been amended to 1.59 mgd,

1 because of reductions in the agricultural water use permits, leaving more for the proposed
2 agricultural reserve and thus less for other future uses. [COL 19]

3
4 To avoid similar misunderstandings in this Decision and Order, the idea of a
5 proposed agricultural reserve is withdrawn.

6
7 The Waiāhole Ditch flows are categorized as follows: 1) water added to the
8 windward streams under the amended IIFS; and 2) water that is available for offstream
9 use.

10
11 Water added to the windward streams total 12.0 mgd: 1) 4.8 mgd added to
12 Waiāhole Stream; 2) 3.0 mgd added to Waianu Stream; 3) 2.1 mgd added to Waikāne
13 Stream; and 4) 2.1 mgd added to Kahana Stream. [COL 4; section B of this Decision and
14 Order, *supra*]

15
16 Water available for offstream uses through water use permits therefore equals
17 15.0 mgd. (There is approximately 27.0 mgd developed in the Ditch system from Kahana
18 to Adit 8, the leeward end of the main bore. [FOF 26])

19
20 The 15 mgd will consist of permitted and unpermitted water, the specific amounts
21 to be identified later in this Decision and Order, because the amounts of permitted water
22 will be modified from D&O II. The unpermitted water will be added to the streams until
23 permitted for offstream use. The unpermitted water and any permitted water not needed
24 for day-to-day operations will be released into the windward streams as previously
25 specified in D&O I and D&O II; i.e., 0.9 mgd into Waikāne Stream and the remainder
26 into Waiāhole Stream. (D&O I, Decision and Order, at 3; D&O II, at 139-140)

27
28
29 **D. Practicability of PMI and Campbell Estate Using Alternative**
30 **Ground Water Sources**

31
32 The decision by the Commission in D&O II is confirmed that PMI has no
33 practicable alternatives to the use of Waiāhole Ditch water, for which it was originally
34 granted a water use permit in the amount of 0.75 mgd in D&O I, and for which it is
35 authorized to continue to use under the Commission's Third Amended Interim Order,
36 dated September 30, 2004. [COL 23] Therefore, PMI's water use permit for 0.75 mgd,
37 which was vacated by the Court in Waiāhole II, is reinstated.

38
39 For PMI, this remanded hearing was convened specifically to clarify the basis on which
40 the Commission concluded that there were no practicable alternatives for PMI's use of
41 ditch water and not to revisit the Commission's original award in D&O I of 0.75 mgd to
42 PMI as a reasonable and beneficial use. The Windward Parties' motion to deny PMI's
43 permit application for failing to establish an actual water need of 0.75 mgd is therefore
44 denied without prejudice. Thus, the motion will be addressed and decided by the
45 Commission, but not in this limited remand from the Court.

1 For Campbell Estate, the Commission has concluded that at least one alternative
2 ground-water source is economically available, even though more costly than the use of
3 ditch water. [COL 43-a] However, the ground-water source is not practically available,
4 because practicable innately requires prioritizing among public trust resources, and the
5 Commission's prioritizing requires the use of non-potable ditch water instead of potable
6 leeward ground water for agricultural irrigation of Campbell Estate's lands. [COL 45]
7 However, the amount of ditch water for which Campbell Estate is issued a water use
8 permit is decreased by 0.76 mgd as explained in the following two sections, from 4.74
9 mgd in D&O II to 3.98 mgd in this D&O. Therefore, Campbell Estate's water use permit
10 for 4.74 mgd, which was vacated by the Court in Waiāhole II, is reinstated but reduced to
11 3.98 mgd.
12
13

14 **E. Actual Needs of Field Nos. 115, 116 and 145 (Jefts)**
15

16 Jefts leases 267 acres from Campbell Estate, of which he is cultivating only 188
17 acres. [COL 46] Jefts' actual water need is 2,500 gad per cultivated acre. [COL 47]
18 Campbell Estate was awarded a water use permit in D&O II for 267 acres, or 0.66 mgd.
19 Campbell Estate's water use permit is therefore reduced from 0.66 mgd to 0.47 mgd for
20 Field Nos. 115, 116 and 145.
21
22

23 **F. Actual Needs of 229 Acres in Field Nos. 146 and 166 (Garst Seeds)**
24

25 Garst Seeds leases 344 acres from Campbell Estate, of which 115 acres are
26 planted at any particular time, with the remaining 229 acres used as part of its crop
27 rotation plan. [COL 49] Garst's actual water need is 1,800 gad per planted acre. [COL
28 50] Campbell Estate's water use permit is therefore reduced from 0.78 mgd to 0.21 mgd
29 for Field Nos. 146 and 166.
30
31

32 **G. ADC's Permit for System Losses**
33

34 After taking into consideration costs, existing technology, and logistics in light of
35 the overall water planning process, the Commission finds that ADC has taken practicable
36 mitigating measures, including repairs to the ditch system, and has met the conditions for
37 the issuance of a water use permit for system losses under HRS section 174C-49(a) of the
38 State Water Code. [COL 67]
39

40 System losses are measured as the Adit 8 reading minus metered water uses, and
41 system losses are further divided into evaporation, overflow at Reservoir 155, and
42 unmetered losses. [COL 67-h]
43

44 ADC's request in D&O II was for 2.02 mgd, consisting of 0.07 mgd in
45 evaporation losses, 0.45 mgd in overflow at Reservoir 155, and an estimated 1.50 mgd in
46 unmetered losses after the three wooden siphons were replaced. [COL 67-b] Because

1 savings from replacing the wooden siphons were less than projected, the unmetered loss
2 after replacement has stabilized at an average of 1.72 mgd, not the projected 1.50 mgd, or
3 0.22 mgd more than originally projected. [COL 67-j] However, overflow at Reservoir
4 155 in dry weather has been reduced from 0.45 mgd to 0.24 mgd, for a savings of 0.21
5 mgd. [COL 67-d] When lining of Reservoirs 155 and 225 is completed, savings are
6 projected at 0.398 mgd to 0.759 mgd. [COL 67-k] ADC's system losses are therefore
7 2.03 mgd after taking practicable mitigating measures, estimated to decrease to an
8 average of 1.45 mgd when the lining of Reservoirs 155 and 225 is completed between
9 December 2007 and June 2008.

10
11 When the adjustment gate near Gate 31 is closed and all the windward tunnel
12 waters are diverted into the windward streams, water developed in the Main Bore leeward
13 of Gate 31 will continue to flow into the leeward ditch system and, if not used, will also
14 be included in system losses. [COL 67-e] To address the impact of wet weather on
15 ADC's ability to minimize system losses when there is little or no leeward water use,
16 ADC/DOA has requested "[t]hat the Commission revise the method for ADC's
17 calculation of system losses as follows: system losses equals the Adit 8 reading minus
18 metered usage, minus overflow at Reservoir 155 when the adjustment gate near Gate 31
19 is closed." [ADC/DOA, Proposed Decision and Order, #2]

20
21 The Commission is faced with two choices in addressing the variability in ADC's
22 ability to practicably minimize system losses in dry versus wet weather: 1) issue a water
23 use permit for a single quantity of system losses; or 2) issue a variable water use permit
24 that reflects the constraints on ADC's ability to implement practicable mitigating
25 measures under different weather conditions.

26
27 In the first option, a water use permit would be issued for 2.03 mgd, subject to a
28 decrease to an estimated 1.45 mgd when the lining of Reservoirs 155 and 255 are
29 completed between December 2007 and June 2008, and further reduced to 1.42 mgd
30 when the 1000 feet of unlined ditch are enclosed in pipes. ADC proposes that the current
31 method be modified as follows:

- 32 1) When the adjustment gate near Gate 31 is open and some windward water is
33 being diverted to the leeward side, system losses would be measured as the
34 Adit 8 reading minus metered water use
- 35 2) When the adjustment gate is closed and no windward water is being diverted
36 leeward, system losses would be measured as the Adit 8 reading minus
37 metered water use and minus the overflow at Reservoir 155. In the latter
38 scenario, 0.24 mgd could be deducted from the overflow (i.e., added to system
39 losses), because that would be the amount included in system losses when the
40 adjustment gate was open, and the remaining overflow would represent runoff
41 into the open portions of the Ditch when it is raining.

42
43 In the second option, a variable water use permit would be issued. System losses
44 would continue to be measured as the Adit 8 reading minus metered water use.

- 45 1) When the adjustment gate is open and some windward water is being diverted
46 to the leeward side, the water use permit would be for 2.03 mgd, subject to a

1 decrease to an estimated 1.45 mgd when the lining of Reservoirs 155 and 255
2 are completed between December 2007 and June 2008, and to 1.42 mgd when
3 the 1000 feet of unlined ditch are enclosed in pipes.

4 2) When the adjustment gate is closed and all windward tunnel waters are being
5 diverted into the windward streams, the water use permit would be for the
6 Adit 8 reading minus metered water use. The overflow at Reservoir 155,
7 which would include runoff into the ditch during rainy periods, would be
8 reported to the Commission only for monitoring purposes. Under this method,
9 if water were not being used, the permit for system losses would be the
10 amount flowing out of Adit 8, and if water were being used, the permit for
11 system losses would decrease by those amounts. Water developed in the Main
12 Bore, between Gate 31 and Adit 8, has varied in recent years between a low of
13 3.8 mgd in November 2003 and 7.55 mgd in June 2004 [COL 67-e]
14

15 The Commission adopts the second option of a variable water use permit. ADC
16 clearly has available different practicable mitigating measures to minimize system losses
17 in dry versus wet weather. Rather than excluding some portion of system losses (i.e., the
18 first option) when changes in physical conditions constrain ADC's ability to minimize
19 losses, the Commission concludes that it is appropriate and required by the Water Code
20 to regulate system losses through a variable water use permit.
21

22
23 **H. Summary**
24

25 There is on average 27.0 mgd that is developed in the Waiāhole Ditch and Tunnel
26 System. About 5.0 mgd of this amount is developed in the Main Bore, the tunnel that
27 connects the windward collecting tunnels to the leeward distribution ditch. The Main
28 Bore is leeward of and at lower elevation to the last adjustment gate on the windward side
29 that can divert tunnel waters into the windward streams, so a maximum of 22.0 mgd can
30 be diverted into the windward streams.
31

32 Water added to the windward streams under the amended IIFS total 12.0 mgd: 1)
33 4.8 mgd to Waiāhole Stream, 124% greater than its 1960s flow; 2) 3.0 mgd to Waianu
34 Stream, 600% greater than its 1960s flow; 3) 2.1 mgd to Waikāne Stream, 150% greater
35 than its 1960s flow; and 4) 2.1 mgd to Kahana Stream, 19% greater than its 1960s flow.
36

37 Of the 15.00 mgd available for offstream uses, 12.57 mgd has been permitted,
38 including a decrease from 4.74 mgd to 3.98 mgd for Campbell Estate, and 2.03 mgd in
39 system losses for ADC, subject to a decrease to an estimated 1.45 mgd when the linings
40 of Reservoirs 155 and 225 are completed between December 2007 and June 2008, and to
41 1.42 mgd when the 1000 feet of unlined ditch are enclosed in pipes.
42

43 The changes from D&O II are as follows: 1) water added to the windward streams
44 for the amended IIFS increases from 9.9 mgd to 12.0 mgd; 2) water permitted for
45 offstream uses decreases from 13.30 mgd to 12.57 mgd; and 3) water remaining
46 unpermitted, available for future water use permits, and diverted into the streams until

1 permitted, decreases from 3.80 mgd to 2.43 mgd. When system improvements by ADC
2 are completed, its water use permit is projected to decrease by 0.61 mgd, from 2.03 mgd
3 to 1.42 mgd. Thus, water permitted for offstream uses will decrease from 12.57 mgd to
4 11.96 mgd, and unpermitted water will increase from 2.43 mgd to 3.04 mgd.

5
6 The 2.43 mgd in unpermitted water will be diverted into the windward streams
7 until such time as it is permitted for offstream use. The unpermitted water and any
8 permitted water not needed for day-to-day operations will be diverted into the windward
9 streams as previously specified in D&O I and D&O II; i.e., 0.9 mgd into Waikāne Stream
10 and the remainder into Waiāhole Stream (these amounts are in addition to the 2.1
11 mgd added to Waikāne and 4.8 mgd added to Waiāhole Streams under the amended
12 IIFS).

13
14 ADC's permit is for 2.03 mgd in system losses and will be decreased to 1.45 mgd
15 no later than June 2008, or earlier if the reservoir linings are completed. The permit for
16 1.45 mgd in system losses will be adjusted as necessary to reflect actual reductions
17 instead of the 0.398 to 0.759 (average of 0.58) mgd currently estimated. When the
18 remaining 1000 feet of unlined ditch are enclosed in pipes, the permit for system losses
19 will be reduced further by 0.03 mgd. ADC will report on the progress of the reservoir
20 lining projects and on funding to enclose the remaining portion of unlined ditch
21 according to schedules and details to be determined by the Commission.

22
23 ADC's permit for 2.03 mgd in system losses and subsequent reductions to 1.45
24 mgd and 1.42 mgd applies when the windward adjustment gate is open and some
25 windward water is being diverted leeward. When the adjustment gate is closed and all
26 windward tunnel waters are being diverted into the windward streams, the water use
27 permit will be for the Adit 8 reading (where the tunnel emerges into the ditch) minus
28 metered water use. This would be the water developed in the Main Bore, which cannot be
29 prevented from flowing into the leeward ditch system, minus metered water usage. The
30 water use permit for this amount is in effect the flow at Adit 8 minus usage when use is
31 less than the Main Bore flow.

32
33 The apportionment of Waiāhole Ditch water is summarized in Figure 1. The
34 stream flows in the 1960s and the amended IIFS are summarized in Figure 2 and Table 1.
35 The water use permits are summarized in Tables 2-4.

36
37 The Standard Water Use Permit Conditions are contained in Appendix A.

38
39 Additional Water Use Conditions for ADC are contained in Appendix B.

40
41 The Commission's ruling on the proposed findings of fact submitted by the
42 parties is contained in Appendix C.

1 **Response to the Dissent**

2
3 The dissent takes the Court’s *observation* in *Waiāhole II* that unpermitted water
4 had not been allocated by the Commission as a *direction* to allocate. But the Court in
5 *Waiāhole I* had concluded that it was permissible for the Commission to have unallocated
6 flows, as long as it did not constitute a distinct category or quantity and fluctuated with
7 variations in supply and demand, a conclusion the Court reiterated in *Waiāhole II*:
8

9 [T]he Commission should incorporate any allowances for scientific uncertainty
10 [i.e., a “margin of safety”] into its initial determination of the minimum [interim
11 instream flow] standard. Any flows in excess of this standard shall remain in the
12 stream until permitted and actually needed for offstream use, in keeping with the
13 policy against waste and in recognition that the standard merely states an absolute
14 minimum required under any circumstances. These unallocated flows, however,
15 will not constitute a distinct category or quantity, but will fluctuate according to
16 variations in supply and demand.
17

18 *Waiāhole II* at 13 (quoting *Waiāhole I* at 156) (emphasis added).
19

20 However, the dissent also points out that the Court criticized the Commission in
21 *Waiāhole I* for designating the unallocated, unpermitted ground water as a “buffer” that
22 the Commission could use to satisfy future permit applications without amending the
23 IIFS, and that nothing in the code authorized such a measure:
24

25 [A] buffer stands the constitution and the Code on their heads, allowing
26 diversions of instream flows before the completion of the requisite procedure and
27 analysis for instream use protection. . . If the Commission determines the minimum
28 instream flows first, as contemplated by the Code, it need not designate formal
29 “buffer” flows for the sake of precaution. As the Commission recognized, the
30 policy against waste dictates that any water above the designated minimum flows
31 and not otherwise needed for use remain in the streams in any event. At best,
32 therefore, a buffer is superfluous; at worst, it is a violation of the public trust and
33 an end run around the instream use protection provisions. Since it serves no
34 legitimate purpose, we refuse to let it stand.
35

36 . . . We do not bar the Commission, pending the establishment of permanent
37 standards, from setting the interim standard lower than the combined total of the
38 previous “base” and “buffer” flows or from amending the standard
39 subsequently. . . . however, several factors suggest to us that the interim standard
40 should, at least for the time being, incorporate much of the total instream flows. . .
41

42 . . . The Commission’s assignment of the buffer flows to the windward streams, on
43 its face, seems to amount to a determination that it is “practicable” to “protect,
44 enhance, and reestablish” instream uses by that quantity, at least for the interim. If
45 so, this would generally meet the definition and purpose of “interim” standards
46 under the Code. We leave the final analysis of the foregoing factors and

1 determination of the appropriate interim standard to the Commission on remand.

2
3 *Waiāhole I* at 156-157 (emphasis added).

4
5 Thus, the proper sequence was first to add Ditch water to the streams under
6 amended IIFS; second, to issue water use permits from the remaining water; and third, to
7 place the remaining, unallocated, unpermitted water into the streams to avoid waste. The
8 amount of the unpermitted water would fluctuate with variations in supply and demand
9 and would not constitute a distinct category or quantity.

10
11 This is in fact what the Commission did in D&O I, but the Court in *Waiāhole I*
12 somehow concluded that the Commission first issued water use permits; second,
13 designated a "buffer" to be placed in the streams; and third, added the remaining water
14 into the streams under amended IIFS. The Court then concluded that such a buffer was a
15 distinct category or quantity and not allowed under either the constitution or the Code.
16 The Court further concluded that it was practicable to include the buffer into the IIFS,
17 because it was a categorical allocation to the streams. However, the Court also said that
18 the Commission was not barred from setting the IIFS lower than the sum of the base and
19 buffer flows and left the final analysis and determination of the appropriate IIFS to the
20 Commission on remand.

21
22 In fact, the Court in *Waiāhole II* did not direct the Commission to allocate all of
23 the unpermitted flows into the IIFS and only asked for clarification of whether the IIFS
24 established in D&O II were higher than the stream flows in the 1960s and FOF and COL
25 on the remaining unpermitted water. Thus, the Court supported the Commission's
26 "setting the interim standard lower than the combined total of the previous 'base' and
27 'buffer' flows." *Waiāhole II* at 156. As explained below, the original concern of the
28 Court was its interpretation that a "buffer" was a "formal and distinct category of
29 allocation" (*Waiāhole I* at 156), and it subsequently explicitly recognized the
30 Commission's explanation in D&O II that it was not:

31
32 In its D&O II, the Water Commission notes that, although it inadvertently used
33 the word "buffer" in a COL in its D&O I, it did not intend that "nonpermitted
34 ground-water buffer" be a formal and distinct category of allocation.

35
36 *Waiāhole II* at 6, fn 3.

37
38 Thus, in *Waiāhole II*, the Court no longer referred to the unallocated, unpermitted
39 water as a formal and distinct category of allocation, but only asked for further
40 clarification of the unpermitted water with FOF and COL.

41
42 Another legal issue concerns the effect of incorporating the unallocated,
43 unpermitted water into a second revision of the IIFS, as recommended by the dissent.
44 While this contested case identified, for the first time, water that is not part of the IIFS or
45 water use permits, this followed only because all streams across the state were designated
46 with "status quo" IIFS after the Code was enacted in 1987; i.e., any water in the streams

1 on the effective date of designation would be part of the IIFS, and any diversions of water
2 for offstream use were allowed to continue. For the windward O`ahu streams, the
3 effective date was May 4, 1992 for the standards measured on April 19, 1989. HAR §13-
4 169-49.1. This contested case included the first petitions to amend the status quo IIFS for
5 specific streams; and other similar petitions pertaining to East Maui streams are currently
6 pending before the Commission. Thus, there is no departure from Commission precedent
7 to incorporate unallocated, unpermitted water into the IIFS, because no such precedent
8 exists.

9
10 The effect of incorporating the unallocated, unpermitted water into a second
11 iteration of the IIFS raises the following concerns.

12
13 First, in *Waiāhole I* the Court concluded: ‘Given the diverse and not necessarily
14 complementary range of water uses, even among public trust uses alone, we consider it
15 neither feasible nor prudent to designate absolute priorities between broad categories of
16 uses under the water resources trust. Contrary to the Commission’s conclusion [in D&O
17 I] that the trust establishes resource protection as “a categorical imperative and the
18 precondition to all subsequent considerations,” we hold that the Commission inevitably
19 must weigh competing public and private water uses on a case-by-case basis, according
20 to any appropriate standards provided by law.’ *Waiāhole I* at 142 (citations omitted). The
21 dissent proposes that any unallocated, unpermitted water be formally placed into a second
22 iteration of the IIFS. Presumably, the dissent sees this as setting the precedent for all such
23 future applications for surface water use permits. This policy would be equivalent to “a
24 categorical imperative and the precondition to all subsequent considerations” that the
25 Court has expressly rejected.

26
27 Second, to allocate the unpermitted water into the IIFS violates the Court’s
28 prohibition of issuing offstream water use permits before amending the IIFS. Amending
29 the IIFS a first time, followed by issuing water use permits, then amending the IIFS a
30 second time to incorporate all of the remaining unpermitted water is equivalent to
31 amending the IIFS after water use permits are issued, no matter what the dissent intends,
32 because the first amendment is merely a stopgap measure to see how much offstream
33 water use permits will require before amending the IIFS for a final time.

34
35 Third, the dissent would require all future permit applicants for ditch water not
36 only to meet the permit’s requirements of reasonable and beneficial use and no practical
37 alternatives but also require permit applicants to successfully petition to amend the IIFS
38 of one or more of the four streams affected by the ditch system in the amount of water
39 being requested. But the Court has agreed with the Commission that the IIFS is the
40 surface water corollary to the ground water sustainable yield. *Waiāhole I* at 148. If the
41 same principle the dissent advocates were to be applied to ground water, after initial
42 designation of a ground water management area and issuance of existing use permits, the
43 Commission would reset the sustainable yield at zero as a matter of policy only, and
44 subsequent new use permit applications would have to convince the Commission to
45 change the sustainable yield to a positive number to make water available for the permit
46 applications. This procedure would then have to be repeated for each successive permit

1 application. There is no basis in the Code for requiring future surface water use permit
2 applicants to always have to simultaneously petition for amendments to the IIFS.
3

4 Fourth, suppose a water use permit applicant seeks an amount of water that could
5 have been satisfied with the unallocated, unpermitted flow. The portion of water added in
6 the first iteration of the amended IIFS would have been based on scientific and historical
7 evidence, but the unallocated, unpermitted water would have no such basis except the
8 Commission's preference to do so. How should the petitioner proceed in convincing the
9 Commission that the amendment he/she seeks is warranted? In fact, on what basis could
10 the Commission itself make a reasonable and not arbitrary decision? If the only test is
11 that applied to water use permits, then the petition to amend the IIFS would be a
12 superfluous and sham proceeding.
13

14 Fifth, and probably most important from a policy perspective, the dissent's
15 position that unallocated, unpermitted water should be formally placed into the IIFS
16 would "back door" an extremely important policy change through this remanded
17 contested case, without any public input and reasoned and exhaustive discussion among
18 the Commission members, including addressing directly the legal and practical issues
19 identified immediately above.
20

21 The crux of the dissent's argument is its conclusion that "the majority fails to
22 address its trust responsibilities to allocate the unpermitted water," and more specifically,
23 its statement that "(i)n order to fulfill our trust duties, the Commission must appropriate
24 the unpermitted water to a fate permissible under the Code, whether by allocating to a
25 separate category (if that is the intent of the Commission), to windward instream use
26 under IIFS, to some permitted offstream use, or to some combination of the above. Upon
27 remand, the majority has done none of the above."
28

29 Given the dissent's arguments, these are curious and inconsistent
30 recommendations. There is no support for a formal and distinct category of allocation
31 under the Code, yet the dissent recommends this as one course of action and states that
32 the Commission has not taken such an action. The dissent apparently objects to a "buffer"
33 but does not realize that the Court was more specifically referring to "a formal and
34 distinct category of allocation," which it thought in *Waiāhole I* that the use of the word
35 "buffer" represented for the unallocated, unpermitted water in D&O I. (In D&O II, the
36 Commission clarified its intent, which the Court in *Waiāhole II* duly noted, as described
37 earlier.)
38

39 Another option identified by the dissent is "to some permitted offstream use."
40 Surely the dissent is not advocating that the majority add the unallocated water to
41 approved water use permits, in violation of the reasonable and beneficial use requirement
42 for granting permits. Instead, the dissent's option is based on its erroneous conclusion that
43 "(t)here are three basic options for categories under the Code: 1) instream flow standards,
44 2) permitted water, and 3) reservation of water. As defined, unpermitted water is clearly
45 not the second category." But the dissent's second category is in error. The correct
46 category should be "water available for offstream uses," and permitted water and

1 unallocated, unpermitted water are its two subcategories, just as an aquifer's sustainable
2 yield is a category for ground water, consisting of permitted water and the remaining
3 unpermitted water. (Reservations are not a separate category but part of the water
4 available for offstream uses.) That is why the Court has stated that the unpermitted waters
5 "will not constitute a distinct category or quantity, but will fluctuate according to
6 variations in supply and demand." *Waiāhole II* at 13 (quoting *Waiāhole I* at 156). With
7 this correction of the dissent's category 2, it is clear that the unpermitted water is already
8 included in a category permitted by the Code and consistent with the Court's directives.
9

10 A further contradiction in the dissent's recommendations is its claim that the
11 majority has established an unnamed reserve with the unallocated, unpermitted water by
12 not including it in the IIFS. The majority refutes this assertion (addressed below) but also
13 notes that it is the very type of action the dissent is recommending when it stated that the
14 unallocated, unpermitted water could be allocated to some permitted offstream use.
15

16 The dissent's final recommendation is to allocate the unpermitted water into the
17 IIFS, which the majority has addressed in detail in its five-point rebuttal
18

19 The dissent also would apportion the unallocated, unpermitted flows pro rata to
20 three of the four windward streams. Although the dissent would apportion as part of the
21 IIFS, it does note that the majority has allocated the 2.43 mgd as follows: 0.9 mgd to
22 Waikāne Stream and the remaining 1.53 mgd to Waiāhole Stream, noting that Waianu
23 Stream is a tributary to Waiāhole, with the juncture of the two streams at 80 feet
24 elevation. FOF 37. While the majority does not object to the dissent's observations, it
25 does not believe there will be a significant benefit to further apportioning of the
26 unpermitted flows to the detailed degree that the dissent recommends.
27

28 Finally, the dissent alleges that the majority has allocated the unpermitted water
29 as an unnamed reserve, again contending that a separate and distinct category of
30 unpermitted water has been formally created. The dissent is incorrect, using the label
31 "reserve" in a manner not consistent with the Code. The Code states that "(t)he
32 commission, by rule, may reserve water in such locations and quantities and for such
33 seasons of the year as in its judgment may be necessary. Such reservations shall be
34 subject to periodic review and revision in the light of changed conditions; provided that
35 all presently existing legal uses of water shall be protected." HRS §174C-49(d). For
36 example, reservations have been made for the Department of Hawaiian Home Lands in
37 Windward O`ahu from the Waimānalo aquifer system, setting aside 0.124 mgd from the
38 sustainable yield. HAR §13-171-62. Note that the reservation is set aside from the
39 sustainable yield and that the entire sustainable yield is not the equivalent of a
40 reservation. Similarly, simply because the dissent has chosen to characterize the
41 unallocated, unpermitted water (equivalent to the water remaining in the sustainable yield
42 after permitted water is subtracted) as an "unnamed reserve" does not make it a reserve,
43 and it remains as the Court has characterized it: not a distinct category or quantity but
44 fluctuating according to variations in supply and demand.
45

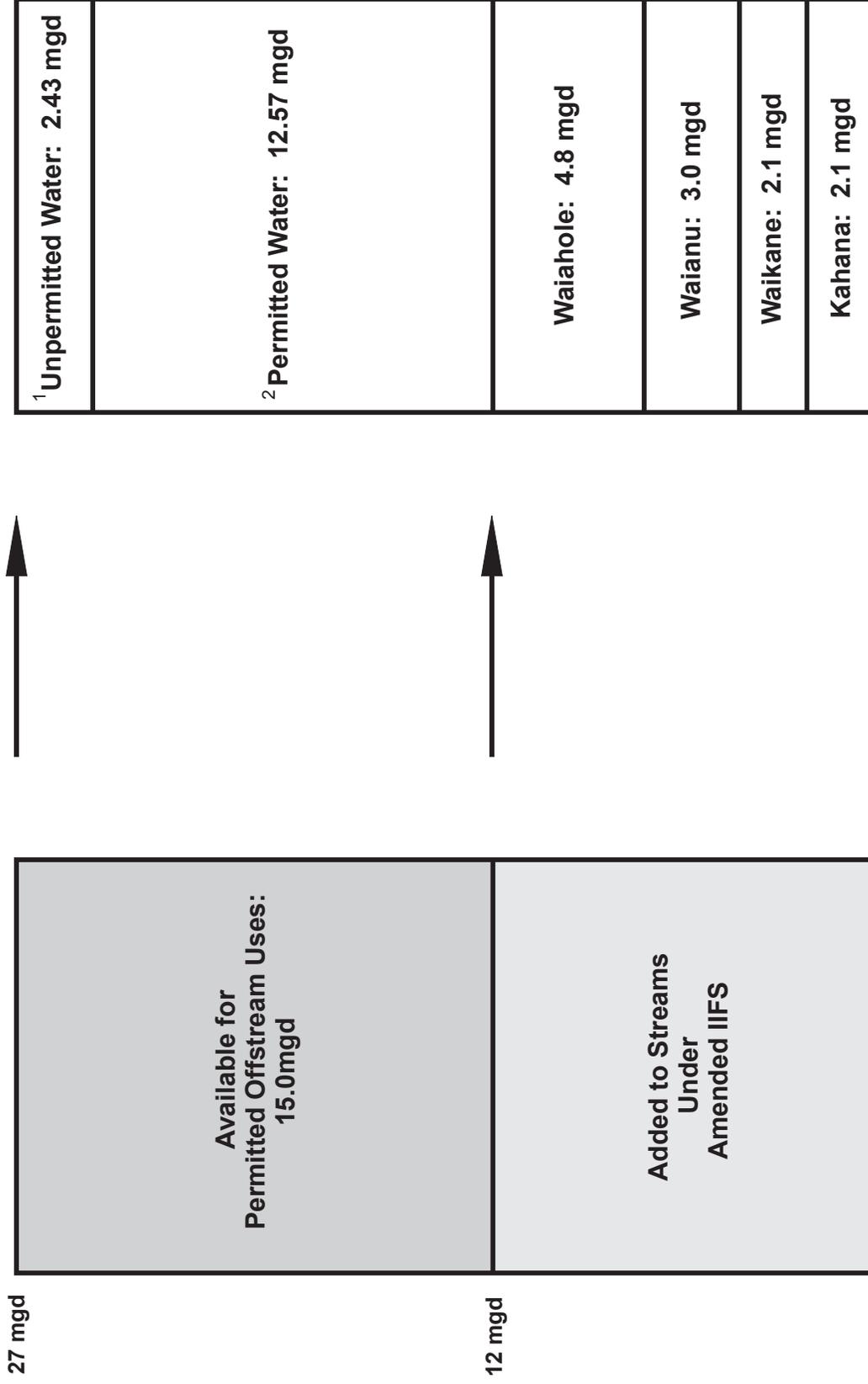
46 The amended IIFS under D&O II and this D&O III have met the test the Court

1 has imposed, with the amended IIFS substantially higher than the stream flows in the
2 1960s. After amending the IIFS, water use permits have been issued from the water
3 available for offstream uses, and the remaining unallocated, unpermitted flows have been
4 diverted into the streams, not constituting a distinct category or quantity, but fluctuating
5 according to variations in supply and demand, as required by the Court.
6

7 For example, if the Windward Parties' motion to deny PMI's water use permit
8 application for 0.75 mgd had been granted, the unallocated, unpermitted flows would
9 increase by an equal amount. Furthermore, in D&O I, Kamehameha Schools had
10 requested 4.20 mgd but was granted 0.17 mgd. Pending final determination of this
11 contested case, the Commission will not issue new water use permits from ditch waters.
12 On October 25, 2005, the Commission approved 0.982 mgd in water use permits for
13 potable ground water for golf course irrigation to Waiawa Development
14 LLC/Kamehameha Schools, subject to conversion to treated wastewater or another
15 nonpotable source if they become available. If ditch water becomes available after the
16 final conclusion of this contested case, and is substituted for potable ground water, the
17 unallocated, unpermitted flows would decrease by 0.982 mgd. And tellingly, the amounts
18 of unallocated, unpermitted water (including the proposed agricultural reserves of D&O I
19 and D&O II) have changed from 6.97 mgd in D&O I (see Figure A in D&O I), to 3.8
20 mgd in D&O II (see Figure 2 in D&O II), to 2.43 mgd in this D&O III (see Figure 1), as
21 the Commission has responded to the Court's directives on amending the IIFS and upon
22 closer scrutiny of the quantities of water requested by certain permit applicants. Thus, the
23 unpermitted water is clearly a subcategory of the water available for offstream uses after
24 the IIFS have been amended, and is not a formal and distinct category of allocation but is
25 unallocated water that will fluctuate with variations in supply and demand.
26

27 Finally, regarding the dissent's comments on PMI, this D&O simply denied the
28 Windward Parties' motion without prejudice. The motion may be filed again with the
29 Commission, and on its own initiative, the Commission may at any time request that PMI
30 appear before the Commission.
31
32
33
34
35

FIGURE 1
APPORTIONMENT OF WAIHAHOLE DITCH WATER



¹ Until permitted, the 2.43 mgd will be diverted into the streams to avoid waste, 0.9 mgd into Waikane Stream and the remaining 1.53 mgd into Waiahole Stream. ("Any flows in excess of this standard [the amended IIFS] shall remain in the stream until permitted and actually needed for offstream use in keeping with the policy against waste... These unallocated flows, however, will not constitute a distinct category or quantity, but will fluctuate according to variations in supply and demand." 94 Haw. 56.)

² Any water not actually needed for day-to-day operations will be diverted into Waiahole Stream to avoid waste.

Table 1. Stream Flows

Stream	1960s	Amended IIFS	Percent Increase
Waiāhole	3.9 mgd	8.7 mgd	124%
Waianu	0.5 mgd	3.5 mgd	600%
Waikāne	1.4 mgd	3.5 mgd	150%
Kahana	11.2 mgd	13.3 mgd	19%

Table 2. Waiāhole Ditch System - Leeward Oahu Agricultural Water Use Permits

Landowner	User/Lands	Use	Acreage	Acreage Subtotal	Basis (GAD)	Allocation	Allocation Subtotal
Robinson	Jefts Sou	Div Ag	620	995	2500	1.55	2.49
		Div Ag	375		2500	0.94	
Nihonkai	Sou	Div Ag	190	190	2500	0.48	0.48
Campbell	156,140,172 105,110 HARC 146,166 115,116,145 161	Pineapple	803	1788	2000	1.60	3.98
		Div Ag	409		2500	1.02	
		Plant Research	65		4000	0.26	
		Seed crops	115		1800	0.21	
		Div Ag	0		2500	0	
		Div Ag	188		2500	0.47	
		Pineapple	208		2000	0.42	
Dole/ Castle & Cooke (Robinson)	Dole Fresh Fruit Co. Hawaii Ag Park Pacific Landscape Hawaiian Fertilizer Sales Eiko Nakama	Div Ag	925	1459	904 (requested)	0.84	2.13
		Div Ag	97		2500	0.24	
		Div Ag	22		500 (requested)	0.01	
		Small plots & long-term crops	375		2500	0.94	
		Div Ag	40		2500	0.10	
		Div Ag	36		2500	0.09	
KSBE	Waiawa Nursery HFP	Div Ag	33	69	2500	0.08	0.17
		Div Ag	33		2500	0.08	
TOTAL		DIV AG		4809			9.25

Table 3. Waiahole Ditch System - Leeward Oahu Water Use Permits, Other Uses

Landowner	Use	Acreage	Tax Map Key	Basis (GAD)	Allocation
State of Hawaii (Waiawa Corr. Fac.)	Dom, Irr	210	9-6-5:011 9-6-5:012	requested @ 714	0.15
Mililani Memorial	Cemetery	67	9-4-6:10p 9-4-33:01	requested @ 2085	0.14
Mililani Golf	Golf Course	165	9-5-01:35	requested @ 1500	0.25
Royal Oahu Resort	Golf Course	163	9-2-4:046	N/A	0.00
Puu Makakilo	Golf Course	230	9-2-3:074	requested @ 3261	0.75
Agribusiness Development Corporation	System losses			requested 2.00	2.03 ¹
TOTAL	OTHER USES	835			3.32

1 Reduced to an estimated 1.45 mgd after lining of Reservoirs 155 and 225 is completed, and to 1.42 mgd when the 1000 feet of unlined ditch are enclosed in pipes. When all windward tunnel waters are being diverted into the windward streams, the water use permit for system losses would be the Adit 8 reading minus any metered water use.

Table 4. Summary of Allocations (mgd)

Landowner	Allocation per Original D&O	Allocation on 1 st Remand	Allocation on 2 nd Remand
Robinson	2.49	2.49	2.49
Nihonkai	0.48	0.48	0.48
Campbell	5.28	4.74	3.98
Dole/Castle & Cooke	2.22	2.13	2.13
KSBE	0.17	0.17	0.17
SUB TOTAL	10.64	10.01	9.25
OTHER USES	1.29	1.29	1.29
OPERATIONAL LOSS ALLOWANCE	2.1	-	-
Water Use Permit For System Losses	-	2.0	2.03¹
TOTAL	14.03	13.30	12.57

1 Reduced to an estimated 1.45 mgd after lining of Reservoirs 155 and 225 is completed, and to 1.42 mgd when the 1000 feet of unlined ditch are enclosed in pipes. When all windward tunnel waters are being diverted into the windward streams, the water use permit for system losses would be the Adit 8 reading minus any metered water use.

Appendix A

Standard Water Use Permit Conditions

1. **The water described in this water use permit may only be taken from the location described and used for the reasonable beneficial use described at the location described in this Decision and Order. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)**
2. The right to use ground water is a shared use right.
3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
 - a. Can be accommodated with the available water source;
 - b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
 - c. Will not interfere with any existing legal use of water;
 - d. Is consistent with the public interest;
 - e. Is consistent with State and County general plans and land use designations;
 - f. Is consistent with County land use plans and policies; and
 - g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).
4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.
5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
 - a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
 - b. The interim or permanent instream flow standard, as applicable, must be amended.
6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.
7. The water use permit application, as amended, approved by the Commission in its December 24, 1997 Decision and Order, are incorporated into this permit by reference.

8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.
9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
 - a. protect the water sources (quantity or quality);
 - b. meet other legal obligations including other correlative rights;
 - c. insure adequate conservation measures;
 - d. require efficiency of water uses;
 - e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
 - f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
 - g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. Approved flowmeters must be installed to measure monthly withdrawals and a monthly record of withdrawals must be kept and reported to the Commission on Water Resource Management on a monthly basis.
11. This permit shall be subject to the Commission's periodic review of the Waipahu-Waiawa, Kahana, and Koolaupoko Aquifer System's sustainable yields. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yields of the Waipahu-Waiawa, Kahana, and Koolaupoko Aquifer Systems, or relevant modified aquifer(s), are reduced.
12. A permit may be transferred, in whole or in part, from the permittee to another, if:
 - a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
 - b. The Commission is informed of the transfer within ninety days.

Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.

13. The use(s) authorized by law and by this permit do not constitute ownership rights.

14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances which will affect the permittee's water use.
15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.
16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Waipahu-Waiawa, Kahana, and Koolaupoko Ground-Water Management Areas.
17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.
18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.

Appendix B

Additional Water Use Permit Conditions for ADC

In addition to the standard water use permit conditions described in Appendix A, ADC is required to perform the following activities:

1. Periodic reporting to the Commission, according to schedules to be determined by the Commission, on:
 - a. completion of the lining of reservoirs 155 and 225 and, after completion, the actual reductions in system losses realized;
 - b. funding sources and timetables for enclosing the remaining 1000 feet of unlined ditch with pipes;
 - c. steps taken to further improve the accuracy of the meters used to measure actual water use by permittees; and
 - d. other matters which the Commission may require from time to time.

Appendix C

RULINGS ON THE PROPOSED FINDINGS OF FACT SUBMITTED BY THE PARTIES

The Commission makes the following rulings on the parties' proposed findings of fact. The findings are placed into two categories.

Category A contains findings that are accepted in their entirety, or accepted with minor modifications or corrections that do not substantially alter the meaning of the original findings.

Category B contains findings that are rejected because they may be:
1) duplicative; 2) not relevant; 3) not material; 4) taken out of context; 5) contrary (in whole or in part) to the found facts; 6) an opinion (in whole or in part); 7) contradicted by other evidence; or 8) contrary to law.

I. CAMPBELL ESTATE

A. ACCEPTED

1-17, 20-22, 24-26, 31, 34, 36-39, 41-57.

B. REJECTED

18-19, 23, 27-30, 32-33, 35, 40, 58.

II. PMI

No findings of fact were submitted, as the Hearing Officer had concluded that no further hearings were necessary because of the sufficiency of evidence in the Record.

III. ADC/DOA

A. ACCEPTED

10-19, 23-40, 43, 45-46, 48-57, 59-68.

B. REJECTED

1-9, 20-22, 41-42, 44, 47, 58.

IV. CITY AND COUNTY OF HONOLULU

The City and County of Honolulu waived its right to file Proposed Findings of Fact, Conclusions of Law, and Decision and Order.

V. WINDWARD PARTIES

A. ACCEPTED

2, 9-12, 15-16, 22, 26-29, 33-34, 38, 48, 50-52, 57-58, 62-63, 66-67, 89-90, 94-96, 98-99, 101.

B. REJECTED

1, 3-8, 13-14, 17-21, 23-25, 30-32, 35-37, 39-47, 49, 53-56, 59-61, 64-65, 68-88, 91-93, 97, 100, 102-103.

VI. HAWAII'S THOUSAND FRIENDS

Hawaii's Thousand Friends joined in the Windward Parties' Proposed Findings of Fact.

The foregoing FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER in the second remanded proceedings "In the Matter of Water Use Permit Applications, Petitions for Interim Instream Flow Standard Amendments, and Petitions for Water Reservations for the Waiāhole Ditch Combined Contested Case Hearing," ARE HEREBY ADOPTED.

IT IS SO ORDERED.

DATED: HONOLULU, HAWAII, JUL 13 2006

COMMISSION ON WATER RESOURCE MANAGEMENT
STATE OF HAWAII

By: Lawrence H. Mike
LAWRENCE H. MIKE, Commissioner and
Hearings Officer

Meredith J. Ching
MEREDITH J. CHING, Commissioner

James A. Frazier
JAMES A. FRAZIER, Commissioner

Neal S. Fujiwara
NEAL S. FUJIWARA, Commissioner

1
2 COMMISSION ON WATER RESOURCE MANAGEMENT

3
4 STATE OF HAWAI'I

5
6
7 In the Matter of)
8 Water Use Permit Applications,)
9 Petitions for Interim Instream) OPINION DISSENTING IN PART,
10 Flow Standard Amendments, and) AND CONCURRING IN PART, BY
11 Petitions for Water Reservations) COMMISSIONER PETER T. YOUNG;
12 For the Waiāhole Ditch Combined) AND JOINED BY COMMISSIONER
13 Contested Case Hearing:) CHIYOME L. FUKINO, M.D.
14)
15 ON SECOND REMAND)
16 _____)
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26

27 **OPINION DISSENTING IN PART, AND CONCURRING IN**
28 **PART, BY COMMISSIONER PETER T. YOUNG;**
29 **AND JOINED BY**
30 **COMMISSIONER CHIYOME L. FUKINO, M.D.**
31
32
33

1 Opinion Dissenting in Part, and Concurring in Part, by Commissioner
2 Peter T. Young; and Joined by Commissioner Chiyome L. Fukino, M.D.

3
4 **The Allocation of Unpermitted Waiāhole Water**

5
6 I. Allocation must be made

7
8 Upon its second remand, the Hawaii Supreme Court expressed concern over the
9 failure of this Commission to allocate an otherwise unpermitted¹ portion of the 27.0 mgd
10 water flow developed by the Waiāhole Ditch and Tunnel System (“Waiāhole system”).
11 The Court directs the Commission to make FOFs and COLs, regarding the approximately
12 2.2 mgd of “unpermitted water” indicated in Decision & Order II (“D&O II,” figure 2).
13 In Re Water Use Permit Applications, 105 Haw. 1, 12-13, 93 P.3d 643, 654-655 (2004)
14 (“Waiāhole II”).

15
16 While correcting what the quantity² of unpermitted water presently consists of, on
17 remand, the majority fails to address its trust responsibilities to allocate the unpermitted
18 water. The Waiāhole I Court (In Re Water Use Permit Applications, 94 Haw. 97, 155, 9
19 P.3d 409, 467 (2000)(“Waiāhole I”) has already spoken against any temporary allocation
20 of water pending some future offstream use and directs us to give priority to establishing
21 IIFS for windward streams posthaste, stating:

22
23 ...In requiring the Commission to establish instream flow standards at an
24 early planning stage, the Code contemplates the designation of the
25 standards based not only on scientifically proven facts, but also on future
26 predictions, generalized assumptions, and policy judgments. Neither the
27 constitution nor Code, therefore, constrains the Commission to wait for
28 full scientific certainty in fulfilling its duty towards the public interest in
29 minimum instream flows.

30
31 ... More fundamentally, **the notion of a buffer freely available for**
32 **unidentified offstream uses, while instream flow standards still await**
33 **proper designation, offends the public trust and the spirit of the**
34 **instream use protection scheme.** We have rejected the idea of public
35 streams serving as convenient reservoirs for offstream private use.

36
37 Id. at 155. (emphasis added)

38

¹ Used synonymously with “nonpermitted.”

² The majority indicates that the amount of unpermitted water was erroneously stated in Figure 2 of D&O II as “non-permitted ground water 2.22” mgd and “proposed agricultural reserve 1.58” mgd, and has since abolished the proposed agricultural reserve. This D&O, page 69. The amount of unpermitted water referred to in the majority’s decision is thus the sum of the prior amounts (3.80 mgd) adjusted for the increase in water for IIFS to Kahana in this decision (-2.1 mgd) but decrease in permitted offstream water usage (+0.73 mgd). After subtracting windward stream IIFS and permitted offstream uses from the 27.0 mgd developed, the mathematical remainder of unpermitted water is now 2.43 mgd. This D&O, pages 72-73.

1 In so saying, both Waiāhole I and Waiāhole II apparently conclude that the
2 unallocated unpermitted portion of the Waiāhole system water flow budget of 27.0 mgd
3 should be more than an accounting leftover. In order to fulfill our trust duties, the
4 Commission must appropriate the unpermitted water to a fate permissible under the
5 Code, whether by allocating to a separate category (if that is the intention of the
6 Commission), to windward instream use under IIFS, to some permitted offstream use, or
7 to some combination of the above. Upon remand, the majority has done none of the
8 above.

9
10 II. Abolishment of Allocation to the Proposed Agricultural Reserve

11
12 The Commission previously addressed the unpermitted water, in part by
13 proposing an agricultural reserve, which along with any other remainder was to be
14 distributed to windward streams unless or until otherwise allocated by offstream use
15 water permits.³ In this present decision, the majority withdraws its proposal for an
16 agricultural reserve. This D&O, page 69. Without the anticipated and necessary
17 rulemaking to create such a reserve pursuant to §174C-49(d), HRS, and §13-171-60(a),
18 HAR, removal of the proposed agricultural reserve allotment from consideration by this
19 Commission is appropriate.

20
21 The majority indicates that there is no intent to create a separate and distinct
22 category, and that it is sufficient on remand to leave unpermitted water in the streams
23 until allocated to future offstream use(s). They cite to the following for that proposition:

24
25 ...Any flows in excess of this standard shall remain in the stream until
26 permitted and actually needed for offstream use, in keeping with the
27 policy against waste and in recognition that the standard merely states an
28 absolute minimum required under any circumstances. These unallocated
29 flows, however, will not constitute a distinct category or quantity, but will
30 fluctuate according to variations in supply and demand.

31
32 Waiāhole II, at 13 (quoting Waiāhole I, at 156). However, taken together with the
33 Court's prior criticism against using public streams as reservoirs for future private
34 offstream use (*supra*), the Court has also said (Waiāhole I, at 155, emphasized):

35
36 For similar reasons, we disagree with the Commission's designation of
37 5.39 mgd otherwise available for instream purposes as a "nonpermitted
38 ground water buffer" that the Commission could use to satisfy future
39 permit applications without amending the WIIFS. Nothing in the Code
40 authorizes such a measure....

³ D&O I, at D&O, page 11 (1.58 mgd proposed agricultural reserve and 5.39 mgd other unpermitted water to be put in Waiāhole and Waikāne streams); D&O I also assigned 2.10 mgd of unpermitted Kahana surface water which under certain circumstances and pending designation of a water management area for Kahana, was to be used toward operational system losses. D&O I, at D&O, page 6. D&O II, at D&O, pages 112-113, assigned 0.9 mgd of unpermitted water to Waikāne stream and the balance to Waiāhole stream.

1 Taken in context with the Waiāhole II remand regarding 2.2 mgd of unpermitted
2 water, our focus should be on the Court’s direction to actually allocate the (prior
3 estimated 2.2 mgd of) unpermitted water, and justify such allocation by FOFs and COLs.
4 Waiāhole II, at 13.⁴ The Waiāhole I Court recognized that “although interim standards
5 are merely stopgap measures, they must still protect instream values to the extent
6 practicable.” Waiāhole I, at 155. In making such findings and conclusions, this
7 Commission must also address itself to the issue on remand of whether such allocation of
8 the unpermitted water “protect[s] instream values to the extent practicable.” Waiāhole II,
9 at 13. Given this, and the Court’s prior admonition against creating a buffer, it behooves
10 the Commission to directly address whether unpermitted water should not be included in
11 windward stream IIFS.

12 13 III. Allocation of Unpermitted Water Logically Belongs in Stream IIFS

14 15 A. The Majority Now Allocates Unpermitted Water as an Unnamed Reserve

16 Contrary to its stated intent to avoid the formal creation of a separate and distinct
17 category for unpermitted water, the majority continues the prior practice of maintaining a
18 (now unnamed) quantity of unpermitted water to act as a reserve, even if no longer given
19 that appellation. While I agree with the majority’s current treatment that the unpermitted
20 remainder should be used to augment stream flow, I diverge from the majority’s view
21 that the unpermitted remainder is to be left in the streams as some commodity awaiting
22 future permitting to some offstream use. I would prefer that the amount be counted
23 toward present and/or future instream use, with requirement of amendment of IIFS prior
24 to allocation – such adjustment having been previously contemplated under the Code.
25 Waiāhole I, at 151.

26
27 There are three basic choices for categories under the Code: 1) instream flow
28 standards, 2) permitted water, and 3) reservation of water. As defined, unpermitted is
29 clearly not the second category. As for the latter category, unpermitted water is not
30 recognized as a reserve under § 174C-49(d), HRS, without rulemaking by this
31 Commission. On the other hand, if solely in the context of restoration of natural seeps
32 and surface water flow, unpermitted water in windward streams could constitute a “use”
33 (*i.e.*, an instream use). The Waiāhole I Court has said, “[w]e thus hold that the
34 maintenance of waters in their natural state constitutes a distinct “use” under the water
35 resources trust. This disposes of any portrayal of retention of waters in their natural state
36 as “waste.” *See Reppun*, 65 Haw. at 560 n. 20, 656 P.2d at 76 n. 20 (citing article XI,
37 section 1 [of the Hawai`i Constitution] as an acknowledgment of the public interest in “a
38 free-flowing stream for its own sake”).’ Waiāhole I, at 136-137. But because
39 unpermitted water is largely developed from the Waiāhole tunnel system, its allocation to
40 the IIFS category is merely analogous to such “use.”

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⁴ Another remedy – to amend the Water Code to create another category for unpermitted water – is beyond the purview of this Commission.

1 B. Unpermitted Water Should be Placed in IIFS

2 If IFS represents the “absolute minimum required under any circumstances,”⁵
3 (Waiāhole I, at 156) and, if this absolute minimum IIFS is established based on 1960s
4 windward stream flow data as put forth by the majority,⁶ we should adopt the suggestion
5 of the Waiāhole I Court to provide for “margins of safety” under our public trust duties
6 and the precautionary principle. Waiāhole II, at 12 (citing Waiāhole I, at 156⁷).
7 Unpermitted water – including the proposed agricultural reserve – was initially termed a
8 “buffer”⁸ or “supplemental flow” available for offstream uses. (D&O I, COL, page 33).
9

10 Rather than sequestering the unpermitted remainder for use as an unratified
11 reserve, I would designate the unpermitted remainder and apportion to each windward
12 stream as part of each stream IIFS. In keeping with the precautionary approach, I believe
13 that any request for a permit for an offstream use should require amendment of the stream
14 (or streams) IIFS, with the associated procedures and burden on an applicant, in
15 conjunction with an application for a water use permit.
16

17 The Waiāhole I Court objected to terming the unpermitted water as a “buffer” due
18 to the belief that it was established *a priori* to IIFS, and that its allocation for future
19 offstream use impermissibly reverses the constitutional and statutory burden of proof.⁹
20 The Commission first indicated the unpermitted ground water and the (since abolished)
21 proposed agricultural reserve as “supplemental flows” intended for scientific study and
22 further offstream uses. D&O I, COLs, pages 33-34. Rather than clash over semantics,
23 suffice it to say that the proposal to place residual unpermitted water developed in the
24 Waiāhole system as a margin of safety to IIFS, stems in part from the Code’s recognition
25 that IIFS is intended as a temporary concept intended to “protect and conserve beneficial
26 instream uses of water.” HRS §174C-71(2).
27

28 C. Instream Uses Reflected by IIFS Should be Given Priority

29 As dynamic and variable as stream flow must be in light of aspects of the water
30 cycle, the Waiāhole I Court spoke against the Commission giving priority to temporary
31 allocations rather than first establishing IIFS (and eventually IFS). Waiāhole I, at 155.

⁵ Waiāhole I used IIFS and IFS interchangeably. *Id.* at 148, FN48. The values to be considered in determining a permanent IFS are not stated in the section on IIFS (by definition a temporary quantity). That permanent IFS is a quantity “necessary” to protect the public interest in a stream suggests a minimum is sought. HRS §174C-71.

⁶ In D&O II, the Commission decided from testimony of windward party witnesses, that during the 1960s, “the vitality of these streams was still in evidence.” D&O II, at D&O, page 134. In contrast, the Commission also said, “[d]espite greatly reduced flows in the affected streams from the construction of the Waiāhole Ditch’s windward tunnel system, the evidence has shown that much of the vitality of these streams was maintained until the 1960s.” (emphasis added) *Id.*, page 102.

⁷ The Court states: “We find no fault with the general principles underlying the Commission’s reasoning. Thus, pursuant to its duties as trustee, and in the interest of precaution, the Commission should consider providing reasonable “margins of safety” for instream trust purposes when establishing instream flow standards....”

⁸ D&O I mentioned a buffer first in the context of “instream flows” before mentioning it in the context of “5.39 mgd of non-permitted water.” D&O II clarified that there was no intent to create a buffer. D&O II, at D&O, page 100, FN84.

⁹ Waiāhole I, at 156.

1 The Waiāhole decisions concede and reiterate that present estimation of IIFS poses an
2 elusive challenge given to “scientific uncertainty,” with “variations” in unpermitted flow
3 that will “fluctuate.” Id. at 156. The Waiāhole I Court anticipated the need for
4 amendments to IIFS: “[t]hus, even after the Commission designates the [IIFS] on remand
5 based on the best available information, it may amend the [IIFS] in either direction as
6 further information becomes available.” Id. at 158. The Code and administrative rules
7 also reflect the complexity and diversity of both hydrological and ecological
8 understanding of streams as they conflict with economic demands on a riparian system.
9 They thus allow for designation of IIFS on an individual stream-by-stream basis. HRS
10 §174C-71(2)(f), HAR §13-169-40(d).

11
12 Instream uses are not “competing applications” for water use permits to be
13 weighed against proposed offstream uses, but in fact should be established independently.
14 Waiāhole I, at 148. In citing to §174C-71(1)(E), HRS, the Court said, “[t]he clear
15 implication of these provisions is that the Commission may reclaim instream values to
16 the inevitable displacement of existing offstream uses.” Waiāhole I, at 149 (FN 52:
17 ‘...We agree with the Commission and add that public instream uses are among the
18 "superior claims" to which, upon consideration of all relevant factors, existing uses may
19 have to yield.’). To the extent that instream flow standards establish a minimum
20 requirement to sustain the various interests enumerated in §174C-71, HRS, it would
21 appear to be analogous to a complementary concept: sustainable yield¹⁰ of ground water.
22 The Commission should thus be ever mindful of the risk of underestimating IIFS (as
23 similar to overestimating sustainable yield). The conservative approach would be to
24 allocate unpermitted water toward IIFS, thus erring in favor of IIFS.

25 26 D. Variability in Stream Flow Supports Designation of a Margin of Safety to IIFS

27 There is little question that fluctuations occur in the flow of surface water streams.
28 Hawaiian stream characteristics include great variability in flow, and are described as
29 “flashy” in nature, with steep gradients, and rapid changes in flow level. [FOF 34].
30 Despite the acknowledged connection between surface and ground waters in the “unity of
31 the hydrological cycle” (Waiāhole I, at 135), the immediate effects of external factors on
32 surface water courses: e.g., rainfall, runoff, evaporative loss, etc. must ultimately
33 contribute to variability in flow. Seasonable variability in windward streams is also
34 known, with maximum discharge between October and April. D&O II, COL, page 27.
35 As indicated in Waiāhole I (and reiterated in Waiāhole II), the unpermitted water flow
36 amount will fluctuate according to variations in supply and demand. Id. at 156.

37
38 The Hawaii Supreme Court’s perception that our duty to the public trust evolves
39 (“by its very nature, does not remain fixed for all time, but must conform to changing
40 needs and circumstances.” Id. at 135), is matched by our own increasing understanding
41 of the variability in stream flow in relation to stream biota. *See generally*, Waiāhole I, at

¹⁰ Because sustainable yield represents the maximum amount of ground water that may be removed for use without impairing the utility or quality of the aquifer, the remaining ground water is that minimum quantity that must necessarily be left which is most analogous to IFS. Waiāhole I stated that the corollary is based on their functions in guiding water planning and regulation by prescribing responsible limits. Waiāhole I, at 148. Sustainable yield thus has a complementary relationship to water planning as IFS.

1 114. Consequently a direct relationship between stream biota to the amount of stream
2 flow must also account for variability in that flow. D&O II, COL, pages 35-36.
3 Amendment of the IIFS should be allowed to account for its variability over time.
4

5 IV. Apportionment of Unpermitted Water Flow to Windward Streams 6

7 D&O I indicated that “supplemental flows” consisting of 5.39 mgd of unpermitted
8 ground water and 1.58 mgd unpermitted future agricultural reserve ground water should
9 “be released into windward streams to avoid unlawful waste” but did not apportion the
10 flow by stream. D&O I, COL, pages 33-34. Waiāhole I, quoting from D&O I, requested
11 that the Commission apportion “these “supplemental flows” among the specific
12 streams... [Kahana, Waikāne, Waianu, and Waiāhole Streams]... “Water should be more
13 equally distributed [rather than most of it coming into Waiāhole Stream]... This is an
14 unnatural restoration.”” Waiāhole I, at 157, citing D&O I, FOF 180 “... An attempt
15 should be made to bring the volumes of water closer to the stream’s natural flow.” D&O
16 I, FOF 180.
17

18 Individual stream IIFS as derived from 1960s flow data may not be directly
19 related to water currently developed in the nearest corresponding dike and tunnel system.
20 [FOF 32] We are left with the anomalous situation in which water budgeted as part of
21 IIFS for a given stream may have its source from a different portion of the Waiāhole
22 system. Given our trust duties in managing these resources, this should not deter
23 apportionment of restorative stream flow to meet estimates of IIFS.
24

25 The majority apportions an additional 0.9 mgd to the Waikāne stream, with the
26 remaining unpermitted flow (1.53 mgd) allocated to the Waiāhole stream. The rationale
27 for this division is generally contained in statements indicating that no further addition is
28 necessary to Kahana stream flow,¹¹ and that historically, the Waiāhole watershed
29 contribution to Waianu stream cannot be separated from Waiāhole stream due to their
30 close proximity. D&O II, at D&O, page 112. But this and prior Decision and Orders
31 support an allocation to Waianu stream as part of establishing its IIFS, thus I believe that
32 FOFs and COLs should be made to address and clarify this possible logical
33 inconsistency, or apportion water to Waianu stream under an equal or pro rata
34 distribution.
35

36 The unpermitted water can be apportioned pro rata to each windward stream IIFS
37 as per the basis for the majority’s additions to IIFS for three of the four windward streams
38 (in D&O II, the Commission found that the base flow of Kahana stream exceeded its pre-
39 ditch flow and thus required no further allocation (Waiāhole II, at 10). The majority now
40 decides that the 2.1 mgd originally diverted from Kahana surface water to make up ditch
41 operational losses (Background, page 4) should be restored to Kahana stream’s IIFS. As
42 no further addition to Kahana stream appears necessary, its pro rata share of the 2.43 mgd

¹¹ D&O I, FOF 661, page 104, indicates that Kahana stream in comparison to other windward streams was found to have outstanding aquatic resources. Taken together with the prior D&O II decision that Kahana is already over 50% of its historical flow, it is likely that no further addition is required. D&O II, page 112.

1 of unpermitted water may be distributed among the remaining windward streams.
2 Additions could then be as reflected below:

	Total water added* (Total 12.0 mgd added)	% of water ** added to IIFS	To be Added to IIFS (Total 2.43 mgd)
6 Waiāhole Stream	4.8 mgd	40.0 + 8.5	1.18
7 Waianu Stream	3.0 mgd	25.0 + 5.3	.74
8 Waikāne Stream	2.1 mgd	17.5 + 3.7	.51
9 Kahana Stream	2.1 mgd	17.5	---

11 *[COL 4; section B of this Decision and Order; assuming significant figures– see also
12 D&O II, at D&O, page 99, FN83]; ** see this FN7.

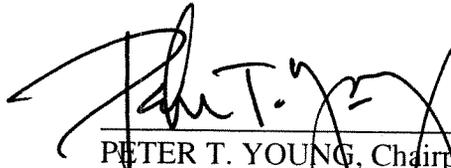
15 **Pu`u Makakilo Inc. (PMI)'s Water Permit**

17 The majority has made findings on Pu`u Makakilo Inc. (PMI)'s water permit
18 application consistent with Waiāhole II's remand direction that PMI has no practicable
19 alternatives to Waiāhole ditch water, and therefore should be issued a new water use
20 permit. While reluctantly concurring in the majority's reasoning to deny the Windward
21 Parties' motion to deny PMI's water use permit, and the majority's finding that PMI has
22 met its burden for a new water use permit, I otherwise disagree in the result. There
23 appear to be current conditions as argued by the Windward Parties (i.e., PMI's razing of
24 the golf clubhouse, PMI's public statement that the property is unsuitable for use as a golf
25 course, and the contrast between usage under PMI's interim permit and its apparent need)
26 that deserve further review before this Commission. Given the apparent changed
27 circumstances relating to their proposed golf course development, and under our
28 continuing duty to the public trust (*see* HRS § 174C-49(c)), I would prefer that PMI be
29 requested to appear before this Commission to explain their need for Waiāhole ditch
30 water. HRS § 174C-51(5) and (8).

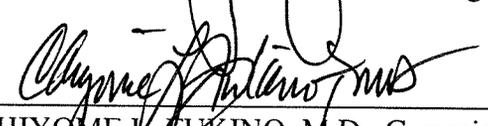
32 Besides the aforementioned issues to which I dissent, I concur in all other aspects
33 of the majority's Findings of Fact, Conclusions of Law, and Decision and Order.

35 Dr. Chiyome L. Fukino, Commissioner, joining in the dissent, but concurring in all other
36 Findings of Fact, Conclusions of Law, and the Decision and Order of this Commission.

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PETER T. YOUNG, Chairperson
Commission on Water Resource Management



CHIYOME L. FUKINO, M.D., Commissioner

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

In the Matter of Water)
Use Perrmit Applications,)
Petitions for Interim)
Instream Flow Standard)
Amendments, and Petitions)
for Water Reservations for)
the Waiahole Ditch Combined)
Contested Case Hearing)

Case No. CCH-OA95-1

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this date a copy of the Commission's Findings of Fact, Conclusions of Law, and Decision and Order were duly served upon the following parties after notice (July 13, 2006) by pick-up at the Water Commission office and/or by U.S. mail, postage pre-paid or via Messenger to the following:

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